

## ESTIMATION OF PREVALENCE OF UTERO-CERVICAL INTRAEPITHELIAL LESION USING PAP SMEAR TEST

Rachana<sup>1</sup>, Pratibha Srivastava<sup>2</sup>, Kumari Poonam<sup>1</sup>, Om Prakash Dwivedi<sup>3</sup>

<sup>1</sup>Tutor, Department of Pathology, Nalanda Medical College, Patna, Bihar, India.

<sup>2</sup>Assistant Professor, Department of Pathology, Patna Medical College, Patna, Bihar, India.

<sup>3</sup>HOD and Professor, Department of Pathology, Nalanda Medical College, Patna, Bihar, India.

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Corresponding Author:  
**Dr. Pratibha Srivastava,**  
Email: drpratibhas.21@gmail.com

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### Abstract

**Background:** Early detection and timely treatment is the key to reduce mortality in cases of cervical premalignant lesion. Uterine cervix is an ideal site for exfoliative cytology or Pap smear test. The aim is to estimate the prevalence of different pre malignant and malignant lesions of cervical region using Pap smear test. **Materials and Methods:** The study samples were collected from the gynaecology OPD from the subjects meeting the inclusion and exclusion criteria. Cytology smears were fixed in 95% isopropyl alcohol and the slides were stained by Papanicolaou's method. The Revised 2001 Bethesda System of Reporting was used for smear sample reporting. **Result:** Of the 493 samples evaluated, 473 samples were found to be Negative for Intra epithelial lesion and only 20 samples showed Intra epithelial lesion. Of total samples Negative for intraepithelial lesion or malignancy, nonspecific pathology was found in 190 samples, bacterial vaginosis in 110, candida, trichomonas species, repair changes and atrophic changes was seen in 36, 6, 102 and 29 samples respectively. Of the total samples positive for epithelial lesion, atypical squamous cells of undetermined significance were found in 09 samples and atypical glandular cells of undetermined significance was observed in 01 sample. The number of samples diagnosed for low grade squamous intraepithelial lesion, high grade squamous intraepithelial lesion and squamous cell carcinoma was found to be 5, 3 and 2 respectively. **Conclusion:** Pap smear test is an easy, simple, cost effective and established method for cervical malignancy screening and can be done at primary health care facilities.

## INTRODUCTION

In India, the second most common malignancy in women is malignancy of the cervical region. The cervical malignancies are detected at an advanced stage in majority of cases, and are the principal reason for high mortality and morbidity amongst women in the developing countries. The relative survival rate (five year) is below 50%.<sup>[1-3]</sup> Early detection of precancerous cervix lesions may reduced associated mortality.

Pap smear, commonly known as Pap test, is a procedure for early detection of cervical cancer in women. Pap smear is the globally accepted and standard screening procedure for cervical cancer including premalignant lesion.<sup>[4]</sup>

The term Pap is named after Papanicolaou, who for the first time highlighted the pre-invasive stage as a precursor of invasive carcinoma. Later it was widely accepted that, the pre-invasive abnormalities of cervix can be identified on examination of the

cervical smear.<sup>[5,6]</sup> Cervical malignancies are easily detected and prevented if proper implementation of cervical smear screening is done.<sup>[7]</sup>

Both the techniques of Pap smear screening i.e; conventional cytology and liquid based cytology are reliable and accepted internationally.<sup>[8]</sup> The sensitivity of Pap smear in the diagnosis of high grade squamous intraepithelial lesion is reported to be 70-80%.<sup>[9]</sup> A concurrent human Papilloma virus test adds the sensitivity level. The early diagnosis of intraepithelial cervical lesion by Pap smear screening has reported to reduce the incidence of cervical cancer.<sup>[10,11]</sup>

Therefore this study was conducted to estimate the prevalence of different pre malignant and malignant lesions of cervical region using Pap smear test.

## MATERIALS AND METHODS

**Study Design:** This prospective, unicentric, cross-sectional, descriptive study was conducted in the

department of pathology, Nalanda Medical College and Hospital, Bihar. This study was conducted over a period of 18 Months from Jan 2019 to July 2020. An informed and written consent was obtained from all the participating subjects prior to the commencement of the study.

#### Inclusion Criteria

Subjects with age 21 years and above with vaginal discharge and / or post coital bleeding and / or intermenstrual bleeding and / or postmenopausal bleeding and / or abdominal pain.

#### Exclusion Criteria

Subjects who are pre diagnosed for carcinoma cervix and / or under treatment for carcinoma cervix. Pregnant patients were also excluded from the study.

**Study Sample:** The study samples were collected from the Gynaecology Outpatient Department of our institute. All the cervical Pap smears were collected conventionally. All samples meeting the inclusion and exclusion criteria and collected during the study duration were collected.

**Sample Size:** All the samples were randomly selected. A total 493 Pap smear samples were included in this study.

**Sample Evaluation:** Cytology smears were fixed in 95% isopropyl alcohol and the slides were stained by Papanicolaou's method. The Revised 2001 Bethesda System of Reporting was used for smear sample reporting.

**Statistical Analysis:** The data was tabulated and was subjected to statistical analysis.

## RESULTS

The present study evaluated 511 Pap smear samples. The non-satisfactory samples (n=18) were discarded. A total of 493 samples which were found satisfactory and adequate as per the Bethesda system of reporting were examined further. Of the samples examined (n=493), a vast majority of samples (n=473) were found to be negative for Intra epithelial lesion / malignancy. Only 20 samples showed Intra epithelial lesion / malignancy. [Table1]

Of the total samples found negative for intraepithelial lesion or malignancy (n=473), non-specific pathology was found in 190 samples, bacterial vaginosis was found in 110 samples, candida and trichomonas species was seen in 36 and 6 samples respectively, while repair changes were seen in 102 samples and atrophic changes was seen in 29 samples. [Table 2]. The distribution of Negative for intraepithelial lesion samples with age group is shown in [Table 3].

Of the total samples examined and found positive for epithelial lesion (n=20), atypical squamous cells of undetermined significance was found in 09 samples and atypical glandular cells of undetermined significance was observed in 01 sample. The number of samples diagnosed for low grade squamous intraepithelial lesion, high grade squamous intraepithelial lesion and squamous cell carcinoma was found to be 5, 3 and 2 respectively.[Table 4]

**Table 1: Pap smear evaluation findings. (n=493)**

Pap Findings	No. of cases	Percentage
Negative for Intra epithelial lesion	473	95.94%
Epithelial lesion Present	20	4.06%
Total	493	100%

**Table 2: Frequency of samples Negative for intraepithelial lesion. (n=473)**

Pap findings	No. of cases	Percentage
Non-specific pathology	190	40.17
Bacterial vaginosis	110	23.26
Candida	36	7.61
Trichomonas	6	1.27
Repair changes	102	21.56
Atrophic changes	29	6.13
Total no. of cases (Negative for intraepithelial lesion)	473	100 %

**Table 3: Distribution of Negative for intraepithelial lesion Samples with age group.**

Age group (in years)	Non- specific pathology	Bacterial vaginosis	Candida	Trichomonas	Repair changes	Atrophic changes	Total
21-30	66	45	0	0	19	0	130
31-40	50	36	1	0	41	1	129
41-50	31	13	2	0	19	8	73
51-60	23	9	8	0	10	9	59
61-70	13	5	11	2	13	9	53
>70	7	2	14	4	0	2	29
Total	190	110	36	6	102	29	473

**Table 4: Frequency distribution of samples with epithelial lesion.**

Pap findings	No. of cases	Percentage (out of total epithelial lesions)	Percentage (out of 493 study cases)
Atypical squamous cells of undetermined significance	9	45	1.83
Atypical glandular cells of undetermined significance	1	5	0.20

Low grade squamous intraepithelial lesion	5	25	1.01
High grade squamous intraepithelial lesion	3	15	0.61
Squamous cell carcinoma	2	10	0.41
Total samples with epithelial lesion	20	100%	4.06

**Table 5: Distribution of Cervical Epithelial lesion Samples with age group.**

Age group (in years)	Atypical squamous cells of undetermined significance	Atypical glandular cells of undetermined significance	Low grade squamous intraepithelial lesion	High grade squamous intraepithelial lesion	Squamous cell carcinoma	Total
21-30	1	0	0	0	0	1
31-40	3	0	2	1	1	7
41-50	3	0	2	1	0	6
51-60	2	1	1	0	1	5
61-70	0	0	0	1	0	1
>70	0	0	0	0	0	0
Total	9	1	5	3	2	20

**Table 6: Comparative Data - Prevalence of Cervical Epithelial Abnormalities.**

Author	Prevalence of epithelial abnormalities (in %)	Main epithelial abnormalities (in %)			
		ASCUS	LSIL	HSIL	SCC
Present study	4.06	1.83	1.01	0.61	0.41
Balaha MH et al	4.95	2.99	0.09	0.68	0.34
Patel MM et al	5.52	4.1	0.1	0.1	0.7
Bal MS et al	5.0	0.3	2.7	0.7	1.3
Nair GG et al	2.42	0.15	1.58	0.49	0.20
Gupta K et al	3.2	0.52	1.36	0.91	0.28
Usha M et al	3.01	0.62	1.46	0.53	0.14

Out of total 20 samples with epithelial lesion, the majority of subjects were in age range 31-40 years followed by age range 41-50 years and age range 51-60 years. [Table 5]

The comparative data for prevalence of cervical epithelial abnormalities detected in different studies is shown in table 6.

## DISCUSSION

Carcinoma of uterine-cervix is one of the most common carcinoma of females. It generally affects the women after the age of 40s, while the precursor lesion initiates relatively a decade earlier [12]. Easy access and suitability for exfoliative cytology makes the uterine cervix site suitable for Pap smear test. [13] Cervical Pap smear evaluation is an easily available and affordable test and does not require much of expertise, and therefore can be done at primary health care facilities, in contrast the HPV-DNA test requires support, expertise and equipments of higher health care facilities. The synergistic effect of HPV in the etiology of cervical cancer is already established. A simultaneous Pap smear test and HPV-DNA increases the sensitivity to detect precancerous lesions of cervical epithelial.

The American Cancer Society suggests that, the Pap smear test should be done routinely and repeatedly every 3 years for malignancy screening test for the vulnerable population. [14]

In the present study reporting was done according to Bethesda system. The present study found a very few cases of epithelial abnormalities. This finding was similar to the previous study findings. [15-17]

However the pattern of various epithelial abnormalities amongst the previous studies was not found to be consistent. A possible reason for this wide variation may be the differences in study sample recruitment criteria, the genetic makeup of different racial and ethnic population, and prevalent risk factors. [18]

The current study found that, the most common cervical premalignant lesion was Atypical squamous cells of undetermined significance, followed by High grade squamous intraepithelial lesion and High grade squamous intraepithelial lesion. In contrast various previous studies observed a relatively lower prevalence of Atypical squamous cells of undetermined significance. [13,17-19]

In the present study, the cervical epithelial abnormalities were found to be more prevalent in age of 30s, followed by 40s and 50s respectively. This was in consonance with the previous study reports. [16,19] In contrast study reports of Niar et al found this to be most prevalent in 50s. [18]

The present study also found the highest prevalence of bacterial vaginosis amongst the Non-neoplastic lesions study samples, the study reports of Pathak R et al., found a relatively similar findings. [20]

## CONCLUSION

Pap smear test is a reliable tool for early detection of cervical precancerous epithelial lesions. Early detection and timely treatment is the key to reduce mortality. Pap smear test is an easy, simple, cost effective and established method for cervical malignancy screening and can be done at primary health care facilities.

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