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Original Research Article

Prospective observational study of cervical cancer screening by Pap smear in tertiary care hospital in hilly areas of Himachal Pradesh

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ABSTRACT

Background: Cervical cancer is major cause of morbidity and mortality in females. The majority of cervical cancer deaths are in developing, low- and middle-income countries. India is having highest age standardization incidence of cancer cervix at 22. Cancer cervix is major health problem and rank one malignancy in Himachal Pradesh. This study was an attempt to detect various lesions of cervix with the help of Pap smear as a screening tool and timely intervention of any abnormality.
Methods: Total 2139 women in age group of 21-65 years were screened by Pap smears who presented in OPD for various gynaecological complaints and as a routine beyond 45 years. The study was conducted at Kamla Nehru State Hospital Shimla Himachal Pradesh during period of 01.02. 2023 to 31.07. 2023. Pap smear testing was done by conventional method and reported according to Bethesda system.
Results: In the present study majority of women were in age group of 41-50 years (49.56%). On analysis of Pap smears 86.11% samples were reported as negative for intraepithelial lesion or malignancy (NILM). Atypical squamous cells of undetermined significance were found in 1.12%, low grade intraepithelial lesion 0.23%, high grade intraepithelial lesion 0.19%, adenocarcinoma and squamous cell carcinoma 0.05% each. On further sub categorization of NILM cytology reports inflammatory finding was commonest (52.06%).
Conclusions: Early and routine Pap smear screening is important for early diagnosis of premalignant cervical lesions and Cancer cervix as prevention is better than cure.

Keywords: Cervical cancer, HSIL, NILM, Pap smear

INTRODUCTION

Cervical cancer is major cause of morbidity and mortality in females. It is second most common malignancy in females after breast cancer according to WHO (world health organisation).[1] In 2020 an approximately 604,000 women were diagnosed with cervical cancer worldwide and around 342000 women died of cervical cancer.[2] The majority of cervical cancer deaths (86%) are in developing, low- and middle-income countries. India is having highest age standardization incidence of cancer cervix at 22.[3] Cancer cervix is major health problem and rank one malignancy in Himachal Pradesh.[4] So it is important to diagnose and treat it at early stage to decrease morbidity (70%) and mortality (80%).[5]

National programme for cancer in India is since 1975 when main focus was on equipping cancer institutes. In 2010 cancer control became a part of larger comprehensive programme on non-communicable diseases as National Programme for Prevention and Control of Cancer, Diabetes, cardiovascular diseases and stroke. In this programme VIA (visual inspection by acetic acid) method is used to screen cervical cancer by trained health providers at equipped centres and VIA positive females are subjected to colposcopy and biopsy.[3]

The Papanicolaou test also known as Pap smear or cervical smear test is a simple, non-invasive, sensitive and cost-effective screening method to detect cancerous, precancerous and benign lesions of cervix. Georgios Papanikolaou a Greek doctor invented it and test was named after him as Papanicalaou or Pap test.[6] Pap smear testing is worldwide accepted as a screening tool for detecting precancerous lesions of the cervix and the recommendation is to start around 21 years of age then every 3 years until the age of 65 years if normal Pap smear reports and 30 year onwards HPV DNA (Human Papiloma Virus Deoxyribonucleic Acid) every 5 yearly alone or along with Pap smear. While in case of abnormal Pap smear depending on abnormality it can be repeated in six months to one year or subjected to colposcopy and biopsy.[2,5] This study was an attempt to detect various lesons of cervix with the help of Pap smear as a screening tool and timely intervention of any abnormality. So, women attending gynaecology OPD for various health problems and routine examination were offered Pap smear test.

METHODS

This study was conducted at Kamla Nehru State Hospital Shimla Himachal Pradesh with effect from 1st February 2023 to 31st July 2023. Total 2139 women between 21 to 65 years presenting to gynaecology OPD with various gynaecological complaints and for routine examination beyond 45 years were screened by Pap smear after taking consent. Pap smears were reported according to Bethesda system.

Inclusion criteria

Sexually active women between 21 to 65 years of age.

Exclusion criteria

Women below 21 years and above 65 years, women with no sexual exposure, women with known and treated case of cancer cervix and pregnant women were excluded.

Pap smears were taken by residents of gynaecology department by conventional method. With the help of wooden Ayres spatula sample from ectocervix was taken by rotating 360 degree and sample from endocervix was taken with cytobrush by rotating 180 degree. Samples were smeared over glass slide and fixed with 95% ethyl alcohol and sent to pathology department for examination. Women with normal test were advised repeat testing after 3 years and with abnormal testing they were advised follow up, repeat testing and treatment as per standard guidelines by WHO.

RESULTS

Total 2139 Pap smears were studied during 6-month period from 1 February 2023 to 31 July 2023. Majority of women in the study were from age group 41-50 years (49.56%) followed by age group of 51-65years (36.04%), then 31-40 years (13.70%) and least women in 21-30 years of age group (0.70%).

Table 1: Age wise distribution of patients.

Age in years	No. of patients	Percentage
21-30	15	0.70
31-40	293	13.70
41-50	1060	49.56
51-65	771	36.04
Total	2139	100

Table 2: Indications for Pap smear.

Indications for Pap smear	No. of patients	Percentage
Routine Pap smear	279	13.04
Vaginal discharge	1080	50.49
Intermenstrual bleeding	120	5.61
Postmenopausal bleeding	540	25.25
Suspicious cervix	40	1.87
Postcoital bleeding	80	3.74
Total	2139	100

Table 2 is showing the various indications for Pap smear testing. The commonest was vaginal discharge in 50.49% followed by postmenopausal bleeding in 25.25%. Routine Pap smears were done in 279(13.04%) women who came for routine gynaecological examination beyond 45years and had Pap smear testing earlier in their life. Women with intermenstrual bleeding were 5.61%, postcoital bleeding 3.74% and suspicious cervix on examination were in 1.87%.

Table 3: Age wise distribution of cervical lesion cytology.

Age group (years)	21-30	31-40	41-50	51-65	Total	Percentage
NILM	12	265	961	604	1842	86.11
ASCUS	0	3	12	9	24	1.12
LSIL	0	0	2	3	5	0.23
HSIL	0	1	2	1	4	0.19
SCC	0	0	0	1	1	0.05
Adenocarcinoma	0	1	0	0	1	0.05
Unsatisfactory	3	23	83	153	262	12.25
Total	15	293	1060	771	2139	100

Among the 2139 Pap smears analysed by cytology department, most of women 1842 (86.11%) were in category of NILM (negative for intraepithelial lesion or malignancy). 262 women (12.25%) were having unsatisfactory Pap smear report. They were advised repeat Pap smear. ASCUS (atypical squamous cells of undetermined significance) was found in 24 cases (1.12%), LSIL (low grade intraepithelial lesion) in 5 cases (0.23%), HSIL (high grade intraepithelial lesion) in 4 cases (0.19%), adenocarcinoma and squamous cell carcinoma 1 case each (0.05%). Adenocarcinoma was found in 32-year-old woman while squamous cell carcinoma was detected in 63-year-old woman (Table 3).

On further sub categorization of NILM cytology reports (Table 4) inflammatory finding was commonest (52.06%) followed by normal (19.65%). Among the infections bacterial vaginosis was in 14.40%, candidiasis in 8.79% and trichomoniasis in 1.63%. 3.47% NILM reports were with findings of atrophy.

Table 4: Age wise sub categorization of NILM cytology.

Age group (years)	21-30	31-40	41-50	51-65	Total	Percentage
Normal	0	34	46	282	362	19.65
Inflammatory	3	176	618	162	959	52.06
Bacterial vaginosis	2	22	154	87	265	14.40
Candidiasis	7	28	108	19	162	8.79
Trichomoniasis	0	5	12	13	30	1.63
Atrophy	0	0	23	41	64	3.47
Total	12	265	961	604	1842	100

DISCUSSION

Cancer cervix is the most widely screened malignancy in both developed and developing countries. It is proven that Pap smear test every 3 to 5 years used in screening programme for cervical cancer in these countries has helped to reduce significantly the morbidity and mortality in females because of cancer cervix.[7] In India though cancer cervix is on declining trend according to population-based registry still it is major health problem and needs further efforts.[8]

In this study, the maximum number of women were in age group of 41-50 years (49.56%) which is the common age to develop cancer cervix. In study conducted by Lakshmi et al maximum number of women were of age group 45-55 years.[5] In the study done by Sunita et al maximum number of women were between 31-40 years and in study of Mandakini et al between 15-30 years age group women were maximum.[9,10] At least one Pap smear is recommended before 45 years of age because late testing (>45years) may miss the chance of cancer prevention.

In this study, 279 women (13.04%) had routine Pap smear. They were knowing about screening test and had Pap smear earlier also. Rest of women had Pap smear testing first time in their life. In the study done by Lakshmi et al 23% (46 out of 200) had routine Pap smear while in study conducted by Verma et al no women had routine Pap smear test.[5,3] So more efforts are needed to sensitize the women regarding various screening tests available to detect cervical malignancy. Among gynaecological complaints majority of women presented with vaginal discharge (50.49%) as in study done by Verma et al (54.5%) which may be due to same topography as both studies are done in hilly areas of Himachal Pradesh.[3]

In this study, majority (86.11%) of smears were reported as NILM which were similar to study conducted by Malpani et al where 97.96% were having reports of NILM.[11] In study conducted by Verma et al NILM was reported in 56% of cases.[3]

In this study, 1.64% reports were with abnormal epithelial lesions. These findings are similar to studies conducted by Sengal et al (1.73%), Malpani et al (2.04%) and Ranabhat et al (1.7%) while in study by Verma et al it was 9%.[12,11,13,3] The prevalence all over world widely varies from 0.98% to 15.5% regarding epithelial cell abnormalities in cervix and in India it is 1.87 to 5.9%.[13,14] This wide variation could be because of different sample size and different risk factors of sample population. In this study, 12.25% samples were found to be unsatisfactory which might be because of sampling and technical errors and advised repeat sampling. In study by Vaghela et al unsatisfactory reports were in 4.8%.[15]

In present study among all epithelial cell abnormalities ASCUS (1.12%) finding was most common followed by LSIL (0.23%) then HSIL ((0.19%) and last 0.05% adenocarcinoma and squamous cell carcinoma each. Table 5 is showing the comparison of various lesions of cervix in our study with other studies.

On further subcategorization of NILM inflammatory finding was most common (52.06%) in our study which is similar to study conducted by Mandakini et al (57.5%).[10] While in study done by Malpani et al it was 73.46% and by Lakshmi et al 67%.[11,5] In Ranabhat et al nonspecific inflammation was in 26% which is very low in comparision to our study.[13] Persistent inflammation can lead to cervical intraepithelial lesion and needs further evaluation. Bacterial vaginosis (14.40%) and atrophy

(3.47%) rates in our study were similar to study by Malpani et al (bacterial vaginosis 9.88%, atrophy 2.83%).[11]

This study has shown the importance of Pap smear as screening tool for detecting malignant and premalignant cervical lesion like other studies. With the help of Pap smear cervical abnormality can be picked up early and women can go for early treatment. Though there are few limitations in performing this test in rural and hilly areas where women visit hospital only during pregnancy or some serious health problem and also Pap smear testing is not available in every health facility. WHO Global strategy for elimination of cancer cervix by 2030 is by reaching the targets of 90% HPV vaccination coverage of eligible girls, 70% screening coverage with high performance test and 90% of women with cervical lesion on screening test are to be managed appropriately.[2] Vision 2030 of United Nations Global Join Program is to tackle cancer cervix, ensuring reproductive health and decreasing the gaps within and among countries.[18-20]

Campaigns and regular health camps should be organized to create awareness in the women for regular screening. Since prevalence of human papillomavirus (HPV) is rising and carcinogenic HPV infection is causative factor for cancer cervix. WHO 2021 guidelines recommend HPV DNA detection as primary test.[2,21] So Pap smear along with HPV DNA testing should be done to increase detection rate of abnormal cervical lesions. There is also need to sensitize people regarding HPV vaccination and to increase vaccination coverage of eligible girls.

This study has limitations; unsatisfactory reports were 12.25%. Need to improve sampling technique and to reduce technical errors.

CONCLUSION

In a country like India where women barely go for routine check-up and screen, clinicians need to motivate women presenting to OPD for regular screening even if they are not experiencing any symptoms. Government should organize regular health camps and campaigns by various media to emphasize the role of screening so that we can be in a state to tackle this major health problem. Pap smear screening in developed countries has significantly reduced the burden of cancer cervix morbidity and mortality in women. This study emphasize that early and routine Pap smear screening is important to diagnose early premalignant cervical lesion and cancer cervix as prevention is better than cure.

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REFERENCES

1. Joshi C, Kujur P, Thakur N. Correlation of Pap smear and colposcopy in relation to histopathological findings in detection of premalignant slesions of cervix in a tertiary care centre. Int J Sci Study. 2014;2(8):55-60.
2. WHO guidelines for screening and treatment of cervical precancer lesions for cervical cancer prevention. 2nd ed. Geneva: World Health Organization; 2021.
3. Verma A, Verma S, Vashist S, Attri S, Singhal A. A study on cervical cancer screening in symptomatic women using Pap smear in a tertiary care hospital in rural area of Himachal Pradesh, India. Middle East Fertil Soci J. 2017;22(1):39-42.
4. Thakur A, Gupta B, Gupta A, Chauhan R. Factors for cancer cervix among rural women of a hilly state: a case- control study. Ind J Public Hea. 2015;59(1):45-8.
5. Lakshmi PV, Gouri SR. Study and analysis of two hundred cervical Pap smears in our hospital. Int J Contemp Medi Res. 2016;3(9):2787-9.
6. Pap smear. By Healthline medical review team. Available at: www.healthline.com/health/pap-smear#Overview1/2015/11. Accessed 01 August 2024.
7. Nayir T, Okyay AR, Nizlican E, Yesilyurt H, Akbaba M, et al. Cervical cancer screening in an early diagnosis and screening centre in Mersin, Turkey. Asian Pac J Cancer Prev. 2015;16(16):6909-12.
8. Sreedevi A, Javed R, Dinesh A. Epidemiology of cervical cancer with special focus on India. Int J Women's Health. 2015;7:405-14.
9. Bamanikar SA, Chandanwale SS, Baravkar DS, Dapkekar P. Study of cervical pap smears in a tertiary hospital. Ind Medi Gazette. 2014:250-254.
10. Patel MM, Pandya AN, Modi J. Cervical Pap smear study and its utility in cancer screening, to specify the strategy for cervical cancer control. Nat J Commu Medi. 2011;2(01):49-51.
11. Malpani G, Agrawal P, Verma AV, Khandelwal N, Tignath G. Cervical Pap smear study and detection of abnormal epithelial lesions and determination of its accuracy by cytohistological correlation in patients of tertiary care teaching hospital in central India. Int J Reprod Contracept Obstet Gynecol. 2016;5(7):2312-6.
12. Sengal D, Altinay S, Oksuz H, Demirturk H, Korkmazer E. 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. 2014;15(5):2069-74.
13. Ranabhat SK, Shrestha R, Tiwari M. Analysis of abnormal epithelial lesions in cervical Pap smears in Mid-Western Nepal. J Patho Nepal. 2011;1(1):30-3.
14. Mulay K, Swain M, Patra S, Gowrishankar S. A comparative study of cervical smears in an urban hospital in India and a population based screening

programme in Mauritius. Indian J Pathol Microbiol. 2009;52(1):34-7.
15. Vaghela BK, Vaghela VK, Santwani PM. Analysis of abnormal cervical cytology in papanicolaou smears at tertiary care centre-A retrospective study. Int J Biomed Adv Res. 2014;5:47-9.
16. Padmini CP, Indira N, Chaitra R, Das P, Girish BC, Nanda KM, et al. Cytological and colposcopic evaluation of unhealthy cervix. J Evid Med Healthc. 2015;2:6920-7.
17. Nayani ZS, Hendre PC. Comparision and correlation of Pap smear with colposcopy and histopathology in evaluation of cervix. J Evol Med Dental Sci 2015;4(53):9236-47.
18. Karra V, Ramulu PS, Rajanikar SB. Cervical pap smear study and its utility in cervical cancer detection and prevention. Ind J Obstet Gynecol Res. 2021;8(4):470-5.
19. Satyanarayana L, Asthana S, Bhambani S, Sodhani P, Gupta S. A comparative study of cervical cancer screening methods in a rural community setting of North India. Ind J Cancer. 2014;51(2):124-8.
20. Arun R, Singh JP, Gupta SB. Cross-sectional study on visual inspection with acetic acid and pap smear positivity rates according to socio-demographic factors among rural married women of Bareilly (Uttar Pradesh). Indian J Community Med. 2018;43:86-9.
21. Basoya S, Anjankar A. Cervical cancer: early detection and prevention in reproductive age group. Cureus. 2022;14(11):1.

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