

CERVICAL CANCER SCREENING IN RURAL WOMEN POPULATION OF LUCKNOW WEST, INDIA: PROBLEMS AND BENEFITS

J. S. Misra, A. N. Srivastava, Shivani Singh

Department of Pathology

Era's Lucknow Medical College & Hospital, Sarfarazganj Lucknow, U.P., India-226003

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ABSTRACT

Carcinoma cervix is a major health problem faced by Indian women and situation is very alarming in rural population because of illiteracy and poverty. There is urgent need of creating awareness regarding the risk factors of cervical cancer such as early marriage and multiparity in the rural women and the importance of early detection of the cervical cancer. With aim for providing single life time Pap smear cover to the rural women, cervical cancer screening program was initiated in May 2013 by Era's Lucknow, Medical College and Hospital, Lucknow, through organizing camps in the villages of Lucknow, west. Till December 2019, a total of 183 camps have been organized and 5209 women attended these camps (28.5%). Pap smear examination could be done in only 2912 women (55.9%). The incidence of squamous intraepithelial lesions of cervix (SIL) was found to be very high in these women (17.1%) though majority of SIL were of low grade (LSIL). This may be related to the poor personal genital hygiene prevailing in rural women due to illiteracy. In the present review, the SIL incidence has been extensively analyzed in relation to different predisposing factors of cervical carcinogenesis and problems faced during camp organization and the benefits derived from these camps to rural women have been highlighted.

KEYWORDS: Single lifetime cytological screening, Rural women, Camp approach, SIL, Illiteracy, Carcinoma cervix.

INTRODUCTION

Though the cancer breast is currently most common cancer in females in India, but the situation is different in rural population where carcinoma cervix is still more common and fatal disease causing mortality. The scenario is more alarming as 70% of the total population of India reside in the villages[1]. Two glaring factors namely illiteracy and poverty prevailing in the rural India make their living conditions miserable. Lack of education leads to the ignorance of different risk factors of cervical carcinoma and poor personal genital hygiene. Lack of medical amenities in the villages is also instrumental in development of persistence vaginal infections which remain undetected and untreated. Therefore, creating awareness regarding the hazards of cervical cancer and apprising them of different associated risk factors like early marriage and multiparity and also importance of early detection of the disease are the major tasks of any screening program [2] [3].

Rural cervical cancer screening program was initiated under auspices of Era's Lucknow Medical College and Hospital, Lucknow, in May 2013 with aim to offer at least single life time Pap smear cover to the women in the villages for early detection of cervical cancer and

treatment of premalignant lesions detected to check the progression of the disease to carcinoma cervix. The rationale behind the screening program was to create awareness regarding hazards and the risk factors of cervical carcinoma through counseling and motivation of the women in the villages and by also telling them regarding utility of early detection of the disease. At least 100 houses were visited in each village motivating the women inmates of the house providing them informative literature such as pamphlets. The camp was organized next day and the camp team comprised of the Project coordinator, one Gynecologist, one Research Assistant, one trained nurse and one ayah. Six types of essential medicines were also distributed to the women attending the camp.

MATERIALS AND METHODS

The duration of the present study till the end of year 2019 has been more than 6 years and the screening program is still continuing. A total of 183 camps have been organized during this period and 5209 women attended the camps (28.5%). Only 2912 of these 5209 women have undergone Pap smear examination (55.9%) Personal counseling and motivation and organization of camps have been found very useful in creating the awareness of different risk factor of carcinoma cervix and importance

Address for correspondence

Dr. J.S. Misra

Department of Pathology
Era's Lucknow Medical College &
Hospital, Lucknow-226003
Email: jata_misra@yahoo.com
Contact no: +91-9005917960

of Pap smear examination for early detection of the disease. The participating women were also told about the high risk group of women (high age above 40 years, high parity of three or more children and those complaining of symptoms like vaginal discharge or bleeding). They were also told regarding the long duration of 8-10 years taken by the disease for the progression of the lesion to malignancy which makes possible the detection of the disease in its pre-invasive phase and its adequate treatment. It was also told to them that the disease in initial stage may be asymptomatic. Further it was also clarified to them that the Pap smear examination is not an invasive process and simply only cervical scrape is taken.

All the collected cervical smears in the camps were stained according to the Papanicolaou technique in the cytology lab of Department of Pathology of the College and screened by the cytologist. The cytopathological changes seen in the smears were graded into normal, inflammation, atypical squamous epithelial changes of unknown significance (ASCUS), SIL and carcinoma cervix according to revised Bethesda System of classification [4].

RESULTS

Cytological examination of cervical smear in 2912 women revealed following findings-

Normal smears	-	1277(44.04%)
Inflammation	-	943(32.3%) (Fig-1)
ASCUS	-	192(6.5%) (Fig-2)
SIL	-	498(17.1%)
LSIL	-	72(16.2%) (Fig-3)
High grade SIL (HSIL)	-	26(0.9%) (Fig-4)
Carcinoma cervix	-	2(0.06%)

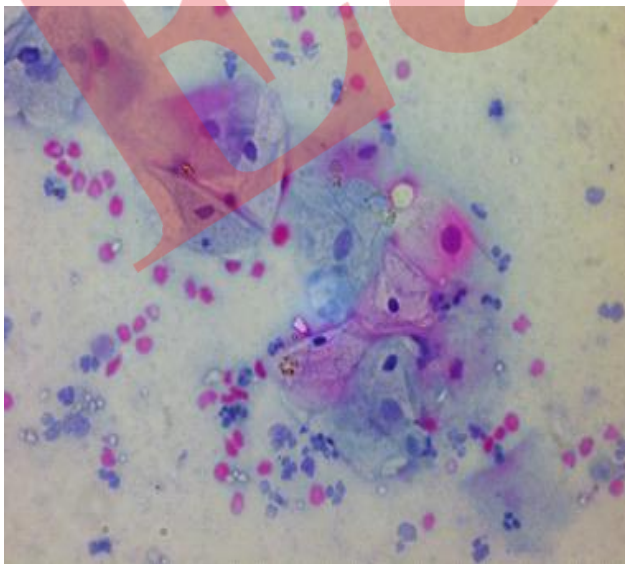


Fig. 1: Inflammatory Smear: Nuclear Enlargement With Loss Of Chromatin Pattern (Pap X400)

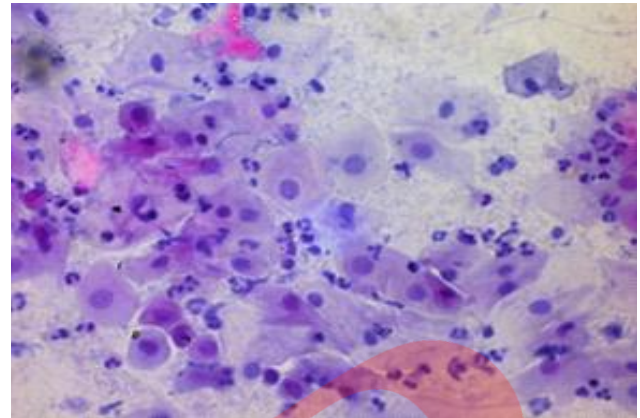


Fig. 2: Ectocervical Smear Showing Atypical Squamous Intermediate Cells With Nuclear Enlargement And Mild Hyperchromasia (Pap x400)

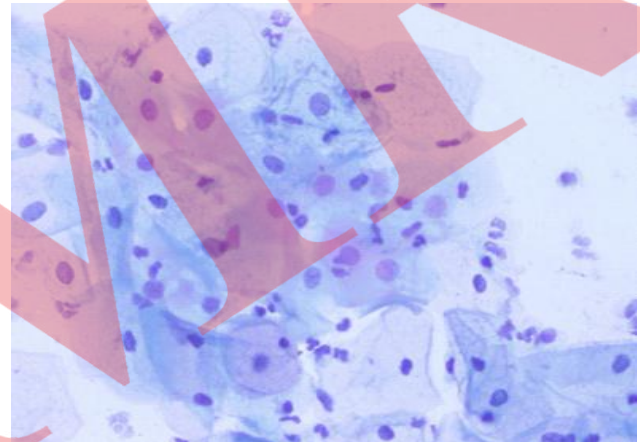


Fig. 3: Low grade squamous intraepithelial lesion of ectocervix (Mild dysplasia): Intermediate and parabasal cells showing nuclear enlargement and coarse chromatin (Pap x 400)

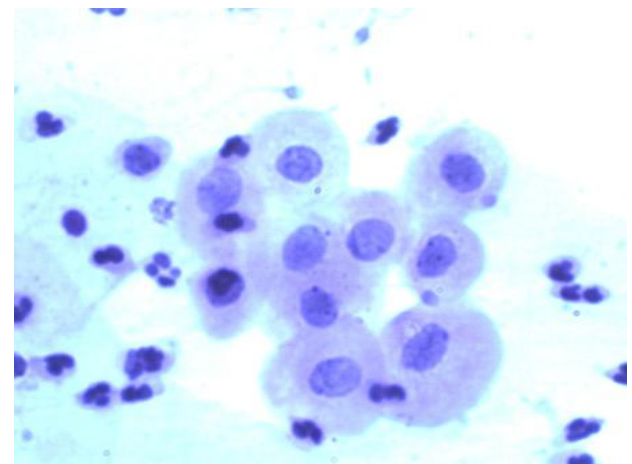


Fig 4: High Grade Squamous Intraepithelial Lesion Of Ectocervix (Moderate Dysplasia): Parabasal Cells Showing Nuclear Enlargement And Coarser Chromatin (Pap x 400)

Both cases of carcinoma cervix were histologically proven and had received radiotherapy at King George Medical University, Lucknow.

The incidence of ASCUS was found to be low in rural women (6.5%) but the SIL was seen in 498 women (17.1%). The SIL incidence was very high as compared to 7.2% noticed in the urban population of Lucknow [5]. However, it was satisfying to note that majority of the SIL cases were LSIL (472-16.2%) and only 26 cases were HSIL (0.9%). A high incidence of SIL in the rural women may be due to poor personal genital hygiene because of illiteracy which results in persistent vaginal infections which remain undetected and untreated due to lack of medical amenities. All the women diagnosed with SIL were given adequate treatment and called for repeat smear to the Hospital after six months in case of LSIL cases and after three months in HSIL cases to know whether the SIL has regressed to normal or persisting or has progressed to higher grade.

Follow up Findings

It was observed that none of the SIL cases turned up to the hospital for follow up. It may be due to their weak financial status and lack of adequate transport facilities. The follow up of SIL cases is very necessary to know the cytological status of cervix for any progression of the lesions and if this is not done, the whole concept of cytological screening will be defeated to check the incidence of carcinoma cervix in the population screened. Hence it was planned by the Management of the Era's Lucknow Medical College and Hospital to carry out the follow up of SIL cases in their respective villages. For this, the SIL cases of a particular village were paid home visits and were told about the importance and need of follow up and were called to report next day for Pap smear examination at the same venue where the camp was initially held.

The follow up program was initiated in July 2015 and till December 2019, follow up was possible in only 254 of the total 498 SIL cases detected. The follow up revealed regression of SIL to normal in 194 and persistence in 60 cases. Further follow up was available in 32 persistent SIL cases and the SIL was found to have regressed to normal in 17 while in the remaining 15, the lesion still persisted.

Out of 192 ASCUS cases seen in study, follow up was available in 105 (54.6%). Regression of ASCUS to normal was seen in 89 and progression to LSIL in 16. Further follow up was available in 5 of the 16 ASCUS cases who progressed to LSIL and the lesion was found to have regressed to normal in 4 and has progressed to HSIL in the remaining 1 case.

In future the follow up study will be concentrated on

the ASCUS cases who showed progression to LSIL and all SIL cases showing persistence. All the ASCUS and SIL cases who did not report for Pap smear examination on the first follow up, will be also followed. For this, home visits will be made again and it is planned to cover at least 2 villages at one follow up schedule depending upon the number of cases.

Inflammatory smears formed the major components of the cytology smears examined in total 2912 women – 943 (32.3%). A low incidence of 20.3% of inflammation was also reported by Bhutia et al [6]. The inflammation was specific in 81 (8.6%) and non-specific in 862 (91.4%). Dasari et al have also reported 91.7% of non-specific inflammation in their series of rural women [7]. The pathogens seen in the inflammatory smears were found to be mostly *Candida albicans* and *Trichomonas vaginalis* while viral infections like human papilloma virus (HPV) and Herpes simplex virus (HSV) were very rare (0.2%). All the women showing inflammatory smears were given treatment according to the associated pathogens.

The overall incidence of STDs found in the cytology smears of 2912 women was found to be as follows-

<i>Candida albicans</i>	143 (4.9%)
<i>Trichomonas vaginalis</i>	37 (1.2%)
HPV	16 (0.5%)
HSV	4 (0.1%)

Candida was the most common pathogen seen in the rural women followed by trichomonal infection. A high incidence of *Candida* also reported by Barauti et al and Burke et al (8-9). These authors have also reported a low prevalence of trichomonal infection. On contrary, Madhavan et al, Arora et al, Nikhumbh et al and Srivastava et al. have found a high percentage of T.V infection in their rural studies (10-13).

The association of these STDs with SIL was found to be as follows-

Pathogen	SIL incidence
<i>Candida albicans</i>	31/143 (21.8%)
<i>Trichomonas vaginalis</i>	5/37 (13.5%)
HPV	12/16 (75%)
HSV	1/4 (25%)

The SIL incidence was higher with viral STDs ranging from 25% to 75%. Among the non-viral STDs, maximum number of SIL cases were seen with *Candida* (21.8%) followed by trichomonal infection (13.5%).

The distribution of symptomatic and asymptomatic women among the total 2912 cases registered and the SIL incidence observed in these two groups was found as follows (Table-1)

Group	No. of cases	SIL incidence
Symptomatic	1988	363 (18.2%)
Asymptomatic	924	135 (14.6%)

Table 1: SIL Incidence In The Symptomatic And Asymptomatic Women

The SIL rate was found higher in the symptomatic women. A high incidence of SIL was also reported in symptomatic women by many investigators (Ambedkar et al., Bukhari et al) (14-15).

Three major types of gynecological symptoms were found in the 2912 women screened- Vaginal discharge, vague pain in lower abdomen and menstrual disorders including bleeding. The number of women showing these symptoms in different age groups was found to be as follows (Table-2)

Age group	Vaginal discharge (1121 cases)	Pain in lower abdomen (744 cases)	Menstrual disorders (318 cases)
16-30 years	617 (55.1%)	336(46.1%)	207(65.1%)
31-40 years	384 (34.2%)	273(36.7%)	97(30.5%)
Above 40 years	120(10.7%)	128(17.2%)	14(4.4%)

Table 2: Distribution Of Different Gynecological Symptoms According To Age

Vaginal discharge was the commonest symptom seen in the rural women especially in younger and sexually active between 16 to 30 years (55.1%). This was followed by pain in the lower abdomen and menstrual disorders. The menstrual irregularities were very common in young age (65.1%) and it may be due to the fact that these young women were mostly literate and were not hesitant to disclose their menstrual problems.

The SIL incidence as well as infections of *Candida albicans* and *Trichomonas vaginalis* in the women complaining of three gynecological symptoms was found to be as follows (Table-3)

Gynecological symptoms	SIL incidence	<i>Candida albicans</i> incidence	<i>T.vaginalis</i> incidence
Vaginal discharge (1121 cases)	204 (18.1%)	100 (8.9%)	31 (2.7%)
Pain in lower abdomen (744 cases)	113(15.1%)	17(2.3%)	2(0.2%)
Menstrual disorders (318 cases)	46(14.4%)	3(0.9%)	1(0.3%)

Table 3: SIL And STDs Incidence With Different Types Of Gynecological Symptoms

The SIL incidence and infection of *Candida albicans* and *T. vaginalis* were found higher in women complaining of vaginal discharge and these women especially younger ones in whom this symptom was very common should be considered as high risk group for development of carcinoma cervix. A high SIL rate was also reported with different gynecological symptoms especially vaginal discharge by Srivastava et al, Nikumbh et al and Rajput et al [16].

The clinical lesions of cervix were also investigated in 2912 women registered. Erosion cervix was the commonest lesion seen in the rural women (7.6%) followed by endocervical lesions like cystocoele. Hypertrophied cervix was seen in only 1.6% of cases. The SIL incidence was found to be higher with all clinical lesions ranging from 33.3% with unhealthy cervix to 16.1% in the endocervical lesions. Nikumbh et al and Rajput et al have also found similar correlation in rural women. As the SIL was found high with all cervical lesions (Table-4), the study shows the importance of clinical downstaging of carcinoma cervix in the rural women.

Cervical lesion	Number of cases	SIL incidence
Erosion cervix	223 (7.6%)	47(21.1%)
Unhealthy cervix	15(0.5%)	5(33.3%)
Cervix bleeds on touch	21 (0.7%)	6(28.5%)
Hypertrophied cervix	49(1.65)	14(28.5%)
Cervicitis	8(0.2%)	2(25%)
Endocervical lesion like cystocoele and Nabothian follicles	119(4.1%)	19(16.1%)

Table 4: SIL Incidence With Different Types Of Clinical Lesions Of Cervix

Illiteracy was found in 60.2% of the total 2912 women cytologically examined (1755 cases). Only 39.8% of the women were literate (1157). High illiteracy may be the reason for the poor personal genital hygiene prevailing in the rural women which results in the persistent vaginal infections which remained undetected and untreated due to lack of medical amenities. This may be the cause of high percentage of illiterate women showing vaginal discharge and pain in lower abdomen and may be contributing factor to the development of cervical cancer. This point has also been highlighted by Zhang et al, Thulishreedharan et al. and Roychaudhary et al (17-19). The SIL incidence was almost identical in both illiterate and literate women and illiteracy was found to have no bearing on the development of precancerous changes in the cervix. This can be seen from the Table-5

Educational Status	Number of cases	SIL incidence
Illiterate	1755	302(17.2%)
Literate	1157	196(16.9%)

Table 5: SIL Incidence In Relation To Educational Status

It should be pointed out here that about 90% of the literate women had only primary level education and most of them could anyhow write their names in Hindi and hence their outlook was like that of illiterate women. Only remaining 10% of the literate women had secondary level education.

The SIL rate was found high in the younger sexually active women between 16-20 years (17.8%) as against 14.9% seen in the older women above 40 years. However, it was noticed that the majority of women attending the camp were from the young age group of 16-30 years (43.1%) as against 23.6% older women above the age of 40 years and above (Table- 6).

Age group	Number of cases	SIL incidence
16-20 years	101(3.4%)	18(17.8%)
21-30 years	1158(39.7%)	206(17.7%)
31-40 years	964(33.1%)	171(17.7%)
Above 40 years	689(23.6%)	103(14.9%)

Table 6: SIL Incidence In Different Age Groups Of Rural Women

As can be seen from the above figures, there was no significant difference in the SIL incidence between different age groups. This has also been reported by Nikumbh et al However, the SIL rate showed rise with increasing parity being highest in the multiparous women with three or more children (17.7%) which formed the major component of the screened cases (68.7%). This can be seen from the Table-7.

Parity group	Number of cases	SIL incidence
Nulliparous	179(6.1%)	27(15.1%)
Para 1	256(8.7%)	43(16.7%)
Para 2	476(16.2%)	72(15.1%)
Para 3 and above	201(68.7%)	356(17.7%)

Table 7: SIL Incidence In Different Parity Groups

Multiparity as risk factor of the carcinoma cervix has also been stressed in their findings by Rajput et al, Das Gupta et al [20] and Roychaudhary et al.

Problems faced during ongoing cervical cancer screening program-

There is immense poverty and illiteracy in the rural population and poor socioeconomic status itself is a risk factor for development of carcinoma cervix. This has also been stressed by Nikumbh et al [21]. The illiterate rural women are ignorant of risk factors of the disease. There is urgent need of identifying these risk factors and creating awareness among the rural women through health education program. Further, a message has to be made to the elders in the family to impart at least primary education to the young girls. The education will change their outlook and will increase personal genital hygiene which will minimize the persistent vaginal infections. Literacy will also result in increase the attendance of women in the camps as they will realize the importance of early detection of cervical cancer.

The younger women between 16-30 years had maximum complaints of vaginal discharge and the SIL incidence was highest in this group. The early marriage in the rural girls may be the reason for such a high SIL incidence. Hence, the young women complaining of vaginal discharge should be identified as high risk group for development of carcinoma cervix and need periodical three yearly cytological screening to rule out any advent of premalignancy. Hence, the elderly people in the families should be told about the risk of early marriage and avoiding it will be a positive measure to control the carcinoma cervix in the rural population.

Though the age was found to have no bearing on the development of carcinoma cervix in the rural women but parity plays important role and should be taken as high risk factor in the rural population. In fact, the majority of women attending camps were multiparous and the SIL incidence was higher in this group. Hence, the rural women especially the younger age group should be advised of restraining their family to two and should be advised to adopt the Family planning measures provided by the Government at the primary health centers. Khanna et al (2019) have also emphasized that by organizing educational programs involving health workers, the rural women should be taught about the importance of education and Family planning measures [22].

During camp screening, it was seen that many women were hesitant to undergo Pap smear examination as they had no gynecological problems. They were told that the cervical cancer in its pre-invasive phase is

mostly asymptomatic and any premalignant change can occur without sign of any gynecological symptom. On repeated motivation, majority of them undertook Pap test. Further it was found that there was a fear in the mind of women regarding the outcome result of the Pap smear examination. In case of any abnormal report, they were unable to afford to visit the hospital for treatment because of poverty and lack of family cooperation. It was seen that the symptomatic women who belong to high risk group readily underwent Pap smear examination. The social stigma of fear regarding Pap smear report has also been emphasized by Nikumbh et al.

There is social taboo about cervical cancer in rural women and mostly women preferred privacy and avoided attending camps. Majority of them also refused to undergo Pap smear examination as they thought that per-vaginal examination and collection of the cervical smear are invasive process. However, when this apprehension was removed by the attending gynecologist by telling that P/V examination is a simple process and does not cause any injury and collection of cervical smear is also simple harmless procedure, the women happily underwent Pap smear examination.

Benefits of Rural cervical cancer screening program

Though this ongoing program has faced many odds, but it has immensely benefitted the rural women of the villages of Kakori, Malihabaad and Mall blocks of Lucknow. It was heartening to note that the program was welcomed by the residents and Gram Pradhans of the villages wherever we approached for organizing camps after listening the benefits of the camp for early detection of cervical cancer. The cooperation of Gram Pradhans was particularly appreciable as they helped in managing the venue and the space needed for holding the camp. The primary school was found to be the ideal place as a separate room, a large table for examining the patients and few chairs were readily available. Where there was no primary school in the village, the Gram Pradhan made arrangement for the camp in the Panchayat Ghar / Community centre/ Aganwari Kendra. At some places the Gram Pradhans offered a room of their houses to hold the camp. In some villages, offers were also made by the village residents to hold the camp in their houses when no arrangement could be made by the Gram Pradhan.

Door- to – door counseling and motivation of women inmates of 100 houses in a particular village had been made by two nurses under the supervision of the Project coordinator emphasizing the importance of single life time cytological screening for early detection of carcinoma cervix, the easy harmless

technique of Pap smear taking and prompt delivery of reports within 10 days and supply of medicine for treatment of SIL or any infection detected. Depolarizing of resources to remote areas to provide door-to-door approach to create awareness among rural women has also been highlighted by Singh et al [23]. Following benefits have been rendered to the women of villages from the ongoing camps –

The program has been able to create awareness among the rural women regarding the risk factors of the cervical cancer and importance of early detection of the disease. It was seen that mostly women who had some gynecological complaints like vaginal discharge, pain in lower abdomen and irregular menses came to attend the camp for Pap smear examination and treatment. They were prescribed treatment by the gynecologist for immediate relief and were given proper medication later according to the Pap smear reports. The reports of the women whose cervical smears were taken, were supplied on the same venue after 10 days. If the women did not turn up, the report were supplied at their home and treatment modalities were explained if it revealed SIL, inflammation or any STD infection. For their convenience, the treatment and follow up schedule had also been written on the back of cytology report in Hindi. Those women whose complaints were severe and not manageable at camps, were referred to the Era Hospital for management on the identity slip of the program. Many of the young women came to attend the camp for the treatment of primary infertility. In these women, Pap smear was taken and the patient was advised to visit the hospital for management after the Pap smear report was received by her.

Many younger women who were mostly literate came to attend the camp for treatment of their menstrual problems particularly bleeding complications for which they were prescribed medication and the severe cases were referred to the Era Hospital. Many middle aged and older women complained of Prolapse or Fibroid uterus. These women were also referred to the Era Hospital for management.

Follow up of SIL cases is an essential component of a cervical cancer screening program. Though the rural women screened who revealed SIL changes in their Pap smears were given medication and advised to report to the Hospital after six months for repeat Pap check up but no one turned up. This might be due to lack of transport, poverty and ignorance. Hence, follow up was planned by the Management of the Era's Lucknow Medical college and Hospital through home visits and till date more than half of the SIL cases have been followed.

CONCLUSION

The Rural cervical cancer screening program which is in progress since May 2013 through camp approach in the villages of Lucknow west has been able to create awareness regarding the hazards and risk factors of carcinoma cervix and importance of early detection of the disease by offering single lifetime Pap smear cover to the women attending camps. Through proper counseling and motivation, attendance of women in the camps was encouraging (approximately 30%) and more than 50% of them undertook Pap smear examination. A high SIL rate was found in young women complaining of vaginal discharge and those showing multiparity and hence these factors should be treated as high risk in rural women for the development of cervical cancer. However, age was found to have no bearing on the premalignant manifestations in the cervix. Top priority has also been given to the follow up of SIL cases specially those showing persistence on the repeat smear examination because only adequate treatment and follow up of SIL cases will check any progression of the disease and will thus bring down the incidence of carcinoma cervix in the rural population screened.

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