

## RESEARCH ARTICLE

# Association of Knowledge, Attitude and Demographic Variables with Cervical Pap Smear Practice in Nepal

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## Abstract

**Background:** Coverage of cervical pap smear test in Nepal is below general global values. One of the reasons may be that cervical cancer prevention policy of Nepal has 'Visual Inspection of Cervix with Acetic Acid' as the only screening tool. The focus of present study was to find out association of demographic factors, knowledge and attitude regarding cervical Pap smear test with its practice by women in Nepal. **Materials and Methods:** This cross sectional analytical observational study was conducted between February 1, 2013 and April 30, 2013. Participants were interviewed with the help of a structured questionnaire. Chi square and multivariate logistic regression tests were used to detect associations of variables with pap smear practice. **Results:** Chi square test showed that practice was significantly associated with knowledge about pap smear test and cervical cancer, having favourable attitude towards the test, urban residency and 36-50 years age-group. Pap smear utilization was not associated with age-at-marriage, parity and age-at-first-child-birth. Multivariate logistic regression showed favorable attitude towards pap smear test as the only variable which significantly influenced pap smear practice ( $p= 0.006$ , OR: 2.4). **Conclusions:** Pap smear coverage has been found to be 15.7% which is lower than global average and that for developing countries. Health education programs which are effective not only in increasing knowledge about cervical cancer and pap smear test but also effective in positively changing attitude towards the test should be organized to increase pap smear coverage.

**Keywords:** Cervical cancer - pap smear - knowledge - attitude - practice - Nepal

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## Introduction

Cervical cancer is the most common malignancy among women in Nepal (Family Health Division [FHD], 2011). 9.65 million women, the population of more than 15 years of age in Nepal, are at risk of developing cervical cancer. Annual incidence is 2,300 while yearly mortality is 1,300 (Institut Catgala d'Oncologia [ICO], 2013). World-wide, cervical cancer is the fourth most common cancer and also the fourth most common cause of cancer death in women (Ferlay et al., 2012).

Fortunately, cervical cancer can be prevented. In addition, mortality can be reduced by diagnosing the disease in its early stage if it is already there. It is sad to state that Nepalese women have achieved success neither in prevention of the cancer nor in its mortality reduction. 80.9% of cervical cancer cases are diagnosed late in Nepal. 86% of these patients have never heard of cervical pap smear test before (Gyenwali et al., 2013). The situation is very different in the case of developed nations. There has been significant decline in incidence and mortality rates of the disease in developed countries in the last fifty years due to both organized and opportunistic screening

with Pap smear cytology test. Pap smear screening was started in the USA in the middle of the 20th century. Cervical cancer, once the most frequent cause of cancer death in women in that country, now ranks 14th because of widespread screening practice (Siegel et al., 2012). Significant decline in cervical cancer mortality has been observed in Canada from 13.5 per 1,00,000 in 1952 to 2.2 per 1,00,000 in 2006. Cervical cancer screening was started in Canada from 1949, British Columbia being the first province (Dickinson et al., 2012). Similarly incidence of cervical cancer is declining gradually in South Korea where "National Cancer Screening Programme for stomach, breast, and cervical cancer" was launched free-of-charge in 1999 (Kim et al., 2011).

A number of professional organizations for example National Health and Medical Research Council of Australia and American Cancer Society of the United States recommend that women in the age-group of 21 to 65 years should be screened with cervical pap smear test every three years (National Cervical Screening Program [NCSPP], 2005; American cancer Society [ACS], 2014).

Despite its obvious benefits, Nepal does not have organized Pap smear screening program or widely

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prevalent opportunistic pap smear tests. As a result, only very few women undergo an opportunistic pap smear test (pap test done at the initiative of a health care worker) without adherence to recommended guidelines. However, published data to substantiate the low pap smear coverage in Nepal are scarce. According to ICO report (ICO, 2013), cervical cancer screening rate in Nepal is very low (2.4%). Shrestha et al., (2013) found pap smear coverage to be 10.5% in a research done in Kathmandu, Nepal.

According to objectives of “Universal Health Coverage 2005 of WHO”, everyone should have an access to high quality health services (The World Health Organization [WHO], 2013). This motto can be translated into the statement that every woman should have access to pap smear test. However, Nepal has “Visual Inspection of cervix with Acetic Acid” as the only screening tool in its cervical cancer prevention policy. The policy named as “National guideline for cervical cancer screening and prevention in Nepal” was formulated in 2010 (FHD, 2011). Although equally or more sensitive than pap smear cytology test, VIA has lower specificity due to its higher false positivity. This means many women tend to receive unnecessary treatment following false positive results of VIA. Another shortcoming of VIA is that it cannot distinguish between various types of precancerous and invasive lesions (Sellers et al., 2004).

To run an effective cervical cancer screening program, establishment of health care facilities and recruitment of enough skilled manpower are important but not adequate. Barriers, which are intrinsic to target population, may lead to under-usage of pap smear screening services and failure of the program. Lack of knowledge about cervical cancer and pap smear, certain demographic factors and unfavorable attitude towards pap smear test can have negative impact on utilization of the test by women. (Denny et al., 2006; WHO 2006). On the other hand, cervical cancer preventive programs can be effective in increasing cervical cancer knowledge, perceived susceptibility, and cancer prevention behavior (Choi, 2013).

We studied intrinsic barriers of pap smear utilization among women in Chitwan district of Nepal to find out their impact on pap smear practice in Nepal. Indeed, it has been found that intrinsic factors are the main reason for non-compliance of Pap smear screening (Demirtas, 2013).

Hopefully, findings of this study will partially fill the void that is present in the field of cervical pap smear screening research in Nepal and help government and non-government agencies in formulating strategies to increase prevalence of pap smear utilization by nepalese women.

## Materials and Methods

### *Aim and objectives*

The aim of this study was to analyze women’s knowledge, attitude and practice regarding cervical pap smear with following objectives: to find women’s knowledge and attitude regarding cervical pap smear, to find out pap smear coverage in nepalese women and to find out association of demographic factors, knowledge and attitude regarding cervical pap smear with its utilization.

### *Study design and location*

It was a cross sectional analytical observational study carried out in Chitwan Medical College and Teaching Hospital, Chitwan, Nepal from February 1, 2013 to April 30, 2013.

### *Sampling method*

The subjects were recruited through purposive nonprobability sampling method from amongst married female clients who attended Out Patient Department (OPD) of gynecology services at Chitwan Medical College. Network sampling was also used to increase the number of participants (Women who were recruited initially into the study were used to recruit other women who were interested in participating). Those with a history of cervical cancer and hysterectomy were excluded. An informed verbal consent was obtained from all the subjects before their inclusion in the study. Ethical approval for the study was received from the Institutional Review Board of Chitwan Medical College.

### *Data collection and analysis*

All the participants were tested by cervical pap smear at a subsidized rate. After cervical smear for pap stain was prepared in the department of gynecology, participants came to the laboratory department where they were interviewed by trained interviewers and information was collected on a pre-tested structured questionnaire. The questionnaire included five questions in order to test knowledge, attitude and practice regarding cervical cancer and cervical pap smear utilization. Demographic information was also included in the questionnaire.

Data from the questionnaires were entered into the Statistical Package for Social Sciences 20.0 (SPSS 20.0). Following operational definitions were adopted for the purpose of this study:

Knowledge of cervical cancer: “Aware” of cervical cancer: Women who knew that cancer can occur in the cervix. Women were “unaware” if they had no such knowledge or if they had no idea.

Knowledge of cervical pap smear test: “Aware” of cervical pap smear test: women who had heard of the test and who knew that it was used to detect cancer or precancerous lesions in the cervix. Women were “unaware” if they didn’t have such knowledge or if they had no idea.

### *Attitude*

“Favourable attitude”: Women who were of the opinion that pap smear test can prevent cervical cancer were said to have favourable attitude towards pap smear test. Women were said to have “unfavourable attitude” if they opined that pap smear test cannot detect cervical lesions or if they had no idea.

### *Practice*

Women who had had pap smear test at least once in their lifetime are included in the calculation of pap smear coverage. In this study we tried to find out the percentage of participants who had undergone pap smear test at least once rather than cervical cancer screening rate. The reason

for this decision being that participants had no knowledge of screening interval between two tests which is every 3 years. Those participants who had undergone the test more than once could not remember the date of initial test and the interval between the tests. Because of lack of above-mentioned knowledge and recall bias, cervical cancer screening rate could not be calculated.

In line with above-mentioned operational definitions, participants were divided into two groups regarding each variable: knowledge of cervical cancer- aware and unaware; knowledge about cervical pap smear test: aware and unaware, attitude regarding pap smear test- having favourable attitude and having unfavourable attitude; practice of pap smear test- having ever had pap smear test and having never had pap smear test.

These two groups in each variable were statistically analyzed and compared as follows.

Univariate analysis using frequency distribution and means were carried out to describe characteristics of participants. Present research contains mainly categorical data, thus these were analyzed by contingency table.

An independent samples t-test was used to find if there is any significant difference in mean age of women who had adequate knowledge about cervical cancer and those who did not have, in mean age of women who had adequate knowledge about cervical pap smear test and those who did not have, in mean age of women who had good attitude regarding pap smear test and those who had unfavorable attitude and in mean age of women who had undergone pap smear test and those who had not.

Bivariate analysis was conducted using Pearson chi-square test to confirm or refute the null hypothesis of no association between the categorical variables. All statistical tests were performed using two-sided tests at the 0.05 level of significance (95% confidence interval).

Bivariate binary logistic regression was used to find out the exact strength of relationship between those variables which were found to have significant association with each other on the basis of chi-square test. The strength of association was measured as unadjusted odds ratio.

Multivariate binary logistic regression was done to identify the most significant predictor of pap smear test utilization and other variables. The strength of association between a dependent variable and covariates was measured as odds ratio (OR).

## Results

### *Socio-demographic characteristics of participants:*

Six hundred and seven women were included into the study. Table 1 contains summary of sociodemographic information, and findings of assessment of knowledge, attitude and practice (KAP) regarding cervical cancer and cervical pap smear test of participants.

### *t-test*

An independent samples t-test showed no statistically significant difference in the mean age of women who had knowledge of cervical cancer compared with those who did not have ( $p=0.99$ ), in the mean age of women who had adequate knowledge about cervical pap smear test

and those who did not have ( $p=0.99$ ), in the mean age of women who had good attitude regarding cervical pap smear test and those who had unfavorable attitude ( $p=0.88$ ) and in mean age of women who had undergone pap smear test and those who had not ( $p=0.36$ ).

### *Pap smear coverage*

In this study, it was found that only 15.7% of participants had utilized cervical pap smear test in the past. 80% of them had undergone the test only once. It is shown in the pie chart.

### *Chi Square Test*

Variables which were significantly associated with pap smear test utilization are as following: having knowledge about pap smear test and cervical cancer ( $<0.001$ ), having favourable attitude towards cervical pap smear test ( $p=<0.001$ ), being an urban resident ( $p=0.002$ ) and being in late child-bearing age-group i.e. 36- 50 years ( $<0.001$ ). Pap smear utilization was not significantly associated with age at marriage, parity and age at first child-birth.

Women who have knowledge about pap smear test, women who have knowledge about cervical cancer, women who had undergone pap smear test at least once and urban residents were found to have favourable attitude towards cervical pap smear test ( $p=<0.001$ ). No significant relationship was found with parity, age-group, age at first childbirth and age at marriage.

### *Bivariate binary (binomial) logistic regression analysis*

Pap smear utilization was found to be significantly more common in women who had favorable attitude

**Table 1. Sociodemographic Characteristics and KAP Findings of Participants**

Characteristics	N=607 (%)	
Age Category (years)	18-35	363 (59.8)
	36-50	193 (31.8)
	>50	51 (8.4)
Mean age $\pm$ (SD)	35.3 $\pm$ (10.2)	
Age at marriage (years)	<20	497 (89.1)
	>20	110 (18.1)
Mean age $\pm$ (SD)	17.9 $\pm$ (3.2)	
Parity	None	31 (5.1)
	1 to 3	469 (77.3)
	>4	107 (17.6)
Mean (Median)	2.1 (2.0)	
Age at first childbirth (years)	<20	357 (58.8)
	20-30	215 (35.4)
	>30	4 (0.7)
Urban residence	Yes	197 (32.5)
	No	410 (67.5)
Knowledge about Ca cervix	Aware	205 (33.8)
	Unaware	402 (66.2)
Knowledge about objective of pap smear test	Aware	118 (19.4)
	Unaware	489 (80.6)
Attitude	Favourable	166 (27.3)
	Unfavourable	441 (72.7)
Practice of pap smear test	Adequate	0 (0.00)
	Inadequate	98 (16.1)
	Never had pap test	509 (83.9)
Knowledge about age of initiation and cessation, and screening interval of pap smear test	Aware	0 (0.00)
	Unaware	607 (100)

towards cervical pap smear test, in those who had adequate knowledge of cervical pap smear, in those who had adequate knowledge of cervical cancer and in urban residents.

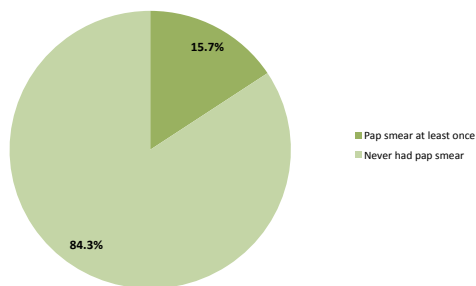
Attitude in turn was found to be significantly affected by knowledge of cervical cancer, knowledge of cervical pap smear, utilization of pap smear test and urban residency.

*Multivariate binary (binomial) logistic regression analysis*

Bivariate binary logistic regression analysis showed that pap smear utilization and attitude towards cervical pap smear test were significantly influenced by several covariates. Multivariate binary logistic regression analysis was done to find out the covariate that had the highest measure of association with the above-mentioned variables. The association was interpreted in terms of odds ratio (OR).

Analysis showed that favorable attitude towards pap smear test was the only variable which significantly influenced pap smear utilization (p= 0.006, OR: 2.4).

Analysis also showed “attitude” to be significantly affected by knowledge about cervical pap smear test and cervical cancer. In comparison to elderly females (> 50 years, the reference age-group), women in age-group 36- 50 and 18- 35 years were 2.4 times and 1.4 times respectively more likely to undergo pap smear test. But these observations were found not to be statistically significant. Findings of multivariate binomial logistic regression analysis are shown in Table 2 in detail.



**Figure 1. Pie Chart Showing Pap smear Coverage**

**Table 2. Multivariate Binary Logistic Regression Analysis between Dependent Variable ‘Pap smear Utilization (Practice of Pap smear)’ and Covariates**

Variables	Pap smear test utilization		P value	Odds Ratio	95% CI for OR	
	Yes	No			lower	upper
Knowledge about Ca cervix						
Aware	26.8	73.2	0.4	1.3	0.71	2.48
Unaware	10.7	89.3				
Knowledge about pap smear						
Aware	33.9	66.1	0.3	1.5	0.72	2.98
Unaware	11.9	88.1				
Attitude						
Favourable	31.3	68.7	0.006	2.4	1.28	4.56
Unfavourable	10.4	89.6				
Urban residency						
Yes	22.8	77.2	0.06	1.6	0.98	2.52
No	12.7	87.3				
Age-group						
18-35	86.2	13.8	0.5	1.4	0.5	3.82
36-50	77.7	22.3	0.09	2.4	0.87	6.82
>50	90.2	9.8				

**Discussion**

Cervical cancer screening rate in Nepal is very low (2.4%) according to ICO (2013). It is interesting to note that not a single woman in this study answered she was being screened regularly. All the participants were unaware of age at which pap smear should be initiated, age at which it should be discontinued and the interval between two pap smear tests. That means cervical cancer screening according to recommended guidelines is nonexistent in Nepal on the basis of this study. However, percentage of women who have undergone at least one pap smear test in their lifetime (pap smear coverage) has been found to be 15.7%. It is slightly higher than the one (10.5%) found in a research done in Kathmandu, Nepal (Shrestha et al., 2013). Average figure of pap smear coverage in developing countries, developed countries and across the globe are 18.5%, 63% and 39.6% respectively. (Gakidou et al., 2008). The data reveal that Nepal is below the average among developing countries and our data is twice as low as the global figure. Data of a few studies in different countries regarding pap smear coverage are given below: 7% in rural India (Shekhar et al., 2013), 9.8% in South Africa (Hoque E and Hoque M, 2009), 17.2% in Sri Lanka (Nilaweera et al., 2012), 27.1% in Iran (Chamani et al., 2012) and 45.2% in South Turkey (Coskun et al., 2013). Developed countries are far ahead because of both organized and opportunistic pap screening programs. Screening rate and pap smear coverage are 88% and 93% respectively in the USA (Sirovich and Welch, 2004). Cervical cancer screening rate is 63.9% in South Korea (Kim et al., 2011).

Variables affecting pap smear test coverage in Nepal namely certain demographic factors (age, age at marriage, age at first child birth, parity, urban residency), knowledge about cervical cancer and pap smear test, and attitude towards cervical pap smear test were studied in this research.

According to Pearson chi-square test, knowledge about cervical cancer and pap smear test, attitude towards pap smear test, urban residency and being in late child-bearing age group (36 to 50 years) were found to have significant impact on pap smear test utilization. In this study, only 33.8% and 19.4% of participants had adequate knowledge about cervical cancer and pap smear test respectively. 27.3% of participants had favourable attitude towards pap smear test. The number of participants who had undergone at least one pap smear test in their lifetime was much lower (15.7%). This pattern “number of women who have had the test done lower than the number of participants who have knowledge about cervical cancer and cervical pap smear test” was seen in other studies as well (Coskun et al., 2013; Shekhar et al., 2013; Thippeveeranna et al., 2013). Studies on KAP regarding pap smear test are scarce in Nepal. Only one article was found in the world wide web in which 65.7% and 42.9% of participants were found to be aware of cervical cancer and cervical pap smear test respectively in Kathmandu, Nepal. Only 10.5% of all the participants had at least one pap smear test done in that research (Shrestha et al., 2013). Despite more women being aware of cervical cancer and pap smear test,

utilization of the test is lower than in our study. Higher awareness may be due to the fact that study participants hailed from Kathmandu, the capital city of Nepal where women get more exposure to information on health care. Nevertheless, lower pap smear test value in that study could not be explained. In our study, demographic factors except urban residency and late childbearing age-group were not associated with utilization of the test. People in urban region are exposed to more information on health care and more opportunity to undergo a pap smear test because of easier access to a hospital than their rural counterparts. Similarly, women in late childbearing age have cumulative knowledge about health care issues and opportunities of more hospital visits than younger women, which means they have more opportunity to undertake pap smear test with each hospital visit. A Turkish study, an Indian study and another study done in Nepal had similar finding regarding late child-bearing age (Bekar et al., 2013; Shekhar et al., 2013a; Shrestha et al., 2013). In contrast to our study, these two studies from Nepal and India and another study from Erzurum, Turkey showed women with high parity to have significantly better KAP values (Karabulutlu, 2013).

In this study, by doing multivariate binomial logistic regression analysis, it was found that favourable attitude towards pap smear test was found as the only variable which significantly influenced pap smear test utilization. Women who thought pap smear test can prevent cervical cancer were 2.4 times more likely to undergo the test than women who did not think so. Good attitude towards pap smear test was found to be significantly correlated with high pap smear coverage in a study done in Malaysia too (Baskaran et al., 2013). Similarly, Fernandez et al., (2003) found that more accurate beliefs about Pap smear test were most significantly associated with repeated pap smear test screening in Mexican Americans. However, researchers in Bangalore, India did not find attitude as the predictor of pap smear practice (Swapnajaswanth et al., 2014).

Other variables which were found significant in bivariate analysis in this research viz. knowledge about cervical cancer and pap smear test, and urban residency were found not to have significant impact on pap smear test utilization on multivariate logistic regression analysis. Observations obtained by Swapnajaswanth et.al, (2014) in a study done in tertiary hospitals in Bangalore tally our findings. Pap smear practice was poor despite good knowledge of participants regarding cervical cancer and pap smear test in their study. But Aswathy et al. (2012) have cited having knowledge of screening for cervical cancer and Pap smear test as independent predictors for doing the test on the basis of research done in Kerala, India. In studies done in Iraq and UAE, analysis showed that husband's encouragement was the only significant factor which predicted pap smear test utilization. (Bakheit and Haroon, 2004; Saadon et al., 2014). This variable was not studied in our research. Researchers in a North Central Nigeria did not find any significant predictor of pap smear test utilization. However, they found that women who had belief (attitude) that cervical cancer is a preventable disease were significantly more likely to have awareness of cervical pap smear test (Hyacinth et al., 2012).

Apart from utilization of pap smear test, we studied knowledge of cervical pap smear test and cervical cancer as dependent variables by logistic regression in this study. It was found that women who had knowledge about pap smear were 16.7 times more likely to have favourable attitude towards the test than women who did not have and women who had knowledge of cervical cancer were 5 times more likely to have favourable attitude towards the test than women who did not have.

These data reveal attitude towards pap smear test, knowledge about cervical cancer and pap smear test to be interrelated with each other. Therefore, knowledge of cervical cancer and pap smear test should be provided to women in such a way that their attitude towards pap smear test is made favourable. It is shown by a study done in nurses in India that merely having knowledge about cervical cancer and pap smear test is not enough. In that study, pap smear coverage was found to be just 11.6% despite almost all participants having good knowledge about preventability of cervical cancer with the use of pap smear (Thippeveeranna et al., 2013).

Researchers have identified several more factors which influence pap smear uptake by women. Among them, "not receiving advice to do the test from health care workers" is the most common one for not doing the test in multiple studies (Al-Naggar et al., 2010; Chamani et al., 2012; Thippeveeranna et al., 2013). In studies carried out in South Africa, Malaysia and Sri Lanka, women did not like to have pap smear test done because of fear at the prospect that the test may reveal malignancy (Hoque E and Hoque M, 2009; Al-Naggar et al., 2010; Nilaweera et al., 2012). Lack of symptoms was cited by participants as the reason for not doing pap smear test in studies done in Nepal and India (Shekhar et al., 2013; Shrestha et al., 2013). These variables can be studied in the future in Nepal.

In conclusion, Pap smear coverage in this research at 15.7% is far lower than global average and even below the average for developing countries. It was observed that attitude was the only factor significantly associated with pap smear test uptake on multivariate binary logistic regression analysis. Thus, health education programs which are effective not only in increasing knowledge but also in bringing about positive change in attitude of women towards pap smear test should be organized to increase pap smear coverage in Nepal.

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