

A Different Kind of Street Smarts: HPV Awareness Among Street-based Female Sex Workers in Albuquerque, NM

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Introduction

Genital HPV is the most common sexually transmitted infection in the U.S.¹ By age 50, at least 4 out of every 5 women in the U.S. will have been infected with Human Papillomavirus (HPV) at some point in their lives.² The risk of contracting cervical cancer from HPV is directly correlated to the number of lifetime sexual partners. The most important risk factor is having more than 5 male sexual partners during a lifetime.³ On average, a street-based female sex worker (FSW) in the U.S. has 60 male partners per month or 694 partners per year.⁴

Published HPV knowledge surveys have been validated in the general US female population, and used in international studies to explore knowledge of HPV among men and women. Prior studies reported that in the U.S. 65% of women have some awareness of HPV.^{5,6} Of those, 93% know it is sexually transmitted and 74% know it is associated with cervical cancer.⁶ In this study populations, awareness rate varied with education level and minority status, among other factors.^{6,7}

Prior studies did not target street-based female sex workers, a high risk group. Our study examined HPV awareness among FSW in Albuquerque, N.M using previously validated measures on knowledge of HPV, HPV testing, and HPV vaccination.

References

1. Prevention CDC [Internet]. Atlanta: STD Facts - Human papillomavirus (HPV); 2013. [cited 2014 Jan 1]; Available from: http://www.cdc.gov/std/hpv/stdfact_hpv.htm
2. Prevention CDC [Internet]. Atlanta: CDC - Basic Information about HPV-Associated Cancers; 2013. [cited 2014 Jan 7]; Available from: http://www.cdc.gov/cancer/hpv/basic_info
3. Remschmidt C, Kaufmann AM, Hagemann I, Vartazarova E, Wichmann O, Delere Y. Risk Factors for Cervical Human Papillomavirus Infection and High-Grade Intraepithelial Lesion in Women Aged 20 to 31 Years in Germany. *Int J Gynecol Cancer*. 2013 Mar;23(3):519-26
4. Brewer DD, Potterat JJ, Garrett SB, Muth SQ, Roberts JM Jr, Kasprzyk D, Montano DE, Darrow WW, et al. Prostitution and the sex discrepancy in reported number of sexual partners. *Proc Natl Acad Sci USA*. 2000 Oct 24;97(22):12385-8.
5. Kobetz E, Kornfeld J, Vanderpool RC, Finney Rutten LJ, Parekh N, O'Bryan G, Menard J. Knowledge of HPV among United States Hispanic women: opportunities and challenges for cancer prevention. *J Health Commun*. 2010;15 Suppl 3:22-9.
6. Marlow LA, Zimet GD, McCaffery KJ, Ostini R, Waller J. Knowledge of human papillomavirus (HPV) and HPV vaccination: an international comparison. *Vaccine*. 2013 Jan 21;31(5):763-9
7. Tiro JA, Meissner HI, Kobrin S, Chollette V. What do women in the U.S. know about human papillomavirus and cervical cancer? *Cancer Epidemiol Biomarkers Prev*. 2007 Feb;16(2):288-94.
8. Waller, J., Ostini, R., Marlow, L., McCaffery, K., Zimet, G. Validation of a measure of knowledge about human papillomavirus (HPV) using item response theory and classical test theory. *Preventive Medicine*, Volume 56, Issue 1, January 2013, Pages 35-40
9. Murphy, P. W., Davis, T. C., Long, S. W., Jackson, R. H., & Decker, B. C., (1993). Rapid Estimate of Adult Literacy in Medicine (REALM): A Quick Reading Test for Patients. *Journal of Reading*, 37(2), 124-130.
10. Albuquerque city New Mexico Quick Facts (n.d.). In *U.S. Census Bureau*. Retrieved April 18, 2016, from <http://www.census.gov/quickfacts/table/PST045215/35>
11. New Mexico Quick Facts (n.d.). In *U.S. Census Bureau*. Retrieved April 16, 2016, from <http://www.census.gov/quickfacts/table/PST045215/35>

Materials & Methods

Through collaboration with a local non-profit (Street-Safe New Mexico), self-identified FSW in Albuquerque were verbally consented for participation in this survey study. Surveys were read to participants with responses filled out by investigators from July 2015-March 2016. Participants were compensated for their participation with a 1-month pass. The survey protocol was approved by the Institutional Review Board at the University of New Mexico Health Science Center.

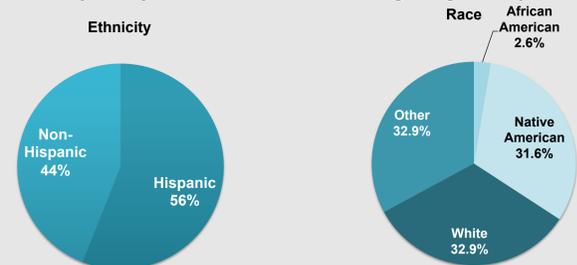
The surveys contained three components: a Demographic Questionnaire, REALM (Rapid Estimate of Adult Literacy) worksheet, and HPV Awareness Survey⁹. The Demographic Questionnaire contained questions about age, gender, race, insurance, medical care, and social behaviors. The REALM worksheet is a standardized tool which was developed to help physicians identify patients at risk of having limited health literacy. The HPV Awareness Survey is a 29 question validated measure containing questions assessing HPV knowledge, HPV testing, and HPV vaccination. Response options were true/false/don't know, with "don't know" scored as incorrect.

Data were analyzed using STATAAdvisor. Standard summary statistics (means, medians, proportions, confidence intervals) were calculated for all demographic and experimental variables. Analysis of Variance or Student T-test were used to compare means of the HPV Awareness Survey (KTV score) scores among categorical variables and numerical variables. All statistical tests were carried out with a critical p-value of 0.05. The Bonferroni inequality was used to adjust for multiple, planned comparisons. Two-tailed tests were used throughout.

Results

Demographics

Study subjects: 76 FSW; Average age 38 years old



A disproportionately large percentage of Albuquerque sex-workers are **Native American** at 31.6%, compared to the 2010 U.S. Census estimate of Albuquerque's and New Mexico's Native American population percentage at 4.6% and 9.4%^{10,11}, as well as **Hispanic** ethnicity (56.6% v. 46.3% and 46.7% respectively)^{10,11}.

HPV Awareness Survey (KTV score) total score averaged 66.1% (+/-18.5%) correct, with the subgroup of HPV knowledge scoring higher than the national average (68.9% v. 58.2%⁶)

- Testing scores averaged 58.5% (+/- 18.5%)
- Vaccine scores averaged 66.3% (+/-18.3%)
- **Understanding that HPV causes cervical cancer 82.9% (v. national average of 92.6%⁶)**
- **Understanding that HPV can be passed on by genital skin-to-skin contact 56.58%**

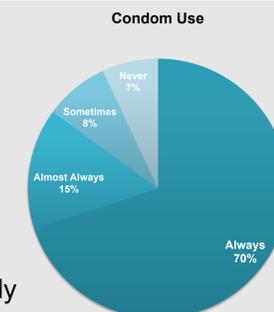
REALM survey was completed by each participant with an Mean (SD) score of 6.46 ± (1.06) out of 7.

There was a direct correlation between REALM score to overall KTV score ($p = .0031$ R-squared 11.3%).

Social and health behavioral characteristics were assessed in relation to the overall KTV scores and the means for individual Knowledge, Testing, Vaccination sections, these were **not found to be significantly different** among the various categories of condom use, regular childhood medical care, age starting commercial sex work, or frequency of sex-work ($p > 0.05$).

Health and Social Behaviors

- **82.9% reported being insured**
- **44.7% see a regular doctor for non-emergency visits**
- 47.4% of participants find that seeking health care is difficult
- 82.9% of participants saw a doctor regularly as a child
- 82.9% were aware of their Hepatitis C status
- 71.1% had an HIV test within the past year
- 32.9% had an STD within the past year
- 43.4% had a Pap smear within the past year
- Average number of dates per day 3.25 +/- 3.66
- **Average age participants began doing dates 24.11yo** (range 12-50yo; **18 started before the age of 18yo**)
- Average grade that participants completed in school 11.14yr



Conclusion

Overall, the results of our study showed a higher level of knowledge of HPV among Albuquerque FSW as compared to the U.S. population (64.7% correct v. 58.2%⁶), yet knowledge that HPV can cause cervical cancer was lower (82.9% v 92.6%⁶), which could have severe morbidity and fiscal consequences. The analyses showed a direct correlation between health literacy score and HPV awareness scores.

We also found a disproportionately large percentage of Native American and Hispanic FSW compared to the Albuquerque and New Mexico general population

We gleaned substantial demographic information about the population that may be important in guiding future studies, finding public assistance, providing preventative health care, and connecting already established public resources to this marginalized population.

Future Directions

Further areas of interest include investigating other factors related to FSW's access to health care, inciting factors for starting sex work, and strategies to improve health literacy; knowledge about which could inform policies for prevention and linkage to care.

Examples of linking FSW to additional resources include annual cervical exams for insured women, and funding through NM Victims of Reparation Committee (eligible for federal funding of \$125,000) for those who started work under age 18 since this criteria classifies them as sex-traffic victims.

As medical providers, we can be more diligent about connecting FSW to available resources, educating at-risk patients, and incorporating routine health screening to visits.

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