



Acceptability of multipurpose human papillomavirus vaccines among providers and mothers of adolescent girls: A mixed-methods study in five countries



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ABSTRACT

Introduction: Multipurpose vaccines (MPVs) could be formulated to prevent multiple sexually transmitted infections simultaneously. Little is known about acceptability of MPVs among vaccine health care providers (HCPs) or mothers of adolescent girls.

Methods: 151 adolescent vaccine providers and 118 mothers of adolescent girls aged 9–14 were recruited from five geographically-diverse countries: Argentina, Malaysia, South Africa, South Korea, and Spain. We assessed providers' preferences for single-purpose human papillomavirus (HPV) vaccine versus MPVs (including HPV +herpes simplex virus (HSV)-2, HPV+HIV, or HPV+HSV-2+HIV) via quantitative surveys. Maternal MPV attitudes were assessed in four focus group discussions (FGDs) in each country.

Results: Most providers preferred MPVs over single-purpose HPV vaccination, with preference ranging from 61% in Malaysia to 96% in South Africa. HPV+HSV-2+HIV was the most preferred MPV formulation (56–82%). Overall, 53% of the mothers preferred MPVs over single-purpose HPV vaccines, with strongest support in South Africa (90%) and lowest support in South Korea (29%). Convenience and trust in the health care system were commonly-cited reasons for MPV acceptability. Safety and efficacy concerns were common barriers to accepting MPVs, though specific concerns differed by country. Across FGDs, additional safety and efficacy information on MPVs were requested, particularly from trusted sources like HCPs.

Conclusions: Though maternal acceptability of MPVs varied by country, MPV acceptability would be enhanced by having HCPs provide parents with additional MPV vaccine safety and efficacy information. While most providers preferred MPVs, future health behavior research should identify acceptability barriers, and targeted provider interventions should equip providers to improve vaccination discussions with parents.

Abbreviations: FGD, focus group discussion; HCP, health care provider; HIV, human immunodeficiency virus; HPV, human papilloma virus; HSV, herpes simplex virus; MPV, multipurpose vaccine; STI, sexually transmitted infections

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1. Introduction

Sexually-transmitted infections (STIs) can have severe long-term effects on sexual and reproductive health. Herpes simplex virus (HSV-2) and human immunodeficiency virus (HIV) contribute to high global morbidity, and cannot be cured or prevented by prophylactic vaccination. Research on HSV-2 and HIV preventive technologies is underway, and the Multipurpose Technology Working Group has prioritized the development of technologies to prevent both infections simultaneously [1]. We therefore posit that multipurpose technologies could be effective for STI/HIV prevention in adolescents, conferring STI/HIV protection before sexual debut.

Prophylactic multipurpose vaccines (MPVs) could reduce acceptability and adherence barriers to STI/HIV prevention. One of the first MPVs was licensed in the United States in 1948 against diphtheria, tetanus, and pertussis [2]. By 2015, diphtheria-tetanus-acellular pertussis (Tdap) vaccination exceeded 80% in the United States, largely controlling these high-morbidity infections and demonstrating that MPVs can be acceptable to caregivers [3].

Human papillomavirus (HPV) is one of the only vaccine-preventable STIs. HPV vaccines are highly-efficacious against high-grade cervical lesions – which are associated with cervical, vaginal, vulvar, and anal cancers – caused by high-risk HPV types [4]. Given the high global priority of preventing HPV-associated cancers, HPV vaccines were licensed in over 100 countries and integrated into 87 countries' national vaccination programs by November 2016 [5]. HPV vaccines could serve as the basis for an MPV to prevent multiple STIs, including HSV-2 and HIV.

To date, no such MPVs have been developed, nor have any published studies explored the acceptability of MPVs for STIs/HIV. It remains unknown whether providers would administer MPVs, or whether parents of adolescents would accept them, presenting a potential barrier to future MPV program implementation.

To assess the acceptability of hypothetical MPVs for STI/HIV prevention, we conducted a mixed-methods study among adolescent vaccine providers and mothers of adolescent girls in five geographically-diverse countries. We hypothesized that MPV preference would be high among providers [6–12] and mixed among mothers, based on barriers reported in the HPV vaccine literature [13–17]. To our knowledge, this is the first study to assess providers' and mothers' attitudes toward MPVs, providing insight into the acceptability of MPVs as a strategy to promote sexual health in adolescents.

2. Methods

2.1. Study participants

2.1.1. Providers (Quantitative)

Providers from Argentina, Malaysia, South Africa, South Korea and Spain were identified via non-probability convenience sampling and recruited through mail, email, phone, or in-person. Eligible providers were authorized to administer adolescent vaccines per each country's medical regulations.

2.1.2. Mothers (Qualitative)

Between November 2013 and April 2014, each country conducted four focus group discussions (FGDs). Mothers were recruited using non-probability convenience sampling from medical offices, health centers, or schools. Eligible mothers had a daughter old enough to receive HPV vaccination, based on each country's vaccination guidelines at the time of data collection (minimum age: South Africa=9; Argentina/South Korea/Spain=11; Malaysia=13). Participating mothers were assigned to FGDs based on whether their daughters had received HPV vaccination. In Spain, six mothers of unvaccinated daughters completed in-depth interviews rather than FGDs. To ensure comparability of the findings across countries, this analysis reports findings from FGDs only.

In-country institutional review boards (IRB) approved this study prior to data collection. University of North Carolina (UNC) study staff received IRB approval for analysis of de-identified secondary data.

2.2. Measures

2.2.1. Providers (Quantitative)

Providers' demographic information and attitudes towards single-purpose HPV vaccine and MPVs were collected by a study interviewer trained in structured interviewing techniques. Two questions assessed MPV attitudes: 1) "MPVs in the future may protect against HPV plus other infections, such as HSV-2 or HIV. Which would you prefer to recommend to girls and their parents: A vaccine for HPV alone, or an MPV?"; 2) "If an MPV were available, which would you be most likely to recommend: HPV +HSV-2; HPV+ HIV; or HPV+HSV-2+HIV?" Providers were allowed to answer "No preference" or "Would not recommend MPV".

2.2.2. Mothers (Qualitative)

Each FGD followed a semi-structured discussion guide that assessed mothers' attitudes towards various aspects of adolescent HPV vaccination; the present analysis involves discussions around MPVs. Discussion moderators gave prompts from the discussion guide, and additional questions emerged through probing and clarifying statements (Appendix A). Although HPV vaccines are approved for girls and boys, this study focused on vaccination for girls in keeping with local HPV vaccination recommendations [18–21].

2.3. Analysis

2.3.1. Providers (Quantitative)

In-country staff double-entered de-identified data into English language EpiData forms, and translated data into English when necessary. Data were cleaned and analyzed at UNC, the central coordinating site. Univariate tabulations were performed in SAS 9.4 (SAS Institute Inc., Cary, NC).

2.3.2. Mothers (Qualitative)

In-country researchers facilitated the verbatim transcription of FDG recordings and their translation to English. Translations were reviewed by in-country study staff who were native speakers of the language used in the FDGs and fluent in English. UNC study staff reviewed the translations for meaning, and clarified colloquial usages, local references, and cultural contexts with the lead in-country researchers before analysis, and during analysis as needed.

Cleaned transcripts were entered into ATLAS.ti (ver. 7, Berlin, Germany) for thematic content coding. An experienced qualitative researcher supervised data management and analysis. An initial codebook was developed based on themes outlined in the FGD script, and additional codes were added iteratively as they emerged from the data [22]. One transcript from each country was reviewed and coded independently by two research assistants using initial and additional codes; coded transcripts were then compared, and inconsistent coding decisions were discussed and reconciled [23]. Additional codes were incorporated into the existing codebook, and remaining transcripts were coded using the same procedure. Qualitative data are summarized by commonly-cited themes.

3. Results

3.1. Providers (Quantitative analysis)

3.1.1. Providers' medical practices

Of 353 providers contacted, 151 were enrolled between October 2013 and April 2014 across the five countries (Argentina [n=30]; Malaysia [n=30]; South Africa [n=31]; South Korea [n=30]; and Spain [n=30]). Providers were primarily family physicians and general practitioners (31.1%), obstetrician-gynecologists (25.8%), and pediat-

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