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Awareness of cervical cancer among women attending an HIV treatment centre: a cross-sectional study from Morocco

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ABSTRACT

Objective To explore awareness about cervical cancer among Moroccan women attending an HIV treatment centre in Laâyoune city, Morocco.

Design A cross-sectional study was conducted from April to June 2017 using a knowledge test regarding cervical cancer, its risk factors and its prevention.

Setting HIV treatment centre at the Hospital of Moulay Hassan Ben Elmehdi in Laâyoune city, Morocco.

Participants One hundred and twenty-three HIV-positive women aged 19 years and older were recruited to this study.

Results A total of 115 women were eligible to participate in the study. The average age was 34.9±10.2 years. Few women (20%) had heard about cervical cancer and its screening, the majority (17.4%) having received information from mass media. The vast majority (79.1%) of respondents had no knowledge of cervical cancer risk factors, and 80.8% did not know any symptoms of cervical cancer. Only 13% had undergone a Pap smear test. The main reason for not seeking Pap smear was the absence of symptoms (47%).

Conclusion Our study documents poor awareness of cervical cancer. Given that the HIV-positive population is at increased risk of cervical cancer, health education programmes should be promoted to increase awareness of cervical cancer as well as access and participation in cervical cancer screening.

Strengths and limitations of this study

► To our knowledge, this is the first study to explore awareness of HIV-infected Moroccan women regarding cervical cancer.
► The study participants were recruited from a hospital and the findings might not be truly representative of HIV-infected women who do not have access to hospitals.
► This study was completed at one site and results cannot be generalised to all HIV treatment centres in Morocco.
► The small sample size limited further analysis for predictors of awareness about cervical cancer.
► The information provided by the participants could be affected by social acceptability bias and/or recall bias, despite our attempts to minimise this by ensuring anonymity.

INTRODUCTION

Cervical cancer is the fourth most common cancer in women worldwide, with an estimated 527 624 newly diagnosed cases and 265 672 deaths in 2012.[1] Among newly diagnosed cases, 453 000 (86%) occurred mostly in low-income and middle-income countries.[2 3] In Morocco, cervical cancer is a major public health problem. It is considered the second most common cancer in Moroccan women, after breast cancer, and the majority of women present to hospitals at late stages when treatment is less effective. Current estimates indicate that 2258 new cases of cervical cancer and 1076 deaths from cervical cancer occur every year in Morocco.[4] As in most low-income countries, there are no national screening or prevention programmes for cervical cancer in Morocco, and awareness of cervical cancer among women remains very limited.

Infection with human papillomavirus (HPV) is the most common sexually transmitted infection (STI) worldwide. Among HPV genotypes, 40 have a tropism for the anogenital site, and persistent infection with one of a dozen high-risk HPV (hrHPV) is responsible for virtually all cases of cervical cancer and its precursors.[5–7] Cervical cancer is one of the most preventable cancers. Indeed, effective primary and secondary prevention strategies for cervical cancer through HPV vaccination and cervical screening should reduce the infection and the incidence of precancerous cervical lesions that may subsequently progress to invasive carcinoma.

Women living with HIV present a 5.4-fold higher risk of developing cervical cancer than HIV-negative women.[8] Indeed,

HIV-infected women have a higher prevalence of hrHPV infection and greater persistence of HPV infection with multiple hrHPV types than HIV-negative women.[9–13] Several studies suggest that high HIV load and low CD4 count are associated with an increased risk of hrHPV infection and cervical abnormalities among HIV-positive women.[14–19]

Cervical cancer has been classified as an AIDS-defining illness.[20] With increased life expectancy following the introduction of antiretroviral therapy (ART), HIV-positive women are at high risk of precancerous lesions of the cervix and invasive cervical cancer due to immune suppression by HIV infection that appears to worsen the outcome of HPV infection.[19 21–24] In a previous study performed among Moroccan women, we reported that 26.2% of HIV-positive women screened for cervical cancer had abnormal results.[25] Thus, the follow-up of women on ART offers an opportunity for cervical cancer screening in low-income and middle-income countries.[26 27] In late 2014, the number of people living with HIV in Morocco was estimated to be 28 892, with 51% of the cases registered between 2010 and 2014.[28] As the primary prevention of cervical cancer by HPV vaccination is not effective in women already infected by HPV, secondary prevention through early detection and treatment of precancerous lesions of the cervix is crucial.[21] There is a national programme for cervical cancer screening for HIV-negative women in Morocco. It targets women aged between 30 and 50 years. This programme aims to establish and to sustain the screening of women at risk in the primary healthcare structures. With regard to women living with HIV in Morocco, attendance at an HIV treatment centre is an opportunity to educate them about the risks of cervical cancer and the benefits of Pap smear screening. The purpose of this study was therefore to determine awareness on cervical cancer among women attending an HIV treatment centre in the city of Laâyoune, Morocco, in order to build a health education programme on cervical cancer and its prevention focusing on HIV-positive women.

METHODS

Study design and setting

A cross-sectional study was conducted from April to June 2017 to explore awareness of cervical cancer among HIV-positive women attending an HIV treatment centre at the Hospital of Moulay Hassan Ben Elmehdi in Laâyoune city. Laâyoune is situated in the South of Morocco, and it is considered the capital city of the Laâyoune-Boujdour-Sakia El Hamra region. The total population of this area based on the 2014 census is estimated to be 367 758.[29] About 1400 cases representing 5% of the total number of notified HIV/AIDS cases in Morocco for the period 1986–2014 were diagnosed in women living in the Laâyoune region.[28]

Study population

The inclusion criteria were HIV-positive women aged 19 years old and above, volunteered to participate in the study and without mental or physical limitations that would preclude participation in focused discussions. Women reporting previous hysterectomy with removal of the uterine cervix and those unable to respond to the questions were excluded. Social class was based on the UK Registrar General's Classification.[30 31]

Data collection

All HIV-positive women consulting the HIV treatment centre for their follow-up (recommended every 6 months) were informed and were offered participation in the study. The study period was limited to 3 months in order to reduce the possibility of interviewing the same patient twice. Women were subjected to a knowledge test guided by a questionnaire specifically designed for the present study.

The questionnaire was designed after reviewing publications reporting similar studies in the field of cervical cancer and its screening.[32–34] Items were tested by a panel of physicians and were revised prior to its use in the study. The revised questionnaire was translated into the local dialect of the participants. It was read by a physician who transcribed and recorded the answers from the participants. Data collection took place in a private room for an average time of 15 min. The questionnaire consisted of three sections. The first section focused on sociodemographic and clinical characteristics of the subjects related to age, educational level, employment, marital status, place of residence, social class, sexual activity (age at first intercourse, lifetime sexual partners, contraceptive method), reproductive life (age at menarche, age at first pregnancy, parity), smoking, time since HIV-AIDS diagnosis, duration of ART, baseline CD4+ cell count, Centers for Disease Control and Prevention (CDC) stage and infection with other infectious diseases.

In the second section, awareness about cervical cancer was assessed if the answer to the question 'Have you heard of cervical cancer?' was 'yes'. Respondents were then asked specific questions regarding knowledge of cervical cancer such as risk factors, symptoms, prevention and treatment. They were also asked about their source of information about cervical cancer; they were asked if they ever heard about cervical cancer screening, if they have already performed a Pap smear in their life and if they knew someone who suffered from cervical cancer. The third section was conducted to record reasons for not undergoing a Pap smear. Seropositivity and immune status were checked on the medical records of patients. After the interview, women were given counselling on cervical cancer screening.

Statistical analysis

Data were entered into an Excel database and analysed using IBM SPSS Statistics V.20.0. In the descriptive analyses, continuous variables are reported as

mean±SD. Categorical variables are described as number (percentage). Bivariate analysis using the χ^2 statistics and Fisher's exact test was performed to assess the relationship of the studied variables with awareness of cervical cancer. A p value <0.05 was considered statistically significant.

Ethical considerations

The purpose and the importance of the study were explained to the participants. Confidentiality of the information was maintained throughout the study by excluding personal identifiers from the data collection form.

Patient and public involvement

There was no patient or public involvement in this study.

RESULTS

Characteristics of the study population

A total of 123 HIV-positive women presented to the HIV treatment centre during the study period. Among them, eight (6.5%) were not eligible to participate in the study (four did not give their consent, three women reported previous hysterectomy and one woman had mental disease). Overall 115 women (93.5%) were included in the final analysis. The sociodemographic and clinical characteristics of the study population are shown in table 1. The mean age (±SD) of the participants was 34.9 (10.2) years, with 14 (12.2%) women under 25 years old. The majority of women never attended school (71.3%) and were unemployed (80.9%). More than half of the women were divorced (54.8%), had menarche at age younger than 12 years (53.9%) and their first intercourse at age younger than 16 years (58.3%). Most participants resided in an urban area (95.7%) and 76.5% reported belonging to the lower social class. The majority of women (74.8%) reported having more than one lifetime sexual partner. More than half (54.8%) of women did not have any contraception and 66.1% were nulliparous. According to their answers, 24.3% of women currently smoked. Time since HIV/AIDS diagnosis ranged from 1 month to 10 years, with a mean of 2.5±2.2 years. The mean duration on ART was 2.0±1.8 years. The majority of ART users (73.9%) had a CD4+ cell count between 200 and 500 cells/mm^3, and 53.1% of the participants were CDC stage A. Based on participants' knowledge, seven women reported having had tuberculosis and two reported having had syphilis.

Awareness of women about cervical cancer

Responses to questions about awareness of cervical cancer among the population are summarised in table 2. Of the respondents, 24 (20.9%) and 22 (19.1%) had heard of cervical cancer and cervical cancer screening, respectively. Four women (3.5%) knew someone who had cervical cancer and only 15 (13.0%) reported that they had been screened for cervical cancer. Furthermore, when women were asked about the source of information about cervical cancer, mass media (radio/television) was the predominant source (n=20, 17.4%), followed

Table 1 Sociodemographic and clinical characteristics of Moroccan women followed in the HIV treatment centre in Laâyoune city, Morocco (n=115)

Characteristics	n (%)	Mean±SD
Age at interview (years)		34.9±10.2
<30	34 (29.6)	
30–39	54 (47.0)	
40–49	17 (14.8)	
≥50	10 (8.7)	
Educational level		
Never attended school	82 (71.3)	
Primary school	24 (20.9)	
Secondary/high school	9 (7.9)	
Employment		
No	93 (80.9)	
Yes	22 (19.1)	
Marital status		
Single	2 (1.7)	
Married	40 (34.8)	
Divorced	63 (54.8)	
Widowed	10 (8.7)	
Age at menarche (years)		12.64±1.42
<12	62 (53.9)	
12–13	32 (27.8)	
>13	21 (18.3)	
Age at first intercourse (years)		15.17±1.31
<16	67 (58.3)	
≥16	48 (41.7)	
Place of residence		
Rural	5 (4.3)	
Urban	110 (95.7)	
Social class		
Lower	88 (76.5)	
Middle	25 (21.7)	
Higher	2 (1.7)	
Lifetime sexual partners		
Single	29 (25.2)	
Multiple	86 (74.8)	
Actual contraceptive method		
None	63 (54.8)	
Pill	39 (33.9)	
Condom	12 (10.4)	
IUD	1 (0.9)	
Parity		0.77 ± 1.42
0	76 (66.1)	
1	21 (18.3)	
>1	18 (15.6)	

Continued

Table 1 Continued

Characteristics	n (%)	Mean±SD
Smoking status		
Never smoked	46 (40)	
Former smoker	41 (35.7)	
Current smoker	28 (24.3)	
Time since HIV/AIDS diagnosis (years)		2.5±2.2
<1	48 (41.7)	
1–2	38 (33.1)	
>2	29 (25.2)	
Duration of ART (years)		2.0±1.8
<1	34 (29.6)	
1–2	43 (37.4)	
>2	38 (33)	
Baseline CD4+ cell count among ART users (cells/mm^3)*		
<200	8 (7.2)	
200–500	82 (73.9)	
>500	21 (18.9)	
CDC stage*		
A	59 (53.1)	
B	29 (26.1)	
C	23 (20.8)	
Had other infectious diseases		
None	106 (92.2)	
Tuberculosis	7 (6.1)	
Syphilis	2 (1.7)	

*The baseline CD4+ cell count and the CDC stage for four patients were not found in their medical records.
ART, antiretroviral therapy; CDC, Centers for Disease Control and Prevention; IUD, intrauterine device.

Table 2 Awareness about risk factors, symptoms, prevention measures and treatment options of cervical cancer (CC) among HIV-positive women in Laâyoune city, Morocco

Items	n	%*
Ever heard of CC		
Yes	24	20.9
No	91	79.1
Ever heard of CC screening		
Yes	22	19.1
No	93	80.9
Knew someone with CC		
Yes	4	3.5
No	111	96.5
Ever had a Pap smear		
Yes	15	13
No	100	87
Knew risk factors for CC		
Sexually transmitted infection	8	6.9
Multiple sexual partners	6	5.2
Early onset of sexual activity	4	3.5
Prolonged use of contraceptive pill	1	0.9
Smoking	1	0.9
No risk factor	2	1.7
I didn't know	91	79.1
Knew symptoms of CC		
Offensive vaginal discharge	10	8.7
Excessive vaginal discharge	5	4.3
Abnormal bleeding between menstruations	6	5.2
Bleeding and pain after sexual intercourse	1	0.9
I didn't know	93	80.8
Knew prevention measures of CC*		
Use of condom	12	10.4
Regular Pap test	11	9.6
Limited number of sexual partners	9	7.8
Delaying sexual debut	1	0.9
I didn't know	91	79.1
Knew treatment options of CC		
Chemotherapy	16	13.9
Radiotherapy	1	0.9
Surgery	5	4.3
I didn't know	93	80.8

*More than one options are reported by a participant.

by friends/family (n=3, 2.6%) and health professionals (n=1, 0.9%).

To determine the overall awareness of cervical cancer, a series of questions on risk factors, main symptoms, preventive measures and treatment options were asked to the study population. The vast majority of women (79.1%) had no knowledge of cervical cancer risk factors, while the 24 women who heard about cervical cancer (20.9%) were able to identify at least one risk factor associated with this disease. STIs and multiple sexual partners were mentioned as risk factors by 6.9% and 5.2% of these 24 respondents, respectively, but no one identified HPV as a risk factor for cervical cancer. The vast majority (80.8%) of the respondents did not know any signs and symptoms of cervical cancer. Only 15 women (13%) mentioned offensive/excessive vaginal discharge, 6 (5.2%) abnormal bleeding between menstruations, and 1 (0.9%) bleeding and pain after sexual intercourse. Thirty-three (28.7%) women knew that cervical cancer can be prevented.

The use of condoms (10.4%), having a regular Pap test (9.6%), limited number of sexual partners (7.8%) and delaying sexual debut (0.9%) were mentioned as helpful

prevention measures. Only 19.1% of the respondents knew that cervical cancer can be treated using surgery, chemotherapy or radiotherapy.

Reasons for not undergoing Pap smear screening

Only 15 participants have ever had at least one Pap smear. The 100 women (87%) who had never been screened for cervical cancer were asked for specific reasons for not undergoing Pap smear. The reasons for not accessing cervical cancer screening were absence of symptoms (47%), never heard of a Pap smear test (22%), fear of abnormal results (13%), fear of painful sampling (7%), shame or embarrassment (7%) and absence of sexual activity (3%).

Sociodemographic and clinical characteristics associated with cervical cancer awareness

Bivariate analysis data of factors associated with cervical cancer awareness are presented in table 3. Significant associations have been observed with patients' age, educational level, marital status, social class, contraceptive method, parity, time since HIV/AIDS diagnosis and duration of ART. Hence, patients above 40 years old were the most informed ones, with more than 59% aware of cervical cancer, whereas only 5.6% of women between 30 and 39 years old were aware. With regard to educational level, the results show that women who never went to school were much less aware than school-educated women (63.6% vs 3.7%, p<0.001). Moreover, women in couples were the most aware ones in comparison with those living alone (50% vs 5.3%, p<0.001). Awareness of cervical cancer appeared to be also associated with social classes; women from higher social class were sixfold more aware of cervical cancer than women from lower social class. Women using contraceptive devices or pill were more aware in comparison with women who never used contraception. High parity, long time since HIV diagnosis or ARV treatment were also associated with cervical cancer awareness (p<0.01).

DISCUSSION

Cervical cancer is a major public health issue worldwide and remains one of the most common malignancies among women in Morocco. The present data show that cervical cancer awareness was poor among women attending an HIV treatment centre in the city of Laâyoune, Morocco. About 80% of the HIV clinic population had never heard of cervical cancer and its screening. This finding is consistent with other studies that reported lack of awareness about cervical cancer among HIV-positive women in other countries.[35–37] However, it contrasts with similar studies carried out in South Africa and Kenya, where HIV-positive women were found to be well informed about this disease.[38 39] This difference might be attributed to the fact that these two countries have a national cervical cancer screening policy. In our study, younger and women who never attended school were less aware about cervical cancer compared with school-educated women. This

Table 3 Bivariate model for identification of factors associated with cervical cancer awareness among HIV-positive women in the city of Laâyoune, Morocco

Characteristics	Aware of cervical cancer		
	No, n (%)	Yes, n (%)	P values
Age at interview (years)			
<30	29 (85.3)	5 (14.7)	<0.001*
30–39	51 (94.4)	3 (5.6)	
≥40	11 (40.7)	16 (59.3)	
Educational level			
Never attended school	79 (96.3)	3 (3.7)	<0.001*
School-educated	12 (36.4)	21 (63.6)	
Employment			
No	74 (79.6)	19 (20.4)	0.50
Yes	17 (77.3)	5 (22.7)	
Marital status			
Married	20 (50.0)	20 (50.0)	<0.001*
Single, divorced, widowed	71 (94.7)	4 (5.3)	
Age at menarche			
<12	19 (90.5)	2 (9.5)	0.37*
12–13	47 (75.8)	15 (24.2)	
>13	25 (78.1)	7 (21.9)	
Age at first intercourse			
<16	51 (76.1)	16 (23.9)	0.36
≥16	40 (83.3)	8 (16.7)	
Residence			
Rural	4 (80.0)	1 (20.0)	0.7*
Urban	87 (79.1)	23 (20.9)	
Social class			
Lower	80 (91.0)	8 (9.0)	<0.001
Middle, higher	11 (40.7)	16 (59.3)	
Lifetime sexual partners			
Single	22 (75.9)	7 (24.1)	0.39
Multiple	69 (80.2)	17 (19.8)	
Actual contraceptive method			
None	58 (92.1)	5 (7.9)	0.001
Pill	25 (64.1)	5 (35.9)	
Condom, IUD	8 (61.5)	14 (38.5)	
Parity			
0	67 (88.2)	9 (11.8)	0.001
≥1	24 (61.5)	15 (38.5)	
Smoking status			
Never smoked	36 (78.3)	10 (21.7)	1
Former smoker	33 (80.5)	8 (19.5)	
Current smoker	22 (78.6)	6 (21.4)	

Table 3 Continued

Characteristics	Aware of cervical cancer		
	No, n (%)	Yes, n (%)	P values
Time since HIV/AIDS diagnosis (years)			
<1	27 (93.1)	2 (6.9)	0.009*
1–2	33 (86.8)	5 (13.2)	
>2	31 (66)	16 (34)	
Duration of ART (years)			
<1	31 (91.2)	3 (8.8)	0.003*
1–2	37 (86.0)	6 (14.0)	
>2	23 (60.5)	15 (39.5)	
Baseline CD4+ (cells/mm^3)†			
<200	4 (66.7)	2 (33.3)	0.62*
200–500	49 (76.6)	15 (23.4)	
>500	11 (68.8)	5 (31.2)	
CDC stage†			
A	45 (76.3)	14 (23.7)	0.28*
B	26 (89.7)	3 (10.3)	
C	17 (73.9)	6 (26.1)	

*P value obtained with the Fisher's exact test.
†The baseline CD4+ cell count and the CDC stage for four patients were not found in their medical records.
ART, antiretroviral therapy; CDC, Centers for Disease Control and Prevention; IUD, intrauterine device.

agrees with data from studies conducted in other low-income countries like Nigeria,[37] Laos[34] and Zimbabwe.[40] Education encourages female empowerment and may improve women's knowledge of safe sex practices. Nulliparous women showed limited awareness about cervical cancer. This might be explained by the fact that they have never attended maternal and child health clinics.

In this study, mass media (radio/television) was the main source of information (17.4%) for most women, and only 4.2% of them reported health professionals as their source of information. This is in line with a study from Nigeria, where mass media was identified as the major source of information (23%) about cervical cancer.[37] The role of media in the transfer of knowledge may become more effective when Moroccan government will use it more actively in a policy of cancer prevention.

Having information on the causes and risk factors of cervical cancer is beneficial for a woman to take preventive measures and to change behaviour. In this regard, none of the women knew that HPV infection is a cause of cervical cancer. Generally, there was low knowledge of the risk factors for cervical cancer, which is in agreement with the findings of similar studies reported in Nigeria and Zimbabwe.[36 37 40] Interestingly, the minority (20.9%) of women aware of cervical cancer were able to recognise at least one risk factor, such as STIs, multiple

sexual partners, early onset of sexual activity, prolonged use of contraceptive pill and smoking. The abysmal level of knowledge among the youngest, unschooled and nulliparous population highlights the urgent need to improve education about cervical cancer prevention by vaccines and screening.[41] We suggest that HIV care providers need to have health education sessions about cervical cancer risk factors when managing highly vulnerable women.

Another significant finding revealed that only few women in our study had undergone a Pap smear test. This is consistent with the fact that the majority of women (80.9%) were not aware of cervical cancer. This result confirms previous reports of low screening coverage among HIV-infected women, ranging from 9% in Tanzania,[42] 10% in Nigeria,[37] to 13% in South Africa.[43] This low screening rate underscores the fact that women are not informed of the importance and benefits of the Pap smear test in the prevention of cervical cancer. Indeed, in Morocco, cervical cancer screening is not part of HIV-positive prevention programme. However, close screening of cervical abnormalities in HIV-infected women, particularly in the era of intensive widespread use of combination antiretroviral treatment in sub-Saharan Africa and its consequences on the life expectancy of this highly at-risk population,[44] is of crucial importance.

According to the results of our study, the main reason cited for not undergoing Pap smear was the absence of symptoms (47%). A similar reason was also reported by 46% of Lao women infected with HIV[34] and 67% of female sex workers in a Thai study.[45] This might be explained by lack of awareness among women on the natural history of cervical cancer and the principle of smear test screening. This stresses the necessity of including information about the natural course of cervical cancer in health prevention programmes.

A worrisome finding in this study is that more than 90% of the respondents did not know that cervical cancer can be prevented, which is consistent with the findings of Eze et al,[46] who reported that few women had knowledge of the prevention of cervical cancer. Moreover, only 19.2% of the respondents knew that cervical cancer can be treated, which is low compared with two studies from China where about 81% of the respondents were knowledgeable of the potential curability of cervical cancer.[47 48]

The present work has some limitations that should be considered in interpreting the results. First, the study participants were recruited from a hospital; thus, the findings might not be truly representative of HIV-infected women who do not have access to hospitals. Second, this study was completed at one site and results cannot be generalised to all HIV treatment centres in Morocco. Third, the small sample size limited further analysis for predictors of awareness about cervical cancer. Lastly, the information provided by the participants could be affected by social acceptability bias and/

or recall bias, despite our attempts to minimise this by ensuring anonymity.

CONCLUSION

This is the first study demonstrating the extremely low level of awareness about cervical cancer and its risk factors, symptoms, prevention strategies and treatment options among HIV-positive Moroccan women from south of Morocco. Thus, there is an over-riding need to implement and strengthen health education programmes on cervical cancer and its prevention in HIV treatment centres in Morocco. This study lays the groundwork to define changes in clinical practices regarding HIV-infected women who are at high risk of cervical cancer. It appears also necessary to evaluate healthcare providers' knowledge and current practices to improve the prevention of cervical cancer in HIV treatment centres in Morocco. Not discussing the potential role of HPV vaccines as a preventive tool against cervical cancer is also noted as an area of further investigation.

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