e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2025; 17(11); 1370-1373

Original Research Article

Evaluation of pap Smear Findings in Women Aged 30–60 Years

M. V. Monika[1], Mandla Shireesha[2], Ushasree Kondam[3], T. Jaya Chandra[4]

[1]Assistant Professor, Department of Obstetrics and Gynaecology, Government Medical College, Nagarkurnool

[2]Assistant Professor, Department of Obstetrics and Gynaecology, Government Medical College, Nagarkurnool

[3]Assistant Professor, Department of Obstetrics and Gynaecology, Government Medical College, Jagtial

[4]Professor, Central Research Laboratory, GSL Medical College, Rajahmundry

Received: 03-09-2025 / Revised: 02-10-2025 / Accepted: 03-11-2025

Corresponding Author: Dr. Ushasree Kondam

Conflict of interest: Nil

Abstract:

Introduction: Cervical cancer (CC) remains a major health issue, especially in low-resource settings. Pap smear is a vital screening tool for early detection of precancerous lesions. This study aims to assess the prevalence and spectrum of cytological abnormalities in women aged 30–60 years and evaluate the effectiveness of Pap smear screening.

Methods: This cross-sectional study at GSL Medical College involved women aged 30–60 attending the gynecology OPD. Pap smears were collected, processed, and interpreted using the Bethesda System 2014. Abnormal cases underwent colposcopy and biopsy for confirmation, ensuring appropriate referral and management based on cytological and histopathological findings.

Results: Of 93 women screened, most were aged 40–49 years. Common symptoms included vaginal discharge and lower abdominal pain. Pap smear showed 73.1% NILM. Abnormalities (26.9%) included ASC-US, LSIL, HSIL, ASC-H, and one SCC case. Most abnormalities occurred in the 40–49 age group, with ASC-US being most common.

Conclusion: Pap smear screening in women aged 30–60 revealed notable epithelial abnormalities, predominantly in the 40–49 age group. Early detection of lesions such as ASC-US, LSIL, and HSIL underscores the Pap test's value. Strengthening cervical screening programs is essential for effective prevention and early management of CC.

Keywords: Pap smear, Cervical cancer, Cytological abnormalities, Screening.

Introduction

Cervical cancer (CC) remains a significant public health concern, particularly in low- and middle-income countries, where organized screening programs are limited. The Papanicolaou (Pap) smear test has been instrumental in the early detection of cervical intraepithelial neoplasia (CIN) and invasive CC, significantly reducing morbidity and mortality when implemented systematically. Women aged 30–60 years represent a critical demographic for screening, as the risk of high-grade lesions increases in this age group due to persistent human papillomavirus (HPV) infections.

Several studies have assessed the diagnostic utility and prevalence of cytological abnormalities among this cohort. For instance, Ashwini HN et al. observed that the majority of epithelial abnormalities detected by Pap smear occurred in women over 30 years, emphasizing the age-specific sensitivity of the test [1]. Similarly, Basu et al. reported a high prevalence of low-grade squamous intraepithelial lesions (LSIL) and high-grade squamous intraepithelial lesions (HSIL) among women in the 35–55 age group [2].

In another study, Sandeep et al. highlighted that early detection through routine Pap smear screening significantly improves treatment outcomes in precancerous lesions [3]. Nene et al. confirmed that regular screening in Indian women aged 30 and above led to reduced incidence and improved prognosis of cervical malignancies [4]. Moreover, Sharma et al. advocated incorporating Pap smear evaluation into routine gynecological check-ups for women above 30, especially in resource-limited settings [5]. The current study aims to evaluate the spectrum and prevalence of cytological abnormalities detected through Pap smear screening among women aged 30–60 years, and to assess the utility of Pap smear as a screening tool for early detection of precancerous and CC.

Methods

This was a hospital-based, cross-sectional observational study conducted in the department of Obstetrics and Gynaecology, GSL Medical College Rajamahendravaram. The study was carried out over a period of 12 months, from September 2024 to 2025. Prior approval for the study was obtained from the Institutional Ethics Committee. All participants were briefed about the purpose, procedure, and benefits of the study. Informed written consent was obtained in the local language.

The study included women aged 30–60 years attending the gynecology outpatient department (OPD) for routine check-ups, complaints of vaginal discharge, menstrual irregularities, lower abdominal pain, postcoital bleeding, or for family planning services. Women aged 30–60 years, sexually active with an intact cervix, who gave informed consent and were willing to undergo Pap smear were included in the study. Pregnant women, those with a history of total hysterectomy, prior cervical cancer diagnosis or treatment, current menstruation, or active vaginal infections or bleeding at the time of smear collection were excluded.

A structured pre-tested proforma was used to collect data on socio-demographic characteristics (age, education, socioeconomic status), obstetric history, menstrual history, contraceptive use, personal hygiene, and clinical symptoms. A detailed gynecological examination was performed prior to Pap smear collection. The Pap smear was collected by trained personnel using an Ayre's spatula. The patient was placed in the lithotomy position, and the cervix was visualized using a sterile bivalve Cusco's speculum. The Ayre's spatula was rotated 360 degrees at the squamocolumnar junction to obtain an adequate sample, which was evenly spread on a clean glass slide and immediately fixed in 95% ethyl alcohol. The slides were stained using the Pap technique in the pathology department and examined under a light microscope by an experienced cytopathologist.

Cytological interpretation of Pap smear samples was performed using the Bethesda System 2014. The smears were classified into the following categories: Negative for intraepithelial lesion or malignancy (NILM), Atypical Squamous Cells of Undetermined Significance (ASC-US), Low-Grade Squamous Intraepithelial Lesion (LSIL), High-Grade Squamous Intraepithelial Lesion (HSIL), Atypical Squamous Cells – cannot exclude HSIL (ASC-H), Squamous Cell Carcinoma (SCC), and glandular cell abnormalities. Women who were found to have abnormal cytological results were further advised to undergo colposcopic evaluation, followed by biopsy for histopathological confirmation according to established clinical protocols. Based on their final diagnosis, patients were referred to appropriate gynecologic oncology or treatment centers for further management and necessary care.

Statistical Analysis: Data were entered in Microsoft Excel and analyzed using SPSS version 25. Descriptive statistics were used to summarize demographic and clinical data. The prevalence of cytological abnormalities was expressed as percentages. Associations between clinical variables and abnormal Pap smear findings were assessed using Chi-square tests. A p-value of <0.05 was considered statistically significant.

Results

Among the 93 women studied, most were aged 40–49 years (36.6%), followed by 50–60 years (33.3%). Educationally, 31.2% had secondary education. Socioeconomically, 46.2% belonged to the middle class, 41.9% to the low class, and only 11.8% were from a high socioeconomic background. Vaginal discharge (49.5%) was the common symptom, followed by lower abdominal pain (34.4%) and irregular menstruation (23.7%). Postcoital bleeding was noted in 7.5% of women, while 26.9% were asymptomatic and attended for routine Pap smear screening. Pap smear results showed that 73.1% of women had NILM, indicating no abnormality. Abnormal findings included ASC US (9.7%), LSIL (7.5%), and HSIL (4.3%). Rare findings included ASC-H (2.2%), glandular cell abnormalities (2.2%), and one case (1.1%) of squamous cell carcinoma. Among 25 women with abnormal Pap smears, most were aged 40–49 years (10 cases), followed by 50–60 years (8 cases) and 30–39 years (7 cases). ASC-US was the most frequent abnormality across all age groups. One case of squamous cell carcinoma was noted in the 50–60 age group.

Discussion

The present study evaluated 93 women aged 30–60 years undergoing Pap smear screening at GSL Medical College. A significant proportion of the participants (36.6%) belonged to the 40–49 year age group, consistent with other Indian studies that identified this demographic as highly vulnerable to cervical epithelial changes due to prolonged exposure to risk factors like HPV and hormonal changes [6]. The next most affected age group was 50–60 years (33.3%), which may correspond to delayed health-seeking behavior and poor awareness regarding cervical cancer screening. Education played a pivotal role, with 31.2% having secondary education and 21.5% attaining graduate-level education. This reflects a moderate level of literacy, which can influence awareness about sexual health and screening practices. Socioeconomic stratification showed that nearly half the participants belonged to the middle class (46.2%) and 41.9% to the low socioeconomic group. Studies have shown a strong correlation between low socioeconomic

status and increased risk of cervical abnormalities, due to reduced access to screening and healthcare facilities [4, 7].

Symptomatology revealed vaginal discharge (49.5%) as the most common complaint, followed by lower abdominal pain (34.4%) and irregular menstruation (23.7%). These findings are in line with reports by Ashwini et al., who found that non-specific gynecological complaints were often associated with underlying cervical pathology [1]. Notably, 26.9% of women were asymptomatic and attended screening voluntarily or during routine check-ups. This highlights an increasing trend of opportunistic screening, which should be encouraged through awareness campaigns and community outreach, particularly for high-risk women above 30 years of age. Postcoital bleeding was less frequently reported (7.5%), but its presence is clinically significant, as it may be an early sign of high-grade lesions or invasive carcinoma [8].

Given that early detection of cervical lesions plays a crucial role in reducing cervical cancer burden, identifying the clinical and demographic profile of women undergoing Pap smear becomes essential. Educated women and those from middle-income backgrounds were more likely to utilize screening services, emphasizing the need to target underserved groups through government and public health initiatives. These findings underscore the importance of integrating cervical screening programs with routine gynecological care, particularly for women in their 30s and 40s, who form a high-risk group. Awareness and accessibility remain the cornerstone of early detection strategies.

The present study reveals that 73.1% of the Pap smear samples were NILM, while 26.9% exhibited abnormal cytological findings. This distribution aligns with findings by Ezzelarab S et al., who reported NILM in over 70% of screened women, demonstrating the predominance of normal cytological patterns in asymptomatic populations [9]. Among the abnormalities, ASC-US (Atypical Squamous Cells of Undetermined Significance) was the most frequent (9.7%), followed by LSIL (7.5%) and HSIL (4.3%). This trend is consistent with reports by Basu et al., who observed ASC-US and LSIL as the most common precancerous findings in mid-life Indian women undergoing opportunistic screening [2]. The Bethesda System categorization allows effective triaging, and identifying ASC-US is critical because it often precedes or coexists with HPV infections that may progress to CIN if not monitored.

Less frequently encountered but clinically significant findings included ASC-H (2.2%), glandular cell abnormalities (2.2%), and one case (1.1%) of squamous cell carcinoma (SCC). Detection of SCC, although rare, reinforces the life-saving potential of routine Pap smear screening, especially in postmenopausal women. The only SCC case in the present study was in the 50–60 years age group, supporting findings from Sharma et al., who emphasized that malignancy risk increases with age due to prolonged HPV persistence and delayed diagnosis [10]. Glandular abnormalities, although rare, require special attention, as they may be associated with endocervical or endometrial pathology and often warrant further evaluation, as recommended by the American Society for Colposcopy and Cervical Pathology (ASCCP) [11].

Age-wise analysis showed that among the 25 women with abnormal smears, the highest number of cases was seen in the 40–49 years age group (10 cases), followed by 50–60 years (8 cases) and 30–39 years (7 cases). This age trend mirrors results from Srivastava et al., who found the majority of epithelial abnormalities in women aged 40–49 years, likely reflecting cumulative exposure to risk factors and hormonal changes during the perimenopausal phase [12, 13]. The predominance of ASC-US across all age groups highlights the need for HPV DNA co-testing or repeat cytology, especially in resource-limited settings where immediate colposcopy is not always feasible. This study reiterates that while a majority of women have normal cytological findings, a significant subset harbors epithelial abnormalities that could progress to malignancy if not detected and treated timely. Therefore, regular Pap smear screening remains a cornerstone in the early detection of cervical precancerous lesions and must be encouraged, especially in women aged 30–60 years.

Conclusion

This study highlights the importance of routine Pap smear screening in women aged 30–60 years, revealing that while the majority had normal cytological findings, a significant proportion (26.9%) exhibited epithelial abnormalities, including ASC-US, LSIL, HSIL, and even a case of squamous cell carcinoma. Most abnormalities were observed in the 40–49 age group, underscoring this period as high-risk. Early identification through Pap smear allows timely intervention, reducing cervical cancer morbidity and mortality. The findings advocate for strengthening cervical screening programs, increasing awareness, and ensuring accessibility, particularly in low-resource settings.

References

1. Ashwini HN, Ramu S, Bevinakatti SH, et al. Cytomorphological spectrum of cervical smears in a tertiary hospital. IP Arch Cytol Histopathol Res 2020; 5(1): 86 – 90.
2. Basu P, Roychowdhury S, Bafna UD, et al. Human papillomavirus genotype distribution in cervical cancer in India: results from a multi-

center study. Asian Pac J Cancer Prev. 2009; 10(1): 27 – 34.
3. Sarandeep SP, Jyoti M, Neerja G. Study of Cervical Cytology and its correlation with Histopathology in diagnosis of Precancerous and Cancerous Lesions of Cervix. International Journal of Health and Clinical Research. 2021; 4(13): 372 – 7.
4. Nene B, Jayant K, Arrossi S, Shastri S, Budukh A, Hingmire S, Muwonge R, Malvi S, Dinshaw K, Sankaranarayanan R. Determinants of womens participation in cervical cancer screening trial, Maharashtra, India. Bull World Health Organ. 2007; 85(4): 264 – 72.
5. Gandhi SS, Shah P C. Utility of Papanicolaou's smears in the diagnosis of premalignant and malignant lesions of the cervix in a tertiary care centre of South Gujarat, India. International Journal of Research in Medical Sciences. 2019; 7(9): 3342 – 51.
6. Maheshwari Vansh, Girotra Siaa, Malik Mans, Basu Saurav. Prevalence and predictors of cervical cancer screening among married women in India: A cross-sectional analysis of National Family Health Survey-5 data. Cancer Research, Statistics and Treatment. 2025; 8(1): 30 – 8.
7. Sankaranarayanan R, Nessa A, Esmy PO, Dangou JM. Visual inspection methods for cervical cancer prevention. Best Pract Res Clin Obstet Gynaecol. 2012; 26(2): 221 – 32.
8. Agrawal S, Agrawal S, Gupta P. Study of cervical cytology in pap smears in a tertiary care hospital of North Maharashtra. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2023; 12(7): 2185 – 91.
9. Ezzelarab S, El-Husseiny A, Nasreldin M, Ali R, Nabhan A; Early Cervical Cancer Detection Consortium. Cervical cancer screening by cytology and the burden of epithelial abnormalities in low resource settings: a tertiary-center 42-year study. BMC Womens Health. 2024; 24(1): 405.
10. Huber J, Mueller A, Sailer M, Regidor PA. Human papillomavirus persistence or clearance after infection in reproductive age. What is the status? Review of the literature and new data of a vaginal gel containing silicate dioxide, citric acid, and selenite. Womens Health (Lond). 2021; 17: 17455065211020702.
11. Massad LS, Einstein MH, Huh WK, et al. 2012 updated consensus guidelines for the management of abnormal cervical cancer screening tests and cancer precursors. J Low Genit Tract Dis. 2013; 17(5 Suppl 1): S1 - S27.
12. Delamater L, Santoro N. Management of the Perimenopause. Clin Obstet Gynecol. 2018; 61(3):419 – 32.
13. Abulajiang Y, Liu T, Wang M, Abulai A, Wu Y. The influence of menopause age on gynecologic cancer risk: a comprehensive analysis using NHANES data. Front Oncol. 2025; 15: 1541585.