

Cervical Cytology in Normal Rural Women Without Gynecological Symptoms and Clinical Lesions of Cervix

Jata Shanker Misra^{1*}, Anand Narain Srivastava², Shivani Singh¹

¹ Department of Pathology, Era's Lucknow Medical College and Hospital, Era University, Lucknow, Uttar Pradesh, India

² Era's Lucknow Medical College and Hospital, Era University, Lucknow, Uttar Pradesh, India

*Corresponding author: Jata Shanker Misra, Cytologist, Department of Pathology, Era's Lucknow Medical College and Hospital, Era University, Lucknow, Uttar Pradesh, India. Tel: +919005917960; E-mail: jata_misra@yahoo.com

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Introduction: Majority of asymptomatic women in rural areas refuse Pap smear examination on the pretext that they have no gynecological problems. After intense persuasion and motivation, few of such individuals underwent a cytological examination. Some of these women also revealed healthy cervixes on clinical examination. Cytological findings obtained from healthy women with no gynecological symptoms and clinical lesions were presented in the current paper.

Methods: In the present study, the normal women were selected from the Rural Cervical Cancer Screening Program which is in progress in the villages of three blocks of West Lucknow. During seven years (from May to February 2020), a total of 2949 women were cytologically examined of which 848 were normal with no gynecological symptoms and had healthy cervixes.

Results: Cytology results of 848 normal women revealed squamous intraepithelial lesions (SIL) of the cervix in 123 (14.5%), while the squamous intraepithelial lesion (SIL) rate was 17.1% in 2015 symptomatic subjects; however, the difference was statically insignificant. The SIL rate in the normal women showed rise with increase in age and parity but the difference in the SIL rate in the different age and parity groups was statically insignificant. A high SIL rate was also observed with illiteracy (15.8%) which may be due to poor personal genital hygiene.

Conclusions: A high SIL rate in the 848 normal women emphasizes the need for cytological screening even in the absence of gynecological symptoms and clinical lesions of the cervix to rule out any advent of pre-malignancy. Adequate treatment in time prevents any progression of the lesion to malignancy.

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INTRODUCTION

The carcinoma cervix is still a common and dreaded disease in the rural women population of India. The mortality rate associated with the disease is very high because the women present themselves at the hospital

in the advanced stage when it is almost incurable [1]. Hence there is a need for mass cervical cancer screening programs in rural India so that the disease can be detected early in its pre-invasive phase and

can be treated easily by checking any progression to malignancy [2]. Further, as the majority of rural women are illiterate, there is need to raise the awareness of the target population of the hazards and risk factors associated with cervical cancer and the importance of the early detection of the disease by Pap smear examination [3]. It could be made possible with the help of trained health workers and organizing camps for cervical cancer screening through proper counseling and motivation of the women in the villages [4]. The situation is complicated in gynecologically asymptomatic rural women as they are very reluctant to undergo Pap smear examination due to lack of gynecological problems. They were told that cervical cancer in its pre-invasive phase is mostly asymptomatic and symptoms arise only when the disease has progressed into the advanced stage and hence their cytological examination is essential to find out any pre-cancerous lesions of cervix. After intense persuasion and motivation, a few of them agreed to undergo a Pap test. Out of 2949 women cytologically examined during the current screening, 2015 were symptomatic while the remaining 934 had no gynecological symptoms. On clinical examination, 848 of these 934 asymptomatic women showed healthy cervixes while clinical lesions were present on the cervix of the remaining 86 ones. In the present study, cytological findings of obtained in 848 normal women were presented in relation to different risk factors of cervical carcinogenesis such as age, parity and level of education.

METHODS

During the current Rural Cervical Cancer Screening Program implemented since March 2013 in the villages of West Lucknow, a total of 186000 women were counseled and motivated for undergoing Pap smear examination (at the rate of 100 women per village) and 186 camps were organized till February 2020. A total of 5286 women attended these camps, 2949 of which underwent Pap test. Of these 2949 women cytologically examined, 848 had no gynecological symptoms and had healthy cervixes. The majority of normal women in the rural areas setup may be explained by the fact that majority of them were illiterate and reluctant to disclose their gynecological symptoms. Further in the initial stages of rural screening, cervical smears were taken by the trained nurses that might have missed the cervical lesions in difficult cases. At

the camps, the cervical smears were taken by the gynecologist from the squamocolumnar junction of cervix in the attending women with the help of an Ayre's spatula and were stained in the Cytology Lab of the Department of Pathology of the Era's Lucknow Medical College and Hospital, Lucknow according to the Papanicolaou's technique. The cytopathological changes in the cervical smears were graded according to the recently revised 2014 Bethesda system [5]. The informed consent was taken from the volunteers on the Pap smear forms in the form of thumb impression if the subject was illiterate or signature if literate. All the collected data were statically analyzed applying the Chi-square test with SPSS version 22.

The ethical approval of the study was obtained from the Ethics Committee of the Era's Lucknow Medical College and Hospital, Lucknow prior to the implementation of the Rural Cervical Cancer Screening Program.

RESULTS

Cytological examination of cervical smears obtained from 848 asymptomatic rural women with healthy cervixes showed low-grade squamous intraepithelial lesions of cervix (LSIL) in 123 (14.5%) subjects and no case of high-grade squamous intraepithelial lesions SIL (HSIL). The SIL rate was 17.1% in the 2015 symptomatic women of the study. It was slightly higher than 14.5% seen in the normal group (n=848) but the difference was statically insignificant ($\chi^2=4.81$, $P=0.028$). A high SIL incidence of 14.5% in the rural women raised the need for cytological screening of all women irrespective of whether they are symptomatic or have clinical lesions of the cervix or none of these two. The SIL incidence in relation to age in the group of normal women revealed a higher rate of 17.8% in the subjects aged above 40 years (64/359 cases) which was higher than 12.8% and 11.2% noticed in young women aged 16-30 years (34/264 women) and adult ones aged of 31-40 years (25/225 cases) respectively. However, the difference in the SIL rate among the age groups was statically insignificant ($\chi^2=5.85$, $P=0.054$). The findings pointed out the necessity of Pap smear screening in all normal women irrespective of age. In relation to parity, low rate of SIL was observed in nulliparous women (3.5% - 1/28 cases) but the SIL incidence showed a rise with parity increase, being maximum in multiparous women (15.1% - 106/703

women). The SIL incidence in women with parity 1 was 12.8% (5/39 cases) and 14.1% (11/78 cases) in para 2 ones. However, the difference in the SIL rate was statically insignificant in different parity groups ($\chi^2=4.63$ P=0.201). As expected, in all the 848 normal women, the SIL rate in relation to the level of education was high with illiteracy (15.8% - 86/542 cases) while it was 12.1% in the literate ones (37/306 women) but the difference was statically insignificant ($\chi^2=2.25$, P=0.134) (Table 1). A high SIL rate in the illiterate women may be due to a lack of awareness of personal genital hygiene.

Table 1: Squamous Intraepithelial Lesions Rate in 848 Normal Women

	Cases, No.	SIL Rate, No.(%)	P Value
Age Group			0.054
16-30, y	264	34(12.8)	
31-40, y	225	25(11.2)	
≥40, y	359	64(17.8)	
Parity Group			0.201
Nulliparous	28	1(3.5)	
Para 1	39	5(12.8)	
Para 2	78	11(14.1)	
≥Para 3	703	106(15.1)	
Educational Status			0.134
Illiterate	542	86(15.8)	
Literate	306	37(12.1)	

DISCUSSION

In the present Rural Cervical Cancer Screening Program extending up to seven years from May 2013 to February 2020, a total of 2949 women were cytologically examined by attending the camps organized for this purpose. Of these 2949 women, 848 (28.7%) had no gynecological symptoms and had healthy cervixes. It is quite a large number for rural women. As noted earlier, this large number could partially be attributed to the reluctance of attending women to disclose their gynecological problems. Besides in the initial stages of the screening, the cervical smears were collected by the trained nurses that might have missed the cervical lesions in difficult cases. Though, the SIL incidence was higher in the symptomatic women (17.1%) compared to 14.5% in the 848 normal women but the difference was statically insignificant. A high SIL rate of 14.5% in the study group may be due to the fact that the majority of rural women (63.9%) were

illiterate and had poor personal genital hygiene. This assumption gets support from the findings in the urban counterparts of Lucknow where most of the women referring to Gynaec Out Patient Department are literate and have good genital hygiene resulting in the low SIL rate in the asymptomatic women with healthy cervixes (6.1%) [6]. The SIL rate in the different age groups of 848 normal women showed a rise with age increase, maximum in the ones aged above 40 years; however, the difference among the age groups was statically insignificant. Similar results were also obtained in different parity groups. The majority of the women were multiparous in the present study and the SIL rate was slightly higher with multiparity. The early marriage leading to the prolonged sexual activity in the rural women and lack of family planning measures with no control over the child birth rate may be the cause of multiparity in the cases studied. The role of prolonged sexual activity in the incidence of SIL is emphasized by Misra et al., Iyre et al., Caslenda- Illiquez et al., and Green et al., also correlated early age at the first sexual intercourse and subsequent child birth with a risk of cervical cancer [7-10]. Dietch et al., also reported CIN (cervical intraepithelial neoplasia) peak in women aged 20-24 years and an increased risk of cervical cancer in women aged above 50 years [11]. Kashyap et al., have also found a significant association between cervical cancer and young age at marriage [12]. Starting sex at an early age is also considered a risk factor for development of carcinoma cervix by Ryan et al., [13]. Out of the total 2949 women studied, 2017 were multiparous (68.3%), 703 of which belonged to the normal group (n=848: 34.8%). Since multiparity was very common in the study group, a cytological examination is recommended for such cases to rule out any advent of premalignancy. The multiparity as a risk factor for cervical cancer is also suggested by Rajput et al., Das Gupta et al., and Raychaudhary et al., [14-16]. Castellsague et al., found that the inconsistent parity is associated with the low-grade lesions of the disease [17]. The prevalent tradition of early marriage in the villages of India leads to a large number of symptomatic young women with different STDs (sexually transmitted diseases) and other vaginal infections (84.1%) [18]. A large percentage of young women showing vaginal discharge is also reported by Srivastava et al., Nikumbh et al., and Rajput et al., [14, 19, 20].

On the contrary, the chances of infections is rare in postmenopausal women as the sexual activity decreases and the cervical epithelium shows atrophic changes. Though the number of healthy women was high in older subjects (42.3%), the number of the ones with cervical lesions was significantly higher in the sexually active group (57.7%). Hence, a high SIL rate in all the age groups of the present study suggests the need for regular cytological testing in such women, irrespective of age, to detect any SIL changes in the cervical epithelium and timely treatment. In the present study, 63.9% of the women were illiterate and the SIL rate was also higher in them compared to literate ones (15.8% vs. 12.1%). The high rate of illiteracy might be the result of poor personal genital hygiene prevailing in the rural women and may be the risk factor of cervical cancer. This point was also highlighted in studies by Raychaudhary et al., Zhang et al., and Thulaseedharan et al., [16, 21, 22].

The novelty of the present study is the cytological examination of cervical smears in 934 asymptomatic rural women who agreed to take the Pap test after intense persuasion and motivation. These women attending the camp were least interested in undergoing the Pap smear examination as they believed that it is dispensable because they had no gynecological symptoms. On the clinical examination, 86 of the 934 asymptomatic women revealed clinical lesions of the cervix while the remaining 848 had healthy cervixes. The 848 women is quite a sizable number and a high SIL rate observed in these women suggests the necessity of Pap smear screening in such women to rule out any risk of premalignancy in the cervix since it can be treated in the early stages of the disease.

It was troublesome to accomplish the study since the rural women attending the camps refused to undergo Pap smear examination inspite of repeated motivation. They believed that they had no gynecological problems and had no need of such a test. However, only after intense persuasion and stress on the asymptomatic nature of cervical cancer in the preinvasive phase and the rise of symptoms at the advanced stage, few of them agreed to be clinically examined by the gynecologist and undergo the Pap test.

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CONFLICT OF INTEREST

The authors declared no conflict of interest.

ETHICS APPROVAL

The Ethical approval of the study was obtained from the Ethics Committee of the Era's Lucknow Medical College and Hospital, Lucknow prior to the implementation of the Rural Cervical Cancer Screening Program.

REFERENCES

1. Umate P, Thengal DS, Kurdukar D. Study of clinical profile of cervical cancer patients: a hospital based study. *Int J Reprod Contracept Obstet Gynecol.* 2017;6(11):4873-8. DOI: [10.18203/2320-1770.ijrcog20174992](https://doi.org/10.18203/2320-1770.ijrcog20174992).
2. Dhamija S, Sehgal A, Luthra UK, Sehgal K. Factors associated with awareness and knowledge of cervical cancer in a community: implication for health education programmes in developing countries. *J R Soc Health.* 1993;113(4):184-6. DOI: [10.1177/146642409311300407](https://doi.org/10.1177/146642409311300407) PMID: 8410910.
3. Tripathi N, Kadam YR, Dhobale RV, Gore AD. Barriers for early detection of cancer amongst Indian rural women. *South Asian J Cancer.* 2014;3(2):122-7. DOI: [10.4103/2278-330X.130449](https://doi.org/10.4103/2278-330X.130449) PMID: 24818108.
4. Ansari A, Agarwal M, Singh VK, Nutan K, Deo S. Cervical cancer: perception of peripheral health workers in Lucknow: a cross-sectional study. *Int J Community Med Public Health.* 2019;6(4):1536-44. DOI: [10.18203/2394-6040.ijcmph20191380](https://doi.org/10.18203/2394-6040.ijcmph20191380).
5. Nayar R, Wilbur DC. The Pap Test and Bethesda 2014. "The reports of my demise have been greatly exaggerated." (after a quotation from Mark Twain). *Acta Cytol.* 2015;59(2):121-32. DOI: [10.1159/000381842](https://doi.org/10.1159/000381842) PMID: 25997404.
6. Misra JS, Srivastava S, Singh U, Srivastava AN. Risk-factors and strategies for control of carcinoma cervix in India: hospital based cytological screening experience of 35 years. *Indian J Cancer.* 2009;46(2):155-9. DOI: [10.4103/0019-509x.49155](https://doi.org/10.4103/0019-509x.49155) PMID: 19346651.
7. Misra JS, Srivastava AN, Zaidi ZH. Cervical Cytological Changes Associated with Prolonged Sexual Exposure due to Early Marriage in Rural India. *J Clin Diagn Res.* 2020;14(1):EC06-EC10. DOI: [10.7860/jcdr/2020/42757.13412](https://doi.org/10.7860/jcdr/2020/42757.13412).
8. Iyer SS, Shah SK. Colposcopy as diagnostic aid in unhealthy cervix. *J Obstet Gynaecol India.* 1981;31:495-8.
9. Castaneda-Iniguez MS, Toledo-Cisneros R, Aguilera-Delgadillo M. [Risk factors for cervico-uterine cancer in

- women in Zacatecas]. *Salud Publica Mex.* 1998;40(4):330-8. DOI: [10.1590/S0036-36341998000400005](https://doi.org/10.1590/S0036-36341998000400005) PMID: [9774902](https://pubmed.ncbi.nlm.nih.gov/9774902/).
10. Green J, Berrington de Gonzalez A, Sweetland S, Beral V, Chilvers C, Crossley B, et al. Risk factors for adenocarcinoma and squamous cell carcinoma of the cervix in women aged 20-44 years: the UK National Case-Control Study of Cervical Cancer. *Br J Cancer.* 2003;89(11):2078-86. DOI: [10.1038/sj.bjc.6601296](https://doi.org/10.1038/sj.bjc.6601296) PMID: [14647141](https://pubmed.ncbi.nlm.nih.gov/14647141/).
 11. Dietsch E, Gibb H, Francis K. Abnormal Pap test results and the rurality factor. *Aust J Rural Health.* 2003;11(2):50-6. DOI: [10.1046/j.1440-1584.2003.00464.x](https://doi.org/10.1046/j.1440-1584.2003.00464.x) PMID: [12780494](https://pubmed.ncbi.nlm.nih.gov/12780494/).
 12. Kashyap N, Krishnan N, Kaur S, Ghai S. Risk Factors of Cervical Cancer: A Case-Control Study. *Asia Pac J Oncol Nurs.* 2019;6(3):308-14. DOI: [10.4103/apjon.apjon_73_18](https://doi.org/10.4103/apjon.apjon_73_18) PMID: [31259228](https://pubmed.ncbi.nlm.nih.gov/31259228/).
 13. Ryan M, Marlow L, Waller J. Socio-demographic correlates of cervical cancer risk factor knowledge among screening non-participants in Great Britain. *Prev Med.* 2019;125:1-4. DOI: [10.1016/j.ypmed.2019.04.026](https://doi.org/10.1016/j.ypmed.2019.04.026) PMID: [31085204](https://pubmed.ncbi.nlm.nih.gov/31085204/).
 14. Rajput N, Verma YS, Ahirwar G. Detection of abnormal cervical cytology by Pap's smear and comparison between rural and urban women. *J Evol Med Dent Sci.* 2013;2(41):7923-31. DOI: [10.14260/jemds/1396](https://doi.org/10.14260/jemds/1396).
 15. Das Gupta A, Naskar NN, Rama R, Deb S. A community based study of the prevalence of risk factor of carcinoma cervix in married women of rural area of West Bengal. *Indian J Community Med.* 2012;27(3):36-9.
 16. Raychaudhuri S, Mandal S. Socio-demographic and behavioural risk factors for cervical cancer and knowledge, attitude and practice in rural and urban areas of North Bengal, India. *Asian Pac J Cancer Prev.* 2012;13(4):1093-6. DOI: [10.7314/apjcp.2012.13.4.1093](https://doi.org/10.7314/apjcp.2012.13.4.1093) PMID: [22799287](https://pubmed.ncbi.nlm.nih.gov/22799287/).
 17. Castellsagué X, Muñoz N. Chapter 3: Cofactors in Human Papillomavirus Carcinogenesis—Role of Parity, Oral Contraceptives, and Tobacco Smoking. *JNCI Monographs.* 2003;2003(31):20-8. DOI: [10.1093/oxfordjournals.jnci-monographs.a003477](https://doi.org/10.1093/oxfordjournals.jnci-monographs.a003477).
 18. Misra JS, Srivastava AN, Singh S. Utility of cervical cytology in asymptomatic women under rural conditions in India. *Int J Clin Obstet Gynaecol.* 2020;4(3):196-8. DOI: [10.33545/gynae.2020.v4.i3d.602](https://doi.org/10.33545/gynae.2020.v4.i3d.602).
 19. Shrivastava M, Shrivastava OP, Jaiswal SS. Pattern of cervical smear cytology in rural medical college. *Pravara Med Rev.* 2011;6(1):4-8.
 20. Nikumbh DB, Nikumbh RD, Dombale VD, Jagtap SV, Desai SR. Cervicovaginal cytology: clinicopathological and social aspect of cervical cancer screening in rural (Maharashtra) India. *Int J Health Sci Res.* 2012;1(2):125-32.
 21. Zhang ZF, Parkin DM, Yu SZ, Esteve J, Yang XZ. Risk factors for cancer of the cervix in a rural Chinese population. *Int J Cancer.* 1989;43(5):762-7. DOI: [10.1002/ijc.2910430503](https://doi.org/10.1002/ijc.2910430503) PMID: [2714881](https://pubmed.ncbi.nlm.nih.gov/2714881/).
 22. Thulaseedharan JV, Malila N, Hakama M, Esmay PO, Cheriyan M, Swaminathan R, et al. Socio demographic and reproductive risk factors for cervical cancer - a large prospective cohort study from rural India. *Asian Pac J Cancer Prev.* 2012;13(6):2991-5. DOI: [10.7314/apjcp.2012.13.6.2991](https://doi.org/10.7314/apjcp.2012.13.6.2991) PMID: [22938495](https://pubmed.ncbi.nlm.nih.gov/22938495/).