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Original Research Article

Secondary prevention of cervical cancer by screen-and-treat approach among HIV negative women in Faith Alive Hospital, Jos Nigeria

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ABSTRACT

Background: Cervical cancer is the second most common cancer among women in Nigeria and the leading cause of cancer-related death in sub-Saharan Africa. In low-income settings, visual inspections with acetic acid (VIA) and Lugol's iodine (VILI); and subsequent treatment of cervical precancerous lesions with thermal ablation remains the practical approach for secondary prevention. Objectives were to determine prevalence of pre-cancerous cervical lesions, prevalence of suspected cervical cancer, and associated risk factors.
Methods: A retrospective study on sexually active HIV negative women aged 16-55 years screened for cervical cancer using VIA/VILI within 16 months period in Faith Alive Hospital Jos. Data were analyzed using IBM-SPSS 26. Socio-demographic characteristics and screening results were presented in frequency tables; and logistic regression was performed to determine risk factors for cervical pre-cancerous lesions.
Results: 1,073 HIV negative women were screened for cervical cancer using VIA/VILI. 82 (7.6%) tested positive, 30 (2.8%) had suspected cancer with modal age distribution of 36-45 years. Higher positivity yield (58.6%) was found in ages between 36 and ≥55 years while the less positivity yield (41.4%) was found ages ≤35 years. Parity ≥3 had 1.8 fold risk association with precancerous lesion.
Conclusions: Our study revealed high prevalence of cervical pre-cancerous lesions among HIV negative women, modal age distribution for suspected cancer and parity ≥3 being significant risk factor. Thus, "screen-and-treat" approach to cervical cancer prevention by VIA/VILI and thermal ablation in resource constraint settings should be undertaken until widespread HPV testing to triage clients is possible.

Keywords: Faith Alive, HIV negative, Screen-and-treat, VIA

INTRODUCTION

HIV negative women have lower risk of developing cervical cancer compare to women living with HIV (WLHIV) due to high frequency of incident, persistent and progressive human papilloma virus (HPV) infection in the latter.[1,2] According to the World Health Organization (WHO), 604,127 cervical cancer cases were diagnosed worldwide, and 34,831 deaths were registered in 2020, most of them occurring in low-income and middle-income countries.[3,4] Despite being largely preventable, cervical cancer still remains second leading cause of cancer among women in sub-Saharan Africa including Nigeria.[5] The majority of women who die from cervical cancer are in the prime of their life, resulting in social and economic repercussions for both their families and their communities.[1] Thus, cervical cancer is a major public health concern. Organized screening programs with high coverage rates have led to a significant reduction in the number of new cases and mortality rates in developed

countries whereas the reverse is the case in low-income countries like ours.[6,7] In response to this situation, WHO launched a global strategy to accelerate the elimination of cervical cancer in November 2020 during the 73rd World Health Assembly with some of the key objectives for 2030 being 70% screening coverage with 90% access to treatment of precancerous and cancerous lesions.[8] A series of seminal studies have proven the safety, acceptability, and effectiveness of screen-and-treat approach for cervical cancer prevention in low-income countries.[9,10] In screen-and-treat approach, women are tested through visual inspection of the cervix with acetic acid (VIA) and Lugol's iodine (VILI), if positive, they receive immediate treatment of the pre-cancerous lesion with thermal ablation.

Screening is considered optimal when the smallest amounts of resources are used to achieve the greatest benefit.[11] Cervical cancer screening with visual inspection with acetic acid(VIA) or visual inspection with Lugol's iodine (VILI) is a simple and affordable alternative to cytology-based screening with accuracy to detect pre-cancerous lesions at a rate comparable with or better than cytology.[12,13] Furthermore, nurses, midwives, and non-physician healthcare providers can be trained in VIA or VILI and treatment with thermal ablation, which can greatly improve access to cervical cancer prevention services.[14] In contrast, the sensitivity rate of HPV DNA testing (94%) is much higher than visual inspection with acetic acid (80%); however, the high cost and health system requirements of HPV DNA testing would be challenging for large-scale implementation in resource constraint settings.[15,16] Thus, this study aimed to determine the prevalence of cervical pre-cancerous lesions, prevalence of suspected cervical cancer, and associated risk factors among HIV negative women who had cervical cancer screening by VIA/VILI in Faith Alive Hospital Jos, Nigeria.

METHODS

A data review of sexually active HIV negative women aged 16–55 years screened for cervical cancer using VIA and VILI at Faith Alive Foundation Hospital in Jos, Nigeria between September 2020 and December 2021 (16 months) was carried out. Pre-cancerous lesions were identified as dense aceto-white changes close to or abutting the squamo-columnar junction (SCJ) in the transformation zone, occupying less than 75% of the cervix and not extending into the cervical canal and confirmed using Lugol's iodine. Confirmed pre-cancerous lesions were treated with thermal ablation and monitored for 2-6 weeks after treatment. Women with cancer suspicious lesions were referred to Jos University Teaching Hospital for colposcopy and biopsy to confirm cervical cancer, which was subsequently treated with radiotherapy and extended hysterectomy plus chemotherapy for women who could not afford the former. Clients with negative screening results were counselled to repeat screening annually. Data was retrieved from care cards and service registers and analyzed using IBM-SPSS 26. Frequency tables were generated to show the socio-demographic characteristics of the study participants (age, parity, history of multiple sexual partners, STI, age at first sexual intercourse, marital status and level of education) and the screening results. Chi square test was used to determine association between risk factors and cervical pre-cancerous lesions and logistic regression was performed to determine risk factors of cervical pre-cancerous lesions.

RESULTS

1073 HIV negative women had cervical cancer screening by VIA/VILI within the period under review. Mean age of clients 40.90±9.19 years. Majority of the clients were of age band 36-45 years 337 (32.3%), married 599 (57.4%), had secondary level of education 433 (41.5%), parity ≥3 570 (54.7%), had multiple sexual partners 689 (66.1%), had STI 535 (51.3%) and 652 (62.5%) had coitarche ≥18 years (Table 1).

Table 1: Socio-demographic characteristics of sexually active HIV negative women aged 16 to 55 years.

Demographic characteristics	Frequency (n=1073)	Percentage
Age classification (years)		
16-25	79	7.6
26-35	279	26.7
36-45	337	32.3
46-55	216	20.7
>55	132	12.7
Marital status		
Married	599	57.4
Single	365	35.0
Widowed	44	4.2
Others	35	3.4
Level of education		
Non-formal	41	3.9
Primary	234	22.4
Secondary	433	41.5
Tertiary	335	32.1
Parity		
Nullipara	225	21.6
1-2 para	248	23.8
≥3 para	570	54.7
Multiple sexual partners		
0-1 (single)	354	33.9
≥2 (multiple)	689	66.1
Coitarche		
<18	391	37.5
≥18	652	62.5
STI		
Yes	535	51.3
No	508	48.7

Table 2: Prevalence of cervical pre-cancerous lesions and suspected cancer.

	Frequency	Percentage
Positive	82	7.6
Negative	961	89.6
Suspected	30	2.8
Total	1073	100.0

82 (7.6%) of the clients had cervical precancerous lesions, 30 (2.8%) had cervical lesions suspicious of cancer (Table 2).

Parity ≥3 and STI were found to be associated with cervical precancerous lesions at p value 0.25 as shown in Table 3.

Table 3: Association between independent variables and occurrence of cervical precancerous lesions.

Variables	VIA result		χ^2	P value
	Positive	Negative		
Age classification (years)				
16-25	9 (11.4)	70 (88.6)	5.099	0.277
26-35	25 (9.0)	254 (91.0)		
36-45	29 (8.6)	308 (91.4)		
46-55	13 (6.0)	203 (94.0)		
>55	6 (4.5)	126 (95.5)		
Marital status				
Married	45 (7.5)	554 (92.5)	0.811	0.847
Single	29 (7.9)	36 (92.1)		
Widowed	4 (9.1)	40 (90.9)		
Others	4 (11.4)	31 (88.6)		
Level of education				
Non-formal	2 (4.9)	39 (95.1)	0.561	0.905
Primary	18 (7.7)	216 (92.3)		
Secondary	35 (8.1)	398 (91.9)		
Tertiary	27 (8.1)	308 (91.9)		
Parity				
Nullipara	18 (8.0)	207 (92.0)	4.617	0.099*
1-2 para	27 (10.9)	221 (89.1)		
≥3 para	37 (6.5)	533 (93.5)		
Multiple sexual partners				
0-1 (single)	28 (7.9)	326 (92.1)	0.002	0.967
≥2 (multiple)	54 (7.8)	635 (92.2)		
Coitarche				
<18	31 (7.9)	360 (92.1)	0.004	0.951
≥18	51 (7.8)	601 (92.2)		
STI				
Yes	50 (9.3)	485 (90.7)	3.339	0.068*
No	32 (6.3)	476 (93.7)		

STI: sexually transmitted infection, *significant at p value of 0.25.

Table 4: Multiple logistic regression of factors associated with cervical pre-cancerous lesion.

Factors	AOR	95% CI	P value
Parity			
Nullipara	1.255	0.698-2.256	0.449
1-2 para	1.777	1.055-2.993	0.031*
≥3 para	1		
STI			
Yes	1.548	0.974-2.458	0.064
No	1		

AOR: adjusted odds ratio, CI: confidence interval, *significant at p value <0.05

Parity ≥3 has approximately 1.8-fold risk association for cervical precancerous lesions (OR 1.8, 95% CI, p value =0.031) (Table 4).

DISCUSSION

We found prevalence of cervical precancerous lesions of 7.6% and suspected cancer 1.6%. Parity ≥3 was found to be significantly associated with cervical precancerous lesions.

The prevalence of precancerous cervical lesion of 7.6% among HIV-negative women in this study is at par with 8.6% found by Koris et al in North-West Ethiopia, 5.7% by Jolly et al in Swaziland and 6.5% by Gabaza et al in Harare City.[17-19] Our prevalence of cervical precancerous lesions is lower than that found among WLHIV: 12.2% in Jos, 22.9% by Jolly et al in Swaziland and 20.2% by Limenih et al in Northwest Ethiopia.[4,18,20] These higher prevalence could be due to HIV increasing the risk of persistent HPV infection, and reduces the ability of the immune system to clear precancerous lesions.

The prevalence of suspected cancer of 1.6% is comparable with the findings in similar studies: 1.0% in Namibia, 0.9% in Malawi and 2.1% in Harare city, though a lower prevalence of 0.56% was reported in a similar study among rural South Indian women.[19,21-23] A unimodal age classification for suspected cancer is noted in this study: 14 (46.7%) 36-45 years, this is in keeping with age distribution of cervical cancer with first peak at 43 years.[24] Suspected cervical cancer cases were referred to Jos University Teaching Hospital for examination under anesthesia (EUA), clinical staging and biopsy, with subsequent radiotherapy, or extended hysterectomy with chemotherapy for those who could not afford radiotherapy.

Parity ≥3 and sexually transmitted infection (STI) were factors found to be associated with cervical precancerous lesions and this is at par with findings in other studies.[17-19,21]

However, after subjecting to logistic regression parity ≥3 was found to be a significant predictor of cervical precancerous lesion (OR 1.8., 95% CI: 1.O55-2.993, p value 0.031). The mean age of clients with cervical precancerous lesions was 41.32±9.89. Prevalence of precancerous lesions across age bands include: 16-25 years 9 (11%), 26-35 years 25 (30.5%), 36-45 years 29 (35.4%), 46-55 years 13 (15.9%), ≥55 years 6 (7.3%).

There are few limitations also. Cervical cancer screening by VIA/VILI is subject to observer bias and thus making quality control difficult. Also, Lugol's iodine test has a high false positivity rate among post-menopausal and women with vaginal candidiasis. There were no secondary triage procedures like HPV testing and Papanicolaou (PAP) smear prior to "screen-and-treat" in our facility due to low resource constrains. The low specificity associated with VIA/VILI could also lead to overtreatment.

CONCLUSION

This study has been able to reveal high prevalence of precancerous cervical lesion and low prevalence of suspected cancer with modal age distribution among HIV-Negative women. Parity ≥3 being a significant risk factor for cervical precancerous lesion. We therefore recommend a scale up in the "screen-and-treat" approach for secondary prevention of cervical cancer until widespread HPV testing to triage client is feasible.

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