Published in final edited form as:

Int J Gynecol Cancer. 2013 June ; 23(5): 895–899. doi:10.1097/IGC.0b013e31828e425c.

Brief Report: Knowledge, attitudes, practices and perceived risk of cervical cancer among Kenyan women

Staci L. Sudenga, MPH¹, Anne F. Rositch, PhD², Walter A. Otieno, MCHD³, and Jennifer S. Smith, PhD^{4,*}

¹Department of Epidemiology, School of Public Health, University of Alabama at Birmingham, Birmingham, AL

²Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

³Impact Research and Development Organization, Kisumu, Kenya

⁴Department of Epidemiology, University of North Carolina at Chapel Hill, Chapel Hill, NC

Abstract

OBJECTIVES—Eastern Africa has the highest incidence and mortality rates from cervical cancer worldwide. It is important to describe the differences among women and their perceived risk of cervical cancer in order to determine target groups to increase cervical cancer screening.

METHOD—In this cross-sectional study we surveyed women seeking reproductive health services in Kisumu, Kenya to assess their perceived risk of cervical cancer and risk factors influencing cervical cancer screening uptake. Chi-square statistics and t-tests were used to determine significant factors, which were incorporated into a logistic model to determine factors independently associated with cervical cancer risk perception.

RESULTS—While 91% of the surveyed women had heard of cancer, only 29% of the 388 surveyed women had previously heard of cervical cancer. The majority had received their information from healthcare workers. Few women (6%) had ever been screened for cervical cancer and cited barriers such as fear, time, and lacking knowledge about cervical cancer. Nearly all previously screened women (22/24, 92%) believed that cervical cancer was curable if detected early, and that screening should be conducted annually (86%). Most women (254/388, 65%) felt they were at risk for cervical cancer. Women with perceived risk of cervical cancer were older (OR=1.06, 95% CI 1.02, 1.10), reported a history of marriage (OR=2.08, CI 1.00, 4.30), were less likely to feel adequately informed about cervical cancer by healthcare providers (OR= 0.76, CI 0.18, 0.83) and more likely to intend to have cervical cancer screening in the future (OR= 10.59, CI 3.96, 28.30). Only 5% of women reported that they would not be willing to undergo screening, regardless of cost.

Conclusions—Cervical cancer is a major health burden for women in sub-Saharan Africa, yet only one-third of women had ever heard of cervical cancer in Kisumu, Kenya. Understanding factors associated with women's perceived risk of cervical cancer could guide future educational and clinical interventions to increase cervical cancer screening.

*Correspondence: Department of Epidemiology University of North Carolina at Chapel Hill Gillings School of Global Public Health 2103 McGavran-Greenberg Hall Campus Box# 7435 Chapel Hill, NC 27599-7435 Phone: 919-966-7450; Fax: 919-966-2089 jennifers@unc.edu.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Keywords

Screening; Barriers; Cervical Cancer; Africa

Introduction

Eastern Africa has one of the highest incidence and mortality rates from cervical cancer in the world.¹ The World Health Organization (WHO) estimated that cervical cancer was the second most common cancer among women in Kenya in 2008, however screening coverage is currently very low at 3.2% in 2002.^{1, 2} If screening and treatment remain low in Kenya, the number of deaths resulting from cervical cancer will almost double by 2025.¹ Fortunately, cervical cancer is preventable if women are adequately screened and treated.

Cervical cancer screening methods available in Kenya, which were part of the Ministry of Health's National Cervical Cancer Prevention Strategic Plan from 2002-2006, include the Pap smear, visual inspection with acetic acid, and visual inspection with Lugol's iodine; however uptake of these methods remained very low.² Several factors may contribute to the underutilization of screening, including lack of awareness, lack of funds, women's worry about exam discomfort, fear of finding cancer, and inability to establish effective follow-up treatment.³⁻⁵ Our study aimed to assess women's knowledge and attitudes towards cervical cancer screening, and to describe the differences among women and their perceived risk of cervical cancer. These findings will be imperative in order to determine target groups to increase cervical cancer screening in Kenya.

Methods

Study population and design

The cross-sectional study was conducted in four health facilities that offer reproductive health services within the Kisumu municipality, Kenya. The health facilities were selected from a register obtained from the Medical Officer of Health, Kisumu East District. Of the 39 facilities, one urban public, urban private, peri-urban public and peri-urban private facility were randomly chosen and systematic random sampling of respondents was conducted at each facility. Research assistants interviewed the first client of the day, aged 15 to 49 years, between June 2007 and August 2007 who exited after receiving health services. Every third client thereafter was interviewed until a total sample of 488 respondents was obtained.

The questionnaire was read to the participants by trained research assistants. These research assistants answered questions regarding the questionnaire, but did not provide education on any of the material covered. The questionnaire covered three sections: 1) demographic characteristics, 2) knowledge of respondents about cervical cancer, including current screening practices and 3) attitude of respondents towards cervical cancer screening, including barriers to screening and risk perception.

Statistical Analysis

Of the 488 women that participated, 100 were not included in the analysis due to missing questionnaire information in the "knowledge of respondents about cervical cancer" section; however these participants did not differ significantly based on socio-demographic characteristics from the participants included in the analysis (data not shown). Demographic characteristics, and knowledge and attitude of respondents towards cervical cancer that were associated with perceived cervical cancer risk were described, and chi-square and t-test were used to assess these differences. Odds ratios (OR) for cervical cancer risk perception and

corresponding 95% confidence intervals (CI) were calculated by a logistic model using stepwise regression that incorporated significant factors at $p < 0.1$ from the univariate analysis. The final multivariable model for cervical cancer risk perception consisted of age, ever married, cervical cancer information provided by service provider, and plan of being screened for cervical cancer in the future.

Results

Study population

Of the 388 women included in this analysis (Figure 1), the median age of 27 years (range 15 to 53), 87% were married or had ever been married, 88% of them had a child, and the majority (61%) had secondary education or above. While 91% of the surveyed women had heard of cancer, only 29% of them had previously heard of cervical cancer, and most received their information about cervical cancer from healthcare workers.

Women Previously Screened for Cervical Cancer

Few women (6%) had ever been screened for cervical cancer. Screened women tended to be older (37 for screened vs 27 years for unscreened), better educated (secondary or above, 96% vs 59%), have higher monthly incomes (>3000 Kenya Shillings (>\$35), 95% vs 62%), have heard of cervical cancer (100% vs 25%) and were less likely to be willing to be screened for cervical cancer in the future (65% vs 87%) compared to previously unscreened women. When asked, 'What motivated you to go for screening?' women cited the following reasons: healthcare workers, medical reasons (like bleeding or pain), or desire to know their cervical cancer status. When asked about risk factors associated with the development of cervical cancer, previously screened women believed vaginal bleeding (15%), having multiple sex partners (30%), smoking (10%), having sexually transmitted diseases (10%), or use of contraceptives (20%) were associated with cervical cancer. Nearly all previously screened women (92%) believed that cervical cancer was curable if detected early, and 86% felt that screening should be conducted annually. Women that had not been screened for cervical cancer in the past cited fear (16%), lack of funds (10%), and lack of knowledge about cervical cancer (14%) as barriers to screening.

Cervical Cancer Risk Perception

When asked, 'Do you consider yourself at risk for cervical cancer?' most women (65%) felt they were at risk (Table 1). Women who felt at risk for cervical cancer were older (OR=1.06, CI=1.02, 1.10), reported a history of marriage (OR=2.08, CI 1.00, 4.30), were less likely to feel adequately informed about cervical cancer by healthcare providers (OR=0.76, CI=0.18, 0.83), and were more likely to intend to have cervical cancer screening in the future (OR= 10.59, CI=3.96, 28.30). Most women (57%) reported that they would be willing to pay or to have free cervical screening, and only 5% of women reported that they would not be willing to undergo screening, regardless of cost. This multivariable analysis was stratified by women who had heard of cervical cancer (n=112) versus women who had not heard of cervical cancer (n=272) several of the covariates remained consistent between the pooled analyses (Supplementary Table 1). However, due to small sample size the interpretation is limited.

Discussion

Cervical cancer is a major health burden for women in sub-Saharan Africa, yet less than one-third of the women surveyed had ever heard of cervical cancer. Previous Pap smear screening prevalence in this cohort (6%) was considerably lower than other previous studies in sub-Saharan Africa (12%-27%), yet consistent with the Kenyan Ministry of Health's

estimate of 3.2% for women 18 to 69 years old.^{2, 3, 5-7} A study in Gaborone, Botswana found that previous cervical screening was more common among women that were older, had higher incomes, or had heard of cervical cancer, which is consistent with our findings.⁸ A survey in China found that women who had been previously screened were more likely to be motivated to receive screening in the future; however in our study population, we found the opposite to be true.⁹ Most women in our study who had been previously screened felt that screening should occur yearly, but only 65% were willing to be screened again in the future. Our questionnaire did not assess why the 8 out of the 23 women were not willing to be screened again nor did we inquire whether these women had abnormal cytology results. Further research is needed to explore why women are reluctant to pursue future cervical cancer screening.

In a similar self-reported survey from Kenya, 23% of participants their participants felt that they were at risk for cervical cancer while 65% of our study participants felt at risk.⁵ In our cohort, the women who did feel at risk of cervical cancer as compared to those who did not were older and more likely to be/ have been married. Cervical cancer rates increase with increasing age, with the highest incidence among women ages 55-64 years in Kenya.¹ Consistent with the known risk of cervical cancer in older women, there was an increased perception of risk for cervical cancer with increasing age in this Kenya population. However, pre-cancerous lesions occur at relatively younger ages, and are highly treatable.

The WHO recommends that cervical cancer screening programs should start screening women aged 30 years or more and should occur at three-year intervals.¹⁰ We found that women who have a perceived risk of cervical cancer are significantly more likely to accept cervical cancer screening in the future compared to women who did perceive themselves at risk. Other studies have found similar results that perceived low-risk of cervical cancer was associated with low uptake of screening.^{5, 11} These findings highlight the need to include an educational component in screening programs for women in the reproductive age group to describe risk factors for cervical cancer, in order for women to better understand their risk for cervical cancer. Cervical cancer education would also increase the likelihood of HPV vaccine success in Kenya.¹² The WHO also recommends that the Human papillomavirus (HPV) vaccine be included in the national immunization programs in areas where cervical cancer incidence is high and introduction is programmatically feasible.¹³ Cervical cancer rates in Kenya warrant a need for the HPV vaccine to prevent future cervical cancer cases; however this vaccine's effectiveness will not be seen for twenty years or more since the vaccine is only administered to young adolescent women. Therefore, there is still a need to actively screen women for cervical cancer and increase awareness.

This study provides insight about screening uptake and perceived risk of cervical cancer in a population of women that is representative of reproductive aged women in Kisumu, Kenya, who seek health services. However, there were a few study limitations. Most women surveyed (71%) were not aware of what cervical cancer is; however 91% of the surveyed women had heard of cancer, which makes it feasible that these women could still have a perception of risk because they know what cancer is and the outcomes of cancer regardless of where the cancer is located in the body. Even with this knowledge, there is still disconnect between cervical cancer risk perception and screening uptake among these women, which solidifies the need for future outreach and education on cervical cancer and prevention. In the current study, the research assistants would answer the participants' questions to clarify the meaning of the survey questions but they did not provide an educational introduction to the topic so responses represent baseline levels of cervical cancer knowledge and perceived risk. The study relied on women volunteering to complete the survey and potentially could be biased if the women who refused to participate differed from those that participated in the survey. However, our population had similar educational

attainment, contraceptive use and smoking prevalence as women in nationally representative Kenyan data.¹²

Challenges to cervical cancer screening programs include low public awareness, cost, and access to services. Programs also face shortages of equipment, trained personnel, and clinic and laboratory space, which result in delays in service provision and a general lack of screening coverage on the population level. A previous study in Uganda found that less than 40% of medical workers understood risk factors for cervical cancer, the specific eligibility criteria for screening and recommended screening intervals.¹¹ For proper implementation and acceptability of cervical cancer screening, healthcare providers and women need more education about who is at risk for cervical cancer and on the importance of routine screening for cervical cancer prevention. Understanding factors associated with women's perceived risk of cervical cancer could guide future educational and clinical interventions to increase cervical cancer screening coverage.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

We would like to acknowledge the women who kindly agreed to participate in this study, the staff of Family Health Options Kenya (FHOK) formerly Family Planning Association of Kenya (FPAK), Kisumu District Hospital, Port Florence Community Hospital, Ober Kamoth Health Centre and Lumumba Health Centre.

Funding This work was supported in part by National Institutes of Health Cancer Prevention and Control Training Grant (S.L.S. R25CA47888 and A.F.R. T32 CA009314) and by the National Cancer Institute, National Institutes of Health (R01 CA114773-04).

References

1. WHO. Cancer WIICoHaC. , editor. Human Papillomavirus and Related Cancers in Kenya. Summary Report. 2010.
2. Kimani, F.; Sharif, SK.; Bashir, I. Ministry of Public Health and Sanitation and Ministry of Medical Services National Cervical Cancer Prevention Program in Kenya: Strategic Plan 2012-2015. Nairobi, Kenya: 2012.
3. Rositch AF, Gatuguta A, Choi RY, et al. Knowledge and Acceptability of Pap Smears, Self-Sampling and HPV Vaccination among Adult Women in Kenya. PloS one. 2012; 7:e40766. [PubMed: 22808257]
4. Ansink AC. Cervical cancer in developing countries: how can we reduce the burden? Awareness raising, screening, treatment and palliation. Tropical doctor. 2007; 37:67–70. [PubMed: 17540080]
5. Were E, Nyaberi Z, Buziba N. Perceptions of risk and barriers to cervical cancer screening at Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya. African health sciences. 2011; 11:58–64. [PubMed: 21572858]
6. Wellensiek N, Moodley M, Moodley J, Nkwanyana N. Knowledge of cervical cancer screening and use of cervical screening facilities among women from various socioeconomic backgrounds in Durban, Kwazulu Natal, South Africa. Int J Gynecol Cancer. 2002; 12:376–382. [PubMed: 12144686]
7. Hoque M, Hoque E, Kader SB. Evaluation of cervical cancer screening program at a rural community of South Africa. East African journal of public health. 2008; 5:111–116. [PubMed: 19024420]
8. Mingo AM, Panozzo CA, DiAngi YT, et al. Cervical cancer awareness and screening in Botswana. Int J Gynecol Cancer. 2012; 22:638–644. [PubMed: 22367370]

9. Gu C, Chan CW, He GP, et al. Chinese women's motivation to receive future screening: The role of social-demographic factors, knowledge and risk perception of cervical cancer. *European journal of oncology nursing : the official journal of European Oncology Nursing Society*. 2012
10. WorldHealthOrganization. Comprehensive cervical cancer control: a guide to essential practice. 2006.
11. Mutyaba T, Mmiro FA, Weiderpass E. Knowledge, attitudes and practices on cervical cancer screening among the medical workers of Mulago Hospital, Uganda. *BMC medical education*. 2006; 6:13. [PubMed: 16509979]
12. Becker-Dreps S, Otieno WA, Brewer NT, et al. HPV vaccine acceptability among Kenyan women. *Vaccine*. 2010; 28:4864–4867. [PubMed: 20566394]
13. WorldHealthOrganization. Human papillomavirus vaccines: WHO position paper. *Weekly epidemiological record*. 2009:117–132. [PubMed: 19360984]

Figure 1. Women seeking reproductive health services in Kisumu, Kenya were surveyed to assess their perceived risk of cervical cancer and risk factors influencing cervical cancer screening uptake

Table 1

Significant factors associated with perceived cervical cancer risk based on logistic model using stepwise regression for adjusted odds ratios

	Feel at risk for cervical cancer*		UOR	95% CI	AOR	95% CI
	No	Yes				
	n=143	n=245				
Age in years	25.4 (± 7.3)	28.3 (± 7.0)	1.1	(1.0, 1.1)	1.1	(1.0, 1.1)
Ever married	111 (77.6%)	224 (91.8%)	3.2	(1.8, 5.9)	2.1	(1.0, 4.3)
Ever had full term birth	119 (83.2%)	222 (90.6%)	1.9	(1.1, 3.6)		
Currently use contraceptive methods	51 (37.0%)	124 (50.8%)	1.8	(1.2, 2.7)		
Willing to pay for cervical screening services	110 (76.9%)	219 (90.1%)	2.7	(1.5, 4.9)		
Would accept free cervical cancer screening						
Not sure	12 (8.5%)	40 (16.4%)	1.9	(0.9, 3.9)		
No	37 (26.1%)	46 (18.9%)	0.7	(0.4, 1.2)		
Yes	93 (65.5%)	158 (64.8%)	1			
Do service providers provide enough information about cervical cancer?						
no	90 (64.3%)	186 (76.9%)	1.0		1.0	
yes	25 (17.9%)	40 (16.5%)	0.3	(0.2, 0.6)	0.8	(0.2, 0.8)
don't know	25 (17.9%)	16 (6.6%)	0.8	(0.4, 1.4)	0.4	(0.4, 1.4)
Who would you prefer to screen you for cervical cancer?						
Does not matter	68 (53.5%)	142 (59.2%)	1.0			
Male service provider	19 (15.0%)	34 (14.2%)	0.9	(0.5, 1.6)		
Female service provider	38 (29.9%)	60 (25.0%)	0.8	(0.5, 1.3)		
Other	2 (1.6%)	4 (1.7%)	0.9	(0.2, 5.4)		
Consider get screened for cervical cancer in the future	108 (79.4%)	234 (97.5%)	10.1	(4.1, 25.1)	10.6	(3.9, 28.3)

* Questionnaire asked, 'Do you consider yourself at risk for cervical cancer?'

Unadjusted Odds Ratio=UOR from the univariate analysis; Adjusted Odds Ratio= AOR from the multivariable analysis that incorporated significant factors at p<0.1 from the univariate analysis; Confidence Interval=CI