# Prevalence rate and pattern of cervical cytological changes in female patients of District Hospital.

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**ABSTRACT**

This observational interventional study was conducted at Department of Gynecology, Allied/DHQ Civil Hospital, Faisalabad from 01st April 2017 to 30th Sep 2017 with an objective to assess the frequency and cytological pattern of abnormal pap-smear in women visiting Hospital outpatient. Among females between 20 - 65 years of age, Pap-smear test was performed from the transformation zone. A total 68.75% females were noted with pap-smear abnormalities, of which 60% patients were found to have inflammatory changes and remaining 8.75% patients had cytology for malignant or premalignant changes. Among patients showing pre-malignant and malignant changes 42.85% patients were CIN I (LSIL), 28.57% patients were CIN II (HSIL), 21.42 % patients were CIN III (HSIL) and 7.14% patients were with invasive cancer.

**Conclusion:** High prevalence rate of abnormal pap smear and of pre-invasive cervical cytological changes particularly with low grade have been observed as compared to the literature values.

**Keywords:** Cervix, Pap smear, Lesion, Neoplastic, Invasive, Transformation zone, Abnormal, Dyskaryosis, Inflammatory.

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## INTRODUCTION

The 5th most common worldwide cancer in women is the cervical cancer and after each 20-minute one woman dies of this type of cancer[1] and it is the 2nd most common type of tumor found in the females of less developed countries resulting into three lac annual deaths. Approximately two Lacs deaths occur per year due to cervical cancer accounting for 8.5% of all deaths in cancerous women worldwide[2]. About 80% of such cases are found in low or middle-income regions of the world. One out of every 10 cancerous female patients in this world is diagnosed with cancers of cervix which can be prevented by preventing and detecting the pre-invasive disease[2-5]. It can occur at any level of the age like from 2nd decade of life to its senility. Dysplasia occurs at almost 30 years of age and peak incidence of the invasive lesion occurs mostly at 45 years[6,7]. Pap-smear test is a very simple, low cost, noninvasive, easy to use and acceptable to patients for initial cervical cancer screening and it has saved the millions of women's life worldwide[8-10]. It is a fact that pap smear is worldwide an effective screening tool for cervical cancer and its use is long proven. Regular screening of the patients reduces the cancer risk by 80%[3]. It depends on the individual consideration that how frequently the pap-smear test should be done. Pap smear can miss up to 25% of the lesions even if it is correctly done, so, some recommends it going longer than one year between examinations[2,11].

Its incidence has been reduced dramatically in US and some other well developed regions due to initial screenings but high incidence of it is still found in Pakistan and other developing areas which is due to inappropriate screening programs[5]. So, it is very necessary to have our own country statistics on pap smear screening as we don't have an authentic data from Pakistan. This present research project may be proved later as a pilot

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study and may act as an initiative for other tertiary Hospitals of the region to get more data on the same issue based on which a policy can be made for regular pap smear screening and patient education at Government level to control cervical carcinoma in the region. The main rationale of this study was to evaluate the prevalence of abnormal pap smear and to study the cervical cytological pattern which will help us to identify the disease in its early premalignant phase.

This study was conducted with an objective to find out the frequency of pap smear abnormality in women and to find out the cytological pattern of abnormal smears.

## METHODOLOGY

This Observational Interventional study was conducted at Outpatient Department of Gynecology, Allied/DHQ Hospital Faisalabad from 01st April 2017 to 30th Sep 2017, after approval from Research Ethics Committee. In this study, 160 local female patients (20-65 years) of any parity were analyzed thoroughly. The pregnant, sexually inactive and unmarried women, women having suspicious looking cervix (like erosion or mass), patients with abnormal features on pelvic ultra-sonography and patients with abnormal uterine bleeding were excluded from study. The written consent was taken from each patient. The demographic information, detailed history, parity, number of marriages of each partner, age, multiple sexual partners and any other abnormal sexual behavior, personal history like socioeconomic status, smoking and any previous pap-smear history was taken along for each patient along with her general physical examination. Any cervical abnormality or mass and any evidence related to infection was noted in abdominopelvic exam. The pelvic USG (ultrasonography) was carried out to see any abnormality. Pap-smear cytology of all patients was done and a sample was considered adequate if presence of endocervical cells were noted on the smear. The transformation zone was area of the screening, whose upper limit was squamo columnar junction as more than 90 percent cervical cancer cases develop in the transformation zone, so, adequate sampling of this area was very important. Ayer's spatula on microscopy sample were classified into normal; inflammatory; dyskaryosis (mild, moderate, and severe); borderline changes and glandular neoplasia. The cytological report with cellular description in well-defined and acceptable cytological terms was obtained. A smear with no cellular abnormality was said to be negative and the smear unable to be evaluated in the Lab was said to be inadequate. It may be obscured by inflammatory cells or blood, poorly prepared at point of collection or may not have the right cells types.

Data was presented in tabulated form and percentages were calculated for all variables like normal and abnormal pap smears were calculated using Microsoft Excel. Then number and percentages of cytological pattern of abnormal positive pap smears were also analyzed.

## RESULTS

Cytological reports of 160 pap-smear results showed that 31% (50) patients had normal smear results i.e. they had no evidence of inflammatory, malignant or premalignant change, while 60% (96) patients were found with the results of inflammatory smears. Whereas, 8.7% (14) females were noted positive for the malignant or premalignant changes (Table-I).

**Table-I: Frequency of normal and abnormal PAP smear results (N=160).**

| Interpretation | pap smears n (%) | Subtype of interpretation | n (%) |
|---|---|---|---|
| Normal | 50 (31.25%) | | |
| Abnormal | 110 (68.75%) | Inflammatory | 96 (60%) |
| | | Positive (Includes pre-malignant and malignant changes) | 14 (8.75%) |

Carcinoma of cervix has a premalignant condition which is known as cervical intraepithelial neoplasia (CIN). Cytological pattern of abnormal positive pap-smear (Table-II) presented that six patients (3.7%) showed mild dysplasia i.e. CIN I (LSIL), four patients (2.5%) had moderate dysplasia i.e. CIN II (HSIL) and three patients (1.87%) were of severe dysplasia i.e. CIN III (HSIL). Out of 160 smears only one (0.625%) showed invasive cancer i.e. malignant cells. Results of high grade dysplasia were later confirmed by biopsy. No patient was observed with borderline change or glandular neoplasia. Abnormal sexual behavior was observed in no patient and there was no patient found with any pap-smear testing history.

**Table-II: Frequency of cytological pattern of abnormal positive PAP-smear (14 smears) out of total pap-smear cytology results (n=14).**

| Pattern of positive pap smears | Number of patients | Subtype of pattern (n=13) | Number and percentage |
|---|---|---|---|
| Dyskaryosis | 13 (8.12%) | a) CIN I (LSIL) | 6 (3.75%) |
| | | b) CIN II (HSIL) | 4 (2.5%) |
| | | c) CIN III (HSIL) | 3 (1.87%) |
| Invasive | 1 (0.625%) | | |
| Borderline changes | 0 | | |
| Glandular Neoplasia | 0 | | |

## DISCUSSION

A total of 8.7% females were found positive for malignant or premalignant changes. Similar results were observed by Sohail et al[6] who found that 6% smears samples had CIN. In another study, the frequency of mild to severe cervical intraepithelial was found to be 8%[7]. Percentage of dysplasia or positive smear in this study was noted higher than that of the previously observed positive Pap-smear cytology such as 3.12%,[8] 4.16%,[12] 4.5%[13] and 4.75[14]. However, a study carried out in 2017 indicated a higher percentage (19%) of CIN samples in India[15]. Preceding lines are showing that abnormal pap smear results of recent study are more in number than that of the values observed in the similar type of studies conducted in the past which may be due to less public awareness level, abnormal sexual behavior, multiple partner, smoking or unprotected

sexual activities.

Cytological report of pap-smear in present study showed that 31% females were having normal smears i.e. they had no evidence of inflammatory, malignant or premalignant changes. Same values of normal pap-smear results, i.e. 30.55%,[12] 35.7 [5] and 38.1%,[16] was revealed in other areas. Some local and foreign studies showed comparatively high percentage of negative results for malignancy i.e. 53%,[17] 55.6%,[6] 59.50%,[18] 61.6%,[19] 70.8%[20] and 73.77%.[15] Whereas, Khan et al[8] and Haider et al[21] revealed comparatively less values of normal smears such as 22.71% and 18.34%, respectively, in female population. As previously discussed that low percentage of normal pap smears in present study as compared to previous ones may be related to increased prevalence of different risk factors for abnormal pap smears now a day.

Frequency of inflammatory smears (60%) in present study was comparable to previously reported inflammatory changes i.e. 55%,[16] 55.7%,[22] 55.31%[8] and 60.44%.[12] However, some other previous studies showed less inflammatory results of pap-smears as 28.25%,[23] 30.22%,[24] 32%,[19] 33%,[20] 36%[17] and 36.4%.[6] The incidence of infections are high in Pakistan which may be most probably due to poor hygiene, malnutrition and high parity which ultimately contribute to low resistance and hence more susceptibility to infections[12].

Total 3.75% patients showed mild dysplasia i.e. CIN I, 2.5% patients had moderate dysplasia i.e. CIN II and 1.87% patients were of severe dysplasia i.e. CIN III. Whereas, only one patient showed invasive cancer i.e. malignant cells. Results of high grade dysplasia were later confirmed by biopsy. In a study on the incidence of cervical intraepithelial neoplasia in Jordan[25], the results were found as CIN I (21%), CIN II (48%) and CIN III (31%). A previous research showed CIN-I in 2.47%, CIN-II in 1.90% and CIN-III in 0.38% of the total samples.[22] Another study conducted in Shaikh Zayed Hospital, Lahore showed 1.2% (CIN I), 1.42% (CIN II) and 0.40% (CIN III).[16] Some international studies showed 13.28%,[15] 4.0%,[17] 1.9%[26] and 0.5%[27] for CIN I, 4.94%,[15] 1.0%,[17] 0.3%[26] and 0.1%[27] for CIN II and 2.03%,[15] 0.5%,[17] 0.5%[26] and 0.1%[27] for CIN III. So, cervical cancer can be picked in its early pre-malignant phase if it is in time and properly diagnosed by pap smear, a simpler method.

Incidence of cervical cancer increases with age and progression of the mild cervical dysplasia to its higher grade, then progression to the invasive phase takes more than 10 years[2,11,28]. The long natural history of cervical cytology therefore allows ample chance for its presentation and for the early findings of the most precancerous lesions through papanicolau smear screening[8]. These pre-invasive cervical lesions are easy to treat after detection. Papanicolau smear is the foundation of screenings for cervical. The regular screening of this cancer minimizes its risk by 80 percent[3]. The pap-smear has been found to save the millions of women worldwide[10]. Thus, majority of deaths can be prevented by screening program and training the patients when the disease is pre-invasive[2,11].

In present study, almost 30% females only were found negative for abnormal pap-smears and about 9% women showed positive cytology of cervix with different pattern. Pap-smear test has been proved an effective, widely accepted and a powerful technique for an early detection of the cervical dysplasia, which is a pre-malignant condition and can be treated effectively if diagnosed early. No systematic schedule of screening has ever been planned in Pakistan and most of the efforts and studies are hospital based only.

## CONCLUSION

The rate of abnormal pap smear and of pre-invasive changes in cervical cytology are more prevalent as compared to the literature values.

**Recommendations:** This data emphasizes on the hospital administration for making it a policy to do pap smears and make a recall system to ensure regular follow up of the patients to decrease the incidence of cervical cancer in the catchment population.

We also recommend Government to make policy on regular pap smear screening of every married women visiting the indoor or outdoor departments of the government and private Hospitals and to collect their data. Regarding this issue, the patient education and health awareness activities should be emphasized and promoted using electronic and print media.

## AUTHOR'S CONTRIBUTION

**Naz U:** Conceived idea, Designed methodology, Data collection, Data analysis, Manuscript writing

**Ashraf MM:** Data analysis, Data interpretation, Manuscript writing

**Rashid A:** Manuscript approval, Final proof reading

**Sarwar A:** Designed methodology, Data collection, Data analysis, Manuscript writing

**Aslam B:** Literature analysis, Data collection

**Ashraf N:** Data analysis, Data collection

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