

Cervical cancer screening in women: a study at Hospital 199, Danang, Vietnam

Nguyen Thi Tam^{1*}, Quach Huu Trung²,
Le Thi Hang³, Tran Ngoc Hai¹, Hoang Thi Diem Hang⁴

¹Department of Pathology, Hospital 199, Danang, Vietnam

²Hospital 199, Danang, Vietnam

³Department of Pediatrics, Gynecology and Obstetrics, Hospital 199, Da Nang, Vietnam

⁴Outpatient Clinic, Hospital 199, Da Nang, Vietnam

Abstract: Cervical cancer is one of the most common cancers in women and can be cured if diagnosed at an early stage and treated promptly. In Asia, it stands as a significant contributor to female cancer mortality rates. As of 2022, Asia accounted for 60.0% of new cases and 57.3% of global deaths for this disease. The high incidence and mortality rates can be attributed to factors such as inadequate screening programs, lack of awareness, and limited healthcare resources. Our study aims to determine the prevalence of cervical intraepithelial lesions and associated factors among women underwent screening at Hospital 199 in Danang, Vietnam. A cross-sectional study was conducted from April 2024 to October 2024 involving 374 women. Demographic data and Pap smears were collected. Specimens were stained using the Papanicolaou technique and evaluated following the Bethesda 2014 system. Data was processed using SPSS version 20.0. Results: The mean age of the participants was 40.63 ± 6.96 years. Of the women screened, 75.1% had never undergone cervical cancer screening before. The prevalence of abnormal epithelial cells was 3.5% (13/374 cases), including cases of ASCUS, LSIL, and HSIL. History of vaginal infections ($p: 0.020$) were significantly associated with cervical intraepithelial lesions.

Keywords: cervical cancer screening, Papanicolaou smear, ASCUS, LSIL, HSIL.

1. Introduction

Cervical cancer (CC) is a major public health problem that affects the health, well-being and well-being of women and society. Globally, CC is the fourth most common cancer in women, with an estimated 660,000 new cases in 2022[1]. In the same year, approximately 94% of the 350,000 CC deaths occurred in low- and middle-income countries. The regions with the highest incidence and mortality rates include sub-Saharan Africa, Central America and Southeast Asia. The regional disparities in the CC burden are related to disparities in access to vaccination, screening and treatment services. By 2030, the number of CC deaths is projected to increase to 443,000, more than doubling the number of deaths from obstetric complications. In Vietnam, the incidence of cervical cancer is on the rise. According to the Globocan 2022 report, Vietnam recorded 4,612 new cases and 2,571 deaths, equivalent to 14 women diagnosed and 7 deaths from the disease every day. In 2012, the direct burden of cervical cancer was estimated at VND 1,755 billion, accounting for 0.015% of GDP, while the indirect burden was VND 418 billion [2]. Without intervention, it is predicted that by 2070, a total of 218,907 Vietnamese women will die from cervical cancer, and this number could increase to 449,459 by 2120[3]. To reduce the increasing burden of cervical cancer, screening and early detection of precancerous lesions and cervical cancer play an extremely important role. The Pap smear method has been recognized as a simple, cost-effective and effective screening tool for early detection of cervical cancer. Early detection not only helps improve treatment outcomes but also significantly reduces medical costs for patients. Recognizing the importance of screening, the Ministry of Health issued the Decision "Guidelines for prevention and control of cervical cancer" in 2019, to promote the nationwide screening and prevention program for cervical cancer. The implementation of periodic screening plays an important role in women's health care and reduces the incidence and mortality of cervical cancer. Kim Lien's study on 8,079 women screened at Hanoi Medical University Hospital detected 265 cases of precancerous and cancerous cervical lesions, accounting for 3.28%, of which low-grade squamous cell lesions (LSIL) were 17.1% and atypical squamous cell lesions, not excluding HSIL (ASC-H) were 1.8%[4]. Other studies by Vu Van Khoa[5]; Le Quang Vinh[6] recorded the rate of cytological abnormalities ranging from 3.13% to 9.1%, showing that the prevalence of precancerous and cancerous cervical lesions varies significantly between regions. In Da Nang, data on the rate of cervical cancer and precancerous lesions are limited. Therefore, this study was conducted at Hospital 199 to determine the rate of cervical cytological lesions in local women, thereby supplementing the database to propose appropriate intervention solutions to improve disease prevention and treatment in the community.

2. Materials and methods

This was a cross-sectional study carried out from April 2024 to October 2024. All the women who presented at Department of Gynecology seeking for cervical cancer screening, testing and treatment services within this period were included. Patients with history of previous hysterectomy, cervical cancer diagnosis treatment and pregnant women were excluded from the study. Patient data in the form of name, age, clinical complaints, full-term births and vagina findings were collected. Specimens were stained using the Papanicolaou technique and evaluated based on the Bethesda 2014 system. The results were categorized as follows: squamous cell carcinoma (SCC), low-grade squamous intraepithelial lesion (LSIL), high-grade squamous intraepithelial lesion (HSIL), atypical squamous cells of undetermined significance (ASCUS), and negative for intraepithelial lesion or malignancy (NILM). Data was collected and processed using SPSS 20.0 software. Descriptive statistics were used to describe the population using frequencies, means \pm standard deviations (SDs), prevalence of cervical epithelial lesions was presented as percentages. Pearson Chi-square and Fisher's exact test were used, p value < 0.05 was considered statistically significant.

3. Results

3.1 General characteristics of the study subjects:

Table 1: General characteristics of the study subjects (N = 374)

Variables	Number of cases (n)	Percentage (%)	
Age group X \pm SD = 40.63 \pm 6.96	21-29	17	4.5
	30-39	163	43.6
	40-49	142	38.0
	50-59	51	13.6
	60-65	1	0.3
Marital status	Single	14	3.7
	Married	342	91.4
	Divorced/Widowed	18	4.8
Full-term births (number) X \pm SD = 1.80 \pm 0.61	0	19	5.1
	1-2	335	89.6
	≥ 3	20	5.3
History of screening	Yes	132	35.3
	No	242	75.1
Smoking	Yes	93	24.9
	No	281	75.1
Cervical cancer family history	Yes	1	0.27
	No	373	99.7
History of vaginal infections	Swelling, Red	71	19.0
	Itching	32	8.6
	Pain during sex	11	2.9
	Abnormal discharge	87	23.3
	None	173	46.3
Gynecological examination	Cervical Ectropion	61	16.3
	Nabothian cysts	23	6.1
	Cervicitis	82	21.9
	Polyp	11	2.9
	None	197	52.7
Total	374	100.0	

- The average age of the study subjects was 40.63 \pm 6.96 years old. Most women were between the ages of 30-49 with a rate of 81.6% (43.6% from 30-39 years old and 38% from 40-49 years old).
- Marital status: 91.4% of women were married and living with their husband/partner.

- The average number of children born to women in the study was 1.80 ± 0.61 . Most women gave birth to 1-2 children (89.6%).
- Tobacco exposure status: 93/374 (24.9%) women reported regular exposure (including themselves or their husband/child living with them who regularly smokes).
- Family history: only 1 case had a relative (mother) who had been diagnosed with cervical cancer.
- There were 201/374 (53.7%) women who had symptoms of lower genital tract infections. the most common is abnormal vaginal discharge (23.3%)
- 47.3% of women found abnormalities during gynecological examination. Common problems included: cervicitis (21.9%). cervical ectropion (16.3%). nabothian cysts (6.1%). and cervical polyps (2.9%).

3.2. Prevalence of cervical lesions

Category	Number of cases (n)	Percentage (%)
NILM	236	96.4
ASC-US	9	2.4
LSIL	2	0.5
HSIL	2	0.5
SCC	0	0
Total	374	100.0

Table 2: Prevalence of cervical lesions

ASC-US: Atypical Squamous Cells of Undetermined Significance; LSIL: low-grade squamous intraepithelial lesion; HSIL: high-grade squamous intraepithelial lesion; SCC: Squamous cell carcinoma.

The rate of abnormal tests in our study was 3.47% (13/374). of which ASC-US accounted for the majority with 9/374 cases (2.4%). LSIL and HSIL had 2 cases (0.5%).

3.3 Prevalence of cervical lesions across selected socio-demographic characteristics of study participants

Table 3: Prevalence of cervical lesions across selected socio-demographic characteristics of study participants

Variable		ASC-US (n=9)	LSIL (n=2)	HSIL (n=2)	NILM (n=361)	p-value
Age group	21-29	0 (0.0%)	0 (0.0%)	0 (0.0%)	17 (4.7%)	0.719
	30-39	3 (33.3%)	1 (50.0%)	1 (50.0%)	158 (43.8%)	
	40-49	4 (44.4%)	1 (50.0%)	0 (0.0%)	137 (38.0%)	
	50-59	2 (22.2%)	0 (0.0%)	1 (50.0%)	48 (13.3%)	
	60-65	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.3%)	
Marital status	Single	0 (0.0%)	0 (0.0%)	0 (0.0%)	14 (3.9%)	0.306
	Married	9 (100%)	2(100.0%)	2(100.0%)	329 (91.1%)	
	Divorced/ Widowed	0 (0.0%)	0 (0.0%)	0 (0.0%)	18 (5.0%)	
Full-term births (number)	<3	9 (100%)	1 (50.0%)	2(100.0%)	342 (94.7%)	0.516
	≥ 3	0 (0.0%)	1 (50.0%)	0 (0.0%)	19 (5.3%)	
History of screening	Yes	2 (22.2%)	1 (50.0%)	0 (0.0%)	129 (35.7%)	0.556
	None	7 (77.8%)	1 (50.0%)	2(100.0%)	232 (64.3%)	
Smoking	Yes	1 (11.1%)	0 (0.0%)	2 (100.0%)	90 (24.9%)	0.589
	None	8 (88.9%)	2(100.0%)	0 (0.0%)	271 (75.1%)	
Cervical cancer family history	Yes	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.3%)	0.965
	No	9 (100%)	2(100.0%)	2(100.0%)	360(99.7%)	
History of vaginal infections	Swelling. Red	3 (33.3%)	1 (50.0%)	1 (50.0%)	66 (18.3%)	0.020
	Itching	2 (22.2%)	0 (0.0%)	0 (0.0%)	30 (8.3%)	
	Pain during sex	0 (0.0%)	0 (0.0%)	0 (0.0%)	11 (3.0%)	

	Abnormal discharge	3 (33.3%)	0 (0.0%)	1 (50.0%)	83 (23.0%)	
	None	1 (11.1%)	1 (50.0%)	0 (0.0%)	171 (47.4%)	
Gynecological examination	Cervical Ectropion	5 (55.6%)	0 (0.0%)	2(100.0%)	79 (21.9%)	0.161
	Nabothian cysts	2 (22.2%)	0 (0.0%)	0 (0.0%)	59 (16.3%)	
	Cervicitis	0 (0.0%)	0 (0.0%)	0(0.0%)	23 (6.4%)	
	Polyp	0 (0.0%)	0 (0.0%)	0 (0.0%)	11 (3.0%)	
	None	2 (22.2%)	2(100.0%)	0 (0.0%)	189 (52.4%)	
Total		9 (100%)	2 (100%)	2 (100%)	361 (100%)	

The relationship between variables such as age, marital status, number of births, history of screening, smoking, family history of cervical cancer, history of vaginal infection and examination results did not reach statistical significance ($p > 0.05$). However, there was a significant association with $p = 0.020$ between the history of vaginal infections and cervical intraepithelial lesions.

4. Discussion

The mean age of women who participated in screening was 40.63 ± 6.96 years with 81.6% in the 30- to 49-year-old age group. This reflects the focus of the study on women of reproductive age. The lower participation rate among older adults may be explained by psychological and financial factors. Many older adults believe that illness is an inevitable part of aging, which makes them indifferent to proactive health care. In addition, financial constraints cause them to prioritize essential spending over the use of preventive health services. These findings are consistent with those of Ta Thi Kim Lien, who also recorded 70.7% of subjects in the 30-49 age group in her study [4]. In terms of obstetrics, most women had given birth to 1-2 children (89.6%), while the rate of giving birth to 3 or more children was only 5.3%, and 5.1% had never given birth. On average, each woman in the study had 1.80 ± 0.61 children. Vaginal discharge was the most common manifestation of infection affecting 23.3% of women, while the rate of cervicitis and cervical ectropion remained significant requiring monitoring and treatment to maintain optimal gynecological health.

Notably, 75.1% of women in general and 63.6% of women aged 30-49 had never been screened for cervical cancer. Although this rate is lower than the national average of 72%, this figure is still quite high, indicating limited awareness and access to preventive health services in the community. Raising awareness and expanding screening coverage are needed to sustainably improve women's health.

The rate of abnormal tests in our study was 3.5% (13/374), of which ASC-US accounted for the majority with 9/374 cases (2.4%). LSIL and HSIL had 2 cases (0.5%). Compared with the study of Tran Van Hop, this rate was lower: 3.5% compared to 6.54% [7]; while like the study of Ta Thi Kim Lien (3.24%) [4]. However, international authors such as Frank Ssedyabane [8] and Bamanikar [9], Pahwa [10] have noted higher rates of cytological abnormalities when performed in specialized cervical cancer facilities in Uganda and India with rates of 5.99% and 6.6%, 10% respectively. Studies in resource-poor African countries have reported higher rates, such as Kenya with a range of 26.7-37% [11]. A study in Bangladesh reported a rate of 18.2%, while Ethiopia was 22.1% [12]. ASC-US was the most common diagnosis among cytological abnormalities. This occurs because ASC-US is used when the cellular changes are mild and not sufficiently distinct to be classified as a more advanced lesion such as LSIL or HSIL. Many laboratories also use a conservative and cautious approach, especially in equivocal cases. Therefore, ASC-US is often reported to avoid missing cases at risk, even when the degree of abnormality is unclear.

ASC-US and LSIL cases were mainly concentrated in the age group of 30-49 years, accounting for 33.3% to 50%; and most of them were in the group of married women like studies by many other authors [4][8]. This group is often at higher risk due to factors such as frequent sexual activity and exposure to HPV virus. Women who have never participated in cervical cancer screening have a significantly higher rate of ASC-US, up to 77.8%, including two cases (100%) with high-grade squamous intraepithelial lesions (HSIL). This result emphasizes the importance of regular cervical cancer screening in detecting lesions at an early stage. Regular screening tests not only help detect cytological abnormalities but also allow timely treatment and monitoring, avoiding the progression of the disease to invasive cancer which has a much lower success rate. In cases of HSIL lesions if detected early, the successful treatment rate can be up to 93%. On the contrary, when the disease has progressed, the 5-year survival rate can drop to less than 20%.

A history of inflammation is a risk factor with a significant association with precancerous lesions and cervical cancer ($p=0.02$). Because of prolonged inflammation, the cervical mucosa may become more sensitive and vulnerable. We did not find any association between family history, smoking, parity, marital status, gynecological examination results and abnormal cytology results in this study, possibly due to the small sample size within the limited time and resources. The findings in the study cannot be easily generalized to the entire population. We only included women who visited the cervical cancer clinic, which may cause sampling bias. Therefore, large studies are needed that can provide data to the community.

Conclusions

Through a study of 374 women participating in cervical cancer screening at Hospital 199. we have the following conclusions:

- The average age of the study subjects was 40.63 ± 6.96 years old; the most common age group was 30 - 49 (81.6%).
- The rate of abnormal cytology was 3.5% (13/374). Of which: Atypical squamous cells accounted for 2.4%. Low-grade squamous intraepithelial lesions and High-grade squamous intraepithelial lesions accounted for 0.5%.
- 75.1% of women in general have never been screened for cervical cancer.
- There is a correlation between a history of vaginal infections and abnormal cervical cytology results ($p<0.05$).

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Corresponding Author Profile



Nguyen Thi Tam is a specialist in Pathology at Hospital 199 of the Ministry of Public Security, Vietnam. She is also a visiting lecturer at Phan Chau Trinh Medical University. She holds a master's degree in biomedical sciences from Hanoi Medical University.