

ORIGINAL RESEARCH ARTICLE

ARE AWARENESS CAMPAIGNS EFFECTIVE IN INCREASING UPTAKE OF CERVICAL CANCER SCREENING TEST BY WOMEN: A STUDY IN A MUNICIPALITY IN CENTRAL NEPAL?

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ABSTRACT

Background: Cervical cancer is one of the most common cancers and a leading cause of mortality among Nepalese women, but almost completely preventable by a screening test. This study aimed to find out the association of knowledge and attitude about cervical cancer and its screening test on the uptake of cervical pap smear test.

Methods: A cross-sectional study was carried out among women aged 20 to 65 years residing in Madi Municipality located in the central region of Nepal. Probability systematic sampling technique was used to select 300 samples for the study. Data were collected using structured interview schedule, and these were analysed in IBM SPSS version 20 for windows using descriptive and inferential statistics.

Results: Out of 300 married women, median age (IQR) was 40 (54-32) years. Despite 42.7% women having adequate knowledge about cervical cancer and 49% women having favourable attitude towards cervical pap smear, only 6.7% participants had undergone cervical pap smear test at least once in their life. There was no significant association between knowledge about cervical cancer and pap smear, and pap smear utilization. This shows that good knowledge does not always translate into action.

Conclusions: Population-based organized cervical pap smear screening program must be implemented to increase pap smear utilization. Health awareness campaigns in the absence of organized cervical screening program are largely ineffective.

INTRODUCTION

Cervical cancer is the 4th most common cancer in women worldwide.¹ The major burden of cervical cancer incidence is seen in developing countries. Every year 84% of the new cases and between 87 and 90% of the deaths worldwide occur in these low and middle-income countries.² For example, cervical cancer is the most common cancer in women in Nepal, with 2,942 new cases (21.5 per 100,000 women) and 1,928 deaths (14.3 per 100,000 women) in 2018.³ Finland has a population 6 times smaller in comparison to Nepal, but cervical cancer incidence is 17 times lower in that European country.⁴ The lower incidence rate is due to universal cervical cancer screening programme in developed countries.⁵

Precancerous lesions and carcinoma of cervix are caused by high-risk serotypes of Human Papilloma Virus in more than 95% of cases. It is estimated that approximately 3.9 percent of women in the general population have cervical HPV-16/18 infection, the high-risk HPV serotypes. These high-risk serotypes are responsible for 71.2 percent of invasive cervical cancers.⁶ On the brighter side, most HPV infections clear up

on their own in the majority of persons. Most pre-cancerous lesions also resolve spontaneously.⁷ However, considering the large number of women infected by HPV, a significant number of women suffer from precancerous and malignant lesions of cervix all over the world. Indeed, 604,000 new cases and 342,000 deaths were registered due to cervical cancer globally in 2020.⁸

Most sexually active women and men will be infected at some point in their lives, and some may be repeatedly infected by HPV. Both men and women are infected with HPV shortly after the onset of sexual activity. In fact, HPV infection is the most common sexually transmitted disease in the world.⁹

Fortunately, by implementing screening programs, cervical cancer can be prevented by detecting lesions in the precancerous stage and mortality due to it can be reduced by diagnosing the disease in its early stage if it is already there.¹⁰ In order to achieve these objectives, the WHO's global strategy for cervical cancer elimination calls for 70% of women globally to be screened regularly for cervical disease with a high-performance test, and for 90% of those needing it to receive

appropriate treatment.¹¹

According to the new guidelines for the prevention of cervical cancer, WHO now recommends high risk HPV (hrHPV) DNA testing as the first choice instead of VIA or pap smear because it is more cost effective, more efficient, simpler to perform, more objective in interpretation of result and it can be performed on samples self-collected by clients.¹² However, in resource-poor settings where the new HPV DNA test is not available, the primary screening test to use should still be pap smear cytology. Because of lack of laboratory infrastructure, a large population in Nepal cannot be screened with hrHPV DNA test at present. Only 12% of facilities in Nepal can perform basic laboratory tests like hemoglobin, malaria testing, and stool microscopy let alone hrHPV DNA testing.¹³ Therefore, pap smear test will be the backbone of screening activities for a long time to come for the prevention of cervical cancer in Nepal.

Recommendations of U.S. Preventive Services Task Force (USPSTF) are different from those of WHO. Screening should be started from the age of 21 years or 30 years according to USPSTF and WHO respectively. In contrast to WHO, USPSTF gives three options: cervical pap smear alone, hrHPV DNA testing alone or co-testing with cervical pap smear cytology and hrHPV DNA analysis.¹⁴

Although cervical cancer is a preventable disease, this theory has not been translated into reality in Nepal because of lack of universal cervical cancer screening program and because of many barriers in the utilization of screening methods that are available in some areas.^{15, 16} This study has attempted to find out how lack of knowledge about cervical cancer and its screening test has affected cervical pap smear utilization in a municipality in central Nepal.

METHODS

A cross-sectional survey was carried out among women in Madi municipality, Chitwan of Nepal. Madi is the least developed municipality in the region, having only recently recognized as municipality by the Ministerial Cabinet (as of 2014-5-11 AD). It consists of nine wards and a total of 8000 households. Multiple ethnic groups reside in Madi viz., 39% Tharu, 41% Brahmin & Chhetri, and 20% people of other castes. Health care facilities are scarce in this area. The Tertiary care hospital i.e. Chitwan Medical College Teaching Hospital (CMC-TH) which is in Bharatpur, Chitwan lies 50 km from Madi. The municipality was chosen for this study because the people in this region had similar socioeconomic and educational profiles as those in most regions of the country and it was convenient for the researchers to access this region. Study population included married women of all age-groups between 20 to 65 years. Unmarried females were not part of the research because the risk of cervical carcinoma mainly occurs in married women because of the mode of the transmission of etiologic agent which is sexual in nature. In this way, most of the at-risk women were sampled in this research. Women who were mentally disabled, and those who were not sexually active,

or those who refused to participate were excluded from the study.

The required sample size was calculated on the basis of knowledge obtained from previous study,¹⁷ with 95 % confidence interval and 5 % absolute error where, estimated prevalence rate (p)= 24.0%, absolute precision (e)= 5%, confidence level (Z_{α}) at 5% =1.96, total households(N)=8000.

$$(n) = \frac{Z_{\alpha}^2 pqN}{e^2 (N - 1) + Z_{\alpha}^2 pq}$$
$$n = \frac{(1.96)^2 (0.24) (0.76) 8000}{(0.05)^2 (8000 - 1) + (1.96)^2 (0.24) (0.76)}$$

n=271

Considering 10 % non-response rate, final sample size has been calculated to be 271+ 27 (10x271/100) = 298=300.

Two-stage sampling technique was used to select the sample for this study. In the first stage, random sampling technique was applied to select four wards (around 5000 households). In the second stage, 300 households were selected by using systematic random sampling technique.

In this technique, the side of the streets was selected by flipping a coin. The first house was selected using the last digit of a currency note's serial number and thenceforth, every 17th house was selected (N/n). From each selected household, one woman who met the study criteria was taken for the study (as shown in Figure 1). If two or more women were present in a household, one woman was selected by the means of lottery

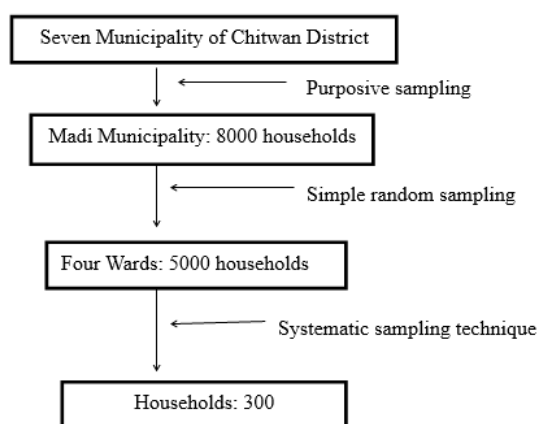


Figure 1: Schematic Representation of Sampling Technique

A structured questionnaire related to knowledge and practice, and Likert scale related to attitude portion of the study were developed by the researchers themselves through extensive literature review and consulting with a subject expert. The data collection research instrument consisted of four parts. Part I had 16 questions related to socio-demographic data. Part II had 30 questions related to knowledge regarding cervical cancer and cervical cancer screening methods which

had dichotomous response. Answers were recorded as yes and no. If the answer was 'yes', it was taken as the correct response and scored as '1'. If the answer was 'no', it was taken as the incorrect response and scored as '0'. A total score 50% or more (≥ 15), was considered as having adequate knowledge. Part III consisted questions for the utilization of cervical pap smear as the screening method of cervical cancer and its precancerous lesions. Having utilized pap smear at least once was scored 'one' otherwise the score was given as 'zero'. The instrument contained a few open-ended questions to identify the barriers of cervical pap smear utilization. If a participant had undergone cervical pap smear screening test at least once, she was considered to have good practice. Part IV had three-point Likert scale (3-agree, 2-neutral, 1-disagree) to gauge attitude on cervical pap smear test. A participant was considered as having favourable attitude towards cervical pap smear screening test if total 'agree' responses were 50% or more (≥ 13).

The research instrument was first developed in English and was translated to Nepali language by a Nepalese language expert which in turn was reverse translated to English by an English language expert. The Nepali-version instrument was used for data collection. Pre-testing of the instrument was done among 10% of study population residing in wards of Madi Municipality not selected for this research. Necessary modifications were done in the questionnaire according to the outcome of the pre-test. Reliability of the instrument was tested by using data obtained from the pre-test. Reliability coefficient ≥ 0.07 was taken as the threshold for considering the instrument as reliable for this research.

Prior to data collection, ethical approval was obtained from Chitwan Medical College Institutional Research Committee (CMC-IRC) and Madi Municipality Office. Researchers then rendezvoused with research participants through community health volunteers. Informed written consent was obtained from each participant. Thumb print was taken from illiterate women. Women were assured of strict confidentiality of the information they provided. No incentive of any kind was provided to the participants.

From each selected household, one eligible married woman was interviewed using the pre-tested Nepali Version interview schedule. Each interview was conducted in the absence of other family members in a secluded place or a room which lasted for 30-40 minutes. After the interview, the women were educated about cervical carcinoma and precancerous lesions, and their prevention. Response sheet from each woman was anonymized by writing a code in it instead of the name of a participant. The data were collected during the 3-month period i.e. 1st January 2022 to 31st March 2022.

The collected data were checked for the completeness and accuracy and organized sequentially. Then variables were coded and fed into IBM SPSS version 20 for windows. Descriptive statistics such as frequency, percentages, mean, standard deviation and median were calculated to describe the study variables. The chi-square test was used to find

out the significant association between level of knowledge, practice and attitude regarding cervical cancer and its screening with selected variables. P value of <0.05 was considered significant.

RESULTS

Out of 300 participants included in the study, just half (50.0%) of the respondents were in the age group of 20 to 39 years, 57.3% belonged to Brahmin ethnicity and most (86%) were literate. More than half (55.5%) of respondents' age of marriage was ≥ 18 years and nearly two third (63.3%) were multi-parous. Only one (0.3%) respondent was vaccinated against HPV and one had history of cervical cancer (0.3%) and 2.7% had family history of cervical cancer (Table 1).

Table 1: Socio-demographic and cervical cancer related information of respondents n= 300

Variable	Number (%)
Age group in years	
Young (20-39)	150 (50.0)
Middle (40-59)	97 (32.3)
Elderly (60 and above)	53 (17.7)
Median Age (IQR)=40 (54-32) year	
Ethnicity	
Brahmin	172 (57.3)
Chhetri	14 (4.7)
Dalit	56 (18.7)
Janajati	58 (19.3)
Education status	
No formal education	42 (14.0)
General literate	89 (29.7)
Basic	31 (10.3)
Secondary	74 (24.7)
Bachelor and above	64 (21.3)
Age at marriage	
<18 years	135 (45.0)
18 and above years	165 (55.0)
Mean age (SD): 17.4 (± 3.52), Min-6 year Max-30 year	
Parity	
Nulliparous	4 (1.3)
Primi-parous	61 (20.3)
Multiparous (2 to 4)	190 (63.3)
Grand Multiparous (5 and above)	45 (15.0)
Number of children	
None	4 (1.3)
One-two	151 (50.4)
Three and more	145 (48.3)
Vaccination against HPV	
Yes	1 (0.3)
No	299 (99.7)
H/o cervical cancer	
No	299 (99.7)
Yes	1 (0.3)
Family h/o cervical cancer	
Yes	8 (2.7)
No	292 (97.3)

Table 2: Knowledge, attitude and practice of cervical cancer screening among respondents
n=300

Variables	Number (%)
Knowledge level	
Adequate	128 (42.7)
Inadequate	172 (57.3)
Attitude level	
Positive	147 (49.0)
Negative	153 (51.0)
Practice level	
Not done	279(93.0)
Irregular	10 (3.3)
Regular	11(3.7)

Out of 300 respondents, 42.3% had adequate knowledge and 49.0% had positive attitude toward cervical cancer and screening test. However, only 7.0% of respondents had undergone cervical pap smear screening test at least once in their life (Table 2). Among those who utilized cervical cancer screening test, more than half (52.4%) did the screening regularly every 3-5 years whereas 47.6% did irregularly. More than half i.e. 57.1% did it in a screening camp (Not shown in table).

In table 3, age, ethnicity, education, and duration of marriage were significantly associated with level of knowledge related to cervical cancer and its screening.

Table 3: Association between level of knowledge regarding cervical cancer and its screening and selected variables
(n=300)

Variables	Level of Knowledge		x ²	p- value
	Low, No. (%)	High, No. (%)		
Age Group				
Young	51 (34.0)	99 (66.0)	70.05	<0.001
Middle	73 (75.3)	24 (24.7)		
Elderly	48 (90.6)	5 (9.4)		
Ethnicity				
Brahmin/Chhetri*	95 (51.1)	91 (48.9)	11.176	0.004
Dalit**	33 (58.9)	23 (41.1)		
Janajati***	44 (75.9)	14 (24.1)		
Education				
Illiterate	37 (88.1)	5 (11.9)	18.829	<0.001
Literate	135 (52.3)	123 (47.7)		
Marriage durations				
≤5 years	5 (16.7)	25 (83.3)	22.535	<0.001
>5 years	167 (61.9)	103 (38.1)		

*Upper most level in the caste system **The lowermost level in the caste system ***People of Mongol/Mongoloids

Table 4: Association between level of attitude towards cervical cancer and its screening test and selected variables of the respondents
n= 300

Variables	Level of Attitude		x ²	p- value
	Negative, No. (%)	Positive, No. (%)		
Age Group				
Young	95 (63.3)	55 (36.7)	24.816	<0.001
Middle	45 (46.4)	52 (53.6)		
Elderly	13 (24.5)	40 (75.5)		
Ethnicity				
Brahmin/Chhetri	111 (59.7)	75 (40.3)	15.721	<0.001
Dalit	18 (32.1)	38 (67.9)		
Janajati	24 (41.4)	34 (58.6)		
Religion				
Hindu	149 (51.0)	143 (49.0)	0.003	0.954
Other than hindu	4 (50.0)	4 (50.0)		
Education				
Illiterate	12 (28.6)	30 (71.4)	9.831	0.002
Literate	141 (54.7)	117 (45.3)		

Table 4 shows the significant association age group, ethnicity and education with the level of attitude towards cervical cancer and its screening. However, other variables such as history of

cervical cancer in the family and duration of marriage were not associated with it (not shown in the table).

Table 5: Association between level of practice regarding cervical cancer screening and selected variables of respondent
n= 300

Variables	Level of Practice		x ²	p- value
	Not Performed, No. (%)	Performed, No. (%)		
Age group				
Young	144 (96.0)	6 (4.0)	9.028	0.011
Middle	84 (86.6)	13 (13.4)		
Elderly	51 (96.2)	2 (3.8)		
Ethnicity				
Brahmin/Chhetri	175 (94.1)	11 (5.9)	9.139	0.010
Dalit	55 (98.2)	1 (1.8)		
Janajati	49 (84.5)	9 (15.5)		
>5 years	250 (92.6)	20 (7.4)		
History of cervical cancer in family				
No	276 (94.5)	16 (5.5)	38.809	<0.001
Yes	3 (37.5)	5 (62.5)		

Table 6: Association between utilization of cervical cancer screening with level of knowledge and attitude towards cervical cancer and its screening among respondents
n=300

Variables	Utilization of Cervical Screening		x ²	p- value
	Not Utilized No.(%)	Utilized No.(%)		
Level of Knowledge				
Adequate	160 (93.0)	12 (7.0)	0.000	0.985
Inadequate	119 (93.0)	9 (7.0)		
Level of Attitude				
Negative	138 (90.2)	15 (9.8)	3.771	0.052
Positive	141 (95.9)	6 (4.1)		

Table 5 shows that age group, ethnicity, and history of cervical cancer in the family were significantly associated with the level of practice among the respondents. However, duration of marriage, education status and religion were not associated with it (not shown in the table).

Table 6 shows that utilization of cervical cancer screening is not associated with the level of knowledge and attitude about cervical cancer and its screening.

DISCUSSION

Cervical pap smear test utilization in Nepal is at rock-bottom as in other developing countries which ranges from 7.8% to 17%.^{15, 17, 18} As expected, pap smear coverage in this study was found to be very low (7.0%). Nevertheless, knowledge of participants about cervical cancer screening was good with 42.7% of women having adequate knowledge and 49% had favourable attitude towards cervical pap smear screening. Accessibility to hospital set-up is not a barrier for pap smear uptake in the municipality where we carried our research. Tertiary level hospitals, both private and government, are within two-hour bus ride. Such disparity in level of practice of cervical pap smear and its knowledge was found in other national and international studies as well. In a hospital-based study from the same region of Nepal, pap smear utilization rate was 15.7%. In this study, 34% of women were aware of cervical cancer.¹⁵ In a study done in Kavre district of Nepal, 18.3% research participants had undergone at least one pap smear

test in their life. On the contrary, very high number of women had heard about cervical cancer and its screening tests (94.4% and 80.6% respectively) and accessibility to health service was not an issue. Regarding such high percentage of women having knowledge of topics, the authors point out to frequent awareness campaigns conducted in that region. It needs to be highlighted that pap smear coverage was still low despite such a high number of women being aware of the disease and the test.¹⁸ In a study done in Kerala, 74.2% of women knew cervical cancer could be detected early by a screening test. Again, only 6.9% of them had utilized pap smear test.¹⁹ In a study done in a tertiary hospital in Andhra Pradesh among nurses, only 8% had undergone pap smear test. The nurses had adequate knowledge about cervical pap smear as the preventive measure against cervical cancer.²⁰ A study was conducted in Nigeria among health workers found very low cervical pap smear utilization (0.3%) despite 70% of the participants having knowledge about pap smear test.²¹ There is recurring theme in studies from developing countries that show low pap smear utilization despite a significant percentage of women having adequate knowledge about cervical cancer and cervical pap smear test.

On the contrary, pap smear coverage ranges from 40 to 90% in many developed nations.²² The success in these countries has been attributed to population-based organized cervical cancer screening program. In these countries which have such a program, women in the target age-group are identified and

contacted to receive pap smear test which is provided free of cost. Some developed countries have opportunistic screening services rather than organized program. Nevertheless, pap smear is provided of cost. To mention as an example, in USA, the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) provides free cervical cancer screening to women of low-income and uninsured category.²³

Because of these strategies, the incidence of cervical cancer has decreased manifold in the last 50 years in developed countries. To cite an example, incidence of cervical carcinoma has decreased by 58% since 1972 in Canada.²⁴

Although our study has identified several factors which are significantly associated with knowledge about cervical cancer and its screening, the later was not significantly associated with pap smear uptake by eligible women.

CONCLUSION

In the background of above-mentioned observations, the authors conclude that governments in developing countries must implement population-based organized cervical pap smear screening program in order to lower the incidence of

cervical cancer. Health awareness campaigns designed to raise awareness of cervical cancer and screening methods are helpful but largely ineffective in increasing pap smear coverage in the absence of organized population-based screening program.

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