Original Research Article

A Hospital Based Screening of Cervical Carcinoma among Women from Rural Population

Anjana Singh[1], Ashish Raj Kulshrestha[2], Dr Pawan Trivedi[1*], Rupita Kulshrestha[1], Sanjeet Kumar Singh[2], Manish Raj Kulshrestha[3]

[1]Mayo Institute of Medical Sciences, Barabanki, Uttar Pradesh, India
[2]King George Medical University, Lucknow, Uttar Pradesh, India
[3]Dr Ram Manohar Lohia Institutes of Medical Sciences, Lucknow, Uttar Pradesh, India

Abstract

Introduction: Carcinoma cervix is the most common preventable cancer in women. Every year 122,844 women are diagnosed with cervical cancer in India, and 67,477 cases die from the disease. Secondary prevention includes screening for precancerous lesions and treating them. The Papanicolaou (Pap) smear has become the standard screening test for cervical cancer and premalignant lesions globally. *Material and method*: In our prospective study, the results of Pap smears obtained from 680 women were analyzed, which had been examined in between March 2013 and October 2018. The pregnancy, known and treated case of cancer cervix, woman who used local douche or antiseptic cream and woman with history of Pap smear testing was excluded from the study. The patient was placed in lithotomy position. A Cusco's bivalve speculum was introduced through the vagina. The cervix was visualized. The longer projection of the Ayre's spatula was placed in the cervix near squamocolumnar junction and rotated through 360°. An average of two smears was collected for each case. The examination results were reported according to the Bethesda III Classification System (2001). *Result*: Cytological examination was done in all the 680 women, 100 (14.7%) smears were reported as negative for intraepithelial lesions or malignancy (NILM), 428 (62.9%) were reported as inflammatory smear, 8 (1.1%) were reported as Low grade squamous intraepithelial lesion (LSIL), 8 (1.1%) were reported as High grade squamous intraepithelial lesion (HSIL), atypical finding in 68 (10%) bacterial vaginosis in 32(4.7%) and candidiasis in 8(1.1%). *Conclusion*: Pap smear testing is very safe, easy to perform, non-invasive and effective test for detecting premalignant lesions of carcinoma cervix. Thus, it helps to decrease morbidity and mortality from carcinoma cervix by treating it at early stage.
Keywords: Carcinoma, women, cervical, cancer, cervix, premalignant.

INTRODUCTION

According to WHO, Cervical cancer is the fourth most frequent cancer in women [1]. Annual incidence is estimated to 570,000 in 2018 and it constitutes 6.6% of all female cancers [1]. Mortality due to cervical cancer in low and middle-income countries is approximately 90% [1]. In India, 1,22,844 and 67,477 women are diagnosed and expired annually due to cervical cancer, respectively [2]. It is the second most common cancer in women of reproductive age group (15–44 years) [2].

It is a preventable cancer. The primary prevention includes vaccination against HPV. Secondary prevention includes screening for precancerous lesions and treating them. There are three screening modalities including cytology, visual inspection and HPV tests. In cytology, cells are scraped from the squamo-columnar junction of the cervix and these were fixed on a glass slide for reading [3]. The Papanicolaou (Pap) smear was introduced in 1941. It became the standard screening test for cervical cancer and premalignant lesions globally [2, 4].

Early detection and screening reduces the mortality due to invasive cervical cancer worldwide. This is possible because, the Pap test detects early cervical epithelial cell abnormalities and mild-to-severe dysplasia to invasive cancer. This facilitates early diagnosis [5-7]. Pap smear screening has 50%−75% and 98%−99% sensitivity and specificity, respectively [8].

This test also aids in the diagnosis of other conditions such as infective and inflammatory conditions apart from the detection of cervical cancer and its precursor lesions.

MATERIAL AND METHOD

This was a prospective study, performed at Department of Pathology, MIMS, Barabanki, Uttar Pradesh. In our study, the results of Pap smears obtained from 680 women were analyzed, which had been examined in between March 2013 and October 2018. The women age were ranged from 20 to 80 years. Detailed history including medical, menstrual history, marital history obstetric history, vaginal discharge, sexual history, post coital bleeding, intermenstrual bleeding, postmenopausal bleeding, socioeconomic status and educational history was taken.

Exclusion Criteria

The pregnant woman, known and treated case of cancer cervix, woman who used local douche or antiseptic cream and woman with history of Pap smear testing was excluded from the study.

All the women included in the study were taught about the screening method to detect carcinoma of the cervix in preclinical stage. The women who volunteered to participate were informed about the Pap smear, biopsy if required. Thereafter, informed consent was obtained. A detailed history was taken in all the women and that included personal information, history, and clinical examination. It was ensured that no local douche, antiseptic cream, and no local internal examination were done on the day of test. The patient was placed in lithotomy position. A Cusco's bivalve speculum was introduced through the vagina. The cervix was visualized. The longer projection of the Ayre's spatula was placed in the cervix near squamocolumnar junction and rotated through 360°. An average of two smears was collected for each case. The smear material gently spread on a clean glass slide. The glass slide was then immediately put into the Coplin jar containing 100% methanol (fixative). It was then stained by Pap method (RAPID-PAP kit). The cytological interpretation of smears was made according to the New Bethesda System for reporting Cervical Cytology 2014. Based on Bethesda system, lesions are broadly divided into negative for intraepithelial neoplasia and epithelial cell abnormalities including squamous and glandular cells.

Cytology laboratory reported the examination results according to the Bethesda III Classification System (2001) as follows [9-11]:

a. Adequacy of sample
- Satisfactory
- Unsatisfactory

b. Squamous cell abnormalities
- Atypical squamous cells (ASCs)
- ASC of undetermined significance (ASC-US)
- ASC that cannot rule out high-grade lesion (ASC-H)
- Low-grade squamous intraepithelial lesion (LSIL)
- High-grade squamous intraepithelial lesion (HSIL)
- Squamous cell carcinoma (SCC)

c. Glandular cell abnormalities
- Atypical glandular cells, specify site of origin, if possible
- Atypical glandular cells, favour neoplasia
- Adenocarcinoma in situ
- Adenocarcinoma

d. Other cancers (such as lymphoma, metastasis, and sarcoma)
- All the women with abnormal results detected in Pap smear were advised for follow-up and treatment as per the standard guidelines by the WHO
- Those with LSIL and HSIL were counselled and were advised to undergo colposcopic examination and biopsy for histopathological examination.

Data Analysis

Data collected were analyzed using SPSS version 19. Categorical data were presented as percentage (%). Normally distributed data were presented as means and standard deviation.

The objective of the study was to detect early cervical carcinoma in asymptomatic women of rural society and educate them about Pap smear.

RESULT

In our study, only 25 women (3.6%) knew that there are tests available that can detect cancer of the cervix. Majority of the women included in the study were in the age group of 20–80 years, with mean age of 39.91 years. Of 680 women, 632 (93.0%) were parous and 48 women (7.0%) were nulliparous. All women were married and were in monogamous relationship. Of 680 women, 78(11.47%) had studied till post graduation, 95(13.97%) had studied till graduation, 204(30%) studied till higher secondary 180(26.47%) had studied till metrics and 123(18.09%) were illiterate. Of 680 women, 612 women (90%) were using some kind of family planning methods. Most of the women were of lower socioeconomic strata and some of them were from middle socioeconomic strata. There was history of smoking in 68 women (10%).

Table-1: Socioeconomic and demographic characteristics of the study population

Age group(years)	19-30	180 (26.47%)
	31-40	250 (36.76%)
	41-50	154 (22.64%)
	51-60	64 (9.41%)
	More than 60	32 (4.7%)
Marital status	Married	680 (100%)
	Unmarried	Nil
Contraception usages	Never used	80 (11.76%)
	OCP	90 (13.23%)
	Barrier methods	186 (27.35%)
	Vasectomy	26 (3.8%)
	Tubal ligation	154 (22.64%)
	IUCD	139 (20.44%)
	Coitus interuptus	3 (0.44%)
	Calendar Method	2 (0.29%)
Parity status	Nulliparous	48 (7%)
	Primiparous	220 (32.35%)
	Multiparous	412 (60.59%)
Education level	Illiterate	123 (18.09%)
	Metrics	180 (26.47%)
	Higher secondary	204 (30%)
	Graduate	95 (13.97%)
	Post graduate	78 (11.47%)
Complaints	No complaints	75 (11%)
	Asymptomatic vaginal discharge	367 (54.0%)
	Post coital bleed	16 (2.3%)
	Inter menstrual bleeding	20 (3%)
	Post menopausal bleed	88 (12.9%)
	Fowl smelling vaginal discharge	40 (5.8%)
	Vulvar itching	20 (3%)
	Low back ache	34 (5%)
	Dyspareunia	20 (3%)

The most common presenting complaint of the study population was asymptomatic vaginal discharge which was 54.0% followed by fowl-smelling vaginal discharge in 5.8% and postmenopausal bleed in12.9%. However, 27.3% women had no complaints. On speculum examination of the cervix, 19% of women had normal looking cervix, 54% has discharge mostly asymptomatic, 9% had unhealthy looking cervix and 18% had cervical erosion. On pervaginum examination, 564 women (83%) had normal findings; 61 women (9%) had mass in the uterus or adnexa, while 54 women (8%) had cervix which bled on touch. Cytological examination was done in all the 680 women who included in the study, 100 (14.7%) smears were reported as negative for intraepithelial lesions or malignancy (NILM), 428 (62.9%) were reported as inflammatory smear, 8 (1.1%) were reported as LSIL, 8 (1.1%) were reported as HSIL, atypical finding in 68 (10%) bacterial vaginosis in 32(4.7%) and candidiasis in 8(1.1%). In cases of 28 women (4.1%) the smears were repeated due to unsatisfactory sampling in nature (Table-2).

**Table-2: Clinical (per scapulum) and cytological examination findings**

|		
Clinical findings	Healthy looking vagina	129 (19%)
	Discharge	368 (54%)
	Chronic cervicitis	7 (1%)
	Cervical erosion	122 (18%)
	Bleed on touch	54 (8%)
Pap smear	NILM	100 (14.7%)
	Inflammatory smear	356 (52.35%)
	Inflammatory smear, reactive atypia	72 (10.6%)
	Atrophic smear	16 (2.2%)
	Bacterial vaginosis	32 (4.7%)
	Candidiasis	8 (1.1%)
	ASC-HSIL-AGUS	4 (0.56%)
	ASCUS	32 (4.7%)
	ASC with dysplastic	4 (0.56%)
	LSIL	8 (1.1%)
	HSIL	8 (1.1%)
	Inadequate sampling	28 (4.1%)
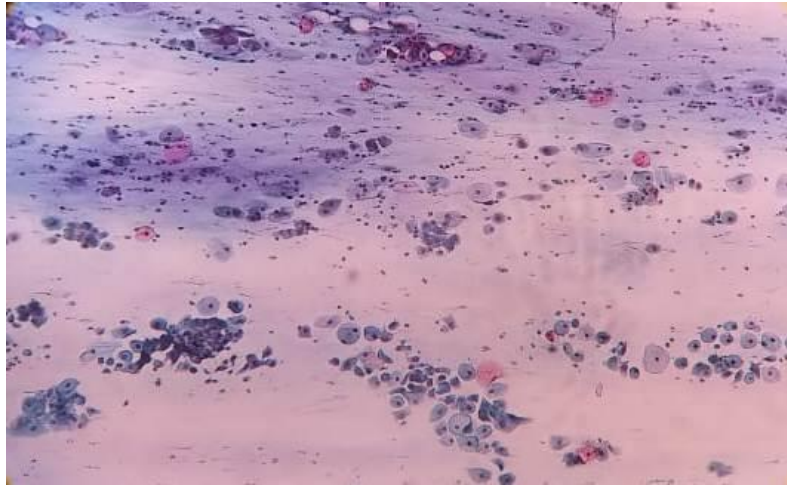
Fig-1: Inflammatory Smear
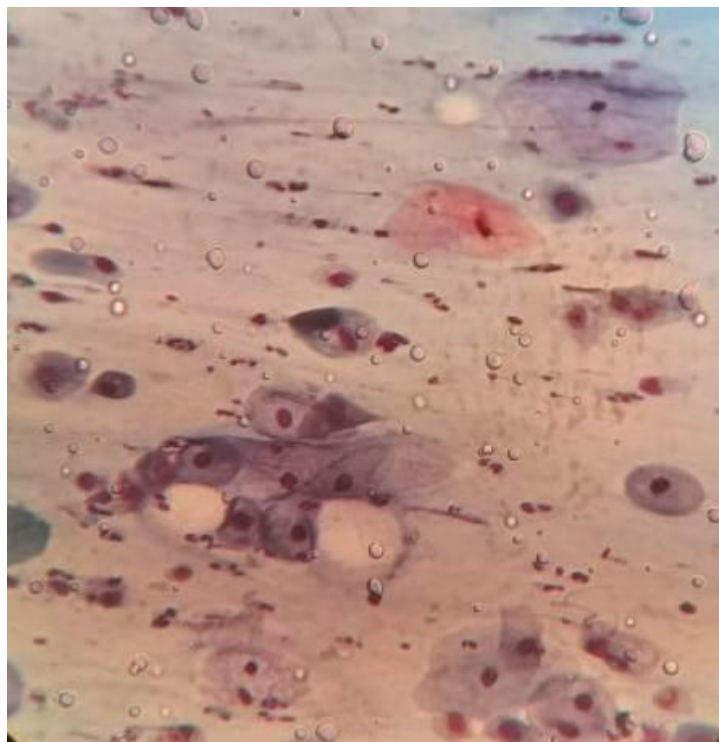
Fig-2: Inflammatory Smear
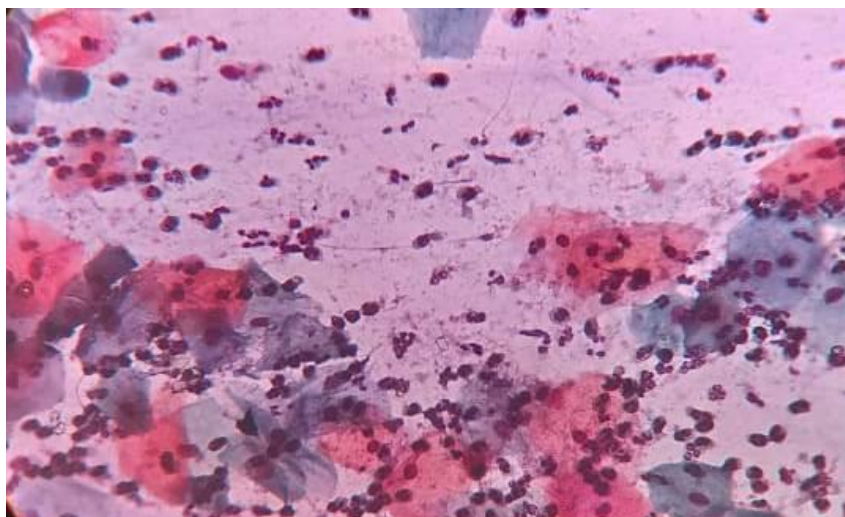
Fig-3: Atrophic Smear
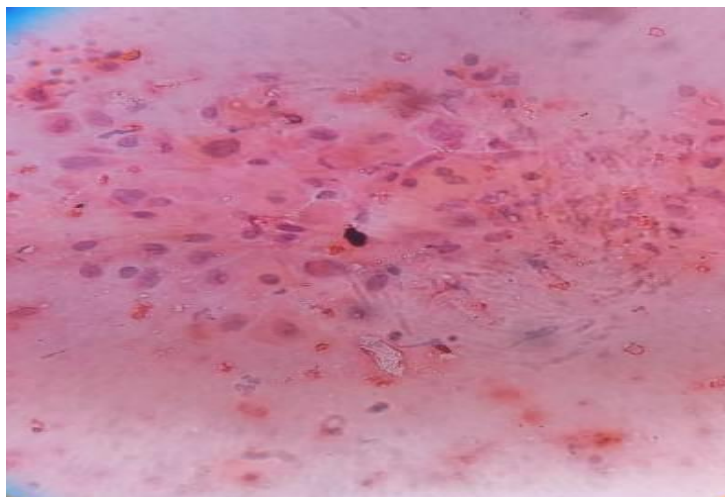
Fig-4: High grade squamous intraepithelial lesion

Out of 680 women who underwent cervical cancer screening extermination 84 women were found to have squamous cell abnormalities like ASUS, ASCH, HSIL, SCC and LSIL lesions on microscopy (Table-2).

Abbreviation

ASCUS- Atypical squamous cells of undetermined significance (ASC)
LSIL-Low grade squamous intraepithelial lesion
HSIL-High grade squamous intraepithelial lesion

DISCUSSION

The morbidity and mortality from cervical cancer have not been eliminated despite widespread screening and acceptance of the Pap smear. This is the most widely screened cancer in both developed and developing countries. The population-based cervical cytology screening programs, using Pap smear testing every 3–4 years have reduced cervical cancer mortality by up to 80% in developed countries in the last five decades as shown by Nayir *et al*., [12] Cervical cancer is on the decreasing trend in developing country like India, as shown in a population-based study by Sreedevi *et al.*, [13] The Pap smear testing was done for the first time in all recruited women. None of the women knew that Pap smear test can detect cervical cancer on outdoor patient department basis. The mean age in our study was 39.91 years. In a study by Shanmugham *et al.*, Cervical cancer usually occurs between 40 and 50 years and its precursor lesion usually occurs 5–10 years earlier [14]. There is recommendation that the women, below age of 45 years should have at least one smear test [15]. However, those women, above age of 45 years who did not have their first smear might miss the chance of cervix cancer early detection. This may be frustrating. Pap smear testing for cervical cancer is an important part of preventive health care of women. According to WHO, every woman in the target age group (30-49 years) should be screened for cervical cancer at least once where it is most beneficial? [1]. In our study, NILM was present in 100 women (14.7%) and inflammatory smear was found in 356 women (52.35%). Studies are reported variable range of inflammatory lesions including 14.3% to 73.7% [5, 16]. This persistent inflammation is associated with cervical intraepithelial neoplasia (CIN) in 14.3%−16.7% of women [5, 16]. Further evaluation is required for the women with abnormal pap smear (CIN) [5, 15-17]. The overall prevalence of cytological abnormality is high as shown by various studies done in India. This difference may be due to social and cultural differences, age, sexual activity level, incidence of related infections, and presence or absence of cervical screening programs in different locality and societies. The epithelial cell abnormality, in our study was observed more in younger age groups of women as compared to many studies [18-27]. This fact highlights the need for cytological screening in both younger as well as in older age group. For decreasing the morbidity and mortality from carcinoma cervix, there is a need to create awareness and education about this among women and motivate them to attend such screening time to time as medical health check-up.

Strengths of the study

The study was conducted in a tertiary care centre (medical college) under direct supervision of medical officer, dedicated pathology set up along with other ancillary staff. This study includes more of lower socioeconomic status patients, in whom most of them were unaware of this screening test.

Limitations of the study

In this study, total number of patients was less. The Biopsy reports were not included in this study.

CONCLUSION

Pap smear testing is very safe, easy to perform, non-invasive and effective test for detecting

premalignant lesions of carcinoma cervix. Thus it helps to decrease morbidity and mortality from carcinoma cervix by treating it at early stage.

Financial support and sponsorship: Nil

Conflicts of interest: None

REFERENCES

1. UN Joint Global Programme on Cervical Cancer Prevention and Control. (2016). World Health Organization 2016 Available at: *https://www.who.int/cancer/prevention/diagnosis-screening/cervical-cancer/en/* Accessed on 15 Feb 2019.
2. Ferlay, J. (2004). Cancer incidence, mortality and prevalence worldwide. *GLOBOCAN 2002.* IARC Cancer Base No. 5, version 2.0. Http: // www - depdb.Iarc. Fr / globocan / GLOBOframe. Htm.
3. Garner, E. I. (2003). Cervical cancer: disparities in screening, treatment, and survival. *Cancer Epidemiology and Prevention Biomarkers*, *12*(3), 242s-247s.
4. Vaghela, B. K., Vaghela, V. K., & Santwani, P. M. (2014). Analysis of abnormal cervical cytology in Papanicolaou smears at tertiary care center: a retrospective study. *International Journal of Biomedical and Advance Research*, *5*, 47-49.
5. Kulkarni, P. R., Rani, H., Vimalambike, M. G., & Ravishankar, S. (2013). Opportunistic screening for cervical cancer in a tertiary hospital in Karnataka, India. *Asian Pacific Journal of Cancer Prevention*, *14*(9), 5101-5105.
6. Satija, A. Cervical Cancer in India: South Asia Centre for Chronic Disease. [Last accessed on 2014 Feb 16]. Available from: http://www.sancd.org/uploads/pdf/cervical_cancer.pdf .
7. Arbyn, M., Castellsagué, X., de Sanjosé, S., Bruni, L., Saraiya, M., Bray, F., & Ferlay, J. (2011). Worldwide burden of cervical cancer in 2008. *Annals of oncology*, *22*(12), 2675-2686.
8. Aswathy, S., Quereshi, M. A., Kurian, B., & Leelamoni, K. (2012). Cervical cancer screening: Current knowledge & practice among women in a rural population of Kerala, India. *The Indian journal of medical research*, *136*(2), 205.
9. Apgar, B. S., Zoschnick, L., & Wright, J. T. (2003). The 2001 Bethesda System terminology. *American family physician*, *68*(10), 1992-1998.
10. Nayar, R., & Solomon, D. (2004). Of 'The Bethesda System for reporting cervical cytology'-atlas, website, and Bethesda interobserver reproducibility project.
11. Solomon, D., Davey, D., Kurman, R., Moriarty, A., O'connor, D., Prey, M., ... & Young, N. (2002). The 2001 Bethesda System: terminology for reporting results of cervical cytology. *Jama*, *287*(16), 2114-2119.
12. Nayir, T., Okyay, R. A., Nazlican, E., Yesilyurt, H., Akbaba, M., Ilhan, B., & Kemik, A. (2015). Cervical cancer screening in an early diagnosis and screening center in Mersin, Turkey. *Asian Pac J Cancer Prev*, *16*(16), 6909-6912.
13. Sreedevi, A., Javed, R., & Dinesh, A. (2015). Epidemiology of cervical cancer with special focus on India. *International journal of women's health*, *7*, 405-415.
14. Shanmugham, D., Vijay, A., & Rangaswamy, T. (2014). Colposcopic evaluation of patient with persistant inflammatory pap smear. *Sch J Appl Med Sci*, 2:1010-101.
15. Umarani, M. K., Gayathri, M. N., & Kumar, R. M. (2016). Study of cervical cytology in Papanicolaou (Pap) smears in a tertiary care hospital. *Indian Journal of Pathology and Oncology*, *3*(4), 679-683.
16. Lawley, T. B., Lee, R. B., & Kapela, R. (1990). The significance of moderate and severe inflammation on class I Papanicolaou smear. *Obstetrics and gynecology*, *76*(6), 997-999.
17. Bhutia, K., Puri, M., Gami, N., Aggarwal, K., & Trivedi, S. S. (2011). Persistent inflammation on Pap smear: Does it warrant evaluation?. *Indian journal of cancer*, *48*(2), 220-222.
18. Sherwani, R. K., Khan, T., Akhtar, K., Zeba, A., Siddiqui, F. A., Rahman, K., & Afsan, N. (2007). Conventional Pap smear and liquid based cytology for cervical cancer screening-A comparative study. *Journal of cytology*, *24*(4), 167.
19. George, P., & Rao, S. (2014). Cytology of uterine cervix by pap smear: a study from South India. *J Eval Med Dent Sci*, *3*(20), 13796-803.
20. Sherwani, R. K., Khan, T., Akhtar, K., Zeba, A., Siddiqui, F. A., Rahman, K., & Afsan, N. (2007). Conventional Pap smear and liquid based cytology for cervical cancer screening-A comparative study. *Journal of cytology*, *24*(4), 167-172.
21. Gupta, K., Malik, N. P., Sharma, V. K., Verma, N., & Gupta, A. (2013). Prevalence of cervical dysplasia in western Uttar Pradesh. *Journal of Cytology/Indian Academy of Cytologists*, *30*(4), 257-262.
22. Nayani, Z. S., & Hendre, P. C. (2015). Comparison and correlation of Pap smear with colposcopy and histopathology in evaluation of cervix. *J Evol Med Dent Sci*, *4*(53), 9236-9247.
23. Sengul, D., Altinay, S., Oksuz, H., Demirturk, H., & Korkmazer, E. (2014). Population-based cervical screening outcomes in Turkey over a period of approximately nine and a half years with emphasis on results for women aged 30-34. *Asian Pac J Cancer Prev*, *15*(5), 2069-74.
24. Kothari, S., Gohel, A., Dayal, A., Shah, R., & Patel, S. (2014). Pap smear–A tool for detection of cervical intraepithelial lesions in health check up schemes: A study of 36,740 cases. *Int J Res Med*, *3*, 12-15.
25. Nair, G. G., Shamsuddin, F., Narayanan, T., & Balan, P. (2016). Cytopathological pattern of

cervical pap smears-a study among population of North Malabar in Kerala. *Indian Journal of Pathology and Oncology*, *3*(4), 552-557.

26. Bal, M. S., Goyal, R., Suri, A. K., & Mohi, M. K. (2012). Detection of abnormal cervical cytology in Papanicolaou smears. *Journal of Cytology/Indian Academy of Cytologists*, *29*(1), 45-47.

27. Padmini, C. P., Indira, N., Chaitra, R., Das, P., Girish, B. C., Nanda, K. M., & Basu, S. N. (2015). Cytological and colposcopic evaluation of unhealthy cervix. *J Evid Med Healthc*, *2*, 6920-6927.