

# Awareness on Cervical Cancer, Its Screening and HPV Vaccination Among Women of Reproductive Age Group (15-49 Years) in Manipur

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## ABSTRACT

**Background:** Cervical cancer is the second most common cause of cancer among females in India. Proper knowledge, regular screening and timely vaccination can prevent occurrence of cervical cancer. **Aims/Objectives:** To assess awareness of cervical cancer and its screening and vaccination among women of reproductive age group in Manipur. Also to determine the association between awareness of cervical cancer and some socio-demographic variables.

**Methodology:** A community-based cross-sectional study was conducted among women of reproductive age group (15-49 years) residing in Manipur. Two urban and two rural areas were selected using purposive sampling. Face to face interview method was done using pretested, validated, semi-structured questionnaire. Descriptive statistics, univariate and multivariate logistic regression analysis were used to test for association taking all variables with  $p < 0.1$  for model building of the adjusted analysis. P-value of less than 0.05 was considered statistically significant.

**Results:** Total number of respondents were 409. More than half (57%) were aware about cervical cancer. None of the respondents got HPV vaccination. Seven respondents had a history of cervical cancer in the family. Majority of them did not know any risk factors (33%) or signs and symptoms (38%) of cervical cancer. Maximum of them (94%) had not undergone screening test. Increasing age of the respondents (AOR: 0.932, 95% C.I. 0.902-0.964) shows a lesser awareness of cervical cancer but being a Christian was found to have increased awareness of cervical cancer (AOR: 4.639, 95% C.I. 2.001-10.753).

**Conclusions:** Awareness of cervical cancer was found to be poor. Intensified health education and health promotion strategies at the community level about prevention and control of cervical cancer is the need of the hour.

**Keywords:** Awareness of cervical cancer, HPV Vaccination, Manipur, Pap screening

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## INTRODUCTION

The world is heading toward the rising epidemic of non-communicable diseases (NCDs). Out of these NCDs, cancer is the second leading cause of death. Cervical cancer is the fourth most common cancer in women globally with around 660 000 new cases and around 350 000 deaths in 2022.<sup>1</sup> In India, Cervical cancer is the second most common cause of cancer among females after cancer of breast.<sup>2</sup> Age adjusted incidence rate for cervical cancer in Manipur is 6.1 per 1,00,000 population.<sup>3</sup>

Most of the cervical cancer cases are found to be associated with carcinogenic human papillomavirus (HPV) infection. HPV types 16 and 18 causes 70% of cervical cancer and pre-cancer lesions. The other factors involved in the occurrence of cervical cancer include promiscuous sexual habits, reproductive factors such as genital hygiene, early menarche, the interval between menarche and first sexual intercourse, early age at marriage, high parity, other sexually-transmitted infection, and smoking. The peak age of infection with HPV infection is in women after initiation of sexual activity in their 20s.<sup>1</sup> Cervical cancer can be detected early through screening with Papanicolaou (PAP) smear examination or visual inspection with acetic acid (VIA). VIA is simple, safe, cost-effective, and can be done by trained female health worker in the field setting.<sup>4</sup> According to National Program for Non communicable disease (NP-NCD), screening of cervical cancer is recommended using VIA by ANM among women in 30 years and above every five years.<sup>5</sup> The cervical cancer screening coverage is very low (22%–36%) among women in India.<sup>6</sup> As it does not produce signs and symptoms, the patient does not seek health care in early precancerous stage. Hence, most of the cervical cancer patients present to the hospital in the advanced stage, leading to high morbidity, sufferings, and mortality in India.<sup>7</sup>

Generally, women in India do not discuss freely about diseases related to female reproductive system such as sexually transmitted diseases (STDs) and cervical cancer due to cultural taboo. Women in the reproductive age group, being very crucial due to increased chances of exposure to risk factors, with proper knowledge and hygienic practices, can prevent the occurrence of this cancer, along with regular screening and timely vaccination. In Indian women, HPV infection is common at 26–35 years of age, which is a decade later than that in developed countries, and cancer occurs between 45–59 years of age. Hence, there is a long gap between infection and invasive cancer, which gives ample scope for preventive activities.<sup>8</sup> Knowledge regarding various signs, symptoms, and risk factors associated with cervical cancer influences health-seeking behavior. Moreover, with their knowledge and preventive practices toward cervical cancer, the risk of getting HPV infection may be further reduced.

This study was undertaken to assess awareness of cervical cancer and its screening and vaccination among women of reproductive age group in Manipur. We also determined the association between awareness regarding cervical cancer and some socio-demographic variables.

## METHODOLOGY

A community-based cross-sectional study was conducted in two urban and two rural areas of Imphal-East District, Manipur during February 2024 to April 2024. The study population consisted of women of reproductive age group (15-49 years) who have been residing in the area for at least one year. Those who were not mentally sound or those who were seriously ill were excluded from the study.

**Sample size and sampling:** Sample size was calculated after taking the proportion of adequate knowledge about cervical cancer as 30.2%.<sup>9</sup> By taking absolute error as 5% at 95% significance level and after adding 20% for non-responders, the calculated size was found to be 390 rounded off to 400. Purposive sampling was used to select two rural and two urban wards or villages. The calculated sample size was distributed equally to the selected areas. From the selected ward or village, the first household was selected using a random technique. The researcher stood in the geographical centre location of the ward/village and spun a bottle and wherever the bottle pointed was chosen as the first household. All eligible participants from a selected household were included in the study. The next household with the door nearest to the first house was selected and all eligible participants were consecutively sampled till the required sample size is reached.

A pre-tested, validated, semi-structured questionnaire adapted from 'The Cervical Cancer Awareness Measure Questionnaire' developed by the University College London, Health Behaviour Research Centre<sup>10</sup> was used. The questionnaire consists of the following domain-(i) sociodemographic variables, (ii) personal history, (iii) awareness regarding cervical cancer, screening and vaccination and (iv) practices regarding cervical cancer prevention.

### OPERATIONAL DEFINITION:

**Awareness of cervical cancer:** Defined as those women who have heard about cervical cancer and knew at least one risk factor or sign and symptoms of cervical cancer.

**Current smoker:** defined as those who has smoked tobacco within the last six month.

**Current smokeless tobacco user:** defined as those who has used smokeless tobacco products (chewing tobacco, snuff, gutkha, khaini and zarda) within the last six month.

**Data collection:** House to house survey was done to find out the eligible population. The purpose of the study was explained properly to the participants at the start of the study. The data were obtained by face-to-face interview method using pre-tested, validated, semi-structured questionnaire. Identifiers were not collected, instead code number for each participant were assigned. All the collected data were in the custody of the investigator in password protected computers.

**Data analysis:** Data collected were entered in MS-excel and checked for consistency and completeness. Then it was transferred to SPSS Version 22. Analysis was done using descriptive statistics like mean, standard deviation, proportion for describing the patterns of socio-demographic variables. Univariate logistic regression analysis was conducted with 'Awareness of cervical cancer' as dependant variable with selected in dependent variables. Variables with  $p < 0.10$  in the univariate analysis were entered into a multivariate logistic regression for categorical as well as for continuous variables for model building for the adjusted analysis. Finally, findings were reported as Odds ratios (ORs) and 95% Confidence intervals. In our study, p-value of less than 0.05 was considered statistically significant.

Ethical clearance was obtained from the Institutional Ethics before conducting the study vide proposal No.481/94/2023 version 02. During the survey, informed written consent was taken from the study subjects. The confidentiality concerning their information was maintained strictly.

## RESULTS

The total number of respondents were 409. The mean age of participants was  $34 \pm 9.7$  years with a range of 15- 49 years. The mean age of menarche was  $13 \pm 1.5$  years with a range of 10-19 years. The mean age of marriage was  $24 \pm 5$  years with a range of 15 - 40 years. The mean age of first pregnancy was  $25 \pm 5$  years with a range of 15 - 40 years. The number of children range from 1 - 5 children. Out of the total respondents, 56% belonging to nuclear family. In this study, mean age for first screening test was 37.14 years with a range of 23 - 48 years. None of the respondents got HPV vaccination. Number of respondents with a history of cervical cancer in the family was seven (07).

Table 1 shows that more than half of the participants belonged to age group of  $\geq 35$  years and Hindu religion. Almost half of the participants completed secondary education. Majority of them were married and home maker. About 1/3<sup>rd</sup> of the respondents has history of abortion of which half of them were induced. OCP was the most common contraceptive used by the respondents. Around 1/3<sup>rd</sup> of the respondents used smokeless tobacco. Majority of the respondents wash their private part after urination.

**Table 1: Socio-demographic and reproductive characteristics of the participants (N=409)**

| Variables  | Participants (%) |
|--|------------------|
| <b>Age Category</b>  |                  |
| 15-24  | 83 (20.3)        |
| 25-34  | 113 (27.6)       |
| $\geq 35$  | 213 (52.1)       |
| <b>Religion</b>  |                  |
| Hindu  | 350 (85.6)       |
| Christian  | 36 (8.8)         |
| Islam  | 23 (5.6)         |
| <b>Educational level</b>                                     |                  |
| Graduate and above   | 135 (33)         |
| Secondary school   | 201 (49.1)       |
| Primary school   | 59 (14.4)        |
| Illiterate   | 14 (3.4)         |
| <b>Place of residence</b>                                    |                  |
| Rural  | 226 (55.3)       |
| Urban  | 183 (44.7)       |
| <b>Marital status</b>  |                  |
| Married  | 275 (67.2)       |
| Unmarried  | 120 (29.3)       |
| Divorced/widowed   | 14 (3.5)         |
| <b>Occupational status</b>                                   |                  |
| Home maker   | 142 (34.7)       |
| Self employed  | 140 (34.2)       |
| Student  | 74 (18.1)        |
| Govt/Private employee  | 32 (7.8)         |
| Unemployed   | 21 (5.1)         |
| <b>H/O Abortion among the ever married (n=289)</b>           |                  |
| Yes  | 127 (43.9)       |
| No   | 162 (56.1)       |
| <b>If yes, type of abortion (n=127)</b>                      |                  |
| Spontaneous  | 58 (45.66)       |
| Induced  | 69 (54.33)       |
| <b>Contraceptive usage (289)</b>                             |                  |
| Yes  | 44 (15)          |
| No   | 245 (85)         |
| <b>If yes, type of Contraceptives used (multiple answer)</b> |                  |
| OCP  | 22 (50)          |
| Cu -T  | 10 (22.72)       |
| Natural  | 10 (22.72)       |
| Condom   | 7 (15.9)         |
| Injectables  | 1 (2.27)         |
| <b>Current Smoker</b>  |                  |
| Yes  | 6 (2)            |
| No   | 403 (98)         |
| <b>Current Smokeless tobacco user</b>                        |                  |
| Yes  | 148 (36.2)       |
| No   | 261 (63.8)       |
| <b>Wash after urination</b>                                  |                  |
| Yes  | 221 (54)         |
| No   | 188 (46)         |

Out of the 409 respondents, 232 respondents (56.7%) were found to have awareness of cervical cancer (i.e. have heard about cervical cancer and knew at least one risk factor or sign and symptom of cervical cancer). The most common source of information was from friends followed by Television.

Table 2 shows that majority knows that cervical cancer can be cured. Around 1/3<sup>rd</sup> of the respondents did not know about the risk factors of cervical cancer. Poor genital hygiene and tobacco use were the most common risk factors known to the respondents.

**Table 2: Distribution of respondents based on awareness and screening regarding cervical cancer (N=232)**

| Variables   | Participants (%) |
|---|------------------|
| <b>Early cervical cancer be cured</b>                         | 187 (80.6)       |
| <b>Risk factors of cervical cancer (Multiple options)</b>     |                  |
| Don't Know  | 77 (33.18)       |
| Poor genital hygiene  | 49 (21.12)       |
| Tobacco use   | 24 (10.34)       |
| Uterine infections  | 18 (7.75)        |
| Prolonged use of oral contraceptives                          | 15 (6.46)        |
| Increase parity   | 8 (3.44)         |
| Multiple sexual partners                                      | 8 (3.44)         |
| Family history  | 7 (3.01)         |
| Early marriage  | 6 (2.58)         |
| HPV infection   | 4 (1.72)         |
| History of STD  | 4 (1.72)         |
| Early sexual intercourse (<17 years)                          | 2 (0.86)         |
| Early age at first pregnancy                                  | 2 (0.86)         |
| HIV positive/immunosuppressed person                          | 1 (0.43)         |
| <b>Symptoms of cervical cancer (Multiple Options)</b>         |                  |
| Don't know  | 87 (37.5)        |
| Foul smelling/ Abnormal vaginal discharge                     | 30 (12.93)       |
| Pelvic pain   | 25 (10.77)       |
| Menstrual abnormalities                                       | 21 (9.05)        |
| Abnormal vaginal bleeding                                     | 14 (6.03)        |
| Pain during micturition                                       | 7 (3.01)         |
| Bleeding after intercourse                                    | 2 (0.86)         |
| Pain during intercourse                                       | 2 (0.86)         |
| Bleeding after menopause                                      | 2 (0.86)         |
| Persistent diarrhoea  | 2 (0.86)         |
| <b>Cervical cancer can be prevented</b>                       |                  |
| Yes   | 162 (69.82)      |
| Don't know  | 42 (18.1)        |
| No  | 28 (12.06)       |
| <b>Preventive steps of cervical cancer (Multiple options)</b> |                  |
| Don't Know  | 152 (65.51)      |
| Maintaining good genital hygiene                              | 57 (24.56)       |
| Stopping tobacco use  | 21 (9.05)        |
| Going for screening test                                      | 17 (7.32)        |
| Avoiding multiple sexual partners                             | 7 (3.01)         |
| Avoiding OCP use  | 6 (2.58)         |
| Vaccination   | 6 (2.58)         |
| Using condom  | 4 (1.72)         |
| Avoiding early marriage                                       | 1 (0.43)         |
| <b>Reason for not getting vaccinated (Multiple options)</b>   |                  |
| No sign & symptom   | 150 (64.65)      |
| Did not know when & where to get vaccinated                   | 120 (51.72)      |
| Too expensive   | 50 (21.55)       |
| Fear of the procedure   | 2 (0.86)         |
| Embarrassment   | 1 (0.43)         |
| Didn't have time  | 1 (0.43)         |
| Poor service quality  | 1 (0.43)         |
| <b>Heard about screening test</b>                             | 105 (45.25)      |
| <b>If yes, name of the screening test (n= 105)</b>            |                  |
| Pap Smear   | 13 (12.36)       |
| Don't Know  | 92 (87.61)       |
| <b>Ever undergone screening test</b>                          | 14 (6.03)        |
| <b>If no, reason for not getting screening test (n= 218)</b>  |                  |
| No sign & symptom   | 100 (43.1)       |
| Don't think I am at risk                                      | 46 (21.1)        |
| Didn't know where to get tested                               | 39 (17.88)       |
| Didn't have time  | 24 (11)          |
| Afraid of procedure & social stigma                           | 3 (1.3)          |
| Too expensive   | 2 (0.9)          |
| H/O hysterectomy  | 2 (0.9)          |
| Embarrassment   | 1 (0.45)         |
| Family member would not allow it                              | 1 (0.45)         |

Majority did not know any symptoms of cervical cancer. Foul smelling/ Abnormal vaginal discharge and pelvic pain were the most common symptoms of cervical cancer known to the respondents. Maximum of them knew that cervical cancer can be prevented and maintaining good genital hygiene and stopping tobacco use were the most common preventive steps known by the respondents.

None of the respondents got HPV vaccination. Not having sign and symptoms and lack of knowledge about the vaccine were the common reasons for not getting vaccinated.

Less than half of the respondents have heard about screening test and only 12% knows about Pap smear. Maximum of them 94% had not undergone screening test. Most common reason for not undergoing screening test was the absence of sign & symptom followed by thinking that they are not at risk.

Increasing age of the respondents (AOR: 0.932, 95% C.I. 0.902-0.964) shows a lesser awareness of cervical cancer but being a Christian was found to have increased awareness of cervical cancer (AOR: 4.639, 95% C.I. 2.001-10.753) as shown in Table 3.

## DISCUSSION

The present study was conducted among 409 respondents to assess the awareness regarding cervical cancer, its screening and vaccination against cervical cancer. Our study found that only half of the respondents were aware of cervical cancer. However, studies conducted in Rural Telangana<sup>11</sup> and Northern India<sup>12</sup> showed majority of them were aware about cervical cancer (78% and 92%) respectively. In other studies, conducted in different parts of India, less than half of the women were found to be aware of cervical cancer. The difference in the awareness of cervical cancer in different studies may be due to the difference in study populations, with people belonging to urban areas or people with higher level of education, higher density of health institutions and their outreach activities.<sup>9,13,14</sup>

In this study, major sources of information were from friends followed by Television. Similar findings were seen in Northern India.<sup>12</sup>

In our study, the most common risk factors of cervical cancer known were poor genital hygiene, tobacco use followed by uterine infections. Similar findings were reported by Dahiya N et al<sup>13</sup> conducted in New Delhi where the most common risk factor were tobacco and smoking followed by HPV infection. However, other studies considered multiple sexual partners as a major risk factor.<sup>12,14</sup> In our study, 63 % were aware of signs and symptoms of cervical cancer. Foul smelling/ abnormal vaginal discharge, pelvic pain and menstrual abnormalities were some of the signs and symptoms known to them.

**Table 3: Univariate and Multivariate Logistic regression analysis of factors associated with awareness of cervical cancer (N=409)**

| Variables                                      | Crude OR (95% CI)   | P value | Adjusted OR (95% CI) | P value      |
|--|---------------------|---------|----------------------|--------------|
| <b>Age (years)</b>                             | 0.943(0.923-0.964)  | 0.001   | 0.932(0.902-0.964)   | <b>0.001</b> |
| <b>Religion</b>                                |                     |         |                      |              |
| Hindu  | 1                   |         |                      |              |
| Christianity                                   | 4.664(2.129-10.219) | 0.001   | 4.639(2.001-10.753)  | <b>0.001</b> |
| Islam  | 2.021(0.862-4.738)  | 0.105   | 1.769(0.692-4.520)   | 0.233        |
| <b>Place of residence</b>                      |                     |         |                      |              |
| Rural  | 1                   |         |                      |              |
| Urban  | 0.915(0.617-1.357)  | 0.65    |                      |              |
| <b>Educational level</b>                       |                     |         |                      |              |
| Illiterate                                     | 1                   |         |                      |              |
| Primary school                                 | 0.776(0.240-2.513)  | 0.672   | 0.503(0.143-1.766)   | 0.284        |
| Secondary school                               | 0.686(0.230-2.048)  | 0.499   | 0.446(0.139-1.436)   | 0.176        |
| Graduate & above                               | 0.351(0.115-1.073)  | 0.068   | 0.201(0.059-1.031)   | 0.066        |
| <b>Socio-economic status (BG Prasad scale)</b> |                     |         |                      |              |
| Upper class                                    | 1                   |         |                      |              |
| Upper middle class                             | 1.199(0.648-2.219)  | 0.563   |                      |              |
| Middle class                                   | 1.160(0.602-2.238)  | 0.658   |                      |              |
| Lower middle class                             | 1.696(0.871-3.302)  | 0.120   |                      |              |
| Lower class                                    | 2.158(0.841-5.541)  | 0.110   |                      |              |
| <b>Occupational level</b>                      |                     |         |                      |              |
| Homemaker                                      | 1                   |         |                      |              |
| Government/private employee                    | 0.306(0.119-0.791)  | 0.014   | 0.467(0.169-1.290)   | 0.142        |
| Self employed                                  | 0.967(0.119-0.791)  | 0.890   | 0.920(0.534-1.583)   | 0.763        |
| Student  | 2.060(1.162-3.654)  | 0.013   | 0.865(0.348-2.150)   | 0.755        |
| Unemployed                                     | 0.531(0.195-1.449)  | 0.216   | 0.579(0.192-1.744)   | 0.331        |
| <b>Marital status</b>                          |                     |         |                      |              |
| Unmarried                                      | 1                   |         |                      |              |
| Married  | 0.567(0.368-0.875)  | 0.01    | 1.178(0.552-2.515)   | 0.672        |
| Divorced/widowed                               | 1.206(0.395-3.688)  | 1.206   | 1.969(0.497-7.804)   | 0.335        |
| <b>Type of family</b>                          |                     |         |                      |              |
| Nuclear  | 1                   |         |                      |              |
| Joint  | 1.010(0.681-1.497)  | 0.962   |                      |              |

Similar findings were reported by in Rural Telangana where more than half of the women identified vaginal bleeding/discharge, lower abdominal pain and post-menopausal bleeding as symptoms of cervical cancer.<sup>11</sup> Almost one third of the respondents in Northern India reported that bleeding after intercourse was the most important symptom of the disease. This inadequate level of knowledge/awareness could be due to poor mass media campaign on specific aspects of prevention and control for cervical cancer, cultural barriers preventing open discussion with peers. Knowledge about risk factors improves the health seeking behaviour of women with respect to management of cervical cancer.<sup>12</sup>

In our study, less than half of the respondents have heard about screening test and among them only 12% knew about pap smear test. However, in a study conducted in Pondicherry, 60% were aware of the various screening methods and 15% participants reported PAP smear as screening method.<sup>15</sup> In other studies, lower proportion of respondents knew about pap smear.<sup>14,16</sup> In this study, not having sign & symptom was found to be the major barrier among participating women to undergo screening for cervical. Similar findings seen in study which was conducted by in Northern India.<sup>12</sup>

In our study, only 6% had undergone cervical screening. This finding was not comparable with the study

conducted in New Delhi where 18% had Pap smear done in the past. The difference in coverage of screening services may be due to lack of awareness about screening test and willingness to get screening test. All of these indicate a complex phenomenon which involves interaction of multiple factors at various levels that drive the decision of willingness of women to undergo screening for cervical cancer.<sup>13</sup>

In our study, increasing age was found to be associated with lesser awareness of cervical cancer while being Christian was associated with increased awareness of cervical cancer. This finding was contrary to the findings reported by a study in South India where awareness of Cervical cancer was not associated with demographic characteristics such as age, religion, marital status sand level of education.<sup>16,17,18</sup>

In our study, no one was found to be vaccinated for HPV vaccine. Lack of knowledge about the vaccine and high cost of the vaccination were the most important barriers to HPV vaccination. Similar findings were seen in a study conducted in Cambodia by Touch et al.<sup>19</sup>

## STRENGTH AND LIMITATIONS

The strength of our study lies in that we covered both urban and rural areas of Manipur. We also used

a validated study questionnaire. The limitations of our study were that some questions were not responded openly by unmarried women as they gave socially desirable answers. Due to the law-and-order situations in Manipur, the hilly district could not be covered which limit the generalizability of the study.

## CONCLUSION

Our study found that awareness of cervical cancer was poor. Only few of the participants were found to undergo screening test and no one was found to be vaccinated for HPV vaccine. Increasing age was found to be associated with lesser awareness of cervical cancer while being Christian was associated with increased awareness of cervical cancer.

Comprehensive strategies addressing various aspects of cervical cancer need to be worked out for improving the screening and control of cervical cancer. The lack of awareness of screening procedure acts as an important hurdle in uptake of screening of cervical cancer and this hurdle can be avoided through health education intervention tailor made for prevention of cervical cancer in local context. This brings the importance of implementation of intensified health education and health promotion strategies at the community level about prevention and control of cervical cancer.

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