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# Cervical Cancer: Knowledge, Screening Practices and Vaccines among Female Medical Students in the Commonwealth of Dominica

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## Abstract

**Background:** The mortality rate associated with cervical cancer has been on a steady decrease in developed countries, due to the fact that it is a preventable disease if detected early. Apart from making tools and equipment available for necessary screening, proper awareness of cervical cancer is highly recommended among females of susceptible ages. Awareness of cervical cancer remains a concern in the Caribbean. This study presents the knowledge of cervical cancer, screening practices and vaccines among female medical students at the All Saints University School of Medicine, Dominica.

**Methods and Findings:** The study included a cross-sectional design involving 100 females above the age of 15 years. Self-administered questionnaire were administered and results analyzed. About 70% and 72.73% acknowledged to been aware of cervical cancer and cervical screening respectively. The awareness status presented by this study was significantly lower than reports in developed countries.

**Conclusion:** This study thus emphasized a need for proper orientation of female medical students on cervical cancer and screening.

**Keywords:** Cervical cancer; Vaccines; Medical students

## Introduction

Cervical cancer remains a major cause of morbidity and mortality among women worldwide and an issue of significant public health concern. Overall, cervical cancer is the third most common cancer in women worldwide [1]. The highest incidence of cervical cancer is in Africa, Latin America and Caribbean; and the lowest incidence in Northern America and Oceania [2]. Among Caribbean women, it is the second most

common cancer among Caribbean women of all ages in terms of incidence and mortality accounting for 13% of all cancer cases and 10.4% of all cancer deaths [3]. About 84 per cent of cervical cancer cases occur in less developed countries. Dominica, with a population of 73,600, has 49.5% of its population as women, among which the risk for cervical cancer (female population aged  $\geq 15$  years) is 28,547 (38.8%) [4,5].

Cervical cancer is caused by persistent infection with human papillomavirus (HPV) in over 70% of cases [5]. Unlike many cancers, cervical cancer can be prevented. Primary prevention of cervical cancer through preventing human papillomavirus (HPV) infection, a sexually transmitted agent that causes cervical cancer, will contribute to reducing cancer mortality. Primary prevention of HPV infection is more challenging than prevention of most other sexually transmitted infections. HPV-infected women generally are asymptomatic, HPV is transmitted easily, and no therapies eliminate the underlying infection. Secondary prevention involves using relatively cheap screening and treatment technologies that can detect dysplasia before it progresses to invasive cancer [6]. Pap smear is available as a screening service for early detection in Dominica but there is currently no available data on the prevalence of human papilloma virus in Dominica [5].

Vaccines are currently available against HPV to prevent infections and thus cervical cancer. Screening women for pre-cancerous cervical lesions can detect early stages of cervical cancer, and when treated, prevents progression to invasive form of the disease [6]. In spite of this, cervical cancer prevention and control remains a challenge and a significant public health concern in the Caribbean [5]. This paper presents the knowledge of cervical cancer, screening practices and vaccines among female medical students at the All Saints University School of Medicine, Dominica.

## Methodology

### Study area

All saints University School of Medicine is located in Roseau, Commonwealth of Dominica. The Island is one of the Windward Islands in the Eastern Caribbean, lying between Guadeloupe to the north and Martinique to the south. Its area is 750 square kilometers with a population density of 96 per sq. kilometer.

### Study population

The projected Population of Dominica is 73,600. The women at risk for cervical cancer (female population aged  $\geq 15$  years) is 28,547 (38.8%).

### Study design

The study design is cross- sectional.

### Sampling

Convenience sample of 100 female medical students at the All Saints University School of Medicine, Dominica.

### Inclusion criteria

All female students older than 15 years.

### Exclusion criteria

Female students younger than 15 years.

### Data collection

A self-administered questionnaire was administered. The questionnaire was pretested within the school premises

**Table 1** Awareness of Cervical Cancer and screening (N=100).

	Yes (%)	No (%)
Awareness of cervical cancer (n=100)	70 (70.00%)	29 (29.00%)
Awareness of cervical screening (n=99)	72(72.73%)	27 (27.27%)
<b>Sources of awareness of cervical cancer and screening</b>	<b>Cervical cancer</b> (n=76)	<b>Cervical screening</b> (n=72)
Health Professionals	6 (7.89%)	15 (20.83%)
Friends/Relatives	6 (7.89%)	5 (6.94%)
Mass Media	13 (17.11%)	14 (19.44%)
School	41 (53.95%)	34 (47.22%)
Public lecture	10 (13.16%)	4 (5.56%)
Others	-	-

cutting across various classes. The questionnaire assessed the level of awareness and knowledge of cervical cancer and screening and HPV vaccine among the students.

### Data analysis

The data obtained were entered into Microsoft Excel package and screened. Analysis was done using StataIC. Data are presented in the form of frequencies and percentages.

## Results

### Profile of the students interviewed

A total of 100 preclinical female students between the ages of 15 and 29 years were interviewed. 29 (29.0%), 44 (44.0%), 20 (20.0%) and 7 (7.0%) were in premedical class, MD 1, 2 and 3 respectively. 27 (27.0%) were in a relationship out of which 11% have had sexual intercourse and 6.0% had multiple sexual partners. Only one respondent was married. None was divorced.

### Awareness of cervical cancer and screening

Most of the students interviewed were aware of cervical cancer or screening. As shown in **Table 1**, the level of awareness of cervical cancer and screening were 70 (70.00%) and 72 (72.73%) respectively. Among those that were aware of cervical cancer and screening the most common sources where they become informed were through school, the mass media and health professionals.

## Knowledge about cervical cancer and screening

Most of the students were unable to correctly identify the risk factors for cervical cancer.

According to **Table 2**, only 33 (33.00%) and 30 (30.00%) respectively of the students were able to identify screening and vaccination as ways to prevent cervical cancer while 16 (16.00%) of them said that proper and regular condom use was a means to prevent cervical cancer.

**Table 2** Knowledge of method of prevention of cervical cancer (n=100).

Identification of method of prevention	Correct (%)	Wrong (%)
Male circumcision	99 (99.00)	1 (1.00)
Virginity	24 (24.00)	76 (76.00)
Hormonal contraception use	94 (94.00)	6 (6.00)
Proper and regular condom use	16 (16.00)	84 (84.00)
Proper diet	86 (86.00)	14 (14.00)
Immunization	30 (30.00)	70 (70.00)
Screening	33 (33.00)	67 (67.00)
Smoking	99 (99.00)	1 (1.00)
I don't know	28 (28.00)	

**Table 3** Knowledge about cervical screening (N=100).

Knowledge about cervical screening	Yes (%)	No (%)	I don't know (%)
Can screening prevent cervical cancer?	53 (60.23)	7 (7.95)	26 (29.55)
Can screening detect early disease?	64 (77.11)	1 (1.20)	18 (21.69)
Is disease curable if detected early?	67 (72.04)	3 (3.23)	22 (23.66)

## Barriers to cervical screening

10 (11.24%) of the respondents have undergone cervical screening. The major barrier to cervical cancer screening by

**Table 3** shows that the knowledge of cervical screening is averagely good. Fifty-three respondents (60.23%) were correct in answering the question that screening could prevent cervical cancer and 64 (77.11%) knew that screening could detect early disease.

Similarly, 67 (72.04%) of the students knew that the disease can be cured if detected early. A number of the students 58 (65.17%) knew that pap smear is used to screen for cervical cancer.

the students who had not done cervical cancer screening is the notion that they are healthy as indicated by 55 (69.62%) students (**Table 4**). Other barriers noted were embarrassment with a value of 1 (1.27%) and cost in 23 (29.11%).

**Table 4** Perception of the major barrier to uptake of cervical screening (n=79).

The major barriers	Frequency	Percentage
It is painful	-	-
Too expensive	23	29.11
It is embarrassing	1	1.27
I am healthy	55	69.62

## Discussion

Majority of the students were aware of cervical cancer (70.00%). This high value may be due to the fact that these students are within the university community and thus have access to information through the internet and mass media/print media. Previous studies from Africa obtained similar

awareness levels among health workers and students in Nigeria. More than 65.00% of the respondents were aware of cervical cancer in a study of 195 health workers in Nigeria [6]. These values appear lower than values from studies from the United Kingdom with a prevalence rate of 90.00% [7]. The reason for this might be the increasing public advocacy network in existence in the United Kingdom.

The level of awareness for cervical screening among the respondents was high (72.73%) with the source mostly from obtained from sources at school (47.22%). This could also be attributable to the course of study in the university environment. This is at variance with earlier work in which the source of information for cervical cancer screening students was mostly from health professionals [8-10].

Pap smear was the most known screening test among the students (65.17%). This knowledge is understandable and could be as a result of availability of the test in Dominica. Other screening tests like HPV DNA and liquid-based cytology are not available in Dominica. The knowledge of other cheaper screening methods including visual inspection with acetic acid and inspection with lugol's iodine are yet to be incorporated into practice in Dominica and respondents may not be fully aware of them [5].

The awareness level of the disease is high among the respondents but this does not correspond to high screening practice level. The prevalence of screening practice is only 11.24%. Majority of the respondents (69.62%) feel they are healthy and thus considered themselves not to be at risk for cervical cancer. This low uptake is similar to findings of Owoeye and Ibrahim [9] who obtained an uptake of 11.6% among students. It is possible that these values are due to the fact that there is no established general screening program within the university and even the country. Similar findings of low participation in screening programmes have been recorded in other developing countries [7,11,12]. In a study carried out in Ghana, the uptake was 8.5% [13]. The low level of participation in cervical cancer screening programmes observed in this study and similar studies from African countries is unlike the findings in most developed countries advanced screening programs where participatory level in cervical cancer screening was high [4]. In a study from Germany, most women in the study group had a Pap smear test at least once a year and only a few had a smear less frequently than every five years [14]. Also among Chinese American women in the United States, uptake of Pap smear was as high as 84% [15]. This poses a challenge to the effective cervical cancer control programme corroborating an earlier work from Netherlands which indicated that a major reason for non-uptake and pulling out of screening programmes is because some women feel they are healthy [16,17].

## Conclusion and Recommendation

The level of awareness of cervical cancer and screening is high among the students. The knowledge of methods of prevention including cervical screening is very poor. The major barrier to cervical screening among these students in Dominica is feeling that they are healthy. There is the need, therefore, to improve on health advocacy programmes among the youths on the Island focusing on cervical cancer screening programmes while government makes such services cheap for easy affordability.

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