

# The Prevalence of High-Risk Oral HPV Among Rural/Tribal Women In Mysore Who Are Chronic Smokeless Tobacco Users

Kim Yen Nguyen<sup>1</sup>, Kavitha Chandrappa<sup>3</sup>, Anisa Khan<sup>3</sup>, Poornima Jaykrishna<sup>3</sup>, Brenda Hernandez<sup>1,2</sup>, Neha Joshi<sup>3</sup>, Angela Sy<sup>1</sup>, Vivek R. Nerurkar<sup>1</sup>, and Purnima Madhivanan<sup>3</sup>

<sup>1</sup>Department of Tropical Medicine, Medical Microbiology, and Pharmacology, John A. Burns School of Medicine, University of Hawaii at Manoa, Honolulu, Hawaii, USA;

<sup>2</sup>University of Hawaii Cancer Center, Honolulu, Hawaii, USA; <sup>3</sup>Public Health Research Institute of India, Mysore, Karnataka, India



## INTRODUCTION

Human papillomavirus (HPV) is the most common sexually transmitted disease. Low-risk HPV can cause warts, and the virus often clears on its own. High-risk HPV can persist and can cause cervical, anogenital, and head and neck cancer, primarily of the oropharynx. Not all oral cancers are caused by HPV alone. Additional independent risk factors include alcohol, smoking, and smokeless tobacco consumption. Tobacco use, including cigarette smoking and tobacco chewing, is the primary cause of oral cancer worldwide. India has high prevalence of tobacco consumption and 60% of smokeless tobacco users are women. Tobacco users have a fifteen-fold increased risk of oral cancer compared to non-tobacco users. There may be interactions between smokeless tobacco use, oral HPV infection and oral cancer.

## OBJECTIVE

The goal of this project is to examine the prevalence of oral HPV among women who are chronic tobacco users, and determine factors associated with HPV infection. The long-term objective is to inform oral cancer prevention strategies such as tobacco cessation and HPV vaccination within these communities.

## MATERIALS & METHODS

### Data and oral specimen collection:

- Oral cells swabbing, brushing, and oral rinse sample was collected by a staff nurse. An all-collection swab was first used to sample the center of tongue, below the tongue, hard palate, buccal mucosa, and upper front gums and placed into a sterile Qiagen's collection tube. Then the brush in the collection kit was used on the same place as mentioned earlier and placed in the same collection tube as the swab. Lastly, 10 ml saline was given to participant to gargle before spitting out into a separate sample container. Samples were stored at -20°C until further processing.

### Laboratory analysis:

- Oral rinse was combined with the collection tube samples which contained the swab and the brush. The tube was centrifuged for 10 minutes at 2,300 rpm to obtain cell pellet. The supernatant layer was discarded, and the pelleted cells transferred to the Qiagen collection tube with the other oral cell samples.
- The oral samples were tested for high-risk HPV using in vitro nucleic acid hybridization assay with signal amplification using microplate chemiluminescence for the qualitative detection of 13 high-risk types of HPV DNA.



Figure 1: Kim Yen Nguyen is collecting oral pictures of the hard palate, left and right buccal, under the tongue, tongue, and front gum.

## The prevalence of high-risk oral- HPV is low (2%) among rural/tribal women in Mysore who are chronic chewing tobacco users

## RESULTS

Educational Status	Percentage	N
a. Professional degree/Post graduate	0	0
b. Graduate	1	1
c. Secondary School	5	5
d. Highschool	17	17
e. Primary School	10	10
f. Literate, no formal education	1	1
g. Illiterate	66	66
Employment Status		
a. Employed	85	85
b. Students	0	0
c. Housewife	15	15
d. Retired	0	0
e. Unemployed	0	0
Monthly Income		
a. <3000	24	24
b. 3000-10,000	57	57
c. 10,001-20,000	7	7
d. 20,001-30,000	11	11
e. 30,001-40,000	0	0
f. 40,001-50,000	0	0
g. Refused	1	1
Alcohol Use		
Have you ever used alcohol?	18	18
How often do you use alcohol beverages?		
a. Currently using alcohol regularly	0	0
b. Currently using alcohol occasionally	16	16
c. Used alcohol in the past (stopped more than 6 months ago)	2	2
d. Recently stopped alcohol less than 6 months ago	0	0
Sexual History		
Did you practice oral sex?	2	2
Have you ever had oral sex with a man? (penis to mouth)	3	3
Have you ever had oral sex with a man? (vaginal to mouth)	2	2

Table 1. Survey data about the community demographic, alcohol use, and sexual history

## CONCLUSIONS

- There is a low prevalence of high-risk oral HPV (N=1),
- The low prevalence of oral-HPV might be due to low number of women who engage in oral sex hence decreasing the transmission rate.
- There is also a low percentage (18%) of women who had tried alcohol before.
- Cultural values and practices might play a role in the prevalence of oral HPV within these communities

## ACKNOWLEDGMENTS

We thank Mr. Keeton Krause for his assistance. We thank Public Health Research Institute of India, Mysore and staff for their assistance throughout this project. This research was supported by the Minority Health International Research Training (MHIRT) Program at the University of Hawaii through the NIMHD, National Institutes of Health (NIH) grant (T37MD008636-05). We acknowledge the support of UH Pacific Center for Emerging Infectious Diseases Research, COBRE funded through the NIGMS, NIH grant (P30GM114737).