

Factors Associated with Precancerous Cervical Lesion among Women Attending Cervical Cancer Screening Camps

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ABSTRACT

Introduction -Cervical cancer ranks as the 1st most frequent cancer among women in Nepal. The cervical cancer screening with 5% acetic acid is a good option for early detection of cervical neoplasia in settings where good quality cytology is not available.

Aim & Objective - To find out the incidence and precancerous cervical lesion among women.

Material and Method – A descriptive cross-sectional study design was used to collect data from 1050 women who underwent through Visual Inspection with Acetic Acid procedure in 15 screening camps of Nepal by using non-probability purposive sampling technique. Data was analyzed using SPSS version 20.0 and interpreted in terms of descriptive and inferential statistics.

Result –The incidence of Precancerous Cervical Lesion (PCL) in our study is 2%. PCL is significantly associated with age ($p < 0.001$) and occupation ($p = 0.005$) of women. Though the lesion is not significantly associated with other variables, majority of women whose VIA result was positive were married before the age of 20 and gave first child birth before that age and majority were multiparous.

Conclusion –Based on findings of the study, it is concluded that women with sexually active age are more at risk of precancerous cervical lesion and also at risk who married early, gave early and many birth to child. So governmental, non-governmental organizations, public should strictly emphasize on delay marriage and childbirth. The researchers also recommend cervical screening should start before 30 years of age though national guideline recommends the cervical screening between 30- 60 years of age.

Key Words: Precancerous Cervical Lesion; Screening Camp; VIA, Women

INTRODUCTION

Cervical cancer is the second most common cancer in women living in less developed regions with an estimated 570 000 new cases in 2018, making 84% of all new cases worldwide. In the same year, cervical cancer led to the death of approximately 311,000 women, where by again the majority, 85 %, lived in less- and middle-income countries. ^[1] In general, the

occurrence of cervical cancer declined by half between 1975 and 2014 from 14.8 cases per 100,000 to 6.9 per 100,000 worldwide. Responsible for this decrease is mostly the widespread uptake of screening tests, primarily the Pap test, which made it possible to detect and treat precancerous lesions. However, the decrease slowed down in recent years and the overall incidence rate from 2005 to 2015 was

stable. This effect can also be observed for the cervical cancer death rate. The rate decreased significantly from 1975 to 2015 from 5.6 per 100,000 to 2.3 per 100,000, but the pace of the reduction slowed down to 0.8% per year between 2006 and 2015. [2]

In Nepal, 10.16 million women are above 15 years old and therefore in risk of developing cervical cancer. Estimations indicate that 2942 women are diagnosed with cervical cancer every year and that 1928 die from this disease. In Nepal, cervical cancer ranks as the 1st most frequent cancer among women and the 1st most frequent cancer among women between 15 and 44 years of age and 80.3 % of invasive cervical cancers are attributed to an infection with the Human papilloma virus (HPV) strains 16 and 18, which are carried by about 2.0 % of women in the general population. [3] A four-year study conducted in Nepal from January 1st 2010 until December 31st 2013 identified cervical cancer as the most frequent cancer in women (18.9 %), followed by breast cancer (15.6 %) and lung cancer (10.2 %). [5] In the BPKMCH annual report 2017, a total number of 4460 cervical cancer screenings in communities were reported, with 53 patients tested VIA (visual inspection of cervix with acetic acid) positive. Together with the 7 out of 594 women screened in the hospital, the VIA positive cases were 1.38% and the total number of cervical cancer is 543. [5]

The risk factors of cervical cancer are infection with HPV infection, sexual activity, smoking, giving birth many times, HIV infection, history of STI, and oral contraceptive pills. [6] In Anorlu (2008), it was reported, that early marriage, polygamous marriages and high parity are risk factors for cervical cancer, with polygamy alone leading to a two-fold increase. [7] In Nepal, the average age of women having their first marriage and sexual intercourse is 17.9 years and 48 % of the generation of women between 20 and 49 years had sexual intercourse by the age of 18. The first pregnancy of this generation is

at age 20.4 years on an average with a total fertility rate (TFR) of 2.3 births per women. [8]

Other major risk factor of developing cervical cancer are the consumption of tobacco with a prevalence of smoking women of 14 % and a family history of cervical cancer. [9]

Almost all sexually active individuals will be infected with HPV at some point in their lives and are therefore at high risk of HPC 16 and 18, causing 70% of cervical cancers and precancerous cervical lesions. Usually, HPV infections and precancerous lesions caused by HPV 16 and 18 clear up on their own, but still there is a risk for all women that HPV infections become chronic and precancerous lesions progress to invasive cervical cancer. In case of a weak immune system, for example because of an untreated HIV infection, the period for cervical cancer to develop is decreased from 15 to 20 years in healthy women to 5 to 10 years. [10]

The detection of precancerous cervical lesions by VIA varies between countries and over time. In Ethiopia, the rate of VIA positive screened women was 6.7 % in 2017, [11] in Cameroon 3.9 % in 2013, [12] 5.9% in Rwanda in 2015 [13] and in Egypt 6 % in 2015. [14] Also within Nepal, the rate varies: TUTH presented data with a prevalence of 7.4 % in 2006, [15] the Kirtipur Hospital reported 2.62 % VIA positive in 2016, [16] in Nepalgunjin 4.63 % were detected in 2018 [17] and 12.45 % in Jumla the same year. [18]

The significant decrease of mortality from cervical cancer globally could be reduced by prevention, early diagnosis, effective screening and improving treatment programs. One of the most important aspects nowadays in prevention is the vaccines against different HPV strains which therefore protect from cervical cancer. It is also essential to include regular cervical cancer screens in woman's routine health care to detect abnormal cervical cells or cancer cells as precancerous lesions as well as early cancerous cells can be treated successfully. [19] In Nepal, the target age

group for those screening is between 30 and 60 years with a suggested screening interval of 5 years. The most common used methods are VIA and Pap smear. [20] VIA is useful for detection of precursor lesions of cervical cancer in low-resource settings as well as in well-equipped health centers and cancer centers. In these non-low-resource settings, VIA has a positive predictive value comparable to the conventional Pap smear, but it is more likely to achieve earlier diagnosis, follow-up, and treatment than cytology-based screening [21]

Cervical cancer screenings are available in some areas of Nepal, but the screening is mostly conducted when the women come to the hospital for other medical problems or in case of severe symptoms. Even though regular screening decreases the rate of cervical cancer and death significantly, no habit of regular screenings can be observed in Nepal. [22] Therefore, cervical cancer screening camps in communities are very important to increase early detection and provide counseling and treatment in precancerous stages if detected. This will reduce the rates of cervical cancer in Nepal and decrease the mortality. Findings of the study will be useful to policy makers and useful for the further researchers.

Aim and Objectives

- To determine the incidence of precancerous cervical lesion.
- To determine the factors associated with precancerous cervical lesion.

MATERIALS AND METHODS

Descriptive cross-sectional research design was used. A total of 1050 women who undergone through Visual Inspection with 5% Acetic Acid (VIA) procedure to find out the precancerous cervical lesion in 15 cervical cancer screening camps of Chitwan District (9 screening sites), Nawalparasi District (5 screening sites) and Tanahun District (1 screening site) of Nepal were selected by using non-probability purposive sampling technique. All these

screening camps were organized by Cancer Prevention, Control and Research Department of BP Koirala Memorial Cancer Hospital. Chitwan district is also known as the medical city of Nepal. The district is especially famous for the cancer hospital named after B.P. Koirala. Nawalparasi lies West of Chitwan District and midpoint of East -West Mahendra highway and Tanahun District lies North part of Chitwan Valley.

Ethical clearance was obtained from Chitwan Medical College Institutional Review Committee (CMC-IRC). Administrative approval was obtained from BP Koirala Memorial Cancer Hospital (BPKMCH), Chitwan. Verbal informed consent was taken from each respondent to ensure the right of the respondents. An inclusion criteria was married women from any age to 60 years and woman who can give information clearly. Unmarried, pregnant, women with vaginal bleeding, women with hysterectomy were excluded. Before VIA procedure, women were counseled about the importance of test and its possible result, treatment option in case of positive result and post-test follow up for negative result. Each woman was interviewed separately by using semi-structured interview schedule to collect the data before the procedure. All the women who attended in screening and eligible for that test, were taken as sample and interviewed. VIA was done by trained and experienced staffs of prevention unit of BPKMCH, Chitwan, Nepal. Duck speculum was used to visualize the cervix and freshly prepared 5% Acetic acid was applied to the cervix with applicator to see aceto-white lesion (VIA positive) over the cervix if any and recorded in a special VIA form within 1 minute of application. Result of VIA was obtained from women's record file immediately after procedure. Immediately after procedure on the same setting, women were informed about their condition of cervix and counseled for gynaecological problem if any especially the women whose VIA result was positive for further diagnostic procedure and cryotherapy.

Confidentiality of the respondents was maintained by not disclosing information given by them and their result of VIA. Data was collected from September 2018 to February 2019 by the researchers themselves. Entire study period was August 2018 to April 2019. The collected data was entered in Epi data 3.1 and exported to IBM SPSS version 20. Data was analyzed by descriptive and inferential statistics.

RESULT

Table 1 shows the demographic characteristics of the women. Majorities (39.6%) of women were from the age group of 31-40 with mean and standard deviation as 38.2±9.73, minimum age was 20 years and maximum age was 60 years. Majority (61%) were Brahmin/Chhetri, 91.71% were belong to Hindu religion, 98.4% were married, 77.42% were literate and among them, 39.48 had completed their basic education, 68.8% were housewife and 80.6% of women's income was enough for 1 year. Women involved in other occupation were 3.1% (tailoring, student, foreign employment).

Table 1: Socio-demographic Characteristics of Women

Socio-demographic Characteristics	Number	Percentage
Age in years (n=1050)		
≤ 30	253	24.1
31-40	416	39.6
41-50	259	24.7
51-60	122	11.6
Mean ±SD=38.2 ±9.73, Min=20, Max=60		
Ethnicity (n=1050)		
Brahmin/Chhetri	640	61.0
Janajati	298	28.4
Dalit	70	6.7
Others	42	4.0
Religion (n=1050)		
Hindu	963	91.71
Buddhist	64	6.09
Christian	14	1.33
Islam	9	0.85
Marital Status(n=1050)		
Married	1033	98.4
Widow	17	1.6
Educational Status (n=1050)		
Illiterate	237	22.6
Literate	813	77.42
Level of Education (n=813)		
Basic education	321	39.48
Secondary education	292	35.91
Higher secondary education	114	14.02
Bachelor and above	86	10.57
Occupation of Respondents (1050)		
Service	82	7.8
Business	78	7.4
Daily wages labour	8	0.8
Agriculture	127	12.1
House wife	722	68.8
Others	33	3.1
Income Status (n=1050)		
Adequate for 1 year	846	80.6
Inadequate for 1 year	160	15.2
Adequate for more than 1 year	44	4.2

Table 2: Factors of Precancerous Cervical Lesion

Factor of Precancerous Cervical Lesion	Number	Percentage
Regularity of Menstruation(n=1050)		
Regular	724	69.0
Irregular	171	16.3
Menopause	155	14.8
Type of pad use during menstruation(n=895)		
Sanitary pad	261	29.2
Piece of cloth	329	36.8
Both (pad and cloth)	305	34.1
Duration of pad use (n=895)		
≤6 hours	767	85.7
>6 hours	128	14.3
Age of marriage (n=1050)		
< 20 years	658	62.7
≥ 20 years	392	37.3
Age of first child birth(n=1022)		
< 20 years	381	37.27
≥ 20 years	641	62.72
Parity(n=1050)		
Nulliparous	28	2.7
Primiparous	170	16.2
Multiparous	799	76.1
Grandmultiparous	53	5
Current use of family planning (n=1050)		
383	36.47	
Types of family planning (n=383)		
Pills	86	22.45
Implant	28	7.31
Medroxiopovera	85	22.19

Intrauterine contraceptive device	29	7.57
Condom	23	6.0
Permanent family planning	132	34.46
History of STI treatment (n=1050)	46	4.4
History of smoking (n=1050)	53	5.0
Previous cervical cancer screening done (n=1050)	187	17.8
Types of screening done (n=187)		
Pap smear	108	57.8
VIA	79	42.2
Family history of cervical cancer present (n=1050)	21	2.0
If yes, relationship (n=21)		
Aunt	3	14.28
Grandmother	1	4.76
Mother	15	71.42
Sister	2	9.52

Table 2 shows the factors of precancerous cervical lesion. Among the women, majority (69%) were menstruating regularly, 36.8% of women said that they use piece of cloth during menstruation, 85.7% used the pad for ≤ 6 hours, 62.7% of women got married < 20 years, 37.27% of women gave birth to their first child < 20 years of age, 76.1% of women were multiparous, 36.47% used family planning, among them 34.46% had done permanent family planning, 4.4% had treated STI before, 5% of women had history of smoking, 17.8% of women had done cervical cancer screening before and majority (57.8%) of women had done pap smear test, 2% of women had family history of cervical cancer and among them 71.42% of the respondents' mothers were suffered from cervical cancer. Cent percent of the

respondents' HIV status was negative as reported by them (not shown in table).

Table 3: Incidence of Precancerous Cervical Lesion (N=1050)

Precancerous Cervical Lesion	Frequency	Percentage
Positive	21	2
Negative	1029	98

Table 3 shows the incidence of precancerous cervical lesion among 1050 screened women was 2%.

Table 4: Sites of Cervical Cancer Screening Camp (N=1050)

Sites of Screening Camps	Frequency	Percentage
Nawalparasi District	538	51.2
Chitwan District	489	46.6
Tanahun District	23	2.2

Table 4 shows the majority of the women in the camp were from Nawalparasi district though the number of screening sites were more in Chitwan district than Nawalparasi district.

Table 5: Association between Precancerous Cervical Lesion and Socio-demographic Characteristics

Socio-demographic Characteristic	Precancerous Cervical Lesion		χ^2 Value	p Value
	Positive No. (%)	Negative No. (%)		
Age in years				
≤ 30	12 (4.7)	241 (95.3)	15.594 ^a	$< 0.001^*$
31-40	8 (1.9)	408 (98.1)		
> 40	1 (0.3)	380 (99.7)		
Ethnicity				
Brahmin/Chhetri	10 (1.6)	630 (98.4)		
Janajati	6 (2.0)	295 (98.1)	4.003	0.261
Dalit	4 (5.7)	66 (94.3)		
Others	1 (2.4)	41 (97.6)		
Marital Status				
Married	20 (1.9)	1013 (98.1)	1.329 ^a	0.293
Widow	1 (5.9)	16 (94.1)		
Educational Status of Women				
Illiterate	1 (0.4)	236 (99.6)		
literate	20 (2.5)	793 (97.5)	3.889 ^a	0.061
Occupation of Women				
Housewife	8 (1.1)	714 (98.9)		
Working women	13 (4.0)	315 (96)	7.982	0.005 [*]

*Significance level at 0.05

Table 5 shows that association between precancerous cervical lesion and socio-demographic characteristics of women. Precancerous cervical lesion was statistically significant with the age of women ($p < 0.001$) i.e. the women who were ≤ 30 years had precancerous cervical lesion than those 31-40 and above years of age women. Likewise, precancerous

cervical lesion was statistically significant with occupation of women ($p = 0.005$) i.e. working women had precancerous cervical lesion as compared to housewife. Precancerous cervical lesion was not statistically significance with ethnicity ($p = 0.261$), marital status ($p = 0.293$), educational status ($p = 0.061$).

Table 6: Association between Precancerous Cervical Lesion and Factors of Precancerous Cervical Lesion

Factors of Precancerous Cervical Lesion	Precancerous Cervical Lesion		χ^2 Value	p Value
	Positive No. (%)	Negative No. (%)		
Menstrual Status				
Regular	17 (2.4)	706 (97.6)		
Irregular	4 (2.3)	167 (97.7)	0.000 ^a	1.000
Duration of Pad Use				
≤ 6 hours	16 (2.1)	751 (97.9)	1.586 ^a	
> 6 hours	5 (3.9)	123 (96.1)		
Type of Pad Use				
Sanitary pad	5 (1.9)	256 (98.1)	0.766	0.682
Piece of cloth	7 (2.1)	322 (97.9)		
Both	9 (3.0)	296 (97.0)		
Age of Marriage (Sexual Contact)				
< 20 years	15 (2.3)	643 (97.7)	.373	0.541
≥ 20 years	6 (1.5)	386 (98.5)		
Age of First Childbirth				
< 20 years	11 (2.9)	370 (97.1)	2.678	0.102
≥ 20 years	8 (1.2)	633 (98.8%)		
Parity				
Nulliparous	2 (7.1)	26 (92.9)		
Primiparous	6 (3.5)	164 (96.5)	5.009	0.082
Multiparous	13 (1.5)	839 (98.5)		
Use of Family Planning				
Yes	7 (1.8)	377 (98.2)	0.07	0.934
No	14 (2.1)	652 (97.9)		
History of STI Treatment				
Yes	3 (6.5)	43 (93.5)	5.018	0.060
No	18 (1.8)	986 (98.2)		
History of Smoking				
Yes	1 (1.9)	52 (98.1)		
No	20 (2.0)	977 (98.0)	.004 ^a	1.000
Previous Cervical Screening				
Yes	4 (2.1)	183 (97.9)		
No	17 (2.0)	846 (98.0)	.022 ^a	0.778

Those variables which were not statistically significant were menstrual status ($p = 1.000$), duration of pad use ($p = 0.207$), type of pad use ($p = 0.682$), age of marriage ($p = 0.541$), age of first childbirth ($p = 0.152$), parity ($p = 0.082$), use of family planning ($p = 0.934$), history of STI treatment ($p = 0.060$), history of smoking ($p = 1.000$) and previous cervical screening ($p = 0.778$).

Majority of the VIA positive women got married before the age of 20, majority of women gave birth to their first child before

20 years of age and majority of the VIA positive women were multiparous.

DISCUSSION

Out of 1050 screened women in VIA camps, the incidence of precancerous lesion was 2% and percent of the respondents were counseled, referred and received treatment (cryotherapy). The result of this study is almost similar with Annual Report of BP Koirala Memorial Cancer Hospital (1.38%), [5] with the study done in Kirtipur Hospital

(2.62%), [16] and 2.8% in the study conducted in Maternity Hospital, Thapathali. [23] Whereas the result was lower than some other studies: 3.33% in Cameroon in 2019, [24] 4.63% in Nepalgunj, [17] 6.7% in Ethiopia in 2017, [11] 12.45% in Jumla in 2018, [18] 12.9% in Ethiopia in 2015, [25] 26.7% in Kenya in 2012. [26] In the present study, the incidence is lower than the findings of other studies. It might be due to the completely screening test on apparently healthy women in community setting as compared to other studies and many screening camps which were organized in this study were repeated for that setting. So women were aware and had already screened in previous camps. All most all of findings of previous studies were hospital based where majority of women come for gynaecological check up with some complains. Majority of respondents in this study were literate, majority were non smokers, almost all had single lifetime partner, percent of the respondents' HIV status was negative.

In the present study, majority of women came for screening were the age group of 31-40 with mean age was 38.2 ± 9.73 and precancerous cervical lesion was statistically significant with the age of women ($p < 0.001$) i.e. the women who were ≤ 30 years had precancerous cervical lesion than those 31-40 and above years of age women. Similar finding was reported where the majority of screened women were 31-40 years of age group and the mean age was 39.5 ± 9.4 years, [17] a majority of the women came to cervical screening age group 30-39 years in the study of Kirtipur. [16]

In this study, precancerous cervical lesion was statistically significant with occupation of women ($p = 0.005$) i.e. working women had precancerous cervical lesion as compared to housewife.

In present study, majority of women (62.7%) were married (initiation of sexual intercourse) before 20 years of age. Study conducted in Thapathali maternity Hospital

also reported that majority of the women was married before 20 years of age. [23]

Though precancerous cervical lesion was not statistically significant with factors of precancerous lesion, this study at least identified the incidence of precancerous cervical lesion in three neighbouring districts. This study provided chance to identify the many gynaecological problems like cervicitis, unhealthy cervix, cervical polyp, cyst, uterine prolapse etc. at the time of screening and respondents were counseled and provided medication and for precancerous lesion counseled for cryotherapy. Health education was provided for prevention of cervical cancer.

Researchers collected the complete data themselves so the actual information was picked up of the women who participated in the screening camp.

CONCLUSION

Based on the findings of the study, it is concluded that the incidence of precancerous cervical lesion is very low among all previous research findings. Though precancerous cervical lesion is significant only with age and occupation of the women, majority of women with VIA positive were ≤ 30 years of age and majority of them were married before the age of 20, majority of them gave birth to their first child before 20 years of age and majority were multiparous (some women delivered baby up to 11 times). So, the researchers recommend to marry only after the age of 20 when women is physically matured (legal age of marriage), bear less number of children and cervical screening should be started before 30 years of age though national guideline recommends the cervical screening should be done between 30- 60 years of age.

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How to cite this article: Thapa B, Ranabhat MK, Dahal BD et.al. Factors associated with precancerous cervical lesion among women attending cervical cancer screening camps. *Int J Health Sci Res.* 2019; 9(7):78-86.
