

“To Study the Prevalence and Its Risk Associated Factors of Oncogenic Human Papilloma Virus Infection with Patients Suffering From Chronic Cervicitis at a Health Care Setup”

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Abstract:

Background: Human Papillomavirus (HPV) is considered to be the most common sexually transmissible infection (STI) in the world, comprising over 150 related DNA viruses with a high negative impact on individual social life. Human papillomavirus (HPV) infection is considered as the major risk factor for the development of cervical cancer second in India, cervical cancer contributes to approximately 6–29% of all cancers in women.

Aim and Objective: To study the Prevalence and its Risk associated factors of Oncogenic Human Papilloma virus Infection with Patients suffering from Chronic Cervicitis at a Health Care setup.

Material and Methods: It was a cross-sectional study which was carried out in the Department of Microbiology and Central Research Lab, RMCH&RC over a period of 1 year i.e., January 2021 to December 2022. The women aged 21 to 60 years of age who came for routine cervical cancer screening at Rama Hospital were included in our study. Socio demographic profile and clinical data was recorded and detection of HPV infection was done using HPV test specific to HPV16/18 in cervical swabs. Visual inspection with acetic acid (VIA) was used to determine cervical lesions.

Results: A total of 230 women who came for routine cervical cancer screening were included in our study with the age ranging from 21 to 60 years. The maximum number of cases was found in the age group of 31-40 years with rural participants being affected the most. Among them the number of housewives was more in number as compared to divorce and the never married. In the present study the overall prevalence of HPV and cervical lesions was 11.3% and 18.6%. Whereas with no cervical lesions was 0.8.

Conclusion: In developing countries, cervical cancer is the leading cause of cancer death in women, and 91% of global estimated HPV-related cancer deaths are due to cervical cancer. HPV vaccines will reduce but not eliminate the risk of cervical cancer, and screening programmes will be important interventions for cervical cancer even after HPV vaccines are introduced, although the procedures used for screening may be needed to be adapted. The cervical cancer screening programs should be followed.

Key words: Human papilloma virus, chronic cervicitis, risk factors

Introduction

The human papillomavirus is a DNA tumor virus that causes epithelial proliferation at cutaneous and mucosal surfaces contributing to the statistics of cancerous diseases. In the last six decades, the world has made significant progress towards the reduction of morbidity and mortality associated with cervical cancer. Despite this, cervical cancer remains a major threat to women's health, especially in resource-limited countries due to poor awareness and late detection of cervical lesions. For instance, 85% of deaths from cervical cancer occurred in low and middle-income countries [1].

HPV is a virus that can be sexually transmitted, and high-risk HPV DNA is found to be present in 99.7% of cervical cancer specimens [2]. Within 12 to 24 months of exposure to the virus, 90% of HPV infections are

Cleared or become inactive. However, infections by the high-risk HPV types persist which then increase the risk of progression to cervical cancer [3] Almost 200 HPV types have been identified with more than 40 types colonizing the genital tract. Based on the carcinogenic properties; all HPV are divided into two groups these are high risk and low risk. High-risk types include 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 68, and 59. Others are classified as potential high-risk (which are 53, 66, 70, 73, and 82). Currently, it is well known and proven that HPV16 and 18 are the most virulent high-risk genotypes, causing about 70% of all invasive cervical cancer in the world [4].

HPV infection rates continue to persist, especially in developing countries, where cervical cancer incidence and prevalence are still high. Thus, this study is undertaken to study the Prevalence and its Risk Associated factors of Oncogenic Human Papillomavirus Infection with Patients suffering from chronic cervicitis at a Health Care Setup.

Material and Methods

It was a cross-sectional study which was carried out in the Department of Microbiology and Central Research

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Lab, RMCH&RC over a period of 1 year i.e., January 2021 to December 2022. The women aged 18 to 50 years of age who came for routine gynecologic or family planning services to the hospital was used as a source population for this study routine cervical cancer screening at Rama Hospital were included in our study after being consented and interviewed. Socio demographic profile and clinical data was recorded and detection of HPV infection was done using HPV test specific to HPV16/18 in cervical swabs. Visual inspection with acetic acid (VIA) was used to determine the cervical lesions. .

Cervical lesions using visual inspection with acetic acid. The extra mucus was clean away with a cotton swab, a five percent acetic acid solution was applied to the cervix for VIA. After 30 to 60 seconds, abnormal cervical tissues turned white [5] whereas, no aceto white lesions was observed on the VIA of normal cervical tissue.

Oncoprotein testing of E6 HPV 16/18. Endocervical swab was collected from study participant’s women by inserting swab devices into endocervix and rotating them counter-clockwise to make full circle three times. Detection of HPV types 16 and 18 in the cervical swabs was performed using E6 HPV 16/18 oncoprotein detection lateral flow (LF) strip test and used as per manufacturer’s guidelines.

Ethical considerations. The Ethical Clearance was taken from the Ethical Board of RMCH&RC. All study participants was informed about the purpose of the study, and consent was taken from each one of them. Confidentiality of any information related to the participants was maintained by excluding personal identifiers. Participants with a positive HPV test were linked to clinicians for further treatment and follow-up.

Results

A total of 230 women with the age ranging from 21 to 60 years of age were enrolled in the study. There were 128 (55.6%) belonging to the rural area and 102 (44.3%) belonging to Urban area. Among the study participants mainly women’s were house wife of which 189 (82.1%) were house wives and 41 (17.8%) were working women. The majority, 170 of participants were married whereas 40 were Divorced. The unmarried number was 20 in the study.

Table no.1: Age wise distribution of patients from the study

S.No.	Age (in years)	No. of Study Participant (N=230)	Percentage
1.	21-30	9	3.9%
2.	31-40	103	44.7%
3.	41-50	93	40.4%
4.	51-60	25	10.8%

Table no.2: Residence wise distribution of participant from the study

S.No.	Residence	No. of study participant	Percentage
1.	Urban	102	44.3%
2.	Rural	128	55.6%

Table no.3: Occupation wise distribution of participant from the study

S.No.	Occupation	Percentage
1.	Housewives	189(82.1%)
2.	Employee	41(17.8%)

Table no. 4: Marital status wise distribution of participant from the study

S.No.	Marital Status	No. of study Participant (N=230)	Percentage
1.	Housewives	170	73.9%
2.	Divorce	40	17.3%
3.	Never Married	20	8.6 %

Table no. 5 Awareness of cervical cancer among participant women (n = 230) aged 21–60 years Characteristic Frequency (N = 230) Percent

Heard about cervical cancer	Frequency	Percentage
Yes	200	86.9%
No	30	13%
Heard about symptoms of cervical cancer		
Yes	104	45.2%
No	126	54.7%
Heard about HPV		
Yes	68	29.5%
No	162	70.4%
Vaccinated for HPV		
Yes	3	1.3%
No	227	98.6%
Screened for HPV infection		
Yes	81	35.2%
No	149	64.7%

Table no. 6: Proportion of HPV infection and cervical lesions among participant women (n = 230) at RMCH&RC.

S. No.	Residence	No. of Study Participant (N=230)	HPV infection based on E6 16/18 indigents		VIA cervical cancer screening	
			Positive N (%)	Negative N (%)	Positive N (%)	Negative N (%)
1.	21-30	9	2 (.86%)	7 (3.4%)	3 (1.3%)	6 (2.6%)
2.	31-40	103	12 (5.2%)	91 (39.5%)	22 (9.5%)	81 (35.5%)
3.	41-50	93	11 (4.7%)	82 (35.6%)	15 (6.5%)	78 (33.9%)
4.	51-60	25	1 (.43%)	24 (10.4%)	3 (1.3%)	22 (9.5%)
	Overall	230	26 (11.3%)	144 (62.6%)	43 (18.6%)	187 (81.3%)

Table no. 7: Proportion of HPV infection and cervical lesions among participant women according to residence (n = 230) at RMCH&RC.

S. No.	Age (in years)	No. of Study Participant (N=230)	HPV infection based on E6 16/18 indigents		VIA cervical cancer screening	
			Positive N (%)	Negative N (%)	Positive N (%)	Negative N (%)
1.	Urban	102	12 (5.2%)	90 (39.1%)	11 (4.7%)	91 (39.5%)
2.	Rural	128	18 (7.8%)	110 (47.8%)	28 (12.1%)	100 (43.4%)
	Overall		30 (13%)	200 (86.9%)	39 (16.9%)	191 (83%)

Table no. 8: Proportion of HPV infection and cervical lesions among participant women according to Occupation (n = 230) at RMCH&RC.

S.No.	Occupation	No. of Study Participant (N=230)	HPV infection based on E6 16/18 indigents		VIA cervical cancer screening	
			Positive N (%)	Negative N (%)	Positive N (%)	Negative N (%)
1.	Housewives	189	8 (3.4%)	181(78.6%)	9 (3.9%)	180 (78.2%)
2.	Employee	41	6 (2.6%)	35(15 %)	3 (1.3%)	38 (16.5%)
			14 (6%)	216(93%)	12 (5.2%)	218 (94.7%)

Table no. 9: Proportion of HPV infection and cervical lesions among participant women according to Marital status (n = 230) at RMCH&RC.

S.No.	Marital Status	No. of Study Participant (N=230)	HPV infection based on E6 16/18 indigents		VIA cervical cancer screening	
			Positive N (%)	Negative N (%)	Positive N (%)	Negative N (%)
1.	Housewives	170	4(1.7%)	166 (72.1%)	14 (6%)	156 (67.8%)
2.	Divorce	40	3 (1.3%)	37 (16%)	5 (2.1%)	35 (15.2%)
3.	Never Married	20	1 (.43%)	19 (8.2%)	3 (1.3%)	17 (7.3%)
			8 (3.4%)	222 (96.5%)	22 (9.5%)	208 (90.4%)

Table no. 10: HPV (16/18) infections among participant women (n = 230), with and without cervical lesions

S. No.		No. of Study Participant (N=230)	HPV infection based on E6 16/18 indigents	
			Positive N (%)	Negative N (%)
1.	Cervical lesions	138	20(8.6%)	118 (51.3%)
2.	No cervical lesions	92	2 (0.8%)	90 (39.1%)
	Overall		22 (9.5%)	208 (90.4%)

Discussion

Cervical cancer is the leading cause of cancer death in women, and 91% of global estimated HPV-related cancer deaths are due to cervical cancer. In the present study the overall prevalence of HPV and cervical lesions 11.3% and 18.6% , which was similar to the study by Minwuyelet Maru TemesgenIet al.,et al.,[6] where the prevalence of HPV and cervical lesions was 7.1% and 13.1%, respectively. But in contrast with the study performed by other author Cai H.B et al., [7] and Ruland R. et al. [8] where the prevalence was higher. Globally, HPV types 16 and 18 predominate and are responsible for most a genital HPV related cancers in

women [9]. In our study the prevalence of Cervical lesions was 8.6% whereas with no cervical lesions was 0.8%. Our study was in supports with the study by [6] and also with the study performed by other author [10] where the rate was 3.2%, but it was contrast with the study performed in Mozambique (40.3%) [11] and Kenya (41.4%) [12]. Susceptibility to HPV infection is dependent on exposure but also on characteristics of the host such as immunosuppressant and the presence of HIV. In accordance with the study by Abate S. et al. in Addis Ababa, Ethiopia [13], the prevalence of HPV infection and cervical lesions in the current study was similar across the different age groups with a peak in the age range of 40 to 49 years. These studies including ours suggest age is not an independent associated factor for HPV persistence infection; however, older women are more likely to develop persistent HR-HPV infections and cervical lesions [14]...

Unsafe sex is a primary transmission of genital human HPV, and STIs is an indicative of having unsafe sex. In the present study, low level of education or being uneducated were found as associated factor for development of cervical lesions. Additionally, we found association of cervical lesions with rural residence and the association was not as such strong. In support of this, high proportion of uneducated and rural participants in this study never heard about cervical cancer, suggesting presence of health seeking behavior and knowledge gap in the region. A similar finding was reported from different studies in Ethiopia [15-17].

Studies from Ethiopia, Africa and other parts of the world show that first sexual contact before age of 18 years is risk factor for cervical cancer [18].

This suggest early age sexual contact is also associated factor for cervical cancer, and the need to vaccinate female children at age 7–9 years before they have first sexual contact in an attempt to significantly reduce women deaths and mortality related to cervical cancer.

Conclusion

Cervical cancer is associated with considerable morbidity and mortality all over the world. It is well known that one of the main causative agents for cervical cancer is high-risk HPV strains, and this type of malignancy is preventable.

Incorporation of HPV testing into screening strategies has a high potential to decrease morbidity and mortality from cervical cancer. Special attention in future vaccination programs to effectively lessen the burden of cervical. The findings also point to the necessity of organizing screenings for HPV detection, in particular HPV types 16 and 58.

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