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# Cervical cytology screening in young rural girls between the age of 16-20 years

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## Abstract

**Background:** Candida infection study is essential in rural women who are illiterate and financially weak and are not aware of personal genital hygiene, and thus harbor persistent vaginal infections due to insufficient medical amenities. **Method:** Rural cervical cancer screening has been in progress in the western region of Lucknow, India, since May 2013 through camp approach, and to date, a total of 2949 women have been cytologically examined. The candidal infection has been observed in the 143 cervical smears of women, and findings have been analyzed concerning the different predisposing factors of cervical carcinogenesis. **Result:** The incidence of Candida albicans seen in cervical smears of the total 2949 women examined was 4.8% higher than in their urban counterparts (1.2%). The Candida was seen more in the inflammatory smears (9.4%) and those showing squamous intra-epithelial lesions of the cervix (SIL). – (8.2%). The fungus was found more prevalent in the reproductive age group and women complaining of vaginal discharge and resulted from persistent vaginal infections in the rural women that should be treated. The Candida was commonly seen in erosion cervix cases, but it was high in women with cervicitis and cervix bleeds on touch. **Conclusions:** This persistent vaginal infection was seen in illiterate and impoverished rural women who were unaware of personal genital hygiene. There is a need to create awareness for personal genital hygiene through health workers for making any cancer screening program meaningful and successful.

Keywords: Candidal infection; Reproductive age; Vaginal discharge; Erosion cervix; Inflammatory smears.

## Introduction

Cytological screening has significantly reduced worldwide cervical cancer incidence in the last few decades, including in India, but the situation in the rural part of the country is still alarming. This is because there is a lack of awareness regarding the hazards of cervical cancer and its detectionby cytology. Screening programs aim to detect the disease in its pre-invasive phase of the disease [1]. Moreover, marriages at a young age areprevalent in the villages, and young girls are exposed to earlier and prolonged sexual activity [2]. The American Medical Association The U.S, for adolescent's preventive measures [3]. American College of Obstetrics and Gynecology [4]. And National Cancer Institute [5]. Have recommended that the cytological screening should be initiated with the onset of sexual activity or at the age of 18 years whichever occur first or if sexual history is not reliable.

As said before, the marriages of girls are

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performed at adolescent age between 14-15 years in the villages due to weak financial conditions of the parents and limited facilities at their disposal . This leads to early sexual exposure of the minor girls and subsequent prolonged sexual activity in their marriage life. All these factors lead to mulrtiparity which have been found to be instrumental in the causation of premalignant changes of cervix. This study was carried act to detect SIL changes in the cervix of 118 women who were married at adolescent age and were cytologically examined later between age of 16-20 years

## Material And Methodology

**Study design**: Cross-sectional observational study

**Ethics approval**: The institutional ethics committee approved the study, and informed consent was obtained from the participants/ parents. The informed consent was obtained from the women who have undergone Pap smear examination.

**Study location**: The rural cervical cancer screening was carried out in the 3 rural blocks of west Lucknow.

**Study period**: May 2013 to October 2021.

**Sampling method**: Consecutive sampling

**Inclusion criteria**: Only adolescent married girls who were cytologically examined at the age of 16-20 years were selected for the study . This will tell us the effect of early sexual exposure in these village girls regarding any initiation of SIL changes in the cervix.

**Exclusion criteria**: All the women cytologically examined after 20 years of the age were not included in the study and were used for comparative purpose between SIL rate seen in the young girls and their older counterparts.

**Methodology**: During rural cervical cancer screening carried out in the 3 rural blocks of west Lucknow, a total of 189 camps were organized. 2980 have been cytologically examined.Of these118 were young girls between 16-20 years, and cytological evaluation was carried out in them. In each case, a scrape smear was collected by the gynaecologist attending the camp from the squamocolumnar of the cervix and immediately fixed in absolute alcohol. The cervical smears were sent to the Cytology lab of the Pathology Department of the College, where they were stained according to Papanicaou's technique [6]. The cytopathological findings seen in the cervical smears were graded according to the revised Bethesda system of Classification of 2014 (Nayar R et al.)[7].

**Statistical analysis:** The collected data were statistically analyzed using the Chi-square test using software SPSS version 22.

## Results

The rural cervical cancer screening program has been in progress in the western region of Lucknow for the last 8 years through the camp approach, and to date, a total of 2980 have been cytologically examined, of these 2980 rural women 118 were young girls between 16-20 years. Most of these girls were married at the adolescent age of 15-16 years and were exposed to early sexual activity. Many of these girls came for cytological examination when the camps were held in the villages. Only 31 of the 118 girls were examined between 16 and 19 years while remaining 87 were evaluated at 20 years.

The cytological status of 118 young women cytologicaly examined between the age of 16-20 years was found to be as follows:

(a) Squamous intraepithelial lesions of cervix (SIL)-18(15.2%). All the SIL cases were of low grade (LSIL).

(b) Atypical squamous intraepithelial changes of unknown significance (ASCUS) -10(8.4%). The SIL incidence was relatively higher (15.2%) and slightly lower than 17.7% in young adults between 21 and 30 years. It appears that early sexual exposure followed by prolonged sexual activity has a more significant role to play in the SIL production in the cervix.

The ASCUS rate was much lower (8.4%) associated with young age. Among sexually transmitted diseases (STDs), only 4 cases of Candida albicans were seen (3.4%).

Different predisposing factors related to cervical carcinogenesis have been analyzed in detail in 118 young girls.

Regarding age (Table-1), only 2 girls were cytologically examined at 16 -17 years of age, and cervical smears in each of them revealed SIL (50%). It appears that these girls were married at the age of 13-14 years and came to the camp after 2-3 years of the first sexual exposure. The SIL incidence dropped to 8.3% at 18 years but rose to 13.3% at 19 and 14.9% at 20 years. Out of 118 girls of the study groups, 87 had cytology at 20 years. The difference in the SIL incidence between 18-20 years was statistically insignificant ($x^2$ = 4.23; p=0.376).

When the SIL incidence was analyzed concerning parity (Table-2), it was seen that the majority of the girls were nulliparous (74), and 14 of them showed SIL changes (18.9%). The number of girls with parity 1 dropped to 21, 15 (para2), and 18 (para3), and the corresponding SIL incidence in the 3 groups was 9.5%, 6.6%, and 12.5%.

The difference in the SIL incidence between nulliparous and para 1-3 was statistically insignificant ($x^2$ = 3.56; p=0.313).

Gynecological symptoms complained by the 118 girls were also analyzed (Table-3). The vaginal discharge was seen in 26 cases, and 3 of them had SIL (11.5%). Pain in the lower abdomen was complained by 19 girls, and the SIL was seen in 5 of them (26.3%). Irregular menses were seen in 15 cases, and 2 showed SIL (13.3%). The remaining 78 cases were asymptomatic, and SIL was seen in 8 of them (10.2%). The difference in the SIL rate in different gynecological symptoms and asymptomatic cases was statistically insignificant ($x^2$ =3.54; p=0.316).

Different clinical lesions of the cervix were also studied in 118 young girls (Table-4).Only 7 showed cervical lesions, erosion cervix in 4, hypertrophied cervix in 1, and endocervical lesion in 2. The remaining 111 cases had normal cervix. The SIL was seen in only 1 case of the hypertrophied cervix (100%), while the remaining 17 SIL cases were seen with the normal cervix (15.3%). The difference in the SIL incidence between the hypertrophied cervix and those with normal cervix was statistically significant ($x^2$ = 6.64; p=0.084). There were 52 girls in the study group complaining of infertility, and SIL was seen in 8 of them (15.3%).

The SIL rate with the educational status of 118 young girls is shown in Table-5.The SIL incidence was almost identical in the illiterate and literate women (16.6% as against 15.1%),and hence there was a statistically insignificant difference ($x^2$ = 0.02; p=0.886)

**Table1. SIL rate concerning age**

| Age group (years) | Number of cases | Number and incidence of SIL |
|---|---|---|
| 16 | 2 | 1 (50%) |
| 17 | 2 | 1(50%) |
| 18 | 12 | 1(9.1%) |
| 19 | 15 | 2(13.3%) |
| 20 | 87 | 13(14.9%) |

**Table-2. SIL rate concerning parity**

| Parity | Number of cases | Number and incidence of SIL |
|---|---|---|
| Nulliparous | 74 | 14(18.9%) |
| Para 1 | 21 | 2(9.5%) |
| Para 2 | 15 | 1(6.6%) |
| Para 3 | 18 | 1(12.5%) |

**Table 3. SIL rate withGynecological symptoms**

| Gynecological symptoms | Number of cases | Number and incidence of SIL |
|---|---|---|
| Vaginal discharge | 26 | 3 (11.5%) |
| Pain in the lower abdomen | 19 | 5 (26.3%) |
| Irregular menses | 15 | 2 (13.3%) |
| Asymptomatic | 78 | 8 (10.2%) |

**Table 4. SIL rate concerning Clinical lesions of the cervix**

| Cervical lesions | Number of cases | Number and incidence of SIL |
|---|---|---|
| Erosion cervix | 4 | 0 |
| Hypertrophied cervix | 1 | 1 (100%) |
| Endocervical lesions | 2 | 0 |
| Normal cervix | 111 | 17 (15.3%) |

**Table 5. SIL rate in relation to educational status**

| Educational status | Number of cases | Number and incidence of SIL |
|---|---|---|
| Illiterate | 12 | 2 (16.6%) |
| Literate | 106 | 16 (15.1%) |

## Discussion

In 118 young rural girls aged between 16-20 years studied, a SIL incidence of 15.3% was seen. A high rate of abnormal cytology was also found in adolescents and young women, ranging from 3-14% [8 -11]. In the present study, all the 18 cases of SIL were of low grade (LSIL). Mount S.L et al. [8] have also found that out of 14% of smears examined in the girls between 15-19 years showed SIL, butonly 0.7% of them showed high-grade SIL (HSIL) and no case of invasive cancer. However, in a Nation wide organized cervical cancer program in Norway, smear examined in 2000 adolescents between 15-19 years, only 2% were found to have HSIL [10], Zhang S et al. have also found in high-risk American population statistically significant higher detection rate of abnormal cytology in the teenager groups among all the age groups [12].

In the present study, 1 of the 2 girls showed LSIL at 16 and 17 years (50%) while the SIL incidence was low at 18-20 years with no significant difference between the 18-, 19- and 20-years age groups. The girls with younger age of first sexual intercourse are especially at high risk for SIL development [2].

Most teenagers were nulliparous, but the SIL incidence showed no statistical difference between the other parity groups. Among the gynecological symptoms, pain in the lower abdomen showed a maximum SIL rate but was insignificant for other symptoms like vaginal discharge and irregular menses and a symptomic women. Among clinical lesions of the cervix, the SIL was seen in only 1 case of the hypertrophied cervix.

There was no difference in the SIL rate between educated and illiterate girls, but the number of literate girls coming for cytology was higher. Yearly pap smear examination is needed in these teenagers till they attain the age of 20 years, after which smears can be repeated after 3 years interval.

Many investigators have emphasized that the adolescents' girls who are at high risk for the development of cervical cancer after first sexual intercourse may have high-risk behaviour, which includes older sexual partners, high rate, of STDs and multiple sexual partners [13,14]. Since we are doing rural study and these high-risk factors are not prevalent in the population, these risk factors do not apply in our study.

Numerous studies have documented a high regression rate of LSIL in adult women, and about 60-80% of them spontaneously regressed [15-17]. The regression of LSIL is also common in adolescents, and young women and may be due to frequent and new partners with HPV, but this is rare in rural girls and hence ruled out. It may also be due to the process of squamous metaplasia, which is common in adolescents [18]. The squamous metaplasia is a process of rapid cell proliferation and differentiation.

## Conclusion

Young girls in the rural population are at high risk of developing SIL as they are married at adolescent age are put to early sexual exposure and subsequent prolonged activity. The villagers should be taught about the ill effect of early marriage in the development of cervical cancer and should be counselled to avoid child marriage.

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**Conflict of interest:** There is no conflict of interest from either of the Authors.

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