

LOSS TO FOLLOW-UP IN A CERVICAL CANCER SCREENING AND TREATMENT PROGRAM IN WESTERN KENYA

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ABSTRACT

Background: Cervical cancer is a significant cause of mortality among Kenyan women. Centralized prevention programs have not effectively reduced the Loss to Follow-Up (LTFU) burden following positive cervical cancer screening. Little or no information exists on the extent of LTFU in cervical cancer in Kenya.

Objective: This study aimed to determine the proportion, predictors, and reasons for defaulting from follow-up care following positive cervical cancer screening in Western Kenya.

Methods: This was a prospective study, where 100 women presenting for cervical cancer screening were recruited. Descriptive statistics and the Cox proportional hazards model, were used to summarize the data and determine factors associated with LTFU, respectively.

Results: The study participants' mean age was 44.5 years, and the range was between 21 – 77 (SD 12). The mean age was 44.9 and 44.3 for those who were lost to follow-up and those who were not lost to follow-up, respectively. The median distance covered to the health facility was 15 kilometers (IQR: 6-30). Twenty-five (25%) of the women defaulted from scheduled appointments and were categorized as LTFU. HIV-positive women were more likely to be lost to follow-up with OR 2.18 (0.82,6.34). The loss to follow-up was mainly due to clients opting for alternative treatment, myths, perceptions, and stigma.

Conclusion: High loss to follow-up rate remains a setback to all research or care programs, and better strategies should be implemented to reduce the rate and associated factors.

Keywords: cervical cancer, loss to follow-up, colposcopy, VIA, HIV

Introduction

Cervical cancer is the leading cause of cancer deaths in the developing world. Eastern Africa has the second-highest Age-Standardized incidence Rate (ASR) for cervical cancer, 40.1 in 100000 women (1). In Kenya, an estimated 5250 women are diagnosed with cervical cancer annually, and 3286 succumb to the disease. Moreover, cervical cancer is the second most frequent cancer among women in Kenya and the most frequent cancer among women between

15 - 44 (2). Non-adherence to follow-up care after a positive cervical cancer screen largely impacts its management (3). The default rates in programs designed to stop cervical cancer at malignant tumor stages are typically high, 5 – 20% and 20 - 41% in high-income countries and low-income countries, respectively (4–6). Poor adherence to clinical care is a threat to the overall survival patients positively diagnosed with precancerous lesions and early cervical cancer stages (7).

Successful implementation of cervical cancer screening programs requires a robust follow-up system to ensure those with confirmed tumors are taken through the cascade of treatment. Without a proper system of reminders, tracking, and tracing of patients for follow-up and adequate infrastructure for appropriate care, cervical cancer prevention and treatment gains may be significantly lost (8–11).

The highest burden of non-adherence to follow-up care for positive cervical cancer diagnoses is reported in Sub-Saharan Africa and Southeast Asia (11–13). A study in Lagos, Nigeria, reported a substantial default of care in patients with precancerous lesions of the cervix. Forty-seven percent (n=51) positively diagnosed defaulted from follow-up appointments. The identified reasons for loss to follow-up were unaffordable transport costs, limited time to keep appointments, and long distances to the clinic (14). This study aimed to investigate the rate and the factors associated with loss to follow-up following a positive cervical cancer diagnosis using Visual Inspection using Acetic acid (VIA) test.

METHODOLOGY

Study design: This was a prospective study conducted between August 2016 - May 2017. A total of 100 women with VIA positive results and ineligible for immediate treatment with cryo-therapy were recruited and followed up for six months. A Loss to Follow-Up (LTFU) was defined as a participant who failed to keep appointments or was unreachable for three consecutive months and failed to confirm transfer for care in another health facility.

Study Setting: The Academic Model Providing Access to Healthcare (AMPATH) is a collaborative effort between Indiana University and Moi University schools of medicine, and the Moi Teaching and Referral Hospital (MTRH), to advance health care and education in Kenya. The AMPATH program is a working model of urban and rural HIV care based in Western Kenya. The AMPATH Cervical Cancer Screening and Prevention Program (ACCSP) routinely offers free cervical cancer screening in its catchment area. All site clinics are stationed by two trained nurses and research assistants who provide health education talks, emphasizing the importance of keeping follow-up appointments. This study was

conducted at the AMPATH cervical cancer clinics in Chulaimbo county and Webuye sub-county hospitals, situated in Kisumu and Bungoma counties. Both hospitals are in Western Kenya.

Study population: The study population comprised of adult women above 18 years seeking cervical cancer screening services at the two AMPATH cervical cancer clinics. Clients who test positive using Visual Inspection using Acetic acid (VIA) are usually categorized as cryotherapy-eligible or ineligible. Cryotherapy is offered to those eligible using a “screen and treat” approach. Colposcopy is done for those in-eligible for cryotherapy within 1 - 2 weeks. The study included women who screened positive for VIA, were eligible for colposcopy and were scheduled for colposcopy clinic or gynecological review.

Study procedures: Study participants were screened using VIA. Those who screened positive and were ineligible for cryotherapy were briefed on the study’s nature and purpose. Clients who agreed to participate in the study were taken through a consenting procedure. During enrollment, the participants identified means on how they could be located. This included their mobile number and close relatives and friends, home address, school or job address, and directions to their homes.

Sample size determination: This study’s sample size was based on a reference VIA positive rate of 5.7% according to a previous World Health Organization (WHO) demonstration project in six African countries (15). The sample size was calculated using Fisher’s formulae, accounting for the finite population correction factor (16). The average annual population (n=80) reviewed in the two clinics was considered sufficient to identify defaulters. The sample size was increased by 25% in anticipation of non-acceptance to be followed up after testing VIA positive. A final sample size of 100 was obtained.

Data collection: A two-part questionnaire was initially administered following participant consenting. The remaining sections were completed in the following appointment. A follow-up phone call and a community health volunteer visit were made for those who did not keep appointments. In

instances where clients declined to continue with follow up, they were requested to give reasons for defaulting. The second part of the questionnaire was administered to those who were lost to follow-up even after a telephone call or a home visit by the Principal Investigator (PI) or research assistants.

Study variable: The type of visit was defined as new, scheduled, unscheduled, revisit, or referred patients who had or not been previously tested for cervical cancer irrespective of the screening method.

Data analysis: Data were analyzed using the SAS version 9.4 software. Descriptive variables were summarized using frequencies, rates, and p-values and presented in tables. The outcome variables were examined against independent variables: sociodemographic, distance, and HIV status to determine factors associated with default to follow-up care. The bivariate analysis involved Chi-squared tests in assessing the significance of association factors. Multivariate Cox proportional model was used to identify predictors of default from follow-up care. Participant variables included age, educational and marital status, employment, HIV status, previous cervical cancer screening, and distance to the health facility.

Ethical consideration: Ethical approval was sought and obtained from the Institutional Research and Ethics Committee (IREC) of the Moi Teaching and Referral Hospital and Moi University school of medicine (IREC/2016/90 Approval Number: 0001688). Informed consent was obtained from the study participants. Participant autonomy was guaranteed by allowing time to decide, consenting in private rooms, and study disclosure.

RESULTS

A total of 100 women were included in this study; 52 were from Chulaimbo, while 48 were from Webuye clinics. The mean age of study participants was 44.5. The average age was 44.9 for those who were LTFU and 44.3 for non-LTFU. Sixty-one percent (n=61) were married, while 39% (n=39) of the participants were unmarried. Thirteen (52%) of the married participants were LTFU, while 48% were not LTFU. The LTFU rate at Chulaimbo clinic was 60% (n=15), while that of Webuye clinic was 40% (n=10). Thirty-seven percent (n=37) of the total participants

reported having achieved secondary education. Fifty-seven (57%) of the participants were HIV-positive, while 43% were HIV-negative. However, there was no statistically significant difference between the two groups in any sociodemographic covariates. All participants were located within an average distance of a 15km radius to their respective study sites (Table 1).

All variables kept constant; the loss's odds to follow-up in the employed group were 0.64 (0.24,1.66) times higher than loss's odds to follow up in the reference group. The loss's odds to follow-up to education level was 1.23 (0.45,3.32) times lower than its referencing odd group ratio. The odds for HIV Status were 2.18 (0.82,6.34) times higher than the odds for its reference group. The OR in the revisit type was 0.8 (0.29,2.12), higher than the reference group. Odds in marital status was 0.71 (0.27,1.87), higher than the odds for follow up in the reference group. However, there was no statistically significant association, even after adjusting for other covariates (Table 2).

Study participants who were lost to follow-up gave varied reasons for failure to keep appointments. The cited reasons included receiving traditional treatment 36% (n=9), myths and misconception of cervical cancer 20% (n=5), partner refusal 16% (n=4), lack of transport 8% (n=2), and fear of pain or stigma 8% (n=8). Four percent (n=1) were unreachable completely.

DISCUSSION

There is relatively limited literature on the default of follow-up care and associated factors following positive cervical cancer tests (11,13). This study reported a lower default rate compared to similar studies from other low-income countries (14). This may be attributed to different socio-cultural, environmental, and health system issues (10). For instance, women in some Kenyan communities are socio-culturally expected to be subservient to their spouses and usually need permission to honor any invitations, including hospital appointments. Besides, most women, especially in rural areas, are unemployed, thus, dependent on their spouses (17,18).

Table 1: Sociodemographic and socioeconomic characteristics of study participants in a cervical cancer screening and treatment program in Western Kenya

Variable	Total	LFTU = Yes, N = 25 N (%) or Mean±SD or Median (IQR)	LFTU = No, N = 75 N (%) or Mean±SD or Median (IQR)	P-Value	Test
Site					
Chulaimbo	52(52)	15(60)	37(49.3)	0.355	Pearson's Chi-Square
Webuye	48(48)	10(40)	38(50.7)		
Education Level					
Above Secondary	37(37)	10(40)	27(36)	0.72	Pearson's Chi-Square
Below Secondary	63(63)	15(60)	48(64)		
Marital Status					
Married	61(61)	13(52)	48(64)	0.287	Pearson's Chi-Square
Unmarried	39(39)	12(48)	27(36)		
Religion					
Christian	98(98)	25(100)	73(97.3)	1	Fisher's Exact Test
Muslim	2(2)	0(0)	2(2.7)		
Visit Type					
Revisit	43(43)	9(36)	34(45.3)	0.414	Pearson's Chi-Square
New	57(57)	16(64)	41(54.7)		
HIV Status					
HIV-positive	57(57)	18(72)	39(52)	0.08	Pearson's Chi-Square
HIV-negative	43(43)	7(28)	36(48)		
Employment Status					
Employed	52(52)	11(44)	41(54.7)	0.355	Pearson's Chi-Square
Unemployed	48(48)	14(56)	34(45.3)		
Age at screening	44.5±12	44.9±9.8	44.3±12.7	0.815	Two-sample t-test
Distance between home and hospital	15.0(6.0-30.0)	12.0(5.0-30.0)	15.0(6.0-30.0)	0.933	Two-Sample Wilcoxon Rank sum

Table 2: Odds Ratios and respective 95% confidence intervals from the logistic model of study participants in a cervical cancer screening and treatment program in Western Kenya

Variable Label	Unadjusted ORs (95% CIs)	P-Value	Adjusted ORs (95% CIs)	P-Value
Education Level				
Below Secondary	Ref	0.72	Ref	0.683
Above Secondary	1.19(0.46,2.98)		1.23(0.45,3.32)	
Marital Status				
Unmarried	Ref	0.289	Ref	0.478
Married	0.61(0.24,1.53)		0.71(0.27,1.87)	
Employment Status				
Unemployed	Ref	0.357	Ref	0.364
Employed	0.65(0.26,1.62)		0.64(0.24,1.66)	
HIV Status				
HIV-negative	Ref	0.085	Ref	0.13
HIV-positive	2.37(0.92,6.72)		2.18(0.82,6.34)	
Visit Type				
Revisit	Ref	0.416	Ref	0.661
New	0.68(0.26,1.7)		0.8(0.29,2.12)	

Table 3: Reasons given by patients who were lost to follow-up in a cervical cancer screening and treatment program in Western Kenya

Reasons were given by clients who kept appointments and defaulted	Count N=25	Percent (%)
Inadequate/lack of transport	2	8
Felt healthy after being prayed for	1	4
Partner refusal	4	16
Fear of pain or Stigma	2	8
Receiving traditional treatment (Herbal medicines)	9	36
Myths and misconception of cervical cancer	5	20
Unreached	1	4
Total	25	100

Long distances, transportation, and universal health screening are other challenges that women face and make it challenging to keep hospital appointments. The majority of women in rural regions of Kenya prefer to present to an herbalist because of the long waiting time and hospital charges due to poverty and lack of specialized services and expertise in some county hospitals (16).

An evaluation of the “see and treat” strategy in Sub-Saharan reported significant outcomes in reducing the default rate (19,20). Reduction in default rate is also attributed to reduced visits, reduced screening services, transportation costs, and reduced person-hours of work (8). This study’s default rate was relatively lower than studies conducted in Sub-Saharan Africa reported elsewhere (14,21,22). However, higher rates were reported in Cote d’Ivoire (36.5%), Uganda (60%), Nigeria (47.2%), South Africa (32.6%), and Zambia (40.8 – 43.7%) (4,8,10,14,23). HIV-positive women were the most likely to be lost to follow-up in this study. This could be attributed to stigma as per the findings during follow-up in this study. The lower rate of loss to follow-up in this study may be due to the free screening service and continual routine screening (11). Moreover, this study found out that most women do not keep follow-up appointments after screening positive for a precancerous lesion.

Reasons for default in follow-up included seeking alternative treatment, myths, spouse refusal, fear or stigma, and religious beliefs. This is similar to findings reported in the Ivory Coast, Mexico, Tanzania, and Thailand (4,17,24,25).

Study strengths and limitations

This is the first study to report on the extent of LTFU in cervical cancer in Western Kenya to the best of our knowledge. However, our study was not without limitations. There was the likelihood of overfitting the model during analysis due to a small number of events in this study. However, this was minimized by restricting the selection of variables to only those identified as relevant based on clinical experience and previous literature.

CONCLUSION

The study contributes to the growing evidence that the current strategy of opportunistic screening for the rural facility-based cervical cancer screening program is associated with high default. The high loss to follow-up rate remains a setback to all research or care programs, and better strategies should be implemented to reduce the rate and associated factors.

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Declaration of conflict of interest: The authors have no competing interests to declare.

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