

## Association Between Prolonged Sexual Exposure and Cervical Cytological Changes: An Observational Study

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### Abstract

**Background:** Cervical cancer is on the declining trend in India according to the population-based registries; yet it continues to be a major public health problem for women in India. Multifactorial causation, potential for prevention, and the sheer threat it poses make cervical cancer an important disease for in-depth studies, as has been attempted by this paper.

**Material & Methods:** The study cases were derived from the camp screening which is in progress in the Patna Medical College and Hospital, Patna, Bihar, India. Of the 1185 study cases, 97 were adolescents, 338 young adult girls and remaining 750 were adult women. A total of 1350 women who have undergone Pap smear examination at the camps, 102 were adolescents, 333 were young adult's girls and 915 were adult women.

**Results:** The SIL was present in 4 cases of erosion cervix (28.9%) while the only case of hypertrophied cervix also showed SIL. In the young adult girls and adult women, all the 3 types of clinical lesions were seen, the erosion cervix being more common, (10.2% and 6.7%, respectively). The SIL rate associated with three gynecological symptoms was higher in the adolescents than in young adult girls and adult women but the difference was found to be statistically insignificant (vaginal discharge-  $\chi^2=0.80$ :  $p=0.321$ , pain in lower abdomen-  $\chi^2=6.23$ :  $p=0.026$ , menstrual disorders-  $\chi^2=0.89$ :  $p=0.986$ ).

**Conclusion:** Preventing and treating cervical cancer and reducing the burden are possible by targeting resources to the areas with high prevalence.

**Keywords:** Adult women, Cytological screening, Rural adolescents, Teenagers

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### Introduction

Cervical cancer is the commonest cancer cause of death among women in developing countries. [1] Mortality due to cervical cancer is also an indicator of health inequities, [2] as 86% of all deaths [3] due to cervical cancer are in developing, low- and middle-income countries. [4]

Every year in India, 122,844 women are diagnosed with cervical cancer and 67,477 die from the disease. India has a population of 432.2 million women aged 15 years and older who are at risk of developing cancer. [5] It is the second most common cancer in women aged 15–44 years.5 India also has the highest age standardized incidence of

cervical cancer in South Asia at 22, compared to 19.2 in Bangladesh, 13 in Sri Lanka, and 2.8 in Iran. [5] Therefore, it is vital to understand the epidemiology of cervical cancer in India.

It is established fact that the incidence of SIL is increasing within teenage populations [6] and is most likely related to the increased rate of sexual activity and rising incidence of Human Papilloma Virus infection in adolescents [7-11]. The recommendation of National Cancer Institute is to cytologically screen the young girls at 18 years of age or at the onset of sexual activity. These girls are recommended to undergo Pap smear examination at yearly interval and when all the three reports are normal, the screening interval should be extended to three years [12].

In rural areas of India, it has been customary to perform the marriage of the girls at early age in the adolescent stage of 15-16 years. This practice puts these girls to sexual exposure at young age and they become prone to the onset of any cytopathological changes in the cervix. Hence, cytological study is mandatory in these girls to rule out any development of pre-malignancy and also any infection of sexually transmitted diseases. [13]

#### **MATERIALS AND METHODS:**

This was a prospective cervical screening study conducted in Patna Medical College & Hospital, Patna, Bihar, India from May 2019 to March 2020.

##### **Methodology**

Of the 1185 study cases, 97 were adolescents, 338 young adult girls and remaining 750 were adult women. A total of 1350 women who have undergone Pap smear examination at the camps, 102 were adolescents, 333 were young adult's girls and 915 were adult women.

To see the effect of prolonged sexual exposure on the cytological status of cervix,

these 1350 women were divided into 3 cohorts based on their ages as defined above. The age when the smears were taken in them have been taken as age to include them in either of the 3 cohorts accordingly. Those women who have undergone hysterectomy or were pregnant or were more than 60 years of age were excluded from the study.

The informed consent of the women was taken as thumb impression if illiterate or signature if educated.

All the cervical smears were collected by the gynecologist attending the camp and stained in the cytology lab of the Pathology department of the college according to the Papanicolaou's technique. The cytopathological changes in the cervical smears were graded according to the Revised Bethesda System of classification of 2002 [12].

#### **Statistical analysis:**

The entire data was statistically analyzed applying Chi-square test. The software used was SPSS version 22.

#### **Results:**

A total of 1350 women who have undergone Pap smear examination at the camps, 102 were adolescents, 333 were young adult's girls and 915 were adult women.

The clinical lesions of cervix were also evaluated in all the three cohorts [Table-4]. In adolescents, clinical lesions were not so common and only 4 cases of erosion cervix (5.7%) and 1 hypertrophied cervix (2.2%) were diagnosed. The SIL was present in 4 cases of erosion cervix (28.9%) while the only case of hypertrophied cervix also showed SIL. In the young adult girls and adult women, all the 3 types of clinical lesions were seen, the erosion cervix being more common, (10.2% and 6.7%, respectively).

Gynecological symptoms namely vaginal discharge, vague pain in lower abdomen and menstrual disorders were also investigated in the three cohorts [Table-5]. Vaginal discharge was common in all the three groups and showed rise with increasing age. The pain in lower abdomen was also common in all three groups but the menstrual disorders were low. The SIL rate associated with three gynecological symptoms was higher in the adolescents than in young adult girls and adult women, but the difference was found to be statistically insignificant (vaginal

discharge-  $\chi^2=0.80$ :  $p=0.321$ , pain in lower abdomen-  $\chi^2=6.23$ :  $p=0.026$ , menstrual disorders- $\chi^2=0.89$ :  $p=0.986$ ).

Number of the cases with different parities and SIL rate in the three groups is shown in [Table-6]. In the young adult girls and adult women, the number of cases and SIL rate showed increasing trend with rising parity but the difference in the SIL rate in the different parity groups was found to be statistically insignificant ( $\chi^2=8.91$ :  $p=0.265$ ).

**Table 1: Relation of SIL with clinical lesions of cervix in adolescents, young adult girls and adult women.**

Age group	Erosion cervix		Hypertrophied cervix		Others (Cystocele, cervicitis etc.,)	
	no.	SiL rate	no.	SiL rate	no.	SiL rate
Adolescents (102 cases)	12 (5.7%)	3 (28.9%)	3 (2.2%)	1 (100%)	-	-
Young adult girls (333 cases)	38 (10.2%)	16 (35.7%)	5 (0.7%)	-	7 (1.9%)	7 (50%)
Adult women (915 cases)	47 (6.7%)	11 (42.9%)	18 (2.6%)	13 (48.2%)	16 (1.8%)	7 (50%)

**Table 2: Relation of SIL with gynecological symptoms in adolescents, young adult girls and adult women.**

Age group	Vaginal discharge (581 cases)		Pain in lower abdomen (315 cases)		Menstrual disorder (170 cases)	
	no.	SiL rate	no.	SiL rate	no.	SiL rate
Adolescents (102 cases)	45 (13.5%)	10 (19.2%)	37 (36.2%)	13 (27.3%)	21 (20.5%)	7 (21.9%)
Young adult girls (333 cases)	102 (30.6%)	33 (15.3%)	97 (27.3%)	25 (20.1%)	69 (20.5%)	15 (9.8%)
Adult women (915 cases)	410 (44.8%)	61 (11.9%)	221 (24.1%)	101 (42.3%)	162 (17.7%)	23 (114.7%)

**Table 3: Relation of SIL with parity in adolescents, young adult girls and adult women.**

Parity group	Adolescents		Young adult girls		Adult Women	
	no.	SiL rate	no.	SiL rate	no	SiL rate
Null parity	63 (61.7%)	17 (27.1%)	46 (13.8%)	7 (6.0%)	49 (6.1%)	10 (17.1%)
Para 1	10 (9.8%)	3 (7.3%)	52 (15.6%)	21 (20.7%)	22 (2.4%)	8 (19.7%)
Para 2	8 (7.8%)	-	98 (29.4%)	22 (24.1%)	123 (23.8%)	33 (23.1%)
Para 3 and above	21 (20.5%)	5 (11.5%)	174 (52.2%)	31 (19.9%)	721 (78.1%)	151 (27.9%)

**Discussion:**

The SIL rate was found high in these nulliparous girls. However, WHO recommendations are to screen at least once for every woman in the target group of 30-49 years when it is most beneficial. "Screen and treat" is valuable approach [14]. Sadoghi SB et al., have found severe dysplasia as early as at 15 years and invasive carcinoma as early as 20 years while conducting prevalence studies of cervical dysplasia and carcinoma cervix in a national wide planned population [15]. They have stressed for importance of cytological screening programs for sexually active women in view of severe cytopathological changes occurring at young age. Carlson HJ and DeMay KM have also analyzed the mode ages of women with cervical dysplasia and have found that the onset of dysplasia was asymmetrically related with young age [16].

In the Bangalore registry, the age-adjusted rate fell from 32.4 in 1982 to 18.7 in 2009, in Barshi from 22.1 in 1988 to 14.1 in 2010, in Chennai from 41 to 16.7 in 2009, and in Thiruvananthapuram from 9.2 in 2005 to 7.7 in 2011.[17] The annual percentage decrease ranged from a minimum of 1.3% in Bhopal to 3.5% in Chennai in the years from 1982 to 2010.16 All the older PBCRs showed a statistically significant decline in age-adjusted rate from the 25–34 age group up to 54, although the Barshi registry showed a decline only up to 44 years. [18]

The common histological type found in the ectocervix is squamous cell carcinoma and that in the endocervix is adenocarcinoma. [19]

Cervical cytology carried out in the three cohorts of adolescents, young adult girls and adult women living in the rural areas revealed high ASCUS rate in the adolescents but receding with increasing age. The trend was reverse with SIL, the incidence showing rise with increasing age. The cytological monitoring is thus mandatory in these girls as the marriage in the villages is solemnized at an early age and hence these girls are exposed to the early and prolonged sexual activity. This also becomes imperative as majority of these women complain of vaginal discharge which the study pointed out as the major risk factor of the carcinoma cervix under rural conditions. Further large number of adolescent girls were nulliparous and attended the camp for treatment. The SIL rate was found high in these nulliparous girls. However, WHO recommendations are to screen at least once for every woman in the target group of 30-49 years when it is most beneficial. "Screen and treat" is valuable approach [20].

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