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HPV knowledge, vaccine acceptance, and vaccine series completion among female entertainment and sex workers in Phnom Penh, Cambodia: the Young Women's Health Study

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Abstract

Human papillomavirus (HPV) is a common sexually transmitted infection (STI) and the causative agent for cervical cancer, a frequently occurring malignant disease among women in developing countries. We assessed HPV awareness prior to the delivery of a brief information and education intervention, and HPV vaccine provision to female entertainment and sex workers (N=220). At baseline, only 23.6% of women had heard of HPV. Following the educational intervention, 90% answered all the HPV knowledge questions correctly. Of 192 participants attending the first quarterly cohort visit where vaccine was offered, 149 (78%) were eligible for vaccination; HIV-positive (n=32) and pregnant (n=11) women were excluded. Acceptance of vaccine among eligible

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women was universal, and 79.2% completed the three-dose vaccination series. Women who reported use of amphetamine type stimulants (ATS) had significantly and independently lower odds of vaccine completion (Adjusted OR 0.24; 95% CI 0.08, 0.69). New pregnancies also had an impact on vaccine completion: 5.4% (8/149 5.4%) who started the series had to stop due to new pregnancy. Results demonstrate the effectiveness of a simple education intervention designed to increase HPV knowledge and the feasibility of successful HPV vaccine in a population that is often difficult to engage in preventive health care.

Keywords

HPV; vaccine; knowledge; attitudes; brief intervention; Cambodia; female sex workers; HIV

Introduction

Human papillomavirus (HPV) is one of the most common sexually transmitted infections (STIs) globally, with worldwide age-adjusted point prevalence in women estimated to be 11–12%, and most women under 25 have been infected (1–3). Certain genotypes (especially 16 and 18, which make up 60%–70% of infections) of HPV are recognized as the primary cause of cervical cancer (2, 4–6), the third most commonly occurring cancer in women globally, and the fourth ranked cause of cancer mortality (respectively second and third ranked after age adjustment)(7) responsible for 7.8 million years of life lost worldwide(1). The greatest burden of mortality is in developing countries, which account for up to 88% of the estimated 530,000 deaths annually (8), and where the cytological screening programs that have been effective in reducing cervical cancer deaths have not been readily adopted (5).

In addition to sexual behavioral factors such as early age of sex, numbers of partners and inconsistent condom use, the risk of HPV infection is associated with smoking, oral contraceptive use, and other STIs (6, 9). Younger, sexually active populations are most at risk of HPV and older women are at higher risk of cancer. Women engaging in transactional sex have a disproportionately high risk for multiple and recurrent (10) HPV infection and the subsequent development of cervical and other types of cancer (6, 9, 10).

HPV vaccines have the potential to significantly reduce the morbidity and mortality from cervical cancer (11–13). The two commercially available vaccines, Gardasil® and Cervarix®, target the HPV genotypes recognized as causing most cervical cancer (HPV types 16 and 18), and Gardasil® also targets types that cause genital warts (HPV types 6 and 11). The vaccines have close to 100% protective efficacy against these types of HPV infection when administered to women without previous infection (14–16), and are also effective in reducing progression to neoplasia in women who have been previously exposed (17, 18). Both vaccines require a three dose series administered over 6 months. .

Given the high worldwide incidence of cervical cancer, the implementation of high-quality HPV vaccination programs is emerging as a priority for many developing countries(19). Despite the advances in HPV detection, and the development of highly efficacious prophylactic vaccine, feasibility studies have shown low levels of knowledge and awareness

of HPV and cervical cancer (20, 21). HPV vaccination programs in developing countries face formative and programmatic implementation challenges, as well as resource limitations, however among young girls (age 9–13 years) school- and health-center- based delivery can result in high coverage rates (19). Less is known regarding how vaccination programs can be effectively targeted to high risk women, but achieving high rates of coverage and completion will require some understanding of the knowledge and attitudes towards HPV and the HPV vaccine. There is at present very little information on HPV-related knowledge and attitudes among adult women in the Asia Pacific region, and especially very high risk women such as female entertainment and sex workers (FESW) (22).

Cambodia has one of the highest rates of cervical cancer in the Asia Pacific region. In the context of a cohort study of young women at high risk for STIs, we investigated knowledge of HPV prior to and following the provision of two brief HPV information and education sessions. We then measured subsequent acceptance and uptake of the 3-dose quadrivalent vaccine (Gardasil®) series for eligible women.

Methods

Study population

The study population consisted of a convenience sample of 220 female entertainment and sex workers (FESW) in Phnom Penh, Cambodia, who participated in the Young Women's Health Study 2 (YWHS-2) (23), described in detail elsewhere (10, 24, 25). Briefly, the YWHS-2 was a prospective study conducted from August 2009 to August 2010 on the prevalence and incidence of STIs and HIV, sexual behaviors, reproductive health practices, drug use, and sociocultural determinants of HIV infection amongst FESW. Eligible participants were biologically female, 15–29 years old, of self-identified Cambodian ethnicity, understood spoken Khmer, able to provide informed consent, and reported two or more sex partners or engagement in transactional sex within three months of study enrollment. Outreach for recruitment and retention was conducted by the Cambodia Womens Development Association (CWDA) who visited women at community locations proximal to where they worked and lived throughout the study period. They were asked to attend quarterly visits for data (including behavioral surveys) and specimen (including for HIV, HPV, and biomarker tests for semen (Prostate Specific Antigen (PSA)) and amphetamine-type stimulants (ATS)). Women were compensated US\$5 for each study visit they attended, whether or not they received HPV vaccine. The study protocols were reviewed and approved by Institutional Review Board of the Committee on Human Research at UCSF, the Cambodian National Ethics Committee, and the University of New South Wales Human Research Ethics Committee.

Demographic and behavioral survey in YWHS-2

Structured questionnaires were administered in Khmer by native speakers to enrolled participants at a baseline visit, and on a quarterly basis for one year. The survey, which took approximately 45 minutes to administer included up to 45 questions (depending on skip patterns) on demographics, employment, income, sexual behaviors, alcohol and drug use, perception of HIV risk, reproductive health and STI/HIV prevention behaviors. Women

were also queried at baseline regarding whether they had heard of or knew anything about HPV infection or vaccine, and answers were coded dichotomously (yes/no).

HPV Information & Education Brief Intervention

Following the baseline study visit, participants received a brief information and education intervention that was delivered in two sessions, both of which included: general information on HPV, instruction on modes of transmission, the relationship between HPV and cervical cancer and genital warts, and benefits and risks of the quadrivalent multi-dose HPV preventive vaccine, including its contraindications for women who were pregnant or had HIV. The first session was held one month prior to the first quarterly study visit (month two of the study): outreach workers invited participating women to attend a session at the community-based partner (CWDA) site. The second session was held at the clinic at the three-month visit, prior to data collection and vaccine administration. At both sessions, a pamphlet with the same information was also given to each participant. All sessions and information were provided by a trained outreach worker from CWDA in Khmer language.

Pre-vaccination Knowledge and Attitude Survey

At the three-month study visit, participants completed a brief Knowledge and Attitude Survey to assess knowledge of HPV infection resulting from the information and education, and to assess their willingness to receive the HPV vaccination. Portions of the survey were adapted from other studies which assessed HPV knowledge and attitudes toward vaccination (26, 27). The survey assessed: (1) HPV and vaccine knowledge; (2) general attitudes on vaccination; (3) willingness to accept HPV vaccination; (4) reasons for accepting vaccination; and (5) reasons for declining vaccination. The reasons for accepting and declining vaccine were from a list and were not open ended questions. Surveys were translated from and back-translated between English and Khmer for accuracy.

HPV Vaccination

All women negative for HIV and not pregnant were offered the quadrivalent HPV vaccine via a schedule that followed the package insert instructions with three doses over six months (at month 0, 2, and 6). Those who accepted the offer received the first vaccination at that visit offered. Excluded from eligibility for vaccination were women who were known from tests administered the same day and at prior study visits to have HIV-positive individuals were excluded from vaccination (but not the education sessions), as the safety of the vaccine in HIV-positive individuals this population had not been determined at the time of this study. Pregnant women were also excluded from receiving vaccine, in accordance with the CDC Guidelines for Vaccinating Pregnant Women²⁴ and women receiving the vaccine were counseled to avoid pregnancy, and provided with free condoms. Study outreach workers reminded participants to attend vaccination visits with verbal and written reminders and transportation was provided. HPV acceptance and immunization completion rates were tracked and recorded on paper and Clinical Report Forms and then entered into the study database.

Measures

Outcome variables for the present analysis include: (1) HPV Awareness, which was measured at baseline by the question: “Have you ever heard of HPV?” Participants were classified as “Aware” if they indicated that they had heard of HPV, and “Not Aware” if they had not heard of HPV; (2) Results from the HPV Knowledge and Attitude Survey including general HPV knowledge, vaccine and willingness to receive HPV vaccine were tabulated; with the raw number of correct answers summed for each question, and knowledge was represented by the total number and percentage of women answering all questions correctly; (3) HPV immunization eligibility; and (4) HPV immunization series completion among those who were eligible.

Analyses

Descriptive statistics, including frequencies and measures of central tendency (medians and interquartile ranges (IQR)) were used to describe the study population, and results of HPV knowledge and attitudes survey. We examined both HPV vaccine uptake and series completion by demographic characteristics. Factors associated with vaccine series completion were assessed using the chi-square test and multivariate logistic regression. Multivariate models were built using a backward stepwise elimination method, including variables hypothesized to be associated with the vaccine incompleteness outcome, such as ATS use, variables significant at 0.20 in bivariate analyses, and known confounders, including those associated with ATS use, such as sex work venue. Variables were eliminated one by one in reverse order of significance until the model contained only sex work venue and those factors remaining significant at $p < 0.05$. All analyses were performed using STATA (Version 12.1, College Station, TX).

Results

Study population

Demographic characteristics of the 220 women enrolled in the YWHS-2 are provided in Table 1. The median age was 26 years (IQR, 22–28); almost a quarter (22.7%) of women had no schooling, and almost half (41.4%) were separated, divorced, or widowed. Half of the women reported age at first sex (sexual debut) at age 18, and median duration of employment as a FESW was 3.5 years (IQR, 2.0–5.8). The median number of sex partners seen within a thirty day time period at the time of baseline interview was 6 (IQR, 4–15). Regarding current employment venues, more women reported working in entertainment venues (67.7%) than in brothels or freelance settings (32.3%).

HPV awareness at baseline and 3-month visits

At baseline, only 23.6% of the study population (N=52) had heard of HPV. Of the 220 women participating in the YWHS-2 study, 192 returned at three months and 191 completed the Pre- vaccination Knowledge and Attitude Survey. Twenty-eight women (12.7%) were lost to follow-up. At the three-month visit, following the brief information and education intervention, women demonstrated high levels of knowledge regarding HPV: 90.1% of women answered the knowledge questions correctly (Table 2). All (100%) participants

correctly answered that that HPV was an STI and almost all (99.5%) knew that there are several strains of HPV, and that some of these strains could result in cervical cancer (94.2%) while others could cause genital warts (99%). Almost all (99%) understood that having multiple sexual partners placed them at increased risk for HPV infection, and that they could be infected with HPV and not know it (98.4%). Most (97.4%) understood the protective effects of a vaccine (97.4%) and that the HPV vaccine protected against HPV and not other STIs (98.4%). There were no associations between knowledge and vaccine uptake or completion.

HPV vaccine eligibility, acceptance, and reasons for receiving vaccination

Characteristics of those who were both eligible for and accepted and completed the HPV vaccine course are shown in Table 1. The primary reasons cited by participants (100%) accepting vaccination are shown in Table 3. There were no associations between reasons for acceptance and vaccine completion.

HPV vaccine series completion

Out of the 149 women who received the first dose of the vaccine, 138 (92.6%) returned in two months; 11 (7.4%) women were lost to follow up (Figure 1). Of the 138, three women had become pregnant, and were ineligible to continue the vaccine series. For the third and last vaccine administered at month 6, 123 (91.1%) women of the 135 who had received the second vaccine returned, and 118 received the third and final dose. Five additional women had become pregnant during the interim period and were not eligible for the final vaccine visit. The overall vaccine series completion rate among vaccine initiates was 79.2%.

Women were still offered the subsequent vaccine dose if they returned after their scheduled visit date. The median number of days between the first and second dose of the vaccine was 57 days, and 180 days between the first and the third dose. Overall, 15.4% of women were lost to follow up and did not complete vaccination. With the exception of age (median 26 vs. 31.5 years) and time engaged in sex work (median 25 vs. 7 months), there were no significant differences between the 192 retained and the 28 not retained, respectively. Overall, one in twenty women (5.4%) who started the series had to stop due to new pregnancy. Both recent and any use of ATS, reported by 27.3% and 37.3% of women respectively, was significantly associated with incomplete vaccination in bivariate analyses, as was number of sexual partners in the past month (Table 1). In multivariate logistic regression a recent history ATS use, remained independently and significantly associated with incomplete vaccine series (adjusted odds ratio [AOR], 0.2 95% confidence interval [CI], 0.08,0.69; $P < 0.01$), after controlling for sexual risk exposures and confounders: number of sexual partners and employment venue (Table 1). Age did not affect the model and was removed so that the most parsimonious model is presented.

Discussion

In this study we found that HPV awareness was low in young FSW, less than a quarter of whom had heard of HPV at study baseline. Following a brief information and education intervention, however, they demonstrated comprehensive understanding of HPV including

mode of transmission, potential disease outcomes, risk and prevention approach, including vaccination. Among those who were eligible for vaccination, all elected to receive the HPV vaccine, and nearly 80% received all three doses during the 6-month period, with no adverse events. However, a substantial proportion of women (over 20%) were ineligible for HPV vaccine as a result of pregnancy or HIV infection, and new pregnancies accounted for some further discontinued vaccines. Drug use, specifically ATS use, was a strong predictor of incomplete HPV immunization. We have previously published on the context and described consequences of ATS use among young women involved in the sex and entertainment industry in Cambodia (28). ATS use is increasingly associated with adverse health outcomes including incident STI and HIV infection in young FSW (24, 25). Many women initiate ATS use to stimulate income generation, but consequently experience negative health effects, and in turn diminished capacity for income generation through dependence and/or physical degeneration (28). Our results show that ATS use can also have negative effects on health seeking behavior potentially due to stigma, fear of law enforcement, or other psychosocial distress.

Few studies have assessed vaccine acceptance in FSWs, and this study adds important data to literature regarding high acceptance and measures of vaccine completion in this group of women. In Lima, Peru, researchers assessed HPV awareness and interest in receiving HPV vaccine in a similarly aged (18 to 29 years) group of FSW(26). Although less than half (44.2%) had heard of HPV, after receiving information regarding the infection and its association with cancer, almost all (97.5%) wanted to receive the vaccine. This group also demonstrated a 92% completion rate of the 3-dose HPV vaccine in this population in a trial comparing two dosing schedules (29). As in this study, FSWs in Thailand also demonstrated low knowledge levels regarding HPV despite the high rates of cervical cancer in the region. (30). Our finding that women can dramatically increase HPV and HPV vaccination knowledge levels through a simple information and education intervention is especially useful for health providers and programs who want to provide vaccination programs to high risk women. Although we did not measure knowledge retention, HPV vaccination programs may also result in increased knowledge and reduced sexual risk exposures among FSW, as shown by Brown et. al., in Peru (30).

Our study has several limitations. The modest sample size could have impacted power to detect effects from behaviors or exposures potentially associated with incomplete vaccination. The vaccine provided in the YWHS-2 was provided at no cost as part of the study and similar results may not be achieved in settings where women have to pay for vaccine, as suggested by the fact that all eligible women cited free vaccine provision as a reason to accept. The research program provided transportation, and the vaccine was given at the research clinic (which was co-located in the same building as an STI and Family Practice clinic) and did not involve local health care providers, factors that were not examined as part of vaccine completion. Study participants were recruited to the YWHS-2 via convenience sampling methods and results may not be generalizable to all FSWs in Cambodia. Since labor laws in Cambodia restrict employment to those 18 and older, this sample may be older than seen in other groups of sex workers. Almost one in seven (15.4%) women who initiated HPV vaccine were lost to follow up, which could have biased the associations detected (either over- or under-estimating) with vaccine completion.

Despite these limitations, this study demonstrated the feasibility and effectiveness of delivering both a brief educational intervention, and a multi-dose vaccine to FSWs in a developing country setting. Our finding that many participants accepted the vaccination because of advice from a doctor or nurse contributes to the existing literature highlighting the important role health care providers play in vaccine uptake (5). In general, enhancing education of both the public and of providers is critical to increasing vaccination rates. Since all eligible women accepted vaccine, it was not possible to assess whether the educational intervention enhanced vaccine uptake. However, factors that were not evaluated and which may have impacted vaccine acceptance and uptake may in fact have been related to the research study itself, including the relationship women had with the study health care providers, and the logistical support provided to women to attend study visits. Future studies, especially implementation science studies should consider evaluating logistical constraints that FESW experience in accessing health care, including transportation and clinic access.

For women in the sex and entertainment industry, likelihood of exposure to HPV is high. Although it is ideal to vaccinate individuals prior to sexual debut, there is growing evidence that the HPV vaccine is effective in women regardless of previous exposure to HPV(17, 18). A modeling study suggests that including women who have exposure to HPV can significantly and positively impact the cost effectiveness of vaccination efforts, and that adult vaccination strategies should be reassessed (31). At the time of this study, the immunogenicity and safety of the HPV vaccine in people with HIV infection were unknown. More recent studies have shown that the vaccine is immunogenic, safe, and well tolerated in women with HIV, who can therefore be included in programs for vaccination (32).

In conclusion, Cambodian FSW, a population at high risk for HPV infection, responded positively to a brief information and education intervention, demonstrating good knowledge and high vaccine uptake. ATS use and high risk sex both had especially negative associations with vaccine completion. As well, women in brothel-based or freelance sex work were more likely to complete the vaccine series. This may be a result of more intensive health messaging directed towards women in these venues in association with HIV prevention. While this study informs future vaccine implementation programs, more tools are needed to identify methods to not only curb and prevent ATS use, but also minimize pregnancy, loss to follow-up and associated vaccine non-completion for this group of women. Programs that target women at high sexual risk should consider ways to target women in multiple venues, as well as the potential positive of strong community involvement with respect to outreach and health workers. Incorporating reproductive health messaging in HPV vaccine education sessions as well as providing alternative prevention methods (to condoms) should be explored in future implementation science research. Implementation science research should be conducted to assess other operational factors as well such as transportation and clinic location. The efficacy of modest incentives could be studied, as these have been shown to increase vaccine completion in other high risk groups, such as people who use drugs (33, 34). Given the strong associations found between ATS use and incomplete vaccination, interventions to reduce drug use should also be explored in this population. Prioritizing HPV vaccination in high-risk women in Cambodia may also

offer new opportunities to advance prevention for other STIs and HIV, in addition to reducing HPV associated morbidity and mortality.

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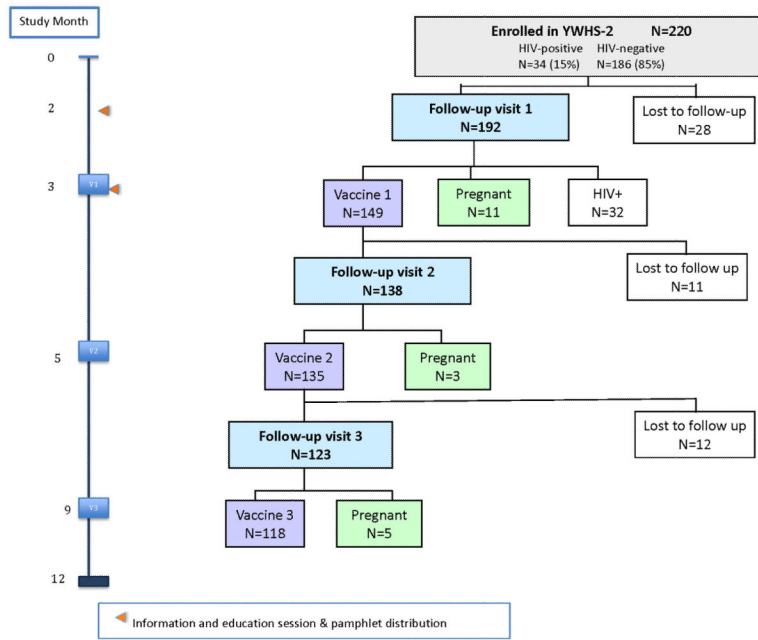


Figure 1. Young Women's Health Study-2: Visit schedule and vaccination (V) timeline and vaccine series completion

Table 1

Characteristics of women participating in the YWHS-2 Study, eligible for and completing the 3 dose vaccine series, and associations with vaccine series completion.

Characteristic	YWHS-2 Cohort (n=220)		Vaccine Eligible (n=149)		Vaccine Series Completed (n=118)					
	N	%	N	%	N	%	Odds Ratio	95% CI	Adjusted Odds Ratio	95% CI
Age (years, median (IQR))	26 (22 – 28)		25 (22 – 28)		26 (22 – 28)					
16–24	85	38.6	57	38.3	44	77.2	1.00			
25–27	63	28.6	45	30.2	36	80.0	1.18	0.45–3.08		
28–29	72	32.7	47	31.5	38	80.9	1.25	0.48–3.24		
Marital status										
Married/Living together	84	38.2	56	37.6	45	80.4	1.00			
Separated/Divorced/Widowed	91	41.4	64	43.0	50	78.1	0.87	0.36–2.12		
Single/Never married	45	20.5	29	19.5	23	79.3	0.94	0.31 – 2.86		
Education (years)										
None	50	22.7	31	20.8	23	74.2	1.00			
Primary (1–6 years)	125	56.8	86	57.7	68	79.1	1.31	0.50–3.42		
Secondary (7+ years)	45	20.5	32	21.5	27	84.4	1.88	0.54–6.54		
Age at first sex (median (IQR))[§]	18 (16–19)		18 (16–19)		18 (16–19)					
> 16	149	68.4	104	69.8	83	79.8	1.00			
16	69	31.7	44	29.5	34	77.3	0.86	0.37–2.02		
Length of employment as FESW (years, median (IQR))	3.5 (2.0–5.8)		3.5 (2.1–5.6)		3.7 (2.0 – 6.0)					
Current employment venue (last 30 days)										
Entertainment/Other	149	67.7	113	75.8	90	79.6	1.00		1.00	
Brothel/Freelance	71	32.3	36	24.2**	28	77.8	0.89	0.36–2.22	4.92	1.12–21.6*
Have a manager, boss or supervisor										
Yes	151	68.9	113	75.8	88	77.9	1.00			
No	68	31.1	35	23.5**	29	82.9	1.37	0.51–3.68		
Income in past month										
Less than \$100	84	38.4	55	36.9	43	78.2	1.00			

Characteristic	YWHS-2 Cohort (n=220)		Vaccine Eligible (n=149)		Vaccine Series Completed (n=118)					
	N	%	N	%	N	%	Odds Ratio	95% CI	Adjusted Odds Ratio	95% CI
\$100-150	57	26.0	41	27.5	33	80.5	1.15	0.42-3.13		
Over \$150	78	35.6	53	35.6	42	79.2	1.07	0.42-2.68		
Number of sex partners in last 30 days (median (IQR))	6 (4-15)		6 (3-14)		5 (3-12)					
5	99	45.0	72	48.3	61	84.7	1.00		1.00	
6-15	71	32.3	49	32.9	39	79.6	0.70	0.27-1.81	0.92	0.32-2.62
16	50	22.7	28	18.8	18	64.3	0.32	0.12-0.89*	0.18	0.04-0.80**
Condom use with last paying partner n=99										
Inconsistent	14	9.8	9	6.0	7	77.8	1.00			
Consistent (always)	129	90.2	90	60.4	75	83.3	1.43	0.27-7.56		
Condom use with last non paying partner n=77										
Inconsistent	66	85.7	43	28.9	31	72.1	1.00			
Consistent (always)	11	14.3	7	4.7	5	71.4	0.97	0.16-5.68		
Number of days drink alcohol (last month)	15 (4-29)		20 (5-30)		19 (5-28)					
0-4	58	26.4	31	20.8	26	83.9	1.00			
5-19	56	25.5	40	26.8	33	82.5	0.91	0.26-3.19		
> 20	106	48.2	78	52.3*	59	75.6	0.60	0.20-1.78		
Number of days drunk (last month)	4 (1-10)		5 (2-10)		5 (2-10)					
0-4	124	56.3	76	51.0	62	81.6	1.00			
5-19	72	32.7	56	37.6	44	78.6	0.83	0.35-1.96		
> 20	24	10.9	17	11.4	12	70.6	0.54	0.16-1.79		
ATS use (ever)										
No	138	62.73	99	66.4	85	85.9	1.00			
Yes	82	37.27	50	33.6	33	66.0	0.32	0.14-0.72*		
ATS use (last 3 months)										
No	160	72.7	115	77.2	97	84.3	1.00		1.00	
Yes	60	27.3	34	22.8*	21	61.8	0.30	0.13-0.71*	0.24	0.08-0.69***
Ever heard of HPV										

Characteristic	YWHS-2 Cohort (n=220)		Vaccine Eligible (n=149)		Vaccine Series Completed (n=118)					
	N	%	N	%	N	%	Odds Ratio	95% CI	Adjusted Odds Ratio	95% CI
Not aware	167	76.3	114	76.5	91	79.8	1.00			
Aware	52	23.7	35	23.5	27	77.1	1.17	0.47-2.91		

* p-value 0.05

** p-value 0.01

¶ data are missing for two women; ATS= Amphetamine Type Stimulant

Table 2

HPV and Vaccine Knowledge among 191 FESW (following brief information and education intervention).

	Women answering correctly	
	N	%
HPV is a sexually transmitted infection (true)	191	100
There are several types of HPV (true)	190	99.5
All types of HPV cause cervical cancer (false)	180	94.2
Only certain types of HPV can cause genital warts (true)	189	99.0
Having multiple sexual partners increases the risk of HPV infection (true)	189	99.0
A person can be infected with HPV, but not know it (true)	188	98.4
A vaccine is a way to protect you against certain diseases (true)	186	97.4
HPV vaccination is a way to prevent HPV infection (true)	188	98.4
Number of women answering all questions correctly	172	90.1

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Table 3

Reasons for HPV vaccine acceptance among 152 eligible FESW (following a brief information and education intervention).

	Women answering YES	
	N	%
I think I'm at risk of HPV infection	130	85.5
I believe the HPV vaccine can protect me against HPV infection	139	91.4
I'm afraid of getting cervical cancer, which can be caused by HPV infection	142	93.4
I know someone who died from a cervical cancer	39	25.7
The HPV vaccine is free	152	100
The vaccine was recommended by the doctor or nurse	152	100
I have previously had an STD	46	30.3
I want to be protected from HPV	152	100

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