Section: Obstetrics and Gynaecology

Original Research Article

# A STUDY ON CORRELATION OF PAP SMEAR, COLPOSCOPY AND HISTOPATHOLOGY IN AN UNHEALTHY CERVIX

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## ABSTRACT

**Background:** In India, cervical carcinoma still accounts for 80% of all female genital cancer cases and is the most common type of genital cancer. Introduced in 1947, the term "pre-invasive disease of the cervix"[1] refers to alterations limited to the cervical epithelial cells. Patients' outcomes may be improved by CIN therapy and early identification of pre-invasive illness. Because invasive cervical cancer is linked to a protracted pre-invasive stage[2] (CIN), which allows for screening and therapy, it is seen as a preventable illness. **Aim:** To screen females who have abnormal symptoms with Pap Smear and to screen only females with dysplastic smears with colposcopy and histopathology. **Materials and Methods:** A Prospective Observational Comparative study was done in which sample size of 100 Women attending Gynecology OPD were taken from Medical College and Hospital in Uttar Pradesh, patients were selected who gave their content and had symptoms such a vaginal discharge or clinically unhealthy cervix. All the data obtained will be subjected to statistical analysis and relevant statistical tests will be applied. Data entered in MS Excel and will be analyzed in SPSS software. Pvalue <0.05 will be considered significant during data analysis **Result:** In a sample data set of 100 patients, the age distribution revealed that the age group of 35-44 years had the highest prevalence of CIN (35%), followed by >=55 years (26%) & 45-55 years (24%). According to our research, most common histopathological finding was CIN-2 which were present among the 13(33.3% patients, ASCUS which was present among the 5(12.8%) patients. **Conclusion:** it would be ideal to diagnose CIN in adult females earlier, to start proper care, CIN lesions and early invasive malignancies should be diagnosed earlier. The study's finding make it clear that colposcopy is unquestionably more accurate and sensitive than pap smears. We can increase the sensitivity and specificity of cervical cancer screening by combining pap smear and colposcopy. Therefore these should be combined methods of screening.

## INTRODUCTION

Cervical cancer is the 4th most common cancer in females over the globe and puts a huge toll on healthcare system. Highest incidence in Sub- Saharan Africa, Latin America & South Asia. Human Papilomavirus(HPV) infection responsible in over 99% cases. In India it accounts for 80% of all female genital cancer cases and is most common type. In 1947, the term "pre-invasive disease of cervix" refers to alterations limited to cervical epithelial cells. Patients outcome may be improved by CIN therapy and early identification of pre invasive illness. Females who are sexually active are at high risk of developing HPV infection. Cervical cancer develops only when HPV DNA is integrated into the host cervical cell. The E2 Gene is disrupted as a result, they cause the production of HPV- derived oncoprotein (E6 and E7) to rise. This leads to the inactivation of p53, and tumor suppressor protein related to retinoblastoma(Rb) which causes uncontrolled cell division by releasing transcription factor E2F. As a result, the expresson of p16 protein increases, serving as a biomarker for cervical intraepithelial lesions. The American College of Obstetrics and Gynaecology States that treating women appropriately and identifying the precursor lesions are the keys to effective cervical cancer prevention, if treatment not ginen they may develop into aggressive cervical cancer. The presence of concealing blood, inflammation, overlapping epithelial cells and Poor sample and preparation quality all contribute to a typical pap smear's


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sensitivity of less than 50%, false results are common with this. In order to address this liquid based cytology was launched in the 1990s. HPV DNA testing are also used. Colposcopy followed by Biopsy increases the sensitivity and specificity for diagnosing the cervical carcinoma. Now vaccination is also authorized for preventions of cervical carcinoma- Cervarix, Gardasil and Gardasil-9 providing protection against various HPV strains.

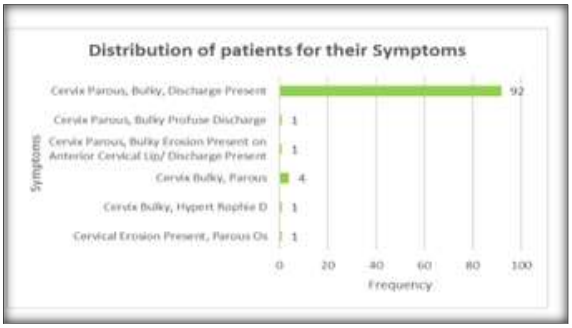
## MATERIALS AND METHODS

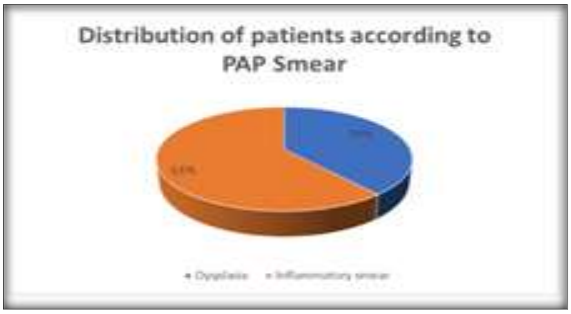
This is a prospective observational comparative study, sample size of 100 women attending gynaecology out patient department at a Medical College in Uttar Pradesh, India. Women of age 20-60 years sexually active with abnormal symptoms like profuse white discharge, post coital bleeding, intermentrual bleeding or post menstrual bleeding bleeding/ spotting. Patients with clinically unhealthy cervix and pap smear showing dysplasia. All the data obtained will be subjected to statistical analysis and relevant statistical tests will be applied. Data entered in MS Excel and will be analyzed in SPSS software. Pvalue <0.05 will be considered significant during data analysis.

## RESULTS

In the sample data set of 100 patients, the age distribution revealed that the age group of 35-44 years had the highest prevalence of CIN(35%), followed by >=55 years(26%) & 45-55 years(24%).

According to our research, most common histopathological finding was CIN-2 which were present among the 13(33.3% patients, ASCUS which was present among the 5(12.8%) patients. 65% patients were belonged to the rural area and 35% belonged to Urban Area.





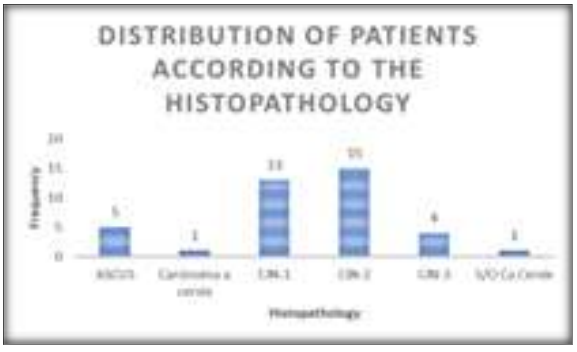



**Table 1**

| Symptoms | Frequency | Percent |
|---|---|---|
| Cervical Erosion Present, Parous Os | 1 | 1.0 |
| Cervix Bulky, Hypert Rophie D | 1 | 1.0 |
| Cervix Bulky, Parous | 4 | 4.0 |
| Cervix Parous, Bulky Erosion Present on Anterior Cervical Lip/ Discharge Present | 1 | 1.0 |
| Cervix Parous, Bulky Profuse Discharge | 1 | 1.0 |
| Cervix Parous, Bulky, Discharge Present | 92 | 92.0 |
| Total | 100 | 100.0 |

46% belonged to Class III SES.

In 92% patients findings such as bulky cervix with foul smelling discharge with or without.


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**Table 2**

| PAP Smear | Frequency | Percent |
|---|---|---|
| Dysplasia | 39 | 39.0 |
| Inflammatory smear | 61 | 61.0 |
| Total | 100 | 100.0 |

Cervical erosions were present. Pap smear was found inflammatory in 61% patients and Dysplastic in 39% patients.

Among dysplastic smears- colposcopy with biopsy was done. Among 9 patients colposcopy score was 5 and in 7 patients score was 6(according to swede scoring). As shown in tabla and graphical representation.

**Table 3**

| Colposcopy score | Frequency | Percentage (n=39) | Percentage (n=100) |
|---|---|---|---|
| Score 1 | 1 | 2.6 | 1.0 |
| Score 2 | 2 | 5.1 | 2.0 |
| Score 3 | 6 | 15.4 | 6.0 |
| Score 4 | 8 | 20.5 | 8.0 |
| Score 5 | 9 | 23.1 | 9.0 |
| Score 6 | 7 | 17.9 | 7.0 |
| Score 7 | 4 | 10.3 | 4.0 |
| Score 8 | 1 | 2.6 | 1.0 |
| Score 10 | 1 | 2.6 | 1.0 |
| Total | 39 | 100.0 | 39.0 |

Most common histopathology finding was CIN-2 present in among 15 patients followed by.

**Table 4**

| Histopathology | Frequency | Percentage (n=39) | Percentage (n=100) |
|---|---|---|---|
| ASCUS | 5 | 12.8 | 5.0 |
| Carcinoma a cervix | 1 | 2.6 | 1.0 |
| CIN-1 | 13 | 33.3 | 13.0 |
| CIN-2 | 15 | 38.5 | 15.0 |
| CIN-3 | 4 | 10.3 | 4.0 |
| S/O Ca Cervix | 1 | 2.6 | 1.0 |

## DISCUSSION

After breast cancer, cervical cancer was the second most frequent cancer among women globally.

However, invasive cervical cancer was viewed as a preventable condition since it was associated with a prolonged pre-invasive phase,[1] (CIN) that made screening and treatment possible. 100 women with abnormal symptoms, such as excessive white discharge,[2] genital bleeding, postcoital bleeding, post-menopausal bleeding, etc., as well as women who only had dysplastic smears,[3] underwent colposcopy and biopsy to determine the sensitivity and specificity of these techniques in identifying CIN.[4] The results were correlated.

The age distribution revealed that the age group of 35–44 years had the highest prevalence of CIN (35%), followed by ≥55 years (26%) and 45–54 years (24%).

In their investigation, Kushtagi and Fernandes,[5] demonstrated that women over 30 had a greater frequency of CIN.

In his research, Vaidya,[6] demonstrated that CIN was more prevalent in the over-35 age range. According to Shalini et al,[7] patients with benign cervical pathology had a mean age of 32 years, whereas those with cervical cancer had a mean age of 41.

35% of the patients lived in an urban region, and 65% of the patients lived in a rural one.

According to Becker et al. and Adadevoh et al,[8] there could be a decline in immunological response during pregnancy, hormonal and dietary changes, cervical trauma after vaginal delivery, and other factors contributing to this.The development of dysplasia has always been epidemiologically influenced by socioeconomic position.[9] The bulk of the patients in our study (46%) belonged to class III SES, which was followed by class IV (29%) and class II (25%).


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30% of CIN II and 44% of CIN I participants in his study were impoverished. Inadequate personal hygiene, substandard living circumstances, precarious marriages, and an early age at first sexual encounters are all linked to low socioeconomic status and cervical cancer.

In terms of literacy, illiterate people were more likely to have CIN. According to our research, 30/39% or 77% of CIN residents lack literacy. This resulted from his lack of medical consultation and his ignorance of the symptoms. It is evident that the length of a marriage and the length of a sexual relationship affected the development of cervical dysplasia. According to our research, the incidence of CIN was 34% among married women aged 11 to 20 and 34% among those aged beyond 20.

In the study, Vaidya et al. also shown that profuse vaginal discharge was a risk factor that contributed to the development of CIN. Of those surveyed, 24% experienced vaginal discharge. CIN was discovered in 0.7% (2/39) of these. Of the women with congestion, 25.6% (10/39) had CIN, and the remaining women with hypertrophy + congestion and hypertrophy + erosion were 25.6% and 30.8%, respectively, had CIN. In 30% (30/100) of cases, treatment with 5% acetic acid results in questionable areas. 17% (17/100) of the AW regions with a vascular pattern had dots, 8% (8/100) had mosaics, and 4% (4/100) had both. 30.7 % (12/39) of the patients with AW area were positive for CIN. 56.4% (22/39) of those with dense opaque A.W. had CIN.

The Pap test was shown to have a very low sensitivity of 30% and a high specificity of 92%. The large number of erroneous negative smear results was the cause of this.

Cytology data negative could be greatly decreased. Colposcopy improved cervical screening, especially for females whose smear results were otherwise negative.

For minor dysplasia, the correlation between cytology and HPE was not very good. However, for moderate and severe dysplastic lesions, the connection was strong.

indicated that the rate of false positives for colposcopy as a screening method

For higher grade lesions (CIN II and CIN III), there was a strong association between the results of the biopsy and the colposcopy findings. 90% of the sample was determined to be sensitive, and 90% to be specific.

In comparison to a Pap smear, this demonstrated a high sensitivity and a low specificity. Compared to pap smears, the high incidence of undiagnosed AW epithelium—which might be brought on by erosion, inflammation, immature metaplasia, or latent HPV infections—leads to a low specificity. Only 10 of the 35 instances with AW regions devoid of any vascular pattern had a biopsy confirm it.

Only 10 out of 34 patients (29.4%) had positive pap smear and biopsy results, compared to 28 out of 34 (82.4%) cases with positive colonoscopy and biopsy results. This demonstrated the value of colposcopy in identifying lesions that pap smears are unable to detect.

In a meta-analysis of eight longitudinal investigations, Olaniyan et al,[10] examined the relationship between the biopsy results and the colposcopic impression. Colposcopic accuracy was determined to be 89%, and in 61% of cases, this result was in perfect agreement with histology. The current investigation indicated that 82% of colposcopic impressions were accurate.[11] An accuracy of 80% was found by Massad et al.[12]

## CONCLUSION

It would be ideal to diagnose CIN in adult females earlier. To start proper care, CIN lesions and early invasive malignancies should be diagnosed earlier. Because invasive cervical cancer (CIN) is linked to a prolonged pre-invasive stage (CIN), which is treatable with screening, it is seen as avoidable.

1. The study's findings make it clear that colposcopy is unquestionably more accurate and sensitive than pap smears. We can increase the sensitivity and specificity of cancer cervix screening by pap smear and colposcopy.
2. A colposcope seems to be more accurate in identifying CIN and can be helpful when examining women who have abnormal pap smears and cervix illness. As a result, the initial visit's genito urinary tract screening might include a primary colposcopy.
3. Colposcopy is therefore a great method for assessing cervical lesions. This approach is simple and straightforward, and its significance is in the diagnosis, treatment, and education of cervical lesions, both cancerous and non-cancerous. To assess and treat patients with abnormal pap smears and a clinically worrisome cervix, colposcopy should be made available and encouraged in all medical facilities.
4. This approach is simple and straightforward, and its significance is in the diagnosis, treatment, and education of cervical lesions25, both cancerous and non-cancerous. In order to assess and treat patients with abnormal pap smears and a clinically worrisome cervix, colposcopy should be made available and encouraged in all medical facility.

Vaccination as primary and secondary prevention should be promoted in the public and awareness to be created. The cost of vaccine should also be subsidized so that it can reach to population.

## REFERENCES


1. Ho GY, Biermon R, Beardsley L, Chang CJ, Burk RD. Natural history of cervicovaginal papillomavirus infection in young women. N Eng J Med. 1998; 338 (7): 423- 8.
2. Juric D, Mahovlic V, Rajhvajn S, Ovanin Rakic A, Skopljanac- Macina L, Barisic A et al ,Liquid –based Cystology –New Possibilities in the Diagnosis of Cervical Lesions. Coll Antropol. 2010; 34 (1) :19-24.




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3. Clerici M, Merola M, Ferrario E, Trabattoni D, Villa ML, Stefanon B, et al Cytokine production patterns in cervical intraepithelial neoplasia:Association with Human Papilloma Virus Infection. .J Natl Cancer Inst. 1997; 89 (3): 245-50.
4. Jain DK, Singh P. A study of the uterine cervix cancer in India. Sankhya - Indian J Stat. 1996; 58 : 118-44
5. kushtagi and fernandes -Khan MS, Raja FY, Ishtaq G, Tahir F, Subhan F, Kazi BM, Karamat A. PAP smear Screening for Pre-cancerous Conditions of the cervical Cancer. Pak J Med Res. 2005; Vol (44) : 111 – 13.
6. vaidya -Noreen R, Qudussi H. PAP smear for screening precancerous conditions of cervix. J Ayub Med Coll Abbottabad. 2011;23 (2) 41 - 43.
7. Shalini et al -Nandini NM, Nandish SM, Pallavi P, Akshatha SK, Chandrashekhar AP, Anjalai S, Dhar M. Manual Liquid Based Cytology in Primary screening for cervical Cancer – a Cost Effective Preposition for scarce Resource Settings. Asian Pac J Cancer Prev. 2012;13 (8): 3645 – 51.
8. Siebers AG, Klinkkhamer PJ, Arbyn M, Raifu AO, Massuger LF, Butten J. Cytologic Detection of Cervical Abnormalities Using Liquid – Based Compared with conventional Cytology. Obstet Gynecol. 2008 ;112(6):1327 – 34.
9. P de Jager , E Singh , B Kistnasamy, M Y Bertram. Cost and cost effectiveness of conventional and liquid – based cytology in south Africa: A laboratory service provider perspective. SAJOG. 2013;Vol.(19) 44 - 47.
10. Saslow D,Solomon D, Lowson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, American Cancer Society, American Society for Colposcopy and Cervical pathology, and American Society for Clinical Pathology Screening Guidelines for the Prevention and Early Detection of cervical cancer. Am J April;137 (4) :516-42.
11. Basu P, Chowdhury D. Cervical Cancer Screening and HPV vaccination: a comprehensive approach to cervical cancer control. Indian J Med Res.2009 :130 (3):241-6.
12. Massad et al. Mingo AM1, Panozzo CA, DiAngi YT, Smith JS, Steenhoff AP, Ramogola-Masire D, Brewer NT.Cervical cancer awareness and screening in Botswana. Int J Gynecol Cancer. 2012 May;22(4):638-44. doi:10.1097/IGC.0b013e318249470a.


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