International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Chinmaye D et al. Int J Reprod Contracept Obstet Gynecol. 2025 Jan;14(1):209-213
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20243952

Original Research Article

A study of efficacy of pap smear in a rural medical college and hospital

Chinmaye D.[1], Sharada B. Menasinkai[2]*, Veena N. H.[3]

[1]Adichunchanagiri Institute of Medical Sciences Affiliated to Adichunchanagiri University, B. G. Nagara Dist. Mandya Karnataka, India
[2]Department of Anatomy Adichunchanagiri Institute of Medical Sciences Affiliated to Adichunchanagiri University B. G. Nagara, Dist. Mandya, Karnataka, India
[3]Department of Community Medicine, Adichunchanagiri Institute of Medical Sciences Affiliated to Adichunchanagiri University, B. G. Nagara Dist. Mandya, Karnataka, India

Received: 12 Novembre 2024
Accepted: 05 December 2024

***Correspondence:**
Dr. Sharada B. Menasinkai,
E-mail: drsharadabm@gmail.com

ABSTRACT

Background: To screen women for cervical cancer using pap smear technique in rural medical college and hospital. To compare the results with other studies early diagnosis of precancerous lesion of carcinoma of cervix To bring awareness among public. Cervical screening using age, symptoms, per speculum examination as parameters and to compare results with other studies.
Methods: In this retrospective study, reports of pap smear test, which was done to women attending obstetrics and gynaecology clinic in the period January 2024 to August 2024, was obtained from department of pathology of Adichunchanagiri institute of medical sciences, B. G. Nagara. During this period total of 620 smears were assessed.
Results: 38.01% had white discharge per vagina, 67.76% had other symptoms like irregular menstrual cycle, abdominal pain, intermenstrual bleeding, secondary amenorrhea etc, 9.2% had no symptoms. Total of 31 (5.12%) smears were found abnormal. Atypical squamous cells of undetermined significance (ASC-US) in 2.4%, Atypical squamous cells cannot exclude high grade squamous intraepithelial lesion (ASC-H) in 1.32%, low grade squamous intraepithelial lesion (LSIL) in 0.66% and high-grade intraepithelial lesion (HSIL) in 0.33%.
Conclusions: Pap smear is a simple, cost effective, easily accessible screening test which has to be utilised for early detection and treatment of precancerous lesions of carcinoma cervix. Awareness among rural people regarding benefits of screening test has to be made and encourage them to participate

Keywords: Dysplasia, Human papilloma virus, Pap smear, Screening, Cancer cervix

INTRODUCTION

Carcinoma of the uterine cervix is a major health problem faced by Indian women. Every year 1,20,000 women develop the disease. India accounts for 15.2% of total cancer cervix deaths in the world. The incidence has declined in urban population but highly prevalent in rural areas.[1] According to world cancer statistics >80% of all ca cervix cases are found in developing countries. Every year 122,844 women in India are diagnosed with ca cervix and 67477 women die from the disease.[2] In India ca cervix is 2nd most common cause of cancer after breast cancer.[3]

Cervix is a distinctive anatomic part of uterus, which is further divided into ectocervix lined by nonkeratinized stratified squamous epithelium and endocervix lined by mucous secreting columnar epithelium. The point at which the epithelium meet is squamocolumnar junction leading to the formation of transformation zone that recedes towards the endocervix as age advances, there by replacing columnar epithelium into stratified squamous epithelium. Due to rapid turnover of cells in transformation zone it becomes susceptible to carcinoma and HPV infections. Most of the cervical lesions are cancer arising in the

transformation zone out of which 75% - 80% are squamous cell carcinoma.[4]

Progression from mild dysplasia to ca cervix makes this condition a preventable disease and provides a rationale for screening.[1] It is a preventable disease due to long preinvasive stage. Early epithelial changes can be identified by pap smear test.[2] Ca cervix can be diagnosed at an early stage because cervix is an organ easily accessible to clinical evaluation.[5] Regular cervical cytological examination of all sexually active women can prevent the occurrence of ca cervix.[1] Cervical dysplasia can be diagnosed by pap smear. All epithelia shed and superficial cells may be collected and analysed.[5]

Sexually transmitted human papilloma virus (HPV) infection leads to the development of cervical intraepithelial neoplasia and cancer cervix. Pap test detects early epithelial cell abnormalities and mild to severe dysplasia to invasive cancer and facilitates early diagnosis.[6]

Creating awareness about genital hygiene and utility of early detection tests are the main focus for rural screening.[1] There a need to spread cancer cervix screening awareness programs to educate women and visit hospitals for screening.[2]

George N. Papanicolaou researched the activity of the vaginal epithelium during the hormone cycle, first in animals and then in humans. He created a technique for differential staining and the alcoholic fixation of vaginal smears to help identify and characterize these cells more accurately.[7] Pap smear was introduced in 1941. Pap smear screening test has sensitivity 50%-75%, specificity of 98%-99%.[4]

Diagnosis of uterine cancer by the vaginal pap smear published in 1943. This important paper described, how normal and abnormal cervical and vaginal cells might be seen under microscope and how to classify them. Soon after, the pap smear was adopted as the gold standard for cervical cancer screening, and it is still the main method used today.[8]

According to WHO it is the 4th most cancer in women globally with around 6,60,000 new cases and around 3,50,000 deaths in 2022.[9]

The present study has been undertaken to evaluate women for precancerous lesion using pap smear in our Medical Institute being located in rural geographic region. The pap smear test is an effective and relatively less expensive and can be used both as diagnostic tool and screening test.

Aims and objectives

To screen women for cervical cancer using Pap smear technique. To create awareness among the public regarding screening methods for carcinoma of cervix and advantage of early detection. To compare the results of the study with other studies.

METHODS

A retrospective study was done by collecting the data from dept of pathology Adichunchanagiri Institute of Medical Sciences for a period of 8 months from January 2024 to August 2024. Approval from the Institutional ethical committee was obtained.

Vaginal samples collected from women who attended the outpatient gynecology clinic of the Department of Obstetrics and Gynecology for different gynecological complaints and sent to pathology dept for Pap smear tests.

Following details were collected from the OPD case sheets - age, obstetric and menstrual history and details regarding presenting complaints, clinical examination findings.

During this period, a total of 605 smears were assessed for epithelial abnormalities and histopathological grading. Reports of Pap smears were collected.

Pap smears were classified according to latest Bethesda system into the following categories:

Atypical squamous cells of undetermined significance (ASC-US)

Atypical squamous cells cannot exclude high grade squamous intraepithelial lesion (ASC-H)

Low grade squamous intraepithelial lesion (LSIL)

High grade squamous intraepithelial lesion (HSIL)

Squamous cell carcinoma (SCC).

Inclusion criteria

All women above 20 yrs who gave consent, non-pregnant women above 20 years. Women with complaints such as vaginal discharge, blood-mixed discharge, foul-smelling discharge, postcoital bleeding, intermenstrual bleeding, postmenopausal bleeding, abdominal pain, infertility, and secondary amenorrhea.

Exclusion criteria

Women not willing to give consent, pregnant women, previously diagnosed as carcinoma of cervix**,** treated case of carcinoma of cervix.

RESULTS

Total 620 members participated in the study. The sample was inadequate in 15 cases. Out of 605 women 47.27% were in age group of 20 - 40 years, 44.95% were 40-60

years and 7.76% were more than 60 years. 38.01% had white discharge per vagina, 67.76% had other symptoms like irregular menstrual cycle, abdominal pain, intermenstrual bleeding, secondary amenorrhea, 9.2% had no symptoms.

Table 1: Parameters used in the study, percentage of age group, symptoms and clinical examination findings.

Parameters		Percentage
Age group (years)	20-40	47.27
	41-60	44.95
	>60	7.76
Complaints	White discharge	38.01
	Postmenopausal bleeding	1.15
	Other symptoms	67.76
	No symptoms	9.2
Clinical examination	Cervix erosion	24.95
	Healthy cervix	64.46
	Hypertrophy of cervix	6.9
	Cervix bleed on touch	2.1
	Mass per vagina	2.9

Table 2: Percentage of cytological report according to Bethesda system.

Cytological report	Percentage
Negative for intraepithelial lesion (NILM)	94.87
Atypical squamous cells of undetermined significance (ASC-US)	2.64
Atypical squamous cells cannot exclude high grade squamous intraepithelial lesion (ASC-H)	1.32
Low grade squamous intraepithelial lesion (LSIL)	0.66
High grade squamous intraepithelial lesion (HSIL)	0.33
Squamous cell carcinoma (SCC)	0.16

Clinical examination findings were, 64.46% healthy cervix, 24.95% had cervical erosion, 6.9% had hypertrophied cervix, 2.9% had mass per vagina and 2.1% cervix which bleed on touch.

Pap smear report indicates 94.87% have Negative for Intraepithelial Lesion (NILM), 2.64% have Atypical Squamous Cells of Undetermined Significance (ASC-US), 1.32% have atypical squamous cells cannot exclude high grade squamous intraepithelial lesion (ASC-H), 0.66% have low grade squamous intraepithelial lesion (LSIL), 0.33% have high grade squamous intraepithelial lesion (HSIL), 0.16% have squamous cell carcinoma (SCC).

DISCUSSION

In the present study 92.22% of women belonged to age group 20 to 40 and 40 to 60 years.67.76% of women presented with menstrual irregularities and excessive blood flow, and 38.01% had white discharge. Pap smear report showed healthy cervix among 64.46%, cervical erosion and hypertrophy was seen among 24.95% & 6.9% respectively. Cervical ulcer bleeds on touch were seen in 2.1%. Pap smear reports showed 0.66% LSIL, 0.33%, HSIL and 0.16% SCC.

The cytological report was significant in 31 cases out of 605. The following paragraph states % of women of different age group as per Bethesda system.

1. 64% had ASC-US of which 25% were 20-40 yrs, 56.25% were 40-60 yrs and 18.75% were above 60 yrs.
2. 1.32% had ASC-H of which 57.14% were in 20-40 yrs, 28.57% in 40-60 yrs and 14.28 % above 60 yrs.
3. 0.66% had LSIL of which 25% is in 20-40 yrs and 75%in 40-60 yrs.
4. 0.33% had HSIL, 33.33% are in 40-60 yrs and 66.66%above 60 yrs.
5. 0.16% had SCC.

In the present study % of patients with white discharge PV and other symptoms like menstrual irregularities are comparable with study reported by Sachan et al.[2] In study conducted by Goel et al majority of 48.4% had complaints of white discharge PV.

Sachan et al reported a prospective study of screening with Pap smear.[2] 1650 sexually active women of more than 21 years attending with different complaints. Pap smear report LSIL was seen in 54 women between age group of 41-50 yrs and 17 women belonged to age 51-60 yrs. There were 48.84% with negative report, 42.66% with inflammation, 2.90% ASCUS, 5.09% LSIL and 0.48% with HSIL.

When we compare clinical examination findings erosion of cervix was observed 24.95% in present study is comparable with that of Goel et al study 22.4%.[4]

Hypertrophy of cervix was not seen in Pahwa et al study where as in our study is 6.9%.[6] Cervix bleeds on touch was seen 2.1% in our study similar with Sachan et al study 4.84%.[2] Percentage of of visualization of normal cervix was more in our study 64.46% compared to other studies.

In present study 24.95% have cervix erosion and in study conducted by Pahwa et al had 15.93%. 31.87% had normal cervix while the percentage in our study was 64.46%.[6] In study conducted by Sachan et al 10.84% had hypertrophy of cervix and 4.84% cervix which bleeds on touch while in our study it is 6.9% and 2.1% respectively.[2] Goel et al study had 22.4% of cervix erosion and 17.2% of cervix which bleed on touch.[4]

Table 3: Comparison of percentage of symptoms in women with other studies.

Complaints	Pahwa et al[6] (%)	Sachan et al[2] (%)	Goel et al[4] (%)	Present study (%)
White discharge	41.25	36.96	48.4	38.01
Postmenopausal bleeding	18.12	1.45	11.2	1.15
Other symptoms	40.61	46.4	40.4	67.76
No symptoms	-	15.15	-	9.2

Table 4: Comparison of clinical examination findings with other studies.

Clinical examination findings	Pahwa et al[6] (%)	Sachan et al[2] (%)	Goel et al[4] (%)	Present study (%)
White discharge	28.12	29.69	-	-
Cervix erosion	15.93	19.21	22.4	24.95
Hypertrophy of Cervix	-	10.84	08.6	6.9
Cervix bleed on touch	-	04.84	17.2	2.1
Normal	31.87	4.84	04.4	64.46

Table 5: Comparison of cytological report findings with other studies.

Cytological report	Pahwa et al[6] (%)	Sachan et al[2] (%)	Goel et al[4] (%)	Present study (%)
NILM	28.7	48.84	84.4	94.87
ASC-US	1.32	2.9	1.7	2.64
ASC-H	0.6	-	0.00	1.32
LSIL	6.25	5.09	6.8	0.66
HSIL	3.75	0.48	2.5	0.33
SCC	0.00	0.00	0.00	0.16

NILM showed 94.87% in the present study and is comparable with study reported by Goel et al 84.4%.[4] Pahwa et al and Sachan study shows lower percentage compared to present study.[6,2]

ASC-US report of our study (2.64%) is comparable with the study of Sachan et al (2.9%).[2] ASC-H is more in present study compared to other studies. LSIL is less in present study compared with other studies. HSIL in present study (0.33%) is comparable with study reported by Sachan et al (0.48%).[2] SCC is not reported in the studies compared, whereas there was one case reported in present study 0.16%.

Nkwabong et al reported a study of pap smear accuracy in cervical precancerous lesions in 2019.[5] A cross-sectional descriptive study in 2 university teaching hospitals. All women who were screened for cervical dysplasia by means of pap smear were recruited. Biopsy was done in all women with abnormal results and also normal results with macroscopic cervical changes. 231 women screened for cervical dysplasia using pap smear.

Chakma et al reported a cross-sectional study in 2022 pap smear screening for housekeeping female staff.[3] Among 44 women age group 26 to 64 years. Goel et al had conducted cancer screening in symptomatic women in Haryana among 116 cases 6.8% had LSIL, 2.5% had HSIL.[4]

Pap smear test is an easy method for early detection of precancerous lesions of cervical carcinoma. All women above 30 yrs of age must be advised to undergo this test and repeat every 3 yrs. Limitations of the present study are, we could have also used visual inspection with 5% acetic acid. The sample size is small here, but this method can be applied to a larger population so that more women can screened. Cervical biopsy was not for all positive cases. In this study we could not assess the other social factors, such as multiple sex partners.

CONCLUSION

Pap smear is easily accessible, affordable, available method for early detection of precancerous lesion of carcinoma cervix which has to be made aware to public. They must be advised to undergo pap test by creating social awareness using role play, campaign, newsletters, peer education, radio etc. Asha workers can give information regarding benefit of undergoing this test to majority of women, who are unaware of availability of these kind of screening test. Early detection and management of cervical cancer can decrease morbidity and mortality. Awareness regarding Pap screening test must be made to public

ACKNOWLEDGEMENTS

We acknowledge faculty department of pathology for permitting to collect the data.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Srivastava AN, Misra JS, Srivastava S, Das BC, Gupta S. Cervical cancer screening in rural India: Status & current concepts. Indian J Med Res. 2018;148(6):687-96.
2. Sachan PL, Singh M, Patel ML, Sachan R. A Study on Cervical Cancer Screening Using Pap Smear Test and Clinical Correlation. Asia Pac J Oncol Nurs. 2018;5(3):337-41.
3. Chakma R, Shetty A, Anusha KS, Prasad N, Yatnatti S, Nikhil PV. Screening for Cervical Cancer in Female Housekeeping Staff by Pap Smear: Our Experience from A Tertiary Care Centre in A Rural Region of Karnataka, India. J Med Sci Health 2023;9(3):263-8.
4. Goel S, Chauhan S, Tevatia MS, Gupta I, Gupta K. A study of cervical cancer screening in symptomatic women, using pap smear as recommended in rural hospital area of Haryana. Int J Acad Med Pharm. 2023; 5 (2); 1637-41
5. Nkwabong E, Laure Bessi Badjan I, Sando Z. Pap smear accuracy for the diagnosis of cervical precancerous lesions. Trop Doct. 2019;49(1):34-9.
6. Pahwa A, Gore S, Goyal ND, Nandre V. Study on Cervical Cancer Screening in Women Using PAP Smear Attending Gynaecology Opd in Tertiary Care Rural Government Hospital in Central India. Med J Obstet Gynecol. 2021;9(2):1147.
7. Han Fredric Nauth. History of Gynecological Cytology. In: Nauth, Hans Friedrich. Gynecologic cytology; 1st edition. Thieme Medical Publication, 2007:3-4
8. Kitchen FL, Cox CM. Papanicolaou Smear. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2024. Available at: https://www.ncbi.nlm.nih.gov/books/NBK470165/. Accessed on 17th March 2024.
9. World Health Organization. Cervical Cancer. World Health Organization; 2024. Available at: https://www.who.int/news-room/fact-sheets/detail/cervical-cancer. Accessed on 17th March 2024.
10. Karunakaran U, Thekkandathil N, Divakaran B, Joseph MM, Kannankai S, et al. Cervical Cancer Screening Program – A Camp Based Cross Sectional Study Among Rural Women in North Kerala. Sci J Public Health. 2017;5(3):215-23
11. Gajalakshmi CK, Krishnamurthi S, Ananth R, Shanta V. Cervical cancer screening in Tamilnadu, India: a feasibility study of training the village health nurse. Cancer Causes Control. 1996;7(5):520-4.
12. Khuakoonratt N, Tangjitgamol S, Manusirivithaya S, Khunnarong J, Pataradule K, Thavaramara T, Suekwattana P. Prevalence of high grade squamous intraepithelial lesion (HSIL) and invasive cervical cancer in patients with low grade squamous intraepithelial lesion (LSIL) at cervical pap smear. Asian Pac J Cancer Prev. 2008;9(2):253-7.

Cite this article as: Chinmaye D, Menasinkai SB, Veena NH. A study of efficacy of pap smear in a rural medical college and hospital. Int J Reprod Contracept Obstet Gynecol 2025;14:209-13.