**Performance of the Papanicolaou Test (Pap Smear) Among Women Attending the Early Detection of Cervical Cancer Screening Center in Basrah**

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**Abstract**

**Background:** High-quality screening using cytology (Pap tests) has significantly decreased mortality from squamous cell cervical cancer, which accounts for 80–90% of cervical malignancies. Cervical cancer was historically the leading cause of cancer-related fatalities in women.

**Objectives:** The purpose of the study is to evaluate the Pap smear test performance of women who are part of the early detection of cervical cancer program and to evaluate the sociodemographic characteristics of women who attend the screening center.

**Methods:** This study is a record-based cross-sectional study conducted to assess the performance of the Pap smear test among women attending the early detection of cervical cancer screening center in Basrah. The study population was all women attending the screening center from January 2013 to 31st of December 2015. During this period, 677 women were examined cytologically, and pap smears were done for them, for whom about 60.7% were normal,18.8 % LSIL,4.3%HSIL, SCC and adenocarcinoma represent 1%, ASC-US, and AGS-US 1.2%, and inflammation represents 14%.

**Results:** The prevalence of abnormal Pap smear increases with an increase in age, about 27.6% of LSIL and HSIL at age 40 and older. A significant association between Pap smear results of women who attended the cervical cancer screening center in Basrah and the following factors: passive smoking, duration of marriage, and parity.

**Conclusion:** The study also found that cervical appearance was abnormal for all women who showed abnormal Pap smear results and for whom a vaginal examination was done. The previous screening test result had a significant effect on the result of the last Pap smear.

**Keywords:** Performance, Papanicolaou Test, Pap Smear, Women, Early Detection, Cervical Cancer Screening

**Introduction**

Ten percent of cancer deaths in the US are from cervical cancer, which is the second most common cause of cancer death after breast cancer. [1] About 11270 new instances of cervical cancer were diagnosed in the US in 2009, and 4070 fatalities were attributed to the disease. [2].

Before the age of 35, half of women with cervical cancer receive a diagnosis. [3]. While the incidence is declining in industrialized nations, it is still increasing in emerging nations. [4] In developing nations, almost 80% of cervical cancer cases occur. [5]

The most popular and economical screening technique for cervical cancer detection is the Papanicolaou test, which has also proved successful in lowering the cancer's incidence as well as the rates of morbidity and death among women who have the disease. [6]. The incidence rates of cervical cancer have been reduced considerably with screening programs, which, in combination with HPV vaccination, may offer a promising way to lower the global burden of this disease [7].

Because cervical cancer has a lengthy pre-invasive phase, it can be avoided. [8] The Pap smear test is frequently used to diagnose cervical intraepithelial lesions, which typically show no clinical symptoms. [9] The sensitivity of cytology tests was 51% for detecting precancerous lesions, 47–62% for cervical intraepithelial neoplasia grades 1–2, and 59–60% for specificity. [10] Every year, almost 30% of new instances of cervical cancer are in women who had a Pap test, but the results were misreported as normal because of mistakes in sample, fixation, and interpretation. The resources required to perform the Pap smear as a screening method for cervical abnormalities are sometimes lacking in underdeveloped nations. [9] Due to the high incidence of cervical cancer, different methods have been pursued. Acetic acid Direct Visual Inspection (DVI) has been more popular recently. Patients will save money and time by using the DVI approach, which does not require laboratory facilities and yields results in a single visit. [9], in contrast to alternative methods. It had a sensitivity of 66–96% and a specificity of 64–98%. [11]

The risk of cervical cancer is high among 8.21 million women in Iraq who are 15 years of age or older. According to current estimates, 311 women receive a cervical cancer diagnosis each year, and 212 of them pass away from the disease. In Iraq, cervical cancer is the tenth most common type of cancer and the seventh most common among women aged 15 to 44. The estimated Age Standardized Incidence Rate (ASIR) /100000 women was 2.8. [12] While in Basra, cancer of the uterus and cervix ranked as the fourth female cancer over the period from 2005-2008, ASIR of cervical cancer was 5.4. [13]

**Methods**

A record-based cross-sectional study involving the records of all women who attended the cervical cancer screening center in Basrah for a year, extending from 1st of January 2013, to 31st of December 2015. An agreement of the Ministry of Health and the Research Committee of the Basrah Health Directorate was obtained before starting the study. The study was carried out in the cervical cancer screening center at the maternity and children’s hospital in Basrah.

The study population: Records of 677 women attended the center from 1st of January 2013, to 31st of December 2015. Data were collected from the records of all women who attended the cervical cancer screening center. The data include the referred place/ health center, age, occupation, education, socioeconomic status, and marital status of each referred woman.

Age at first marriage, duration of marriage, age at first delivery, sequence among husband’s wives, sequence of the current husband. History of passive smoking and parity. Also, information about pap smear (previous smears result), cervical appearance by inspection. The SPSS software (Statistical Package for Social Sciences, version 20) was used to do statistical analysis on the data. The outcomes were tallied. When the p-value was less than 0.05, the association was deemed significant. The chi-square test was used to determine whether there was any association between the variables.

**Results**

**Table 1: Sociodemographic distribution of the study population**

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Frequency | Valid Percent |
| Age (years)  ≥ 19 | | 15 | 2.2 |
| 20-29 | | 143 | 21.2 |
| 30-39 | | 244 | 36.2 |
| > 40 | | 272 | 40.4 |
| Total | | 677 | 100.0 |
|  | |  |  |
| Occupation  House wife | |  |  |
| 596 | 88.7 |
| Employee | | 71 | 10.6 |
| Retired | | 1 | 0.1 |
| Others | | 4 | 0.6 |
| Total | | 677 | 100.0 |
| Marital status | Married | 625 | 92.5 |
| Divorced | 17 | 2.5 |
| Widowed | 33 | 4.9 |
| Separated | 1 | 0.1 |
| Total | 676 | 100.0 |
| Address  City center | | 399 | 59.0 |
| Al-Zubair  Abu-Al-Khasib | | 150 | 22.2 |
| 53 | 7.8 |
| Shat Al-Arab | | 33 | 4.9 |
| Al-Qurna | | 14 | 2.1 |
| Al-Medainah | | 5 | 0.7 |
| Al- Fao | | 6 | 0.9 |
| Outside Basrah Center  (Thiqar) | | 13 | 1.9 |
| Maisan | | 3 | .4 |
|  | Total | 677 | 100.0 |
|  | |

The highest percentage of the attending women were aged 40 and more, more than three quarters of them are housewives, more than half were from the Basrah center, and almost all of them were married.

**Table 2: The results of the pap smear test according to the referred center**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Center of referral | Normal | cin1 | cin2-3 | scc | Adenocarci- noma | ascus, agsus | inflammation | Total |
| Cervical  cancer    screening center | 408 | 101 | 27 | 6 | 1 | 7 | 95 | 645 |
| 63.3% | 15.7% | 4.2% | 0.9% | 0.2% | 1.1% | 14.7% | 100.0 % |
| Al-Seef | 1 | 7 | 1 | 0 | 0 | 1 | 0 | 10 |
| 10.0% | 70.0% | 10.0% | 0.0% | 0.0% | 10.0% | 0.0% | 100.0 % |
| Al- Gunainah | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 9 |
| 22.2% | 77.8% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 100.0 % |
| Al- Nahda | 0 | 12 | 1 | 0 | 0 | 0 | 0 | 13 |
| 0.0% | 92.3% | 7.7% | 0.0% | 0.0% | 0.0% | 0.0% | 100.0 % |
| Total | 411 | 127 | 29 | 6 | 1 | 8 | 95 | 677 |
| 60.7% | 18.8% | 4.3% | 0.9% | 0.1% | 1.2% | 14.0% | 100.0 % |

P= 0.000

There is a highly significant association between the site of referral and the results of the Pap smear test. The result of the Pap smear among 63.3% of women attending the screening center was normal.

**Table 3: Results of cervical appearance by inspection**

|  |  |  |
| --- | --- | --- |
|  | Number of cases | Percentage (%) |
| Normal cervix | 232 | 37.5 |
| Bleeding on touch | 316 | 51.1 |
| Polyp | 19 | 3.1 |
| Hypertrophy | 67 | 10.8 |
| More than one abnormality | 212 | 34.3 |

This table revealed that most women had cervical bleeding on touch, and only about 3.1% had a polyp, 34.4%had more than one abnormal finding by vaginal examination.

**Table 4: The result of cytological examination of cervical smear**

|  |  |  |
| --- | --- | --- |
| Cytological result | Frequency | Percent |
| Normal | 411 | 60.7 |
| CIN1 | 127 | 18.8 |
| CIN2-3 | 29 | 4.3 |
| SCC | 6 | 0.9 |
| Adenocarcinoma | 1 | 0.1 |
| ASC-us, AGS-us | 8 | 1.2 |
| Inflammation | 95 | 14.0 |
| Total | 677 | 100.0 |

The table above shows that 60.7% of attending women had normal results, 23.1% had CIN, 1% had invasive carcinoma, ASC-US and AGS-US were the results in 1.2%, and inflammation was the finding in 14%. Inspection for cervical appearance was reported for 152 out of 171women with abnormal Pap smear results. The cervix was unhealthy in all of the patients with abnormal Pap smear results; examination showed that any or all of the following characteristics were present: hypertrophy, polyps, and hemorrhage.

**Discussion**

In this study, 677 women who visited the Basrah cervical cancer screening clinic had their Pap smear test results reported. The target population, or the population to which the study's primary findings will be applied, must be precisely defined for such a study. After that, a large representative sample needs to be chosen from a suitable source of the study population. [14] Women who qualify for the Basrah screening program are the study's target population. Every woman who had visited this center during the previous three years served as the population's exclusive source. The information and the results of the pap smear were obtained from the records prepared for the attending women; all smears were examined by a skilled cytopathologist in one of the labs that the center often uses for the screening program.

**Sociodemographic and some other characteristics**

In this study, the age of the study population ranged from 16 to 70 years; most of the investigated women (76.6%) were aged more than 30 years. The prevalence of CIN increases with an increase in age; the majority of CIN were diagnosed at age 40 and more (27.6%), which is similar to the results obtained by a study in Basrah, which revealed the risk of cervical intraepithelial neoplasia for women ≥35 years was nearly three times that for women in the age group 15-24. [15] It is also similar to a study in Saudi Arabia in which the most common age for women with CIN was between 40 and 50 years. [16] A study in China showed similar results; women diagnosed with CIN were aged 46–55 years. [17] In England in 2009, overall cervical cancer diagnoses in women aged 25–39 years. [18]

According to the current study, every patient with an abnormal smear who had their cervical appearance inspected had an abnormal appearance. According to a 2011 study conducted in Bangladesh, two-thirds of individuals with abnormal smears had a cervix that looked unhealthy. [16] On the other hand, a study in Saudi Arabia showed that it is well documented that a negative smear can be found in the presence of epithelial cell abnormalities. [19]

In this study, about 60.7% of the smears were normal,18.8 % LSIL, 4.3% HSIL, SCC and adenocarcinoma represented 1%, both ASC-US and AGS-US represent 1.2%, while inflammation was the result for 14% of all women. In contrast to prior studies conducted in Kuwait and the United Arab Emirates, which indicated a prevalence of abnormal smears of 4.3% (Kuwait) and 3.6% (United Arab Emirates), the Pap smear results in this study showed a very high incidence of abnormal smears. [20, 21]

The following prevalence rates of intraepithelial neoplasia were obtained by a study carried out in KSA, the rates were 17.3%, 7.9% and 5% for the western, south-western [22, 23], and eastern region [24] of KSA, respectively. [22, 23, 24]

In China in 2009, the corresponding prevalence rates for cervical cancer, CIN I, II, and III were 50.2, 34.0, 36.4, and 12.2 per 100,000. [25], which are higher than those estimated in the present study. Incidence rate of cervical cancer per year in the United States in 2008 was 6.6 cases per 100000 and varied with age. [26].

**Conclusion**

Women examined by the pap smear test had a comparatively high frequency of cervical intraepithelial neoplasia. As women became older, the incidence of cervical intraepithelial neoplasia rose. There is a need for future studies, especially with a large sample size and with an observational cohort design.

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