

**Exploring the Experience of Human papillomavirus vaccine uptake among
Adolescent Girls in an urban slum of Dhaka**

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Abstract

Introduction: Cervical cancer is one of the most common causes of morbidity and mortality among women in low- and middle-income countries, including Bangladesh, where it is the second most common cancer among women. Human papillomavirus vaccination represents a transformative solution, yet uptake remains hindered in marginalized settings such as urban slums. The current study investigates in detail the experience of adolescent girls in reaching vaccination within the Korail slum in Dhaka, facilitated and barred factors that have influenced such a journey.

Method: A qualitative study design was used, involving semi-structured in-depth interviews with eight adolescent girls who received the HPV vaccine aged 10–14 years. The Behavioral and Social Drivers framework guided exploration of emotional, social, and logistical experiences. Thematic analysis was conducted, incorporating both deductive and inductive approaches in order to identify meaningful insights from the data.

Findings: Teachers and mothers emerged as strong influencers, helping reduce fears and misconceptions engendering trust. Reassurance legitimized vaccination as a normal and thus empowering experience by peers. The appreciation for free access to vaccines underscored values that the country places on health. Nevertheless, misinformation across social media, logistical difficulties in regard to mandatory online registration, and last-minute notifications on vaccination schedules thwarted processes. Despite these barriers, participants also reflected a very strong sense of agency and optimism with respect to taking the vaccine against cervical cancer.

Conclusion: The study highlights the importance of trust, community engagement, and culturally sensitive communication in improving vaccination uptake. By addressing logistical barriers and misinformation, and leveraging trusted peer networks, we can create a supportive environment for vaccination. These insights can enhance HPV vaccination campaigns and reduce cervical cancer rates among underserved populations, ensuring no girl is left behind in the fight against preventable diseases.

Introduction

The primary goal of the Human papillomavirus (HPV) vaccination program is to significantly reduce the incidence of cervical cancer (CC) and other HPV-related diseases, which are major causes of morbidity and mortality in women, especially in low- and middle-income countries (LMICs). Almost 90% of Cervical cancer deaths take place in LMICs (Perehudoff et al., 2020) which underlines an urgent need for globally effective preventive strategies. Indeed, CC is the fourth leading cause of incidents among women worldwide, while South-East and South-Central Asia have been particularly seriously affected by this cancer (Arbyn et al., 2020).

Given the urgent need, vaccination against HPV is considered one of the most effective methods of CC prevention; it protects against the types of HPV responsible for about 90% of the case of CC and 80-95% in cases caused by other viruses (Zhai & Tumban, 2016). Studies show that most people get their first HPV infection in their twenties. For this reason, it is recommended to vaccinate adolescents before they start having sexual activity to help protect them from HPV infection (Loke et al., 2017). The World Health Organization also recommends administering the HPV vaccine to girls alongside screening and treatment for older women to reduce the risk of cervical cancer. The vaccine is most effective when given early in adolescence, specifically between the ages of 9 and 14, before exposed to the virus.

In Bangladesh, Cervical cancer is the second most common cancer among women and leads to the highest number of cancer-related deaths in the country. Approximately 8,300 new cases of cervical cancer are diagnosed each year in Bangladesh, resulting in around 4,900 deaths (UNICEF, Bangladesh, 2023).

A nationwide study in Bangladesh on awareness of HPV highlights the critical need of increasing HPV vaccine awareness, with insights applicable not only in Bangladesh but also in a similar global context (Eva et al., 2024). To maximize the effectiveness of vaccination, tailored strategies are necessary, accounting for differences in age, urban and rural locations, and varying education levels (Eva et al., 2024). This is echoed in another study, knowledge of cervical cancer and HPV vaccine in Bangladeshi women: A population-based, cross-sectional study, which also underscores the need for culturally appropriate targeted educational interventions to enhance knowledge about

cervical cancer causes and promote its primary prevention through HPV vaccination (Islam et al., 2018).

Notwithstanding these challenges, the Government of Bangladesh has made some key moves. In 2016, a pilot HPV vaccination program started in the Gazipur district, covering 30,000 grade 5 girls across 1,694 schools and reaching a 94% coverage rate. The program was conducted as both school-based and community-based outreach for out-of-school girls aged between 10-12 years, in two doses six months apart without any reported severe adverse events following immunization (WHO Bangladesh, 2016).

After the ensuing success, in October 2023, Bangladesh launched the 1st phase of HPV vaccination campaign in Dhaka, targeting the immunization of over 10 million girls in grades 5 through 9 and out-of-school girls aged 10-14 years and successfully vaccinated more than 1.5 million girls (UNICEF, 2023). In addition to previous efforts, a comprehensive final phase of the campaign was launched in October 2024, specifically aimed at reaching 6.2 million girls aged 12 to 14. This initiative focused on seven divisions located outside the capital city of Dhaka, ensuring that the program extended its impact to rural and less accessible areas (UNICEF, Bangladesh, 2024).

Dhaka is home to a significant number of urban slums, housing millions of individuals living in densely packed, resource-poor settings. These communities often experience limited access to healthcare services, high levels of poverty, and inadequate health literacy. Studies emphasized the challenges of achieving high coverage of fully immunized children (FIC) in urban slums, noting a lack of successful models to follow. While Dhaka reached an FIC coverage of 83% in 2006 and the national average was 84%, the coverage in Dhaka's slums was significantly lower, at only 69% (Hayford et al., 2014).

Explaining this cause multiple studies have indicated that the lower vaccination coverage in the slums of Dhaka is largely attributed to a lack of awareness and concerns about vaccine side effects among caregivers (Rahman et al., 2012). While existing studies point out the low awareness and acceptance, more research is needed for tailored interventions that address specific community barriers. There is an indicative gap in research that explores the potential of rapport and culturally sensitive messages to influence the comfort of young women in making decisions about vaccination in socio-culturally challenging settings. To increase HPV vaccination rates in the urban slums it requires health promotion that is culturally and economically sensitive (Garcia et al., 2023)

which is guided by proper communication skills. Programs that focus on building trust, and are sensitive to gender, have proven to be the most effective in reducing vaccine hesitancy (Orangi et al., 2024).

The urban slums of Dhaka present a unique setting to investigate these issues due to their socio-economic diversity and public health challenges. Adolescent girls in these communities often face vulnerabilities related to health (Alam et al., 2018). These challenges underscore the need for context-specific research to address the gaps in HPV vaccine uptake. Understanding how adolescent girls perceive comfort and motivation to engage in the program is crucial. Studies show that high awareness of HPV risks and its benefits improves motivation for vaccination. Therefore, culturally relevant strategies are essential (Lubeya et al., 2023). It is learned that using local languages and cultural references in health education programs has helped improve engagement in communities (Liu et al., 2019). Research suggests that when health workers empathize and spend time understanding individual concerns, beneficiaries are more likely to participate in vaccination programs.

However, much of the existing research has been limited focusing only on the benefits of educational programs toward increasing vaccine uptake (Smolarczyk et al., 2022). While some studies indicate that clear and evidence-based communication is crucial, there is insufficient discussion regarding how effectively this has been implemented and researched in practice. This lack of discussion is particularly significant from the receiver's perspective.

Additionally, in the case of the HPV vaccination, girls between the ages of 10 and 14 are the primary target as they are most vulnerable to future HPV infection, which can lead to cervical cancer. It is a known fact that the onset of puberty is a critical period in their lives. They encounter numerous unique obstacles that are exacerbated at this time of their life course (Chant et al., 2017) impacting their overall well-being and personal advancement. By prioritizing them, we can effectively prevent many HPV-related cancers later in life, which ultimately helps reduce healthcare burdens and supports broader public health objectives.

In this study, we explored the participants' experiences and perceptions in an urban slum in Dhaka who are receiving the HPV vaccine. It assessed their comfort levels during the vaccination program and gathered their opinions on the communication strategies employed by the program organizers. The research explored how these efforts encouraged girls to participate in the program and

maintain their involvement over time. By doing so, we are contributing to the understanding of facilitators and barriers to vaccinations in the Bangladeshi context.

Research Question

How do HPV-vaccinated girls in the Korail slum of Dhaka experience and perceive the process of receiving the HPV vaccination?

Specific Research Questions

1. How do adolescent girls in the Korail slum of Dhaka experience and perceive the facilitators that support their journey to receiving the Vaccination?
2. How do adolescent girls in the Korail slum of Dhaka experience and perceive the challenges encountered in their journey to receiving the HPV vaccination?
3. How does the overall satisfaction and comfort of adolescent girls in the Korail slum of Dhaka with the HPV vaccination process influence their motivation for continued participation in vaccination programs?

Objectives

General Objective

To explore the experiences and perception of receiving the HPV vaccine among adolescent girls in an urban slum.

Secondary Objectives

1. To understand the challenges and facilitators adolescent girls identify in their journey to getting vaccinated.
2. To explore and understand the overall satisfaction and comfort of adolescent girls with the HPV vaccination process and how it influences their motivation for continued involvement.

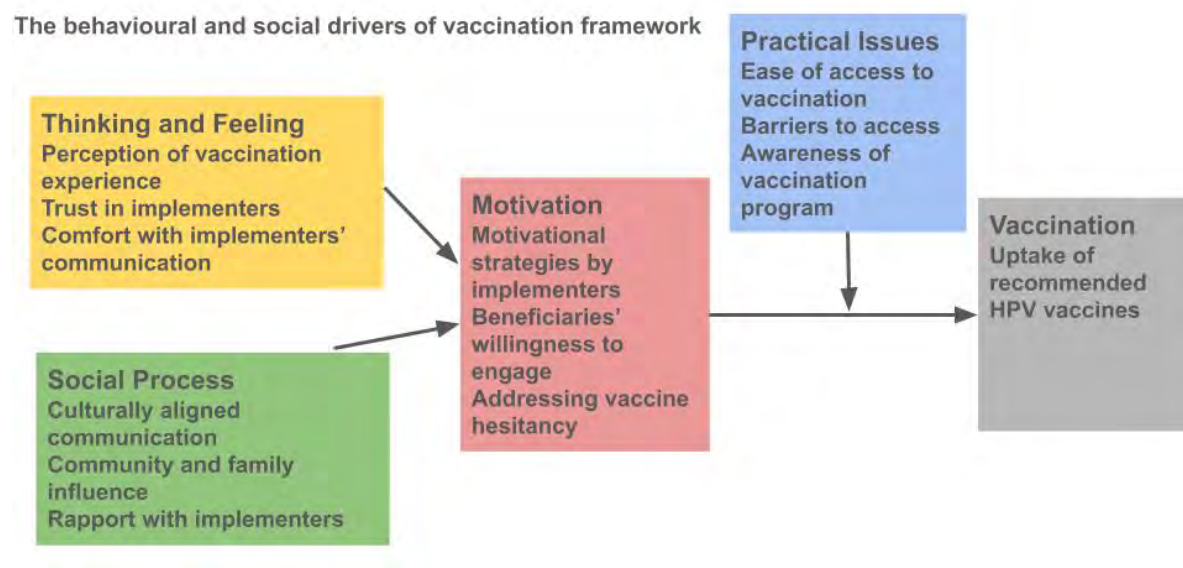
Conceptual Framework

Behavioural and social drivers of vaccination framework (BeSD)

The Behavioral and Social Drivers framework (BeSD), developed by the World Health Organization, is commonly used in studies to understand the intricate behavioral and social factors

influencing vaccine uptake. This framework offers a structured approach to examining the reasons why individuals accept or reject vaccines, focusing on four key domains:

1. Thinking and feeling about vaccines
2. Social processes that drive or inhibit vaccination
3. Motivation (or hesitancy) to seek vaccination
4. Practical issues involved in seeking and receiving vaccination



Source: Behavioural and Social Drivers of Vaccination Tools and Practical Guidance for Achieving High Uptake, World Health Organization and UNICEF, Geneva 2022

In this study, we focused on domains from the BeSD framework to understand how girls perceive the HPV vaccine, their experiences with the whole process, the social influences on their intentions to get vaccinated, and the logistical barriers that shape those perceptions. This approach is appropriate because the study aims to capture the subjective, emotional, and social aspects of their vaccination experiences while also exploring practical barriers and logistical issues related to access.

Methodology

Study Design

The study design was exploratory using qualitative methods. This study was guided by a grounded theory of the behavioral and social drivers of vaccination (BeSD) framework, utilizing in-depth interviews to explore and understand how eligible adolescent girls experience and perceive the process of getting the HPV vaccine.

Study Site

This study was conducted in the Korail slum of Dhaka, the capital city of Bangladesh.

Study Population

The study population is the HPV adolescent girls aged 10-14 years who have got HPV vaccine living in Korail slum, Dhaka, Bangladesh.

Inclusion criteria and Exclusion criteria

The study involved adolescent girls aged 10 to 14 years who participated in the HPV vaccination program while living in the Korail slum during its rollout from 2023 to 2024. To be included in the study, the primary caregivers of the girls had to provide signed consent for their participation in one-on-one interviews. Girls who did not reside in Korail during the vaccination rollout or who opted not to participate in the interviews were excluded from the study.

Sampling Technique

This study employed convenience and purposive sampling to select participants aged 10 to 14 years old, who could provide relevant insights. Snowball sampling was chosen to ensure that the sample aligned closely with the study's aims and objectives and included participants of all ages within the 10–14-year range, targeting residential areas near schools to increase the likelihood of finding participants as the vaccination sites were schools where the girls were studying.

Sample Size

In this research, we conducted eight in-depth interviews with eligible girls. This sample size is selected because it falls within the recommended range for achieving data saturation along with the consideration of budget and time allocated to conduct this study.

Data Collection

Due to a language barrier, I enlisted the help of a research assistant experienced in qualitative research to conduct the interviews in Bangla. A female assistant was chosen to ensure that the adolescents felt comfortable sharing their experiences and thoughts.

Study Tool

The interview questions were designed in accordance with the domains of the BeSD framework. The interviewers also asked follow-up questions and targeted probes to clarify and gather additional relevant information based on the participants' responses. The interview guide also included the collection of each participant's socio-demographic information. With the obtained written consent from the participants' primary caregivers and assent from the participants themselves, the interviews were audio-recorded.

Location of Data Collection

The data collection took place in participants' homes, ensuring a private and safe environment for discussion.

Data Analysis

All audio recordings were translated from Bengali to English by a native Bengali speaker who functioned as the translator within two days after each interview.

A manual analysis was then followed using the framework analysis to organize findings in a data display matrix, categorizing responses according to each domain in a Microsoft Excel spreadsheet. This approach helped identify themes and patterns across the data, providing clear insights into the areas.

The analysis began with open coding, which involved reading through the data and developing codes to represent what was occurring within it. This initial review allowed us to create the first round of deductive coding, in which we generated and applied codes, while also identifying new emerging concepts as we continued our examination of the data. Then pattern coding was done to condense the codes created during open coding to chunk the data into fewer analytic concepts, summarizing the data.

And then an inductive analysis was conducted to gain a deeper understanding of the themes present in the data and to find answers to the research questions. This process involved identifying themes

from the pattern codes, using memoing, and further condensing the pattern codes whenever possible. Throughout the analysis process in vivo codes were also developed from participants' own words to point to data that is representative of particular findings by keeping a running memo of participants' quotes and as well as a memo of the emerging findings by keeping notes on representative evidence which helped in writing a deeper descriptions and explanations.

So, after sorting the data initially in deductive cycles of coding based on the theoretical framework and categories, an inductive analysis where a short memo developed in short phrases helped connect the findings with theory and existing literature. Using a combination of deductive and inductive coding, along with memoing, facilitated the development of the discussions and implications section. This approach enhanced our understanding of the findings in relation to the research and allowed us to examine how the theoretical framework clarifies these findings. Additionally, it provided actionable and meaningful implications and recommendations.

Ethical Consideration

The study received approval from the Institutional Review Board (IRB) of the James P. Grant School of Public Health at BRAC University. Informed consent was obtained from the primary caregivers of all participants, as they are minors, and additional assent was collected from the participants themselves in both written and verbal forms.

We began by explaining the study's purpose, procedures, and the importance of confidentiality in simple, clear language. We ensured that each participant understood this information fully and allowed time for any questions they had. Once they felt comfortable and all questions were addressed, we requested their consent to participate, emphasizing that they could withdraw from the interview at any time if they felt uncomfortable. All collected data was stored in an anonymized and confidential manner.

Results

Eight eligible adolescent girls who had received the HPV vaccine participated in the study. Table 1 presents their socio-demographic characteristics. The ages of the participants in the study ranged from 10 to 14 years. Most of them have been living in Korail for over 10 years. This study found that the participant's fathers were the primary earners in the family, while 6 out of 8 mothers were homemakers and acted as the main caregivers.

Table 1. Characteristics of the participants

Gender	Number of Participants
Female	8
Age	Number of Participants
10 - 12	3
13 - 14	5
Period of stay in Korail slum	Number of Participants
5-10 years	1
11-15years	7
Grades they are studying in	Number of Participants
Class 5 to Class 6	5
Class 7 to Class 8	3
Father's Occupation	Number of Participants
Mason	3
Driver	3
Shopkeeper	2
Mother's Occupation	Number of Participants
Homemaker	6
Mason	2

Thinking and Feeling

(i) Navigating Fear and Trust

The girls had good awareness and understanding about the vaccine that seemed to facilitate its uptake. The girls demonstrated good knowledge about the HPV vaccine, with teachers serving as a vital source of information regarding its importance and health benefits. They sought assurance from a trusted source such as their teacher and mother to navigate through their initial apprehensions and fears, which helped in the decision-making process.

“Besides that, the good thing was, I was taking the vaccines for something good, so [I knew] good things were about to happen. Also, if it was anything bad, they wouldn’t tell the students to take vaccines.” (Adolescent Girl IDI #7))

(ii) Concerns About Side Effects and Misinformation

Participants shared a range of concerns centered around considerable anxiety associated with the physical discomfort of injections.

“I was scared because the injection will hurt.” (Adolescent Girl IDI #8)

This anxiety was heightened by apprehensions regarding the potential side effects of the vaccine. Many of these fears were rooted in misinformation and misleading narratives from various sources including conversations with peers, discussions within the community, and more significantly, from media portrayals.

“I saw on my phone a few days ago that many children were admitted to the hospital after taking the vaccine.” (Adolescent Girl IDI #3)

(iii) A Shot of Assurance

The belief in the vaccine’s ability to prevent cervical cancer reflected the adolescent girls’ understanding of the significance of this medical intervention and their positive perception of health. This understanding provided them with a deep sense of reassurance and hope. They expressed that they believed the vaccine would protect them from cervical cancer, alleviating their concerns about the future and providing them with a much-needed sense of security.

“I took the vaccine bravely to protect myself. If such a big disease can be prevented by just one injection, then it’s good.” (Adolescent Girl IDI #1)

Many participants also expressed their deep gratitude for receiving the vaccine at no cost. They recognized that its accessibility allowed everyone, regardless of their circumstances, to take an important step toward protecting their health.

“Including that..he said that every girl should take it so that in future she doesn’t face any uterus problem...Now-a-days..most of the girls are having this problem..cervix cancer...That’s why we should take the vaccination...Besides..this vaccination is expensive outside ..as our school is

providing it for free, it is good to take it from school....Own reason..so I don't have to face any problem in the future...if there will be any problem, I will have to go to the doctor..which is really expensive.....”(Adolescent IDI #7)

Social Processes

(i) Cultural Norms

Cultural norms and stigma surrounding the topic, and the feminized views of the HPV vaccine played a significant role in limiting adolescent girls' understanding of the vaccine, its uptake and the broader topic of cervical cancer. Many girls found it challenging to discuss sensitive issues such as menstruation and cervical health. There was a sense of discomfort and shame surrounding these topics, which prevented them from asking the teachers about it. One participant mentioned that the teacher could have addressed these topics privately to help facilitate a more comfortable discussion.

Madam actually discussed some matters that she shouldn't have in front of the boys. [She discussed] what happens when a baby is in the womb. Then pregnancy, all of these matters were discussed. Things were said about period. I mean, they could have taken the boys out and told us separately.” (Adolescent Girl IDI #2)

(ii) Assurance From Trusted Sources

Vaccines were taken when inspired by trusted sources, especially when initial hesitation was present. Teachers emerged as trusted figures, actively encouraging their students to get vaccinated by communicating effectively and by addressing misconceptions which helped build trust.

“My teacher said every girl should take it so that in the future she doesn't face any uterus problems. I felt that I should take the vaccination as it is good for me as teachers are saying...they won't say anything that is bad for us” (Adolescent Girl IDI #7)

Mothers were also reportedly equally influential, offering both permission and emotional support, which was demonstrated to be fundamental in the decision-making process. To many girls, their mothers' approval and encouragement provided them with the confidence to move forward, reinforcing the vaccine as a secure and a vital step.

"She understands everything...good or bad...If something is good...she encourages me to take it and if not...she tells me not to take it..." (Adolescent Girl IDI #8)

(iii) Peer Support and Collective Action

Peers were influential in encouraging vaccine uptake by offering social support and helping to ease anxiety. Girls shared how friends reassured them, making the process feel less intimidating. Going for the vaccine together created a sense of solidarity, normalizing the experience. Open conversations among friends allowed them to talk about their fears and address concerns openly, which helped normalize the vaccination process and build confidence in their decision. This peer support made a potentially stressful situation feel safer and more manageable.

"My friends said, 'Take the vaccine, it's good for you. Seeing everyone else do it gave me the courage to get vaccinated.'" (Adolescent Girl IDI #7)

"Everyone was going to get vaccinated. It felt good at that time because we were going together." (Adolescent Girl IDI #2)

Motivation

(i) Desire for Better Health

Among the girls, receiving the vaccination was a feeling of empowerment, and they viewed vaccination as one way to take charge of their health. This theme emerged as an individual motivator influencing adolescent girls' decision to vaccinate.

" This vaccine can save me from any future harm. If I hadn't taken the vaccine then maybe I could get some other kind of disease. So, I took the vaccine as a wise decision." (Adolescent Girl IDI #1)

(ii) Positive Experiences

Their intention to get vaccinated was a personal motivation combined with the positive experience they had during vaccination, which provided them with a sense of protection, thereby motivating them to safeguard them against cervical cancer. The straightforward procedures followed on the day of vaccination, along with the support and care from the healthcare staff involved, reinforced their willingness to proceed.

"After getting the card... I was in a serial as many were taking the vaccine. Then I got the vaccine. The aunties told me that I won't be hurt and they will inject carefully. Then they gave it to me." (Adolescent Girl IDI #7)

In addition, the school-based delivery of their school being the vaccination site provided them with a familiar and accessible environment. These experiences not only brought them satisfaction but also instilled trust in the healthcare service, making their decision to vaccinate a confident and well-supported choice.

"I went to our school and our teacher told us that today you will get vaccinated. After that two classes were held. Then our teacher told us to stand in a line to go to Mayer Doa school. Our vaccination will be held there. So, we went to Mayer Doa school serially. Then gave us the vaccine." (Adolescent Girl IDI #1)

Practical Issues

(i) Administrative Issues

A practical administrative challenge emerged as a significant barrier to vaccination, that made getting the HPV vaccine more difficult for some girls. They shared the struggles to access the documents and their birth certificate that were mandatory for registration, which were often not ready when asked as the need arose which delayed or hindered their participation. Sudden notifications about vaccination schedules left the girls feeling unprepared and rushed, causing them to scramble to meet the requirements within tight timeframes. This made the experience more stressful. As a result, some chose to get vaccinated on different days at various schools that served as vaccination sites, separate from where they were studying. For some, this even led to a delay in receiving their vaccinations, one of the girls reported taking a vaccine a year later as she couldn't produce the necessary documents on time for vaccination.

"In 2023.... They first gave the vaccine then, but I couldn't take it. They asked for a birth certificate. Mine was not online, so I couldn't give it. A few days ago. A person from my school called and told us, then my mom took me. They asked for a birth certificate. Mine was not online, so I couldn't give it. When they gave it in school, I couldn't take it. Then I went to the village and got my birth certificate fixed and then I took it." (Adolescent Girl IDI #3)

Additionally, the disorganized registration process required the girls to handle online registration themselves, which often meant visiting an internet café to complete the process and print their documents, which posed challenges of accessibility and convenience as they had no access at home. To some, this meant traveling outside their neighborhoods just to find a computer and internet connection sufficient to navigate the registration website and print necessary documents. In some cases, their mothers took on this responsibility.

“Firstly, I had to register and then to school. In a shop.....I couldn’t have the vaccine card without registration.... I don’t know, my mother went there.” (Adolescent Girl IDI #6)

(ii) Communication and Awareness

Some participants lacked clarity about the purpose, benefits, and process of vaccination due to inconsistent information and a lack of a widespread awareness campaign. There were significant gaps in awareness due to inadequate information and limited sources to their school and teachers. Some had no awareness at all, while others possessed only limited information to make an informed decision. Participants also explained that a lack of clear information about the vaccine’s purpose and benefits often left their parents hesitant or unsure about giving consent.

"Parents should also know what the vaccine is for. If you explain better, more children will take it." (Adolescent Girl IDI #8)

Discussion

The current study explored the experiences and perceptions related to HPV vaccination among adolescent girls living in the Korail slum of Dhaka. The BeSD framework was applied in this research to explore the interaction of emotional, social, and logistical factors in shaping the vaccination experience and its uptake among these young individuals. The findings show that support from teachers, mothers and peers facilitated vaccine uptake. However, misinformation through social media, logistical hurdles like mandatory online registrations, and inadequate parental awareness posed significant barriers. Despite these challenges participants showed optimism and gratitude, viewing the vaccine as essential for preventing cervical cancer.

With respect to facilitators, teachers were found to play key role in motivating vaccine uptake. They provided the necessary information and helped clear the misconceptions that served to build

vaccine confidence in participants. Similarly, mothers provided emotional reassurance and practical advice, reinforcing the importance of vaccination as a health-protective measure. These findings are in agreement with earlier studies such as those conducted by others pointing to the important role that was generally played by trusted persons for effectively dealing with vaccine hesitancy in underserved populations (Fisher et al., 2024; Vorsters et al., 2019). However, the current research's findings are in contrast in several respects from other settings which identified healthcare providers as core professionals. It should be noted that the influence of health workers in the current research was not clear and the health workers rather played a peripheral role. This might be explained by limited engagement between healthcare providers and the community during vaccination campaigns. Future research could look into the roles of health workers during vaccination campaigns and on the day of vaccination to understand their influence better.

Although most literature emphasizes family and healthcare influences to motivate towards vaccination (Garcia et al., 2023), the current research found peer influence to be a unique and significant facilitator of vaccine uptake. Participants used their friends for support, which in turn normalized the vaccination process and made them feel collectively safe. In support of these findings, a systematic review examining the peer support for the hardly reached population (Sokol & Fisher, 2016) reported that peer support is a flexible and effective approach for engaging underserved groups and adapting to various contexts, health challenges, and settings. A study on peer-supported interventions for health promotion and disease prevention using evidence maps providing visual representations emphasizes how peer networks can be leveraged to aid in greater public health goals (Ramchand et al., 2017). Targeted interventions aimed at reinforcing and formalizing these positive peer influences can further increase vaccine acceptance and address remaining hesitations through culturally sensitive approaches (Ferrer et al., 2014).

Peer networks should be formally engaged in vaccination efforts. Training peer educators or ambassadors among adolescents can amplify the positive influence of peer dynamics, creating a supportive environment for vaccination. For instance, peer educators could be provided with fact-based information about the HPV vaccine and trained in communication techniques to address fears and normalize vaccination. These could be further complemented with digital methods of engagement-such as social media campaigns or messaging apps-that would further extend their reach among adolescents.

The current research also identified several barriers to vaccination. Specifically, misinformation was passed through social media and community narratives that fostered fears and misconceptions about vaccine safety and possible side effects. This finding aligns with those of Liu and colleagues, who through their findings, indicated that misinformation was one of the key drivers of vaccine hesitancy among populations in low-resource settings such as urban poor in Chengdu, China (Liu et al., 2019) .

Besides, there were many logistical barriers found in the current research, such as the need for online registration, notification of vaccination schedules at very short notice, and general lack of infrastructure to support timely vaccine delivery. These are in line with global reports of systemic inefficiencies disproportionately affecting the most underserved communities of all (WHO, 2018). Streamlining the processes for registration is of essence, especially because most of these families in the slum are devoid of access to internet facilities. Introduction of mobile units of registration and paper forms distributed through community volunteers are essential. SMS notifications, voice calls in local languages, and community announcements will help in reducing missed opportunities for vaccination and improve the overall coordination. To support these recommendations, a study that researched on SMS-based intervention for improving child and adolescent vaccine coverage found evidence that SMS-based reminders can have a beneficial effect on the coverage and timeliness of routine vaccines (Currie et al., 2024). However, they noted that future research is needed to know which features of SMS-based strategies, including the message content and timing, are determinants of effectiveness.

Despite the challenges, participants in the current research expressed a strong sense of empowerment and gratitude for receiving the vaccine for free, viewing it as a vital step in protecting their health. This study also underlines the necessity for targeted, multi-factorial interventions in improving uptake of the HPV vaccination within resource-poor settings, like the Korail slum. There is a dire need to design education campaigns culturally adapted for these regions to overcome misinformation and reduce vaccine misconceptions. A systemic review done on the uptake of HPV and its associated factors among adolescents (Loke et al., 2017) concludes that knowledge of adolescents and parents regarding HPV infections was insufficient which was also seen in this study. Having knowledge is known to influence the uptake of the HPV vaccine. Therefore, the awareness program should be extended with involvement from influential

community members, teachers, and mothers who usually yield great influence regarding household health decisions.

The current findings also underscore the need for interactive sessions at schools and community centers, telling stories and sharing testimonials from vaccinated girls and their families to put a face and a name to the benefits brought about by the vaccine. When culturally sensitive interventions are provided, there is high level of willingness to receive HPV vaccine, as per another research (Islam et al., 2018), and this is strongly reflected in the findings of this current study as well. Various interactive communication strategies can also be employed, such as home visits by health workers, mobile vaccination clinics, and house-to-house outreach. Partnerships with local NGOs and community health workers will enhance these outreach efforts by engaging marginalized groups.

In such an all-inclusive and contextual approach, no adolescent will be left behind, thereby fostering public health equity and strengthening confidence in life-saving vaccination programs. This strategy holds the potential to significantly improve vaccine uptake, minimize disparities, and ultimately contributing to global efforts towards cervical cancer prevention. Ultimately, this is a step toward safeguarding health across the life course, empowering adolescent girls to lead healthier lives and build brighter futures.

Limitations

There are a number of limitations that have to be considered in this study. First, reliance on a small sample size of eight participants limits the generalizability of the findings. With a larger sample comprising diverse perspectives, one could get a more detailed insight into adolescent girls' experiences from various socio-economic and cultural backgrounds.

The use of self-reported data may have subjected this study to recall bias that could limit certain aspects of their vaccination experience. The results based on self-reporting could be verified by future studies using observational methods or even longitudinal designs or interviewing immediately following vaccination.

Third, in this study, logistic barriers, for instance, the requirement for web registration, were also seen as a big challenge. Even though the accounts provided by the participants gave comprehensive information on these issues, at a deeper level, understanding systemic factors such as policy and infrastructure would add more value to the analysis. This is considered possible by collaborating with policymakers and program implementers to address the gaps.

Conclusion

The current research found that participants' experiences are shaped through complex and interacting factors of social relationships, cultural norms, and systemic barriers, which when addressed may help develop more responsive vaccination programs. These barriers not only limit access to vaccines but disproportionately create health inequities since these are already underserved populations. Such challenges do need very special solutions that are focused, sensitive, and appropriate to the contextual environment in which these communities exist; involving the community, appropriate cultural messaging, and systems to assure improvement in service delivery.

These study findings raise the need for the inclusions of social, cultural, and systemic considerations in vaccination programs. Greater multi-agency collaboration including schools, healthcare providers, and local communities will definitely help policymakers work out appropriate interventions to suit the requirement of adolescent girls in underserved settings.

Further research is needed that longitudinally evaluates the HPV vaccination program implementation to be able to track long-term population health impact and community attitudes to such a program. By enforcing such strategies, public health efforts would go a long way toward reducing the cervical cancer burden and attaining equitable access to life-saving vaccines for every adolescent girl, irrespective of her socioeconomic or geographic background.

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References

- A, S. S. (2018). Reproductive Health Status and Health Seeking Behavior of Adolescent Girls in Selected Urban Slum of Dhaka City in Bangladesh. *Global Journal of Reproductive Medicine*, 5(4). <https://doi.org/10.19080/gjorm.2018.05.555669>
- Arbyn, M., Weiderpass, E., Bruni, L., de Sanjosé, S., Saraiya, M., Ferlay, J., & Bray, F. (2020). Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. *The Lancet Global Health*, 8(2), e191–e203. [https://doi.org/10.1016/S2214-109X\(19\)30482-6](https://doi.org/10.1016/S2214-109X(19)30482-6)
- Bonner, K., Banura, C., & Basta, N. E. (2018). HPV vaccination strategies targeting hard-to-reach populations: Out-of-school girls in LMICs. In *Vaccine* (Vol. 36, Issue 2, pp. 191–193). Elsevier Ltd. <https://doi.org/10.1016/j.vaccine.2017.11.038>
- Chant, S., Klett-Davies, M., & Ramalho, J. (2017). *Challenges and potential solutions for adolescent girls in urban settings: a rapid evidence review*.
- Currie, G. E., McLeod, C., Waddington, C., & Snelling, T. L. (2024). SMS-based interventions for improving child and adolescent vaccine coverage and timeliness: a systematic review. *BMC Public Health*, 24(1). <https://doi.org/10.1186/s12889-024-18900-4>
- Eva, F. N., Khan, M. A. S., Islam, T., Monisha, U. K., Meem, N. E. S., Hossain, M. A., Goutam, A., Zerín, T., Alam, N., Nath, R., Sifat, S., Sultana, S., Sultana, M. S., Saha, S. K., Sarker, N. E., Rahman, M. L., Nabi, M. H., & Hawlader, M. D. H. (2024). Awareness of HPV vaccine and its socio-demographic determinants among the parents of eligible daughters in Bangladesh: A nationwide study. *Heliyon*, 10(10). <https://doi.org/10.1016/j.heliyon.2024.e30897>
- Ferrer, H. B., Trotter, C., Hickman, M., & Audrey, S. (2014). Barriers and facilitators to HPV vaccination of young women in high-income countries: A qualitative systematic review and evidence synthesis. *BMC Public Health*, 14(1). <https://doi.org/10.1186/1471-2458-14-700>
- Fisher, H., Denford, S., Audrey, S., Finn, A., Hajinur, H., Hickman, M., Mounier-jack, S., Mohamed, A., Roderick, M., Tucker, L., Yates, J., & Chantler, T. (2024). Information needs of ethnically diverse, vaccine-hesitant parents during decision-making about the HPV vaccine for their adolescent child: a qualitative study. *BMC Public Health*, 24(1). <https://doi.org/10.1186/s12889-023-17540-4>
- Garcia, S., Hopfer, S., Amaro, H., & Tanjasiri, S. (2023). HPV vaccine delay and refusal among unvaccinated Mexican American young adult women: a qualitative investigation of Mexican-born and US-born HPV vaccine decision narratives. *Journal of Behavioral Medicine*, 46(1–2), 88–99. <https://doi.org/10.1007/s10865-022-00326-1>
- Gobbo, E. L. S., Hanson, C., Abunnaja, K. S. S., & van Wees, S. H. (2023). Do peer-based education interventions effectively improve vaccination acceptance? a systematic review. *BMC Public Health*, 23(1). <https://doi.org/10.1186/s12889-023-16294-3>

- Hayford, K., Uddin, M. J., Koehlmoos, T. P., & Bishai, D. M. (2014). Cost and sustainability of a successful package of interventions to improve vaccination coverage for children in urban slums of Bangladesh. *Vaccine*, 32(20), 2294–2299.
<https://doi.org/https://doi.org/10.1016/j.vaccine.2014.02.075>
- Health inequities and their causes WHO Factsheet*. (n.d.).
- Islam, J. Y., Khatun, F., Alam, A., Sultana, F., Bhuiyan, A., Alam, N., Reichenbach, L., Marions, L., Rahman, M., & Nahar, Q. (2018). Knowledge of cervical cancer and HPV vaccine in Bangladeshi women: A population based, cross-sectional study. *BMC Women's Health*, 18(1). <https://doi.org/10.1186/s12905-018-0510-7>
- Liu, C. R., Liang, H., Zhang, X., Pu, C., Li, Q., Li, Q. L., Ren, F. Y., & Li, J. (2019). Effect of an educational intervention on HPV knowledge and attitudes towards HPV and its vaccines among junior middle school students in Chengdu, China. *BMC Public Health*, 19(1). <https://doi.org/10.1186/s12889-019-6823-0>
- Loke, A. Y., Kwan, M. L., Wong, Y. T., & Wong, A. K. Y. (2017). The uptake of human papillomavirus vaccination and its associated factors among adolescents: A systematic review. In *Journal of Primary Care and Community Health* (Vol. 8, Issue 4, pp. 349–362). SAGE Publications Inc. <https://doi.org/10.1177/2150131917742299>
- Lubeya, M. K., Chibwesa, C. J., Mwanahamuntu, M., Mukosha, M., Frank, S., & Kawonga, M. (2023). “When you get the HPV vaccine, it will prevent cervical cancer; it will act as a shield”: adolescent girls’ knowledge and perceptions regarding the human papillomavirus vaccine in Zambia. *Frontiers in Health Services*, 3.
<https://doi.org/10.3389/frhs.2023.1208458>
- Okunowo, A. A., Ugwu, A. O., Kuku, J. O., Soibi-Harry, A. P., Okunowo, B. O., Ani-Ugwu, N. K., Osunwusi, B. O., & Adenekan, M. A. (2021). Predictors, barriers and motivating factors for human papillomavirus vaccination and testing as preventive measures for cervical cancer: A study of urban women in Lagos, Nigeria. *Preventive Medicine Reports*, 24.
<https://doi.org/10.1016/j.pmedr.2021.101643>
- Orangi, S., Mbuthia, D., Chondo, E., Ngunu, C., Kabia, E., Ojal, J., & Barasa, E. (2024). A qualitative inquiry on drivers of COVID-19 vaccine hesitancy among adults in Kenya. *PLOS Global Public Health*, 4(3). <https://doi.org/10.1371/journal.pgph.0002986>
- Perehudoff, K., Vermandere, H., Williams, A., Bautista-Arredondo, S., De Paepe, E., Dias, S., Gama, A., Keygnaert, I., Longatto-Filho, A., Ortiz, J., Padalko, E., Reis, R. M., Vanderheijden, N., Vega, B., Verberckmoes, B., & Degomme, O. (2020). Universal cervical cancer control through a right to health lens: Refocusing national policy and programmes on underserved women. In *BMC International Health and Human Rights* (Vol. 20, Issue 1). BioMed Central. <https://doi.org/10.1186/s12914-020-00237-9>
- Rahman, L., Biswas, H., Hossain, T., Khan, A. M., & Khan, I. A. (2012). Study on reasons of dropout of immunization in children in selected slum area of Dhaka city, Bangladesh.

Public Health Short Communication South East Asia Journal Of Public Health South East Asia Journal of Public Health, 2(1), 64–67.

Ramchand, R., Ahluwalia, S. C., Xenakis, L., Apaydin, E., Raaen, L., & Grimm, G. (2017). A systematic review of peer-supported interventions for health promotion and disease prevention. *Preventive Medicine*, 101, 156–170.

<https://doi.org/https://doi.org/10.1016/j.ypmed.2017.06.008>

Rujumba, J., Akugizibwe, M., Basta, N. E., & Banura, C. (2021). Why don't adolescent girls in a rural Uganda district initiate or complete routine 2-dose HPV vaccine series: Perspectives of adolescent girls, their caregivers, healthcare workers, community health workers and teachers. *PLoS ONE*, 16(6 June). <https://doi.org/10.1371/journal.pone.0253735>

Smolarczyk, K., Duszewska, A., Drozd, S., & Majewski, S. (2022). Parents' Knowledge and Attitude towards HPV and HPV Vaccination in Poland. *Vaccines*, 10(2).

<https://doi.org/10.3390/vaccines10020228>

Sokol, R., & Fisher, E. (2016). Peer Support for the Hardly Reached: A Systematic Review. *American Journal of Public Health*, 106(7), e1–e8.

<https://doi.org/10.2105/AJPH.2016.303180>

UNICEF, 2024. (n.d.). Retrieved November 3, 2024, from

<https://www.unicef.org/bangladesh/en/press-releases/government-launches-nationwide-human-papillomavirus-hpv-vaccination-campaign>

UNICEF 2024. (n.d.). Retrieved November 3, 2024, from

<https://www.unicef.org/bangladesh/en/press-releases/interim-government-bangladesh-launches-final-phase-human-papillomavirus-hpv>

UNICEF, Bangladesh, 2023. (n.d.). Retrieved November 3, 2024, from

<https://www.unicef.org/bangladesh/en/press-releases/government-launches-nationwide-human-papillomavirus-hpv-vaccination-campaign>

Vorstes, A., Bonanni, P., Maltezou, H. C., Yarwood, J., Brewer, N. T., Bosch, F. X., Hanley, S., Cameron, R., Franco, E. L., Arbyn, M., Muñoz, N., Kojouharova, M., Pattyn, J., Baay, M., Karafillakis, E., & Van Damme, P. (2019). The role of healthcare providers in HPV vaccination programs – A meeting report. *Papillomavirus Research*, 8.

<https://doi.org/10.1016/j.pvr.2019.100183>

WHO Bangladesh. (2016).

Zhai, L., & Tumban, E. (2016). Gardasil-9: A global survey of projected efficacy. *Antiviral Research*, 130, 101–109. <https://doi.org/https://doi.org/10.1016/j.antiviral.2016.03.016>

Annex

Qualitative Research Guidelines

Study Title: Exploring the Experiences of HPV Vaccine Uptake among Adolescent Girls in the Korail Slum of Dhaka

Section 1: Demographic Information

Age

Have you celebrated your birthday this year, when is it? If you are unsure about the date, can you tell me how old you are?

Education Level

Are you currently in school? If so, what grade or year are you in?

Family Background (Primary Caregiver)

Can you tell me a bit more about your family? Who takes care of you most at home?

What does your father and mother do?

Do you live here? How long?

Section 2: Experience with the HPV Vaccination Process

1. When did you first heard about the HPV vaccine and from where? (probe: family, friends, social media, CHW)
2. What thoughts or feelings came up for you? Can you share what made you think or feel that way at first?
3. Who talked to you about the vaccine, and did what they say change your mind or help you decide? Were there any people whose thoughts or advice were really important to you? Why did you feel that way? What did they say or do that made you listen to them?
4. How would you describe your experience of getting the vaccine, from when you decided to get it to after receiving it? Was there something that happened that was important to you?
5. How did you get registered? Was there any difficulty?

6. From where did you get the vaccine? Was it difficult? Are the staff friendly and helpful?
7. Were you or your family asked to give permission or describe the procedure and after effect before getting vaccinated? How comfortable were you with the process?
8. Since getting the vaccine, how do you feel about getting vaccinated now? Do you think something changed your feelings? Did you feel any fear or concern about the vaccine, before or after getting it? What were you most worried about?
9. After getting vaccine, how did you feel? (probe for dizziness, lethargy or anything)
10. Do you think the vaccine is important? Why or why not?
11. Do you believe there are risks in getting this vaccine? If so, what are those?
1. If a friend your age was thinking about getting the vaccine, what would you tell them? What parts of what happened to you do you think they should know about, and why?

গুণাত্মক গবেষণা নির্দেশিকা

গবেষণার শিরোনাম: ঢাকার কড়াইল বস্তিতে কিশোরীদের মধ্যে এইচপিভি ভ্যাকসিন গ্রহণের অভিজ্ঞতা সম্পর্কে জানা

বিভাগ ১: জনসংখ্যা সংক্রান্ত তথ্য

বয়স

- তুমি কি এই বছর তোমার জন্মদিন পালন করেছো, এটি কখন? তোমার যদি তারিখ মনে না থাকে, তুমি কি আমাকে বলতে পারবে তোমার বয়স কত??

শিক্ষাগত যোগ্যতা

- তুমি কি স্কুলে পড়াশুনা করো? করে থাকলে, কোন ক্লাসে?

পারিবারিক পটভূমি (প্রধান পরিচর্যাকারী)

- তুমি কি আমাকে তোমার পরিবার সম্পর্কে কিছু বলতে পারবে? বাড়িতে কে তোমার সবচেয়ে বেশি দেখাশুনা করে?
- তোমার মা, বাবা কি করে?
- তুমি কি এখানে থাকো? কতদিন যাবত?

বিভাগ ২: এইচপিভি ভ্যাকসিনেশন প্রক্রিয়ার অভিজ্ঞতা

তুমি কখন HPV ভ্যাকসিন সম্পর্কে প্রথম শুনেছিলে এবং কোথা থেকে? (প্রোব: পরিবার, বন্ধু, সোশ্যাল মিডিয়া, স্বাস্থ্য কর্মী)

- ১। এই সম্পর্কে জানার পরে তোমার প্রথম কি অনুভূতি হয়েছিল? তুমি কি আমার সাথে শেয়ার করবে যে কেন তোমার এমন মনে হয়েছিল?
- ২। কে তোমার সাথে ভ্যাকসিন সম্পর্কে কথা বলেছে, এবং তারা যা বলেছে বা করেছে তা কি তোমাকে সিদ্ধান্ত নিতে সাহায্য করেছে, বা তোমার মন পরিবর্তন করেছে এই টীকার ব্যাপারে? এদের মধ্যে এমন কেও কি ছিল যার মতামত বা চিন্তাভাবনা তোমার কাছে গুরুত্বপূর্ণ? কেন? তারা কি করে বা বলে যার জন্য তুমি তাদের কথাকে প্রাধান্য দেও?
- ৩। তোমার টীকা দেয়ার অভিজ্ঞতা কেমন ছিল? নেয়ার সময় তাৎপর্যপূর্ণ এমন কি কিছু হয়েছিল?
- ৪। তুমি কীভাবে রেজিস্ট্রেশন করেছো? তখন কি কোন সমস্যা হয়েছিল?
- ৫। টীকা দিতে কোথায় গিয়েছিলে? যাওয়াটা কি কঠিন ছিল? কর্মীদের আচরণ কি ভাল ছিল?
- ৬। তোমাকে বা তোমার পরিবার থেকে কি অনুমতি নেয়া হয়েছিল? তোমাদের কি এই টীকা নেয়ার পদ্ধতি এবং সাইড ইফেক্ট বিস্তারিত বুঝিয়ে বলা হয়েছিল? তোমার কি কোন অসুবিধা হয়েছিল টীকা নেয়ার সময়?

৭। টীকা নেয়ার পরবর্তী অনুভূতি কেমন? তোমার যা মনে হয়েছিল আগে, তার থেকে কি কোন পরিবর্তন লক্ষ করছ? তোমার কি কোন ভয় বা দুশ্চিন্তা ছিল টীকা নেয়ার আগে বা পরে? তুমি সবথেকে কি নিয়ে বেশি চিন্তিত ছিলে?

৮। টীকা নেয়ার পরে তোমার শারীরিকভাবে কেমন লাগছে? (মাথা ঘুরানো, দুর্বলতা, বা অন্য কোন সমস্যা হচ্ছে কিনা তা নিয়ে জানতে চান)

৯। তোমার কাছে কি টীকা নেয়াটা জরুরী ছিল বলে মনে করো? কেন না কেন নয়?

১০। তোমার কি মনে হয় যে টীকা দেয়াতে কোন ঝুঁকি ছিল তোমার? যদি হ্যাঁ হয়, কেন এবং সেইগুলি কি কি?

১১। তোমার সমবয়সী কোন বন্ধু যদি টীকা নেয়ার কথা ভাবে, তাকে তুমি কি বলবে? এই পদ্ধতির কোন অংশ, যেইটা তোমার সাথে হয়েছে, তা তুমি তাদের জানা দরকার বলে মনে করো?

[illegible]

