

# Knowledge and personal beliefs about human papilloma virus infection among Sikkimese female nursing professionals in India

Hafizur Rahman<sup>1</sup>, Annet Thatal<sup>1</sup>, and Sumit Kar<sup>2</sup>

1. Department of Obstetrics & Gynaecology, Sikkim Manipal Institute of Medical Sciences, Gangtok, India

2. Department of Community Medicine, Sikkim Manipal Institute of Medical Sciences, Gangtok, India

---

## RESEARCH

---

Please cite this paper as: Rahman H, Thatal A, Kar S Knowledge and personal beliefs about human papilloma virus infections among female Sikkimese nursing professionals in India. AMJ 2016;9(7):198–205. <http://doi.org/10.21767/AMJ.2016.2624>

---

### Corresponding Author:

Dr Hafizur Rahman  
Associate Professor of Obstetrics & Gynaecology  
Sikkim Manipal Institute of Medical Sciences  
5th Mile, Tadong, Gangtok, Sikkim-737102, India  
Email: [hafizezzy@gmail.com](mailto:hafizezzy@gmail.com)

---

## ABSTRACT

---

### Background

Persistent infection with high risk type of human papilloma virus (HPV) has been identified as most important risk factor for cancer cervix. Because of high incidence of HPV infections; HPV testing for cervical screening has been recently advocated in many countries.

### Aims

The aim of this survey was assess knowledge and personal beliefs about (HPV) infection among female nursing professionals.

### Methods

Between April 2012 and February 2013, a pre-designed, pretested, self-administered multiple responses questionnaire survey was conducted among female staff nurses' working in the hospitals of Sikkim.

### Results

Overall, 72.6 per cent nursing staff responded that they had ever heard of HPV. An association between HPV infection

and cancer cervix was aware by only 62.3 per cent nursing staff. Actual knowledge about HPV was poor. Only 23 per cent nursing staff knew that high risk HPV type 16, 18 causes most (70 per cent) of the cervical cancers. Only 16.7 per cent (n=43) nursing staff had adequate knowledge about HPV. Age was the only significant predictor ( $p < 0.0001$ ) which determined awareness of HPV infection with nursing staff in their 20–30s were more likely to be aware of HPV infection. Stigmatizing beliefs about HPV infection was common with 63 per cent participants believed that infected individuals are to blame themselves for causing their own infection while 17.5 per cent maintained their belief that one should keep a social distance from those who are infected.

### Conclusion

There is an urgent need for well-designed HPV education program integrated into a national cervical cancer control program and incorporation of updated detailed information in nurses existing curriculum.

### Key Words

Attitude, beliefs, cervical cancer, human papilloma virus, knowledge, nursing staff

---

### What this study adds:

#### 1. What is known about this subject?

Persistent infections with high risk type of HPV have been identified as most important risk factor for neoplastic diseases of cervix, and are responsible for 70 per cent of cervical cancers.

#### 2. What new information is offered in this study?

Knowledge of the nursing staff about this common infection and their personal beliefs may impact what information and service they provide to general women. In the present study, knowledge and attitudes related to HPV infection and testing were evaluated among nurses in eastern India.

### 3. What are the implications for research, policy, or practice?

There is an urgent need to train nursing staff about HPV infection, testing and cervical cancer through a well-designed HPV education program integrated into a national cervical cancer control program and incorporation of updated detailed information in nurses existing curriculum.

---

## Background

Human papillomavirus (HPV) is the most common sexually transmitted infection all over the world.<sup>1-3</sup> It is estimated that at least 50–80 per cent sexually active women get infected with at least one HPV type during their lifetime, with over 6 million new infections annually.<sup>4,5</sup> HPV infection occurs in women of all ages, although women in their 20s are most vulnerable. Most HPV infections are transient, asymptomatic and resolved spontaneously.<sup>6</sup>

Persistent infection with high risk type of HPV (type 16 and 18) has been identified as most important risk factor for neoplastic diseases of cervix, and are responsible for 70 per cent of cervical cancers.<sup>7</sup> Cervical cancer is the most common cancer among women in developing countries, which cause 88 per cent cancer related deaths among women.<sup>8</sup> India has 20 per cent of world cervical cancer cases and kills one fifth of women's life in India.<sup>9</sup>

Among all malignant tumours, cervical cancer is the one which can be most effectively controlled by organized screening programmes.<sup>10</sup> Because of high incidence of HPV infections; HPV testing for cervical screening has been recently advocated in many countries.<sup>11,12</sup> With rapidly evolving knowledge about HPV, health care professionals must be aware of facts about HPV, testing recommendations and implications of a positive test. Research has shown that health care professionals lacked detailed knowledge about HPV and misuse of testing was common.<sup>13-15</sup> Unnecessary testing may cause financial and psychological burden and relationship concerns and fear in women's life in case of a positive result.<sup>16,17</sup> Most of these studies were conducted in developed countries.<sup>13-15,17</sup> In India cervical cancer screening is mainly done by Pap smear cytology. HPV testing is recommended when any atypical findings in Pap smear or in high risk cases. Because of low doctor patient ratio, nursing staff are the major workforce in India and are directly linked as primary gate keeper in conducting screening tests, giving information about Pap smear screening and HPV infection among women.<sup>18</sup>

Knowledge of the nursing staff about this common infection and their personal beliefs may impact what information and

service they provide to general women, but little information is available in this area among Indian nursing staff. With this background the aim of this study was to assess awareness and detailed knowledge about HPV infection and testing and personal beliefs about HPV infections among nursing professionals working in the Indian state of Sikkim.

## Method

The present anonymous questionnaire based survey was conducted from April 2012 to February 2013 among the nursing staff working in different hospitals of Sikkim. The study was approved by SMIMS institutional ethics committee. Initially in major hospitals nursing staff were invited in a group in a hall and explained about the nature and purpose of the research. Those nursing staff who agreed to participate was given a consent form along with a pre-designed, pretested, self-administered multiple response questionnaire with both closed and open ended questions. Those nursing staff who did not come in group and those who were working in small hospitals; to them, an invitation letter along with consent form and questionnaire was sent in a sealed envelope to participate. Those who agreed to participate were requested to fill the questionnaire along with consent form and sent back to principal author.

The questionnaire consisted items on demographic information of the participants, questions on cancer cervix screening, HPV infection and HPV vaccination for cervical cancer. This paper explores nurses' knowledge and personal beliefs about human papilloma virus infection.

The questionnaire was developed to assess knowledge and perceptions of nursing staff in relation to HPV infection and HPV testing. To assess the in-depth knowledge of the participants' ten questions were asked about various basic facts HPV infections and testing. To assess the actual summarized level of knowledge on HPV infections of the participants, response on each question was first scored and tallied for each participant. For each correct response a score of 1 and for each incorrect response a score of 0 was provided so that the total score of each respondent ranged from 0 per cent (if none of the questions were answered correctly) to 100 per cent (If all questions were answered correctly). The level of knowledge of each participant was categorized according to her total score she obtained. Respondents who scored zero were considered as "Nil or no knowledge", who scored 10 per cent - 40 per cent as "Inadequate or poor knowledge", and who scored 50 per

cent or more were considered to have “Adequate or good knowledge”.

To determine attitude about HPV infection several belief statements were asked and participants were asked to give their response in a 5 point Likerts scale ranging from point 1 (strongly disagree) to 5 (strongly agree). For the purpose of analysis, each item was re-coded to a dichotomous “agree–disagree” variable. Scores between 1 and 2 for an item were considered as disagreement, and scores between 4 and 5 as agreement or a stigmatizing response. A score of 3 was interpreted as “neither agree nor disagree” and was conservatively categorized as disagreement.

The data were analysed by computer software InStat Graph Pad version 3. Descriptive statistics chi-square tests were done and significance of tests was decided at p-value 0.05. Data were analysed using both univariate and multivariate analysis/binary logistic regression.

## Results

Out of 396 questionnaires distributed 354 returned in completed form. Most of the participants were between 21–40 years of age, unmarried, Hindus belonged to Nepali community (Table 1).

To the question ‘are you aware of HPV infection’ 72.6 per cent participant (n=257) responded that they knew about it. Association between HPV infection and cancer cervix was aware by only 62.3 per cent nursing staff. Table 2 presents detailed knowledge of the participants about various issues related to HPV infection and HPV testing.

Overall, only half of the participants were aware that most women will get infected with HPV sometime in their life and HPV may stay inactive inside the body for many years. That high risk type of HPV 16, 18 cause most cervical cancers were aware by only 23.3 per cent nursing staff. Based on the summarized level of knowledge index, sixteen per cent (n=41) of the nursing staff who heard of HPV infection had no knowledge of it, while 67 per cent (n=173) had inadequate or poor knowledge and only 16.7 per cent (n=43) had adequate knowledge.

Table 3 presents the unadjusted associations and results of multivariate analysis of selected independent variables and their associations with awareness of HPV infection among the participants. Age was the only significant predictor ( $p < 0.0001$ ) which determined awareness of HPV infection with nursing staff, however there was no clear trend observed with the age. Nursing staff over fifty and in age

group of 21–40 years had the highest level of knowledge, 41–50 had intermediate and staff below 20 years had the low level of knowledge.

Unmarried and sexually not active nurses had similar level of knowledge compared to married and sexually active nursing staff. Although trainee staff had more rate of awareness of HPV infection than full time nurses, the findings were not statistically significant (Table 3).

Table 4 shows the beliefs and stigmatizing attitudes of the participants about HPV infection. Sixty three per cent participants believed that infected individuals are to blame themselves for causing their own infection while 42.4 per cent believed unfaithful partner as the reason for HPV infection.

About 39 per cent believed that individuals with one life time sexual partner will not get infected with HPV. One fifth of the participants had perceptions that infected individuals are sexually easy and one should maintain a social distance from those infected (Table 4).

## Discussion

Healthcare professionals are the key persons to provide both knowledge and facilities towards the goal of cervical cancer prevention. Nurses are considered as primary port of entry to provide health information to general people in India and other developing countries. Most general women first come in contact with nursing staff and seek suggestion about various health issues including cervical cancer. The finding of this survey shows that knowledge of HPV infection is poor among Sikkimese nurses in India.<sup>19</sup> Although three fourths of nursing staff were aware of HPV infection, association between cancer cervix and HPV infection was aware by only 62 per cent nurses. This level of awareness was lower than those reported among nurses in high income countries. In similar studies in Greece, New Zealand and Thailand the proportions of nurses who knew about this association were 78.5 per cent, 71 per cent, and 81.8 per cent respectively.<sup>19–21</sup>

HPV-related knowledge differed significantly among nurses of different age groups. The finding that nurses in their 20–30s were the more knowledgeable might be because they might had just received updated information via their training course and while they prepared for their examinations or job opportunities. It is necessary for health care professionals including nurses to be updated with the relevant knowledge about HPV to meet the information needs of women and to counsel them effectively. Findings

of our study are comparable to past findings,<sup>22</sup> information that is useful for counselling such as the high prevalence of HPV in young women and the type-specific outcomes of HPV were known only by a few participants.

Healthcare providers' lack of knowledge may perpetuate public misunderstanding and lead to unnecessary investigations. For example most of the participants thought that sexual abstinence is recommended if a woman is tested positive for high risk HPV or HPV testing is recommended for male partner if a woman is detected HPV positive result. Similar observations were made by previous researchers, although there is little evidence to support these practices.<sup>23</sup> This implies there a need for HPV type specific education for health professionals.

Several studies have shown that knowledge of HPV infection is high in countries with existing national HPV education programs. These programs have led to an improved awareness and knowledge of HPV infection and related diseases among health care providers and the general public.

A large majority of participants had stigmatizing beliefs towards individuals with HPV infection. Sixty three per cent participants in our study believed that infected persons are to blame themselves for causing their own infection while many believed a monogamous relationship with a faithful partner will not cause infection. One in five nursing staff believed that infected partners are sexually easy and one should keep a social distance from those who are infected. Many participants thought that sexual risk factors can always be identified in individuals with HPV infection. These beliefs might lead to the misperceptions that HPV infection is confined to only some high risk women, or that an absence of risk factors will not cause HPV infection both of which are not true for HPV. This type of biased attitudes among health care providers may compromise the quality of care they provide and may not meet patient's clinical need and expectations.<sup>24</sup>

In the present study, knowledge and attitudes related to HPV infection and testing were evaluated among nurses in eastern India. It is expected that anonymous nature of the survey helped to reduce social desirability bias and increase the likelihood that the responses provided were true. However, the study has some limitations. Some questions were recall or recognition type which may underestimate or overestimate knowledge respectively. India is a vast country of which Sikkim is a small state. The study was limited to Sikkimese nursing staff only and may not be generalizability

to whole India. Nevertheless, it should be noted that nurses are the dominant work force providing routine screening service in Sikkim and India.<sup>18</sup> Their knowledge and attitudes have a major impact on the overall quality of screening care that woman receive. The present findings may help to guide the development of professional training programs on HPV and HPV testing. The low level of knowledge among the nursing staff indicates the importance of, and need for, continued education for nurses and other healthcare providers in order to keep up with the rapidly increasing information on HPV infections and testing.

## Conclusion

Knowledge of HPV infection and testing among female nurses in this study was poor. There is an urgent need to bridge this information gap through a well-designed HPV education program integrated into a national cervical cancer control program and incorporation of updated detailed information in nurses existing curriculum.

## Declaration

This study is a part of a larger cross-sectional questionnaire based survey. Results of the survey, excluding the results being reported in this study, have been published.<sup>25</sup> As the study population was the same for both reports, the demographics table was the same in both papers.

---

## References

1. Gerend MA, Magloire ZF. Awareness, knowledge, and beliefs about human papillomavirus in a racially diverse sample of young adults. *J Adolescent Health*. 2008;42(3):237–242.
2. Koutsky L. Epidemiology of genital human papillomavirus infection. *Am J Med*. 1997;102(5A):3–8.
3. Verhoeven V, Baay M, Colliers A, et al. The male factor in cervical cancer carcinogenesis: a questionnaire study of men's awareness in primary care. *Prev Med*. 2006;43(5):389–393.
4. Baseman JG, Koutsky LA. The epidemiology of human papillomavirus infections. *J Clin Virol*. 2005;32 Suppl 1:S16–S24.
5. Lambert E. College students' knowledge of human papillomavirus and effectiveness of a brief educational intervention. *J Am Board Fam Pract*. 2001;14(3):178–183.
6. Dunne EF, Unger ER, Sternberg M. Prevalence of HPV infection among females in the United States. *JAMA*. 2007;297(8):813–819.

7. Moscicki A, Schiffman M, Kjaer S, et al. Updating the natural history of HPV and anogenital cancer. *Vaccine*. 2006;24 Suppl 3:S42–S51.
8. Ferlay J, Shin HR, Bray F, et al. Estimates of worldwide burden of Cancer in 2008: GLOBOCAN 2008. *Int J Cancer*. 2010;127:2893–2917.
9. Shanta V. Perspectives in cervical cancer prevention in India. The international network for cancer treatment and research. 2003.
10. Anttila A, Pukkala E, Söderman B. Effect of organised screening on cervical cancer incidence and mortality in Finland 1963–1995, recent increase in cervical cancer incidence. *Int J Cancer*. 1999;83:59–65.
11. Herzog TJ, Huh WK, Einstein MH. How does public policy impact cervical screening and vaccination strategies? *Gynecol Oncol*. 2010;119(2):175–180.
12. Lynge E, Antilla A, Arbyn M, et al. What's next? Perspectives and future needs of cervical screening in Europe in the era of molecular testing and vaccination. *Eur J Cancer*. 2009;45(15):2714–2721.
13. Irwin K, Montañó D, Kasprzyk D, et al. Cervical cancer screening, abnormal cytology management, and counseling practices in the United States. *Obstet Gynecol*. 2006;108(2):397–409.
14. Howard M, Koteles J, Lytwyn A, et al. Giving patients information on abnormal cytology and human papillomavirus: survey of health providers. *Eur J Gynaecol Oncol*. 2007;28(1):15–17.
15. Berkowitz Z, Saraiya M, Benard V, et al. Common abnormal results of pap and human papillomavirus cotesting: what physicians are recommending for management. *Obstet Gynecol*. 2010;116(6):1332–1340.
16. McCaffery K, Waller J, Nazroo J, et al. Social and psychological impact of HPV testing in cervical screening: a qualitative study. *Sex Transm Infect*. 2006;82(2):169–174.
17. Kahn JA, Slap GB, Bernstein DI, et al. Personal meaning of human papillomavirus and Pap test results in adolescent and young adult women. *Health Psychol*. 2007;26(2):192–200.
18. Singh E, Seth S, Rani V, et al. Awareness of cervical cancer screening among nursing staff in a tertiary institution of rural India. *J Gynecol Oncol*. 2012;23(3):141–146.
19. Dinas K, Nasioutziki M, Arvanitidou O, et al. Awareness of human papillomavirus infection, testing and vaccination in midwives and midwifery students in Greece. *J Obstet Gynaecol*. 2009;29(6):542–546.
20. Henninger J. Human papillomavirus and papillomavirus vaccines: knowledge, attitudes and intentions of general practitioners and practice nurses in Christchurch. *J Prim Health Care*. 2009;1(4):278–285.
21. Nganwai P, Truadpon P, Inpa C, et al. Knowledge, attitudes and practices vis-a-vis cervical cancer among registered nurses at the Faculty of Medicine, Khon Kaen University, Thailand. *Asian Pac J Cancer Prev*. 2008;9(1):15–18.
22. Aldrich T, Becker D, García SG, et al. Mexican physicians' knowledge and attitudes about the human papillomavirus and cervical cancer: a national survey. *Sex Transm Infect*. 2005;81(2):135–141.
23. Henderson Z, Irwin KL, Montañó DE, et al. Anogenital warts knowledge and counseling practices of US clinicians: results from a national survey. *Sex Transm Dis*. 2007;34(9):644–652.
24. Khan A, Plummer D, Hussain R, et al. Does physician bias affect the quality of care they deliver? Evidence in the care of sexually transmitted infections. *Sex Transm Infect*. 2008;84(2):150–151.
25. Rahman H, Kar S. Knowledge, attitudes and practice toward cervical cancer screening among Sikkimese nursing staff in India. *Indian J Med Paediatr Oncol*. 2015;36:105–110.

### ACKNOWLEDGEMENTS

The authors would like to thank all the Medical officers and interns of Department of Obstetrics & Gynaecology, SMIMS & Central Referral Hospital, who helped in carrying out this survey and all nursing staff who participated in the survey making this study possible.

### PEER REVIEW

Not commissioned. Externally peer reviewed.

### CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

### FUNDING

None

### ETHICS COMMITTEE APPROVAL

SMIMS institutional ethics committee No-SMIMS/IEC/2012/Natl-SF-1

**Table 1: Socio-demographic characteristics of 354 nursing staff from the state of Sikkim, India who participated in the survey**

Socio-demographic profiles	Number	Percentage (%)
<b>Age (years)</b>		
<20	41	11.6
21-30	155	43.8
31-40	97	27.4
41-50	49	13.8
>50	12	3.4
<b>Marital status</b>		
Unmarried	194	54.8
Married/live in	160	45.2
<b>Family</b>		
Nuclear	231	65.3
Joint	123	34.7
<b>Religion</b>		
Hindu	208	58.8
Christian	57	16.1
Buddhist	88	24.9
Others	1	0.3
<b>Community</b>		
Nepali	209	59.0
Bhutia	53	15.0
Lepcha	30	8.5
Others	62	17.5
<b>Residence</b>		
Urban	215	60.7
Rural	139	39.3
<b>Profession</b>		
Nursing staff	252	71.2
Trainee staff	102	28.8
<b>Ever had sex</b>		
Yes	166	46.9
No	188	53.1

**Table 2: Knowledge of the participants about HPV infection and testing who ever heard about it**

Questions on HPV infection and testing related items*	Correct response	
	n	%
Most sexually experienced women will contract HPV at some point in their life(T)	140	54.5
HPV can stay inactive inside the body for many years (T)	134	52.1
High risk HPV infection is most common among young women in their 20s(F)	85	33.1
HPV type 16 & 18 are responsible for 70% cervical cancers (T)	60	23.3
Sexual transmission is the only route of transmission of high risk HPV (F)	57	22.2
Poor personal hygiene is a causative factor of genital HPV infection (F)	39	15.2
High risk HPV infection alone does not necessitate treatment (T)	29	11.3
HPV testing is more sensitive than cytology testing for the detection of high grade CIN (T)	84	32.7
Sexual abstinence is recommended if a woman is tested positive for high risk HPV(F)	50	19.5
The male partner of an HPV+ve woman should also be tested for HPV(F)	7	2.7

\*Correct answer to the items are given in brackets, T=true, F=false

**Table 3: Unadjusted associations between participant’s socio-demographic characteristics and awareness of HPV infections and results of multivariate binary logistic regression analysis to determine factors independently associated with awareness of HPV infections among the participants**

Characteristics/variables	Aware of HPV infection	Not aware of HPV infection	P value	Odds Ratio	95% CI
	257 (72.6%)	97 (27.4%)			
<b>Age</b>					
<20	12 (29.3)	29 (70.7)	<0.0001	0.09	0.04-0.19
21-30	128 (82.6)	27 (17.4)		1.0 (ref)	
31-40	78 (80.4)	19 (19.6)		0.87	0.45-1.66
41-50	29 (59.2)	20 (40.8)		0.31	0.15-0.62
>50	10 (83.3)	2 (16.7)		1.06	0.22-5.09
<b>Marital status</b>					
Unmarried	139 (71.6)	55 (28.4)	0.7198	0.9	0.56-1.44
Married/live in	118 (73.8)	42 (26.3)		1.0(ref)	
<b>Family</b>					
Nuclear	167 (72.3)	64 (27.7)	0.9009	1.0(ref)	
Joint	90 (73.2)	33 (26.8)		1.05	0.64-1.71
<b>Religion</b>					
Hindu	151 (72.6)	57 (27.4)	0.962	1.0(ref)	
Christian	42 (73.7)	15 (26.3)		1.06	0.54-2.05
Buddhist	63 (71.6)	25 (28.4)		0.95	0.55-1.66
<b>Community</b>					
Nepali	148 (70.8)	61 (29.2)	0.3155	1.0(ref)	
Bhutia	42 (79.2)	11 (20.8)		1.57	0.76-2.26
Lepcha	24 (80.0)	6 (20.0)		1.65	0.64-4.23
Others	41 (66.1)	21 (33.9)		0.8	0.44-1.47
<b>Residence</b>					
Urban	157 (73.0)	58 (27.0)	0.9029	1.06	0.66-1.70
Rural	100 (71.9)	39 (28.1)		1.0(ref)	
<b>Profession</b>					
Nursing staff	173 (68.7)	79 (31.3)	0.0086	1.0(ref)	
Trainee staff	84 (82.4)	18 (17.6)		2.13	1.20-3.78
<b>Ever had sex</b>					
yes	123 (74.1)	43 (25.9)	0.6331	1.0(ref)	
no	134 (71.3)	54 (28.7)		0.87	0.54-1.39

**Table 4: Participants who agreed with stigmatizing belief statements about HPV infection\***

<b>Beliefs about HPV infection</b>	<b>n</b>	<b>%</b>
Infected individuals are responsible for causing their own infection	162	63
Women are infected because their partners have been unfaithful	109	42.4
An individual with one lifetime sexual partner will not be infected with HPV	100	38.9
Women who are infected give others a feeling of dirtiness	80	31.1
Infected individuals are sexually easy	55	21.4
One should keep a social distance from those who are infected	45	17.5