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## 'DETECTION OF ABNORMAL CERVICAL CYTOLOGY BY PAP'S SMEAR AND COMPARISON BETWEEN RURAL AND URBAN WOMEN'

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**ABSTRACT: BACKGROUND:** This study was carried out in department of obstetrics and gynaecology G.R. Medical College Gwalior (MP). **AIMS AND OBJECTIVES:** To study the incidence of malignant and pre malignant cases of cancer cervix in women attending outdoor patient department of G R medical college Gwalior. To find out the role of PAP's smear in early detection of premalignant and early carcinoma cervix and to compare the results between urban and rural women. **MATERIAL AND METHOD:** a total of 400 subjects were selected attending outdoor patient department of G R medical college Gwalior with equal number of urban and rural areas. Information about age, parity, age at marriage, complaints, clinical findings, Pap's smears were prepared and histological interpretations were recorded. **RESULTS**: Maximum number of patients was in the age group of 31-40 years. Mean age at marriage was 17.5 years for woman of rural areas and that for urban woman was 21.5 years. In the rural patients highest number were P2-P4 (53%) followed by > P4 (46.5%). In urban patients too maximum number of patients had parity between P2-P4 (69.5%) followed by > P4 (28.5%). Grand multiparity was seen in 20.5% among rural women as compared to 1.5 % among urban women. Among the rural patients use of barrier method of contraception was only 12% while in urban areas it was 30%. Percentage of couples who were not using any contraception was 47.5% in rural area and 33% in urban area. The most common presenting complaint was white discharge among both rural and urban groups (75% vs. 72%). The most common clinical finding was cervical erosion (57.5%) Histopathological interpretation of Pap's smear revealed cervical squamous epithelial lesions (LSIL and HSIL) in 10.5% smears of rural and 4.5% smears of urban women. A total of 4% smears were found positive for malignancy in rural women as compared to 1.5% smears in urban women.
**KEY WORDS:** Carcinoma cervix, HSIL, LSIL, Pap's smear, squamous intraepithelial lesion

**INTRODUCTION:** Cancer cervix is the second most common cancer in women in the world, while it is the leading cancer in women in developing countries. Globally 15% of all cancers in females are cervical cancers, while in South East Asia, cancer cervix accounts for 20-30% of all cancers. Cancer cervix is a major cause of death in women living in developing countries.[1]

In 2007 estimated number of new cases of cervical cancer according to National Cancer Registry of India was 90,708 with '5' year survival rate of 48%.[2] It is estimated that in India 1,26,000 new cases occur each year.[3]

It is possible to prevent deaths due to cervical cancer through various strategies that target women >30 yr for screening and treatment.[4] The introduction of Papanicolaou test led to significant reduction in mortality and morbidity in developed countries where proportion of women who are screened by Pap test vary from 68 to 84 per cent[5,6,7,8]. On the other hand, the screening coverage in Asian countries is low and varies from 50 per cent in Singapore which has an existing Cancer

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Screening Programme to 2.6-5 per cent in India.[7, 9,10] Despite existence of national guidelines the screening coverage in India is appalling and is mainly attributed to inequality between infrastructure, resources and outsized population.[11] As a result, very often diagnosis of cervical cancer is based on opportunistic screening or after the onset of symptoms. Though data from the 20 populations based cancer registries in India indicate a steady decline in cervical cancer incidence rates over the last two decades, it still occupies number two position and the risk of disease is still high[12]. These registries are predominantly urban and in the rural cancer registry in Barshi the risk of cancer of cervix was considerably high compared to urban Mumbai registry and it accounted for half the cancer burden.[13] Unlike other malignancies cancer cervix is readily preventable if effective programmes are conducted to detect and treat its precursor lesions. Since the introduction of PAP's smear dramatic reduction has been observed in the incidence and mortality of invasive cancer cervix worldwide.[5]

**AIMS:**
1. To study the incidence of malignant and premalignant cases of cancer cervix in the study subjects.
2. To find out the role of Pap's smear in early detection of premalignant and early carcinoma cervix.
3. To compare the incidence of premalignant and malignant cervical lesions among urban and rural areas.

**MATERIAL AND METHOD:** This study was carried out in the Out Patient Department of Obstetrics & Gynaecology, Kamla Raja hospital and G.R. Medical College, Gwalior during January 2012 to December 2012. Women who had attended the OPD for the complaints of white discharge P/V, postcoital bleeding, intermenstrual bleeding, dyspareunia and lower abdominal pain were included in the study. Relevant history regarding the age, duration of marital life, age at marriage, number of children, spacing among children and use of contraception were recorded on the proforma. It was ensured that no antiseptic cream and douche were applied on the day of collecting the sample.

Patient was placed in lithotomy position. Bivalved speculum passed through vagina, cervix was thoroughly visualized and naked eye examination findings were noted in the proforma. The longer projection of Ayre's spatula was placed in the cervix near squamocolumnar junction and rotated to 360°. The cellular material obtained was quickly spread on a glass slide. The glass slide was then immediately put into coplin jar containing 95% alcohol.

The prepared smears were sent to the histopathology department. The cytological interpretation of smears was reviewed and the results were compiled.

**RESULTS:**
**Sample Size:** Total 400 PAP's smears were collected with equal number of rural and urban women (200 each)

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| Age distribution (yrs) | Total (400) | | Rural (200) | | Urban (200) | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| 21-30 | 124 | 31% | 58 | 29% | 66 | 33% |
| 31-40 | 194 | 48.5% | 104 | 52% | 90 | 45% |
| 41-50 | 76 | 19% | 36 | 18% | 40 | 20% |
| > 50 | 06 | 1.5% | 02 | 01% | 04 | 02% |
| Table -1: age wise distribution of study subjects | | | | | | |

Maximum number of patients were in the age group of 31-40 years in both groups - 52% among rural and 45% in urban areas.

| Age at marriage (yrs) | Total | | Rural (200) | | Urban (200) | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| < 20 | 127 | 31.75% | 109 | 54.5% | 18 | 9% |
| 21-25 | 219 | 54.75% | 91 | 45.5% | 128 | 64% |
| 26-30 | 50 | 12.5% | 00 | 00% | 50 | 25% |
| > 30 | 04 | 01% | 00 | 00% | 04 | 02% |
| Table-2: Distribution according to age of marriage | | | | | | |

Maximum numbers of patients were having age at marriage, < 20 years in rural area (54.5%) and between 21-25 years in urban area (64%). Mean age at marriage was 18.5 years, it was 16.5 years in rural areas and 20.5 years in urban areas.

| Parity | Total | | Rural (200) | | Urban (200) | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| P1 | 05 | 1.25% | 1 | 0.5% | 4 | 02% |
| P2 | 154 | 38.5% | 26 | 13% | 128 | 64% |
| P3 | 129 | 32.25% | 84 | 42% | 45 | 22.5% |
| P4 | 78 | 19.5% | 48 | 24% | 30 | 15% |
| > P4 | 44 | 11% | 41 | 20.5% | 3 | 1.5% |
| Table-3: Parity status of study subjects | | | | | | |

In rural areas maximum number of women were para 3 and para 4 whereas it was para2 and para 3 in the urban area. Grand multiparity was seen in 20.5% among rural women as compared to 1.5 % among urban women.

| Contraceptive methods used | Total (400) | | Rural (200) | | Urban (200) | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| OCs | 26 | 6.5% | 2 | 1% | 24 | 12% |
| Condoms | 84 | 21% | 24 | 12% | 60 | 30% |
| IUCD | 41 | 10.25% | 15 | 7.5% | 26 | 13% |
| Permanent sterilization | 88 | 44% | 64 | 32% | 24 | 12% |
| None | 161 | 40.25% | 95 | 47.5% | 66 | 33% |
| Table-4: Use of various methods of contraception | | | | | | |

Among the rural patients use of barrier methods was only 12% while in urban areas it was 30%.Permanent sterilization was adopted by 32% of rural and 12% of urban women.

The use of IUCD was significantly higher (13%) among urban women than that among rural women (7.5%). A total of 47.5% of rural and 33% of urban women were not using any contraception.

| Presenting complaints | Total(400) | | Rural (200) | | Urban (200) | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| White discharge | 294 | 73.5% | 150 | 75% | 144 | 72% |
| Postcoital bleeding | 54 | 13.5% | 24 | 12% | 30 | 15% |
| Intermenstrual bleeding | 27 | 6.75% | 15 | 7.5% | 12 | 6% |
| Lower abdominal pain | 75 | 18.75% | 38 | 19% | 37 | 18.5% |
| Dyspareunia | 14 | 3.5% | 8 | 4% | 6 | 3% |
| Postmenopausal bleeding | 10 | 2.5% | 4 | 2% | 6 | 3% |
| Table-5: Presenting Complaints of study subjects | | | | | | |

The most common presenting complaint was white discharge P/V among both rural and urban groups (75% vs. 72%). Other complaints were postcoital bleeding (12%among rural and 15% among urban patients), lower abdominal pain (19% among rural and 18.5% among urban patients).

| Clinical Finding | Total (400) | | Rural (200) | | Urban (200) | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Cervical erosion | 230 | 57.5% | 116 | 58% | 114 | 57% |
| Cervical inflammation | 106 | 24.5% | 50 | 25% | 56 | 28% |
| Cervical hypertrophy | 36 | 09% | 22 | 11% | 16 | 8% |
| Healthy cervix | 26 | 6.5% | 12 | 6% | 14 | 7% |
| Table-6: Clinical findings in women subjected to pap smear examination | | | | | | |

The most common clinical finding was cervical erosion in both the groups (58% among rural and 57% among urban patients). Other findings were cervical erosion (25% rural and 28% urban), cervical hypertrophy (11% rural and 8% urban). Among 6% of rural and 7% of urban patients cervix was found healthy on clinical examination.

| Cytodiagnosis | Total (400) | | Rural (200) | | Urban (200) | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Inadequate smear | 17 | 4.5% | 10 | 5% | 7 | 3.5% |
| Inflammatory smear | 342 | 85.5% | 161 | 80.5% | 181 | 90.5% |
| LSIL | 16 | 04% | 10 | 5% | 6 | 3% |
| HSIL | 14 | 3.5% | 11 | 5.5% | 3 | 1.5% |
| Carcinoma | 11 | 2.75% | 8 | 4% | 3 | 1.5% |
| Table-7: Histological interpretation of pap smears | | | | | | |

| Risk factors | Number of subjects | p value |
|---|---|---|
| Habitat | | 0.0079 |
| • Rural | 29 (70.7%) | |
| • Urban | 12 (29.3%) | |
| Mean Age | | |
| • SIL | 37.5 years | |
| • Carcinoma | 51 years | |
| Mean Age at marriage | 16.5 years | |
| Average no of children | 3.5 | |
| Use of OCs | 05 (12.2%) | 0.1379 |
| Use of condoms | 04 (09.75%) | 0.0771 |
| Presenting complaints | | |
| • White discharge | 32 (78%) | 0.4808 |
| • Post coital bleeding | 13 (31.7%) | 0.0006 |
| • Lower abdominal pain | 11 (27%) | 0.1870 |
| • Post menopausal bleeding | 02 (4.8%) | 0.3294 |
| Clinical findings | | |
| • Cervical erosion | 30 (73%) | 0.0422 |
| • Cervical inflammation | 25 (61%) | 0.0001 |
| • Cervical hypertrophy | 15 (36.5%) | 0.0001 |
| • Healthy cervix | 04 (9.75%) | 0.3977 |
| Table-8: Frequency of known risk factors in 41 neoplastic lesions. | | |

**DISCUSSION:** Cancer cervix and its premalignant stages considered to be the ideal malignancy for screening as its meets both the test and disease criteria for screening. It has long latent phase during which it can be detected as identifiable and treatable premalignant lesion.

The benefit of conducing screening for carcinoma cervix exceeds the cost involved.

In this study 200 rural and 200 urban patients attending the OPD consecutively for various complaints were included for Pap's smear examination.

Maximum number of patients was in the age group of 31 to 40 years in both the age groups (525 among the rural and 45% among the urban population). This is because of overall increase in the age at marriage due to increasing awareness among the public in the last many years.

The maximum number of patients in the rural area had age at marriage < 20 years in the rural area (54.5%) whereas among the urban women maximum number of women had age at marriage between 21 and 25 years (64%). This explains the level of awareness for age at marriage is more among the urban areas than among the rural areas.

Regarding parity, overall number of children and grand multiparity was higher among the rural population than among the urban population this is comparable to the study done by Manjit singh bal et al.

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Regarding the contraception, among rural population, use of barrier methods was significantly lower (12%) in comparison to the urban population (30%). This finding suggests increased risk of STDs among the rural women than among the urban women.

The most common presenting complaint was white discharge P/V among both the rural and urban women (75% and 72% respectively) followed by post coital bleeding (12% and 15% respectively). This is comparable to study Mulazim Husain et al and Manjit singh Bal et al.

The most common clinical findings were cervical erosion (58% in rural and 57% in urban women), followed by cervical inflammation (25% and 28% respectively).

Histological results of smears in both the groups were compared. The incidence of LSIL was 5% among rural and 3% among urban areas, HSIL was seen in 5.5% among rural and 1.5% among urban area. Overall squamous intraepithelial lesions were found in 10.5% of rural areas and 4.5% of the urban area subjects, it indicates significantly higher incidence of premalignant condition of cervical cancer among rural population than among the urban population. The smears positive for malignancy were significantly higher in rural population in patients (4%) than urban population (1.5%).

Divya hedge et. Al. reported a total 11.7% of Pap's smear as abnormal considering LSIL and above as abnormal.[14] and Mnjit singh Bal reported a 5.1% pap's smear as abnormal including 1,3 % carcinomas.

These results can be explained by the following reasons:

The age of marriage was significantly lower among the rural than among the urban women. 54% of rural women were less than 20 years at the time of marriage while only 9% urban women were married before 20 years. The mean age at marriage was 17.5 years for the rural women and it was 22.5 years for urban women. Early exposure to sexual activity before 20 years of age and higher parity are two strong causative factors for cervical cancers. The mean number of children among rural women were (3.5) significantly higher than mean number of children in urban women (2.4). The maximum women were P3 (42%) followed by P4(24%) in the rural area whereas women with P3 were 22.5% and P4 were 10%. The grand multipara women were 20.5% among rural women and it was only 1.5% among urban population.

The parity was significantly higher among rural women than among urban women. The para 3 and para 4 were significantly higher (42% and 24% respectively and a total of 66.5% among the rural women than urban women (P-3 22.5%, P- 4 10%, Total of 32.5%). Grand multiparity was seen in 20.5% among rural women and 1.5% among urban women.

Use of barrier methods for contraception was significantly higher among urban couples than among rural it seems to be because of lack of motivation in that group.

Mean age of cases with SIL was 37.5 years and that with Invasive carcinoma was 51 years. There was sequential progression in the development of SIL and invasive carcinoma.

Mean age of marriage in patients with LSIL was 17.5 years and that in patients with HSIL and invasive carcinoma was 17.2 and 16.4 years respectively. Similarly mean number of children was 3.5 in women with neoplastic changes.

No significant difference was found with any method of contraceptives in positive cases.

The commonest presenting complaint among positive cases for SIL and carcinoma was vaginal discharge while most significant difference was seen with post coital bleeding (p= 0.0006).

Clinical examination of all neoplastic cases shows that cervical inflammation and hypertrophy were significantly higher than the study population (p= 0.0001)

**CONCLUSION:** Carcinoma cervix is an ideal malignancy for screening because its meets all conditions of screening. Pap's smear is a cost effective and sensitive test for detection of premalignant and early malignant cervical lesions. The incidence of squamous epithelial lesions (LSIL and HSIL) was found significantly higher among the rural Indian women (10.5%) than among the urban Indian women (4.5%). The incidence of smears positive for malignancy was also significantly higher among rural Indian women (4%) than among urban women (1.5%) in the study population. This difference could be due to significant difference in the mean age at marriage (17.5 yrs vs. 22.5 yrs) and parity between the rural and urban Indian women.

The incidence of cervical cancers can be decreased by increasing age at marriage, decreasing the number of child births, increasing use of barrier methods of contraceptive and avoiding unsafe sex, by increasing use of vaccine against cervical cancer particularly among teenagers and regular screening of women by Pap's smear, colposcopy and directed biopsy in doubtful cases. Constant follow up of squamous epithelial lesion cases and if follow up is not possible then by early decision for hysterectomy.

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