

Impact of Literacy Status on the Cervical Cancer Screening in Rural Women of India

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Abstract

Background: Illiteracy is very high in women of rural India and awareness regarding cervical cancer and its risk factors is almost negligible. Rural cervical cancer screening was attempted through camp approach to find out relationship between literacy and compliance rate for Pap smear and pre disposing factors to cervical carcinogenesis.

Methods: From 135 camps, 4279 women were registered organized during rural screening program in Lucknow West, India between May 2013 to March 2017 under the auspices of Era's Medical College, Lucknow.

Results: Only 4279 (31.2%) of the 13500 women counseled and motivated attended the camp and 2369 (55.5%) had Pap smear. Only 37.2% women were found literate and remaining 62.8% illiterate. The SIL rate was almost identical in both groups and also *Candida albicans* but trichomonan infection was higher in illiterate women. Majority of literate women from younger sexually active women with low parity while the illiterate women were mostly from the older age group beyond 40 years with multiparity.

Conclusion: Literacy rate is very low in the rural women. Proper counseling may create awareness for early detection of cervical cancer and also may improve the personal genital hygiene among rural women.

Keywords: Rural women; Literacy; SIL and ASCUS; STDs

Introduction

In rural population of India, women in majority are illiterate and are ignorant of hazards of carcinoma cervix and utility of early detection of the disease by cytology. These are the main focus for any rural cervical cancer screening program. Creating awareness for undergoing Pap test can be achieved through different educational programs. Jayant et al. [1], have found that rural women are mostly illiterate, socio-economically backward, have poor hygienic conditions and have many risk factors of cervical cancer. This is so because the access to medical facilities and advice and awareness programs are almost non-existent [1].

Dhamija et al. [2] have undertaken a survey to access the knowledge, aptitude and practice among rural women and have found that younger women have better awareness and knowledge about cervical cancer and related information [2]. Literacy status for education and exposure to family planning devices are found to be influential in creating awareness about the disease. Early episodes of gynecological problems and treatment leads to higher awareness and it is felt that efforts should be made to innovate ways to reach older and illiterate women for better awareness in the community. Tripathi et al. [3] have also found the main barrier

for rural screening is cognitive i.e. ignorance about the disease [3]. Awareness score was significantly associated with age, education, income and number of persons with history of cancer in the family. Isac et al. [4] have found optimization of health literacy as key factor for creating awareness and increasing participation in screening program [4].

Cervical cancer screening program is in progress in rural population of West Lucknow, India since May, 2013 and till March 2017, a total of 4279 women have been registered by organizing the camps. This was done under auspices of Era's Lucknow Medical College and Hospital, Lucknow and till March 2017, a total of 135 camps have been organized. Out of the total 13,500 women counseled @ 100 women per village, 4279 women attended the camp (31.2%) and 2369 of the 4279 women have undergone Pap smear examination (55.5%). Since we have sufficient information about literacy and gynecological problems etc. of these women while motivating them for undergoing Pap test, we thought it interesting to analyze the percentage of literacy and illiteracy with different cytopathological changes in cervix and different pre-disposing factors to carcinogenesis like age, parity and

gynecological symptoms. These factors were compared in the two groups of women and findings obtained after extensive analysis of data are presented in this paper.

Materials and Methods

Cervical cancer screening is being carried out in Kakori and Malihabad blocks of West Lucknow, U.P. from May, 2013 and till March 2017, a total of 135 camps have been organized for early detection of cervical cancer. In each village, visit by trained nurses were made in 100 houses for counseling women regarding the hazards of cervical cancer and benefits of the detection of carcinoma cervix in its pre-invasive phase through informative literature. Till now, 13,500 women have been counseled and out of them 4279 (31.2%) attended the camp, which was organized next day of the counseling. The camp team comprised of cytologist, gynecologist, two trained nurses and one Ayah. The women attending the camp were thoroughly motivated for undergoing Pap smear examination telling them about the immense importance of the pap test in saving their lives through early detection of the disease. They were also told about high risk group i.e. women of high age and parity and symptomatic women and laid emphasis that if they come under this category, Pap smear is mandatory for them. The cytologist also filled Pap smear form taking details of the patient i.e. name, husband's name, age, parity and gynecological symptoms complained off by them. If they were literate, their signatures were taken and right thumb impression was taken in case of illiterate women.

In case of literate women if the women could sign only in Hindi, it was assumed that she has primary level education while those who signed in English were supposed to possess secondary level education. After the Pap smear form was filled by the cytologist, the women were sent to gynecological examination room where they were again motivated and examined by the gynecologist. A scrape smear was taken with help of Ayre's spatula from the squamocolumnar junction of the cervix and immediately fixed in the absolute alcohol. The smears were transported to the cytology lab of the Pathology department of the college where they were stained according to the Papanicolau's technique. The cervical smears were examined by the cytologist and the cytopathological changes observed were graded according to Bethesda [5] system of classification [5].

Results

The percentage of literacy in 4279 women who attended the camp was as follows:

Number of Literate women-1593(37.2%)

Number of Illiterate women-2686(62.8%)

Illiteracy was extremely high in rural women (62.8%) out of 1593 literate women the percentage of primary and secondary level education was as follows:

Primary level-1471(92.4%)

Secondary Level-122(7.6%)

Literacy rate in women was 37.2% out of which 92.4% had primary level education and only 7.6% had secondary level schooling.

Compliance rate for Pap smear examination on the whole in the total 4279 women who attended the camp was 55.5% (2369 cases).

The compliance rate in the literate and illiterate group was found to be as follows:

- i. Literate Women-955/1593(59.9%)
- ii. Illiterate Women-1414/2686(52.6%)

Surprisingly, the compliance rate was only 7% higher in the literate women. It seems that proper counseling and motivation plays major role in the compliance rate and the educational status might be secondary and enhancing factor.

Out of 4279 women who attended the camp, 3840(89.9%) were Hindus and only 429(10.1%) were Muslims. The reason behind this might be that the majority of the villages covered by the rural screening had predominately Hindu population.

Literacy status in these two communities was found to be as follows:

- i. Hindu women (3840), Literate-1426(37.1%), Illiterate-2414(62.9%)
- ii. Muslim women (429), Literate-158(36.8%), Illiterate-271(63.2%)

The literacy rate was found to be almost identical in both the communities.

The compliance rate for Pap smear examination was as follows in the two communities

- i. Hindu-2142/3840-55.7%
- ii. Muslim-127/429-52.9%

The compliance rate was slightly higher in Hindu women.

Cytopathological changes in the cervix in the total 2369 women examined were found to be as follows:

- i. Ascus-203(8.5%)
- ii. SIL-432(18.2%)

Incidence of Ascus was slightly higher in the illiterate women (9.3% as against 7.4% with literacy). The SIL rate was, however, identical in both the groups. This is shown in Table 1.

Table 1: Relation between literacy status and cytopathological findings in the cervix in 2369 women.

Cytopathology of Cervix	Total Number of Cases (2369)	Literate Group (955)	Illiterate Group (1414)
ASCUS	203(8.5%)	71(7.4%)	132(9.3%)
SIL	432(18.2%)	179(18.7%)	253(17.8%)



The two micro-organisms (non-viral sexually transmitted diseases (STDs) namely: *Candida albicans* and *Trichomonas vaginalis*) have been studied during the present screening and their incidence in literate and illiterate women are shown in Table 2. The incidence of *Trichomonas vaginalis* was high in the illiterate women (1.3%) while that of *Candida* was almost identical in both the groups. The only plausible explanation for high trichomonal infection rate in the illiterate women could be due to the poor personal genital hygiene owing to lack of knowledge in the illiterate women than better living conditions prevailing in the educated women.

Table 2: Relation between literacy status and STDs.

Stds	Total Number Of Cases (2369)	Literate Group (955)	Illiterate Group (1414)
<i>Candida albicans</i>	112(4.7%)	45(4.7%)	67(4.7%)
<i>Trichomonas vaginalis</i>	24(1.1%)	5(0.5%)	19(1.3%)

Table 4: Relation between literacy status and gynecological symptoms.

Gynecological Symptoms	Total Number of Cases (4279)	Literate (1593)	Compliance Rate	Illiterate (2686)	Compliance Rate
Vaginal discharge	877(20.4%)	408 (25.6%)	382(93.6%)	469 (17.3%)	437(93.1%)
Vague pain in lower abdomen	1206(28.1%)	477 (29.9%)	305(63.9%)	729 (27.2%)	328(44.9%)
Menstrual disorders	375(8.7%)	207 (12.9%)	123(60.3%)	168 (6.0%)	56(33.8%)

Relationship between occurrence of different gynecological symptoms and literacy status was also analyzed and shown in Table 4. The gynecological complaints were found in 2460 women out of total 4279 women examined (57.4%) while remaining 1819 women (42.5%) were asymptomatic. The percentage of women complaining of gynecological symptoms was higher in the literate women (68.5% as against 50.8% in the illiterate women). Similarly the number of asymptomatic women was higher in the illiterate women (49.2%) than 31.5% seen in the literate women. It might be due to the fact that most of the illiterate women were reluctant and shy to tell their complaints. This reluctance was low in the literacy group.

Table 5: Relation between literacy status and age.

Age Group	Total Number of Cases (4279)	Literate (1593)	Compliance Rate	Illiterate (2686)	Compliance Rate
< 20 years	289(6.7%)	225(14.1%)	52(23.1%)	64(2.4%)	31(48.4%)
21-30 years	1588(37.1%)	887(55.6%)	527(59.4%)	701(26.1%)	372(53.1%)
31-40 years	1126(26.3%)	317(19.8%)	239(25.3%)	809(30.1%)	537(66.3%)
Above 40 years	1276(29.8%)	164(10.2%)	137(82.1%)	1112(41.3%)	474(42.6%)

The relation between literacy and age has been investigated in detail and is shown in Table 5. The majority of the literate women attending the camp were from the younger sexually active group up to 30 years of age while the trend was reverse with illiteracy

Table 3: Relation between literacy status and clinical lesions of cervix.

Clinical Lesion of Cervix	Total Number of Cases (2369)	Literate Group (955)	Illiterate Group (1414)
Erosion cervix	192(8.1%)	88(9.2%)	104(7.3%)
Hypertrophic cervix	35(1.3%)	16(1.6%)	19(1.1%)
Cervix bleeds on touch	21(0.7%)	3(0.3%)	18(0.9%)
Others (Cervicitis, endocervical polyp, Rectocele and cystocele)	116	32(3.3%)	84(5.9%)

Literacy status of women in relation to the development of clinical lesions of cervix have also been investigated and shown in Table 3. The severe clinical lesions like cervix bleeds on touch, cervicitis, endocervical polyp etc were found high in the illiterate women and this might be due to poor personal hygiene arising from lack of knowledge of sanitation.

Pain in lower abdomen was found to be most common gynecological symptom followed by vaginal discharge and menstrual disorders. Here also, the incidence of all three types of symptoms was higher in the literate women than in the illiterate group and shy factor might be the reason for this. Incidentally the compliance rate for Pap smear was high with vaginal discharge, in both literate and illiterate group. It was due to fact that most of these cases were persistent type for 5-10 years and the women were strongly motivated to undergo Pap smear examination. They were assured that Pap smear examination will reveal the causative agent of the vaginal discharge treatment of which will cure the symptom.

and majority of women above 40 years attended the camp. The compliance rate of Pap smear examination was higher in all age groups among literate women as compared to illiterate category.

Table 6: Relation between literacy status and parity.

Parity Group	Total Number of Cases (4279)	Literate (1593)	Compliance Rate	Illiterate (2686)	Compliance Rate
P0	237(5.5%)	144(9.1%)	93(64.5%)	93(3.4%)	52(55.9%)
P1	367(8.5%)	203(12.7%)	148(72.9%)	164(6.1%)	72(43.9%)
P2	633(14.7%)	325(20.4%)	212(65.2%)	308(11.4%)	176(57.1%)
P3 and above	3042(71.1%)	921(57.8%)	502(54.5%)	2121(78.9%)	1114(55.5%)

Impact of literacy on the parity was also analyzed and is shown in Table 6. The percentage of women attending the camp with low parity was higher among the literate group while reverse trend was seen with number of multiparous women with 3 or more children, being higher in the illiterate women than in the literate women. The compliance rate for the Pap smear examination was also higher in the literacy group.

Discussion

The percentage of illiteracy in the rural women was found to be 62.8%. Sudhir et al. [6] in a rural population of South India have reported slightly lower rate of illiteracy (52.5%) [6]. It reflects that the rural women of South India are more conscious of education. Among literate women also, the percentage of secondary level education was only 8.2% in the present series while this was 47.5% among the rural cohorts of South India. In spite of high literacy rate. Singh et al. [7] have found that, majority of the rural women were not aware of risk factors of cervical cancer, the screening process and its importance as well as good hygiene practices. In another study in South India [7], Thovarayi et al. [8] have seen that the majority of the rural women (98.5%) had poor knowledge regarding cervical cancer screening [8].

In the present series, the compliance rate for Pap smear testing was only 7% higher in literate women (59.9%) than 52.6% observed in the illiterate women. Nene et al. [9] have also found that the acceptance of screening was higher in educated women in Maharashtra and it was felt that the communication methods and the delivery strategies should be aimed at encouraging older, less educated women who have less contact with reproductive disorders and should be motivated to further increase the screening uptake [9]. However, slightly higher compliance rate in our series in the educated women than in the illiterate ones shows that proper counseling and motivation which we have thoroughly done in each village prior to holding the camps also plays vital role in convincing them for undergoing Pap smear examination.

Cytopathological changes examined in the cervical smears of 2369 women revealed ASCUS in 103 cases (8.5%) and SIL in 432 cases (18.2%). The incidence of Ascus was slightly higher with illiteracy but the SIL rate was identical in both literate and illiterate women. Surprisingly, in a hospital based cytological screening in Lucknow city where women attending the OPD were mostly literate, the incidence of SIL was very low (4.2%) as compared to 18.7% observed in the rural women [10].

A high incidence of trichomonal infection was seen in the illiterate women and this may be due to poor genital hygiene prevailing in the rural women. However, the incidence of Candida was almost identical in both the groups. Hence, there is urgent need of promoting the teaching of the ways to maintain a good personal and particularly genital hygiene to the illiterate masses. These factors have also given rise to the frequent development of the clinical lesions of cervix and gynecological complaints in the illiterate women.

Majority of women in the educated class were found to be the younger sexually active group between 21-30 years of age. In the illiterate women, reverse trend was seen and majority of women belonged to the older age group between 31-40 years and above 40 years of age. The compliance rate was also higher in literate women in all age groups. Singh, et al. [7] have also reported similar findings as majority of women attending the camp were from above 30 years of age.

Almost similar trend was also seen in the case of literacy status in relation to parity. Majority of the literate women attending the camp were found to be either nulliparous or low parity while with illiteracy, reverse trend was seen with maximum number of women (almost 80%) were multiparous with 3 or more children. The higher number of pregnancies in the illiterate women shows the lack of knowledge about the contraception and different devices to check the pregnancy and also benefits of small family. Surprisingly, the majority of women attending the urban OPD were found to be older women with high parity [11].

Conclusion

Illiteracy has been found very high in rural women of India. These women have poor knowledge about personal genital hygiene which is the main cause of persistent vaginal infection which is undetected and left untreated. Hence, it is felt that proper counseling and motivation of rural women should be done to create awareness regarding hazards of cervical cancer and immense utility of Pap smear screening for early detection of the disease. Further, this should also include teaching them about maintaining the personal genital hygiene which will reduce the vaginal infection.

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