

Health Worker and Teacher Perspectives on School-based HPV Vaccination in Peru

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INTRODUCTION

Though preventable and treatable, cervical cancer causes the deaths of nearly 250,000 women each year, roughly 88% in developing countries, where it represents 13% of the cancer burden. Cervical cancer has a high burden in South America (23 cases per 100,000). Incidence in Peru is among the highest in the region at 34.5 per 100,000, with over 4,400 cases and 2,000 deaths per year [1]. Recent advances in primary and secondary prevention of HPV have potential to decrease the impact of the disease dramatically if measures are taken to increase equity in access to interventions [2-4].

Two vaccines are now available to prevent the strains of human papillomavirus (HPV) that cause 70% of all cervical cancer cases. The greatest potential impact from these vaccines is in low-income countries where cervical cancer screening and treatment are not accessible to most women [5], but where the Expanded Programme on Immunization (EPI) is a well-established, far-reaching system [6]. The World Health organization has prequalified both vaccines and recommended wide administration to girls between ages 9 and 13 who are not yet sexually active [7].

In collaboration with Ministries of Health, civil society organizations and other stakeholders, the international global health nongovernmental organization (NGO) PATH conducted demonstration projects in India, Peru, Uganda, and Vietnam, in which HPV vaccine was implemented through the public health system in districts reflecting the average performance of the EPI program. School-based vaccination targeting girls by grade level was implemented in the Piura region of Peru after formative research indicated this would be an effective strategy for reaching girls [8]. Among the perceived advantages of school-based vaccination are the administrative structure and regular attendance of the target population, which does not regularly seek facility-based health services [9]. This strategy was tested in each of the other participating countries, along with other promising approaches [10]. Included in the project were 31 of Piura's 64 districts, with participation from 161 health facilities and 264 schools

[11]. Quadrivalent HPV vaccine¹ was used and all girls enrolled in fifth grade in participating schools were eligible, provided they were at least 9 years of age, which is the minimum age for licensed use of quadrivalent HPV vaccine in Peru. PATH supported project planning and implementation, and conducted operations research to measure coverage achieved and incremental program costs and to evaluate feasibility and acceptability [10-13].

The demonstration project was implemented under a protocol informed by formative research in Peru [8] and by guidance from the WHO that was later included in its official recommendations, designed to address anticipated challenges in introducing a vaccine against a sexually transmitted infection to adolescents [14]. Among other recommendations, intensified IEC efforts were advised in order to address expected sensitivities around gender and sexuality and limited experience with multidose vaccines in the target age group [15-17]. With the exception of a previously planned cold chain review and upgrade conducted by the Ministry of Health, no major changes were made that would impact routine conditions in the EPI program, such as adding staff or vehicles; thus the results showed that it is feasible to introduce the HPV vaccine through existing infrastructure [11].

PATH's research addressed some of the highest priority data needs for vaccine introduction decisions in developing countries [18-20]—valuable information that such product introduction partnerships are uniquely positioned to provide [21]. Initial implementation is also a critical component of new vaccine introduction, requiring supplementary data and involving additional planning at national and sub-national levels [19]. Best practices and lessons learned from real implementation efforts are important to consider at this stage, and should also be incorporated in the decision to introduce. The voice of workers who implement new vaccine introduction in developing countries could offer valuable

¹ Quadrivalent (Gardasil[®]) HPV vaccines were donated to PATH by Merck & Co. (USA) for use in the demonstration project. Gardasil[®] is a registered trademark of Merck & Co., Inc.

insight into the actual and optimal use of resources in these activities, which both tend to differ from guidelines and high-level plans.

This paper reports on resource utilization in the first year of large-scale HPV vaccination in the Piura region of Peru as described by health workers and teachers involved in implementation of school-based strategies. The focus of this analysis was on how staff time and other resources were allocated for training, information, education and communication (IEC), and service delivery, and the impact on routine activities at schools and health facilities. Specific aims were to describe what resources were used and what level of effort was expended in the first year of HPV vaccination, and to describe how workers involved in implementation viewed the choices made in resource allocation for the project. Research questions guiding the analysis were:

1. What level of effort and resource utilization did health workers and teachers involved in implementation report based on their observations?
2. What views did these workers express about the suitability of resource use and perceived trade-offs associated with allocating resources for HPV vaccination?

This information will be useful to immunization program managers and other stakeholders planning for HPV vaccine introduction, and may help inform national decisions about whether to introduce the HPV vaccine if there are concerns about impact on other high priority health programs [22].

METHODS

This is a secondary analysis of a cross-sectional study, identifying the level of effort and resource use involved in introducing HPV vaccine through a school-based demonstration project from the perspective of health workers and teachers who implemented the project. Feasibility and acceptability had been assessed through twelve case studies consisting of a health center and one or two schools within its jurisdiction [11]. The sites were chosen to reflect the range of settings, types of institutions, and coverage levels attained across the project. In each case, in-depth interviews were conducted with health workers and teachers, and observations of the health facility and of vaccination at schools were recorded.

Interview data from 45 health workers and 54 teachers who were participants in the original 12 case studies were reanalyzed. Those interviews focused mainly on the information, education and communication (IEC) component of the effort and its impact on acceptability of the vaccine [10]. This analysis examined how staff time and other resources were allocated for training, IEC and service delivery, and the impact on routine activities at schools and health facilities. In order to explore how HPV vaccination added to and differed from workers' usual responsibilities, aspects of the project typical of all immunization activities in Peru (e.g., microplanning, cold chain) were excluded from analysis.

Thematic content analysis of these interviews was conducted for themes and subthemes related to the workers' perspective on the effort and resources expended; how appropriate and effective the resource allocation choices were; collaboration between the health and education sectors; what did and did not work well in the implementation; and the overall benefits and tradeoffs of the effort. The number of respondents who commented on each theme was recorded and the most frequently appearing themes included in the results described in this paper.

Data from transcripts and interview summaries were managed, collated, and analyzed using Atlas.ti version 6.2. Whenever possible transcripts were reviewed, but in some cases only summaries

prepared by the investigators were available. The transcripts and summaries were translated and coded by the author only, and findings were validated against investigators' observations from health facilities and vaccination sites recorded during the feasibility and acceptability studies [23].

TABLE 1. CASE STUDY CHARACTERISTICS

Case study	Health facility type	Setting	Coverage achieved	Health workers interviewed	School Type	Teachers interviewed
1	Health center	Urban	Low	2 EPI 1 IEC	1 public 1 religious	1 principal 4 teachers
2	Health center	Rural	Low	2 EPI 1 Chief of facility	1 public 1 private	2 principals 3 teachers
3	Health center	Rural	Low	3 EPI	2 public	2 principals 3 teachers
4	Hospital	Urban	High	3 EPI 2 IEC 1 Chief of facility	2 public	2 principals 2 teachers
5	Health Center	Urban	Low	3 EPI 2 IEC	1 private 1 public	2 principals 2 teachers
6	Health center	Rural	Low	2 EPI 1 IEC 1 Chief of facility	1 private 1 public	2 principals 2 teachers
7	Health center	Rural	High	2 EPI 1 IEC 1 Chief of facility	1 public 1 religious	2 principals 4 teachers
8	Health center	Rural	High	2 EPI 1 IEC 1 Chief of facility	2 religious	2 principals 3 teachers
9	Health Center	Rural	High	3 IEC 1 EPI	1 public 1 religious	2 principals 3 teachers
10	Health Center	Urban	High	2 IEC 2 EPI	2 public	1 principal 3 teachers
11	Hospital	Urban	High	2 IEC 1 Chief of facility	2 public	2 principals 2 teachers
12	Health Center	Urban	Low	2 EPI 1 Chief of facility	2 public	1 principal 2 teachers
Total				45		54

Abbreviations: EPI=Expanded Programme on Immunization; IEC=Information, education and communication

Ethical Review

The original studies were approved by institutional review boards in the United States and Peru. Ethical approval was not sought for this study, as only de-identified data were reviewed and no new data were collected.

RESULTS

Both teachers and health workers described the HPV vaccination as a positive experience that built upon existing partnerships between schools and health facilities. Most commented on the training, IEC and parental authorization processes, which involved unfamiliar approaches, and there was broad agreement about how the tested approaches worked and what would be most effective in the future. Workers from both sectors drew parallels between the HPV vaccine introduction and other experiences they had in the course of their work, most frequently with rotavirus, the most recent vaccine added to the EPI schedule, and Hepatitis B, which was delivered through a school-based campaign that was delivering its third dose when HPV activity began.

Because of these recent experiences some of the anticipated difficulties, such as communicating that three doses of vaccine would be necessary and establishing connections with classrooms, did not materialize. However, other issues emerged as a result of these experiences, such as needing to address concerns about why target populations and communication activities differed. Difficulties encountered in planning, coordination and service delivery were described as typical rather than specific to the HPV vaccination effort. There was broad agreement that the benefits of the intervention outweighed the challenges encountered in implementation.

COLLABORATION

All of the health workers and most of the teachers described a history of collaboration (Table 2), including the Hepatitis B vaccine campaign that was still under way when HPV vaccination began. The only new relationships established were with a small number of private and religious schools who had not previously been targeted by public health programs. Most workers from both sectors characterized school-health relationships as positive, and as a success factor in the HPV campaign. For example, an EPI worker from a rural health center said:

“We always have good relations. If we allow in school activities, not only with regard to vaccination campaigns but also CRED, weight and height in adolescents, etc.”

TABLE 2. COLLABORATION BETWEEN HEALTH FACILITIES AND SCHOOLS

Theme	Comment	Number of interviewees		
		Health workers N=45	Teachers N=54	Total
Facilitating factors	Previous collaboration	45	31	76
	Positive past experiences	22	25	47
	Effective partnerships	14	15	29
Impeding factors	Transportation	25	-	25
	Scheduling on short notice	11	3	14
	Dysfunctional partnerships	3	6	9
Recommendations	Schedule farther in advance	10	3	13

The principal of a rural public school stated:

“They come, visit us raise some project or activity and we reply promptly if it can or cannot work. Sometimes we invite [them] to share an activity that the school performs and commit, just as we answer them. A favorable institutional relationship.”

Several health workers and teachers said scheduling and coordinating on short notice was problematic. Many health workers recommended coordinating with schools further in advance, which was not possible in this case because of the short notice given to health facilities. One IEC worker described the challenge this presented:

“Here comes the directive, you have to give [HPV vaccine] in ten to fifteen days and we have activities to do here. We had the hepatitis campaign, and then papillomavirus came and overlapped. You know that here the staff is small. We are overloaded with functions and you charge us with more.”

Teachers expressed similar sentiments. To facilitate better management of their workload, a few teachers suggested including HPV vaccination in the calendar developed at the beginning of each school year, as is done with several other health activities.

TRAINING

A novel approach to training was deployed in this demonstration project, involving new responsibilities for health workers and teachers. Using a cascade training approach, health workers were invited to a training of master trainers, where they were informed about the disease and the vaccine, and received instruction on how to lead participatory training for others [11]. It was expected that they would then train other health workers at their facility, and lead trainings of fifth-grade teachers and school directors who would then orient parents and students from the target population for the vaccine. Most health workers led multiple teacher trainings, which took considerable effort to organize. Some also followed up individually to educate teachers who missed the group training.

The training of teachers was designed to prepare them to inform parents and students and to encourage their acceptance of the vaccine. Nearly all of the teachers who were trained said they gained knowledge and skills that would benefit their school population, but less than half said they were confident enough after the training to give parent talks with no health worker present (Table 3). A small number of health workers said they felt the teacher training was effective; several had difficulty scheduling, coordinating, or securing participation on short notice. Several teachers and health workers felt it was important to continue training teachers, however, both groups recommended having health workers convey information to parents and students in the future.

TABLE 3. EFFECTIVENESS OF TEACHER TRAINING

Theme	Comment	Number of interviewees		
		Health workers N=45	Teachers N=54	Total
Benefits	Teachers gained knowledge and skills that would benefit their school population	6	29	35
	Confident educating parents without health worker present	-	11	11
	Effective to train multiple teachers from several schools at once	3	-	3
	Multiplier effect	3	13	16
Drawbacks	Not informed enough to educate parents	-	3	3
	Difficult getting teachers to attend	4		4
Recommendations	Have health workers inform parents directly	11	25	36
	Continue training teachers	12	12	24
	Train one teacher per school	-	2	2
	Train multiple teachers per school	-	4	4

SENSITIZATION OF PARENTS AND GIRLS

Sensitization and IEC activities are described in Table 4. The main role planned for teachers in this demonstration project was in sensitizing parents and students and securing their written authorization in advance of vaccination. Parent meetings about the HPV vaccine were organized by teachers at all the schools, but despite being trained to orient parents, most teachers felt the health workers' expertise was needed and arranged for one to be present. A few teachers initially hosted a meeting on their own and then scheduled a second meeting with a health worker when they were unable to answer parents' questions. Health workers also found it was most effective to attend these meetings rather than leaving parent education to the teachers; several described problems that arose at schools where they had not attended parent meetings. Most teachers and many health workers recommended having health workers lead parent orientations in the future.

TABLE 4. INFORMATION, EDUCATION AND COMMUNICATION ACTIVITIES

Target	Activity	Interviewees reporting involvement	
		Health workers N=45	Teachers N=54
Parents	Sensitized parents at school-organized meeting	24	39
	Worked with health worker to sensitize parents	-	30
	Followed up with outreach to refusers	8	13
Students	Sensitized students during school time	8	45
	Taught lesson in science and environment class	-	21
Media	Coordinated radio coverage	10	-
	Observed local media coverage	-	23

Even though teachers were not seen as effective at conveying health messages, their involvement in the sensitization of parents was viewed as beneficial to the campaign. The teachers' trusting relationships with the parents and ability to communicate on their terms facilitated understanding and acceptance of the vaccination plans. Workers from both sectors felt it would be ideal to have health workers and teachers orient parents together in future efforts, as they did in most cases in the demonstration project.

As one would expect, teachers were much more comfortable orienting students. All of the teachers reported preparing the 5th grade girls for vaccination and providing them with at least basic information about the vaccine and disease. Many of them also incorporated HPV lessons into their Science and Environment class, which included students from outside the target population.

SECURING PARENTAL AUTHORIZATION

Teachers were charged with securing written authorization from parents before immunization. Though this was a preexisting national policy for all vaccinations, the HPV vaccination project was the first time that professionals in Piura were requested to follow it. Many felt it added extra work and complexity to the effort. Some teachers thought this should be the health workers' responsibility (Table 5). Many health workers felt that their usual practice of requesting assent was more practical. On the

other hand, several workers from both sectors said it was not a hardship to secure authorization and that they valued the protection it offered them, particularly in light of negative publicity and law suits related to immunization that had occurred recently in the area.

Several workers said the authorization form raised suspicion among parents, who were also encountering this process for the first time (Table 5). For some parents, suspicions were exacerbated by concerns and confusion about why the Hepatitis B vaccination effort did not involve an authorization request and received much more publicity than the HPV effort. Still, most parents authorized vaccination after the first request. Several teachers arranged home visits or other follow-up with families who initially declined to authorize forms—conducted by themselves, a health worker, or the school director—and many felt this was an effective way to address parents’ concerns (Table 4, 5).

OTHER INFORMATION, EDUCATION AND COMMUNICATION ACTIVITIES

Laminated visual aids were provided for the IEC component of this effort. Usually health facilities are responsible for creating their own sensitization materials. Workers from both sectors said that the materials provided—especially images of the progression of the disease—were instrumental in conveying the importance of the vaccine (Table 5).

TABLE 5. EFFECTIVENESS OF INFORMATION, EDUCATION AND COMMUNICATION ACTIVITIES

Theme	Comment	Number of interviewees		
		Health workers N=45	Teachers N=54	Total
Facilitating factors	Teachers’ relationships with students and parents	22	33	55
	Materials/images	25	23	48
	Teachers’ involvement	17	24	41
	Reinforcement of messages through media	7	18	25
	Orientation for parents by health worker	14	11	25
	Parental authorization process/protection for workers	8	12	20
Impeding factors	Parental authorization process/suspicion among parents	10	12	22
	Poor parent attendance at meetings	4	15	19
	Confusion over different vaccines	16	-	16

	Limited media coverage	10	6	16
	Parental authorization process/extra work and complexity	10	4	14
	Materials arrived too late	8	5	13
	Not enough time to prepare before vaccination	11	-	11
	Not enough materials	6	5	11
Recommendations	Involve teachers in IEC along with health workers	19	18	37
	Conduct media campaign	15	20	35
	Use a video	7	21	28
	Design activities and outreach for rural populations	10	8	18
	Make more materials available to parents and students	12	-	12

Some who gave the materials positive reviews also reported that they arrived either too late or in insufficient quantities for their parent and student trainings. Many recommended designing activities and materials to reach out specifically to rural and remote populations. Several recommended making more images and material available to share with teachers, parents and students, and providing enough to send home with families. Many—mostly teachers—also recommended creating a video. A few rural teachers, including this one, suggested that a video could stand in if no health expert able to attend their school meeting:

"Other means could have been used, such as a video where a specialist is talking (...) to be more practical we can present the material, give us a video that we can project ourselves here with the TV."

Just ten health workers were involved in conducting media activities, which were less intensive in this campaign than for most immunization activities. Radio scripts and messages were provided but many opted not to use them. Some workers thought that limiting mass messages was appropriate since the target audience for the vaccine was so specific. Others felt that more media coverage would have helped reinforce their messages, particularly in areas where negative messages about immunization were broadcast, and where parents expressed some confusion and concern about messages from the Hepatitis B vaccination campaign. Many health workers and teachers, including this teacher from a rural

public school, recommended conducting a media campaign, emphasizing radio and posters, in preparation for future vaccinations:

“For the next year there should be a campaign against cervical cancer, which spreads more on radio and street banners. This could motivate parents to attend our meetings.”

SERVICE DELIVERY

Relatively few comments were made on service delivery in these interviews, which focused on the IEC efforts. Teachers played a very small role in service delivery, transferring parental authorization forms, helping to arrange space, and maintaining order among the students. The main difference in service delivery was that the protocol specified that vaccination should occur in a private area. Most complied, though a few decided it was preferable to vaccinate in their classrooms. Only two of the interviewed teachers said that finding private space for vaccination was a challenge.

Other challenges mentioned by health workers included having two immunizations to manage at one time, access to water, and late or insufficient supplies. The challenge most frequently mentioned by teachers was not being informed prior to service delivery. Several workers from both sectors recommended continuing to vaccinate at schools; none suggested considering a different venue.

IMPACT ON ROUTINE ACTIVITIES

Several health workers commented that most of the disruptions involved in this effort were typical of vaccination campaigns and were handled in the usual manner. This involved assigning staff from other duties to assist in implementing HPV vaccinations or administering immunizations at the health facilities. Many characterized this as a vaccination campaign, and recommended spacing out vaccination campaigns throughout the year so that the impact can be better absorbed. One health worker from a rural health center described how HPV vaccination fit in with other activities:

“This year has been very stressful because we had three days of vaccination. The first was the campaign against hepatitis in Peru, the second Day of the Americas and the campaign against cervical cancer.”

Most health workers—25 of the 45 interviewed— commented that the amount of time they spent off-site for coordination, training, and IEC was unusually high. In particular, the training activities listed in Table 6 involved several days away from other duties—up to five days for the master training, one to three days for each teacher training offered, plus multiple visits to schools to secure participation. Each of these activities required travel; securing vehicles was challenging, and fuel costs were significant. Additional trips were made to attend multiple parent meetings, amounting to a significant workload in addition to the usual coordination, logistical and service delivery activities involved in vaccination. An EPI worker from a rural health center weighed these considerations:

“The ideal way of working immunizations should be done with this style of training teachers, but there are substantial problems ...if only the fifth grade teacher has been trained just for HPV, would it be worth it? Because for us it was a lot of work that depended on clinicians...”

Training of teachers caused some disruption of school activities. Teachers from six schools attended training during the school day. Half of these schools cancelled fifth grade classes while the teachers were trained; the others found substitute teachers or had one or more teachers remain at school while others were trained.

TABLE 6. PARTICIPATION IN TRAINING ACTIVITIES

Target	Activity	Time spent	Reported involvement*	
			Attended	Missed routine work
Health workers	District-level training of trainers	2 to 5 days	28	28
	Training at workplace	≤ 1 day	22	22
	Training for teachers	1 to 3 days	23	23
Teachers	Training for teachers	1 to 3 days	31	10

*Totals are not mutually exclusive. Time spent refers to each training attended. Health workers generally attended more than one teacher training.

Teachers indicated that there was little impact on their workload aside from the time spent in training, since they frequently organized meetings for parents and students for various purposes. Because vaccination involved only one grade rather than the entire student population, service delivery had a smaller than usual impact on routine school and health activities. Only two of the 54 interviewed teachers commented on disruption of activities not related to training and IEC activities. Both said only a partial day was affected and it was not difficult to absorb this.

BENEFITS OF PARTICIPATION

Workers from both sectors said participation in this effort was worthwhile for similar reasons, listed in Table 7. Many found it rewarding to help prevent a health problem that affects many women in their communities, and to model a needed program they hoped would spread throughout the country. Many valued the chance to gain new professional skills and experiences. In addition, health workers commented on the value of leveraging teachers' relationships and working through schools to reach the target population for the vaccine in groups, rather than reaching out to individual families.

TABLE 7. BENEFITS OF PARTICIPATING IN HPV VACCINATION

Theme	Health workers N=45	Teachers N=54	Total N=99
Prevented major health problem affecting their community	15	27	42
Modeled needed program with potential to expand	14	11	25
Gained professional experience and skills	17	8	25
Increased contact between health and education	6	5	11
Leveraged teacher relationships to reach target population	8	-	8

DISCUSSION

This vaccination campaign was highly successful, reaching 82.6% of its target population in the first year without affecting the coverage of other immunizations [10]. This is a significant accomplishment given that no new human resources were added to already understaffed schools and health programs. Despite this achievement, comments from the implementing workers suggest that the activity could have been done with greater efficiency, preserving valuable health and education resources for other purposes and perhaps even improving coverage rates. Workers noted difficulties at various points in implementation but universally felt it was a worthwhile effort, with the preventive health benefit to their community as their main motivation for participating, as health workers and teachers in other contexts have also expressed [24].

Engaging health facilities and schools further in advance, which may follow as HPV vaccination becomes routine, would have reduced stress and allowed workers from both sectors to coordinate more effectively and to absorb the impact on their other responsibilities. Delays and problems with the introduction of other vaccines may be avoided by involving stakeholders, including those who will lead local implementation, in planning and decision-making processes [25].

Though health workers and teachers said the training they received was a positive professional experience, it did not meet its goal of developing a new cadre of independent trainers. In the demonstration project, the health workers targeted only a select group of schools in their area that participated voluntarily in the effort; one can assume a much larger investment of time and resources would be required to train teachers from all schools in their jurisdiction. Other programs planning for introduction may want to consider less resource-intensive ways of involving teachers in IEC.

The teacher made valuable contributions by coordinating parent engagement and facilitating the parental authorization process, as has been seen in other school-based vaccination programs [26]. There may also be other duties assigned to health workers that could be conducted equally well or

better by teachers. Teachers did not play a major role in service delivery in this project; other school-based vaccination programs have found additional roles that would use their strengths, such as student record-keeping, which posed a challenge for health workers unfamiliar with classroom systems [9, 24, 26].

None of the workers involved in this activity were familiar with the official parental authorization policy for vaccinations, which appears to have never been operationalized in at least this region of the country, and which required considerable effort to implement and communicate. The unfamiliar process was found to have a negative impact on coverage in Piura [11]. Following local norms for parental authorization was recommended by workers involved in this and other HPV vaccine introduction efforts [9]. The government of Peru may want to review this policy and consider adopting a more practical, less cumbersome approach to authorization.

Several limitations of this analysis should be noted. This was a secondary analysis of data collected to answer other research questions. Selection bias may be present in the choice of countries, regions, health facilities and schools involved in the project, all of which were purposively selected based in part on their willingness and ability to participate, and may not be generalizable to contexts with less buy-in and fewer resources. Primary research into perspectives of implementing professionals could be incorporated into future operational studies of vaccine introduction efforts.

The cost—as well as the amount of time—associated with activities described by workers in this study vary in different regions and settings around the country [27], and the optimal approach to collaboration will also vary. The workers' recommendation to incorporate approaches that can successfully reach rural populations highlights the need to consider justice and equity when introducing this vaccine against a disease that primarily affects those least likely to access health services [4, 28].

The manufacturer of the quadrivalent HPV vaccine recently agreed to sell HPV vaccines to the GAVI Alliance at affordable prices, which GAVI will further subsidize for qualifying countries [29]. This could lead a large number of low-income countries to consider adding HPV to their EPI schedules [30-32]. With this reduction in cost of the product to countries, program costs will become a more significant proportion of the investment required for HPV vaccine introduction and may therefore be a more prominent consideration for immunization decision-makers in GAVI-eligible countries [13, 33-35]. Further research into the actual and optimal use of health and education resources for HPV vaccine introduction in developing countries, including perspectives of implementing workers, is recommended.

CONCLUSION

The perspective of implementing workers involved in HPV vaccine demonstration projects from the health and education sectors provides valuable insights for introduction of the vaccine in other low-resource settings and merits further investigation. This analysis suggests that workers did not view HPV vaccine introduction as a significant burden or an unfamiliar set of activities, and that programs could achieve similarly successful results with less intensive resource inputs.

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