

Differentials and determinants of cervical cancer knowledge and screening in selected sub-Saharan African countries

Ann Kiragu¹, Richard², Elise Kakou¹

¹*University of Paris 1 Pantheon-Sorbonne, Paris France*

²*Richard Kouamé, Ecole National Supérieure de statistique et économie appliquée, Ivory Coast*

¹*University of Paris 1 Pantheon-Sorbonne, Paris France*

ABSTRACT (abridged)

Morbidity and mortality associated to cervical cancer is rapidly increasing in sub-Saharan Africa, yet it is an avoidable cause of death among women. The reasons are multifaceted but reflect both rapid population growth and access to health, as well as national levels of social and economic development. This paper aims to contribute to the study of women's reproductive health by assessing and comparing women's characteristics and their relationship to cervical cancer knowledge and screening in three sub-Saharan countries: Ivory Coast, Kenya and Namibia. Representative samples of women from the most recent Demographic and Health surveys in these countries were analyzed. Descriptive statistics were used to estimate the proportion of women who had heard of and were screened for cervical cancer. Bivariate analyses using Pearson's Chi-square test for independence were used to test whether women among those who reported to have heard of cervical cancer and to have been screened differed across countries and according to background characteristics. A Probit regression model with sample selection was chosen to estimate factors that had an effect on the probability of cervical cancer knowledge and screening in the three countries. Results show that cervical cancer knowledge (heard of CC) and screening (CC screening) differed significantly across the three countries: In Ivory Coast (Heard of CC = 31.8%; CC screening = 3.5%), in Kenya (Heard of CC = 78.9%; CC screening = 21.6%) and in Namibia (Heard of CC = 67.2%; CC screening = 51%). Utilization of screening services is significantly predicted by women's age group, as well as the wealth index. We argue that communication on the essence of screening for cervical cancer coupled with efficiency in the implementation of screening programs and adequate health infrastructure, could greatly contribute to increasing the observed low levels of screening, hence early diagnosis of the disease. Consequently, cervical cancer mortality rates would decrease.

Key words: Cervical cancer screening, differentials, determinants, Ivory Coast, Kenya, Namibia.

EXTENDED ABSTRACT

BACKGROUND

Cervical cancer is becoming a substantive Public Health problem in sub-Saharan Africa (SSA). According to recent estimates of the International Agency for Research on Cancer (IARC) in 2018, cervical cancer is the second most common cancer and the leading cause of female deaths in Ivory Coast, Kenya and Namibia (Bray et al., 2018). Incidence, the number of new cases occurring in a given period is estimated at 119, 284 new cervical cancer cases in 2018 in Africa, while the estimated number of deaths is 81,687 for the same year. Regional variations of cervical cancer death are striking with Eastern Africa registering the highest rates of deaths and Northern Africa the lowest (Bray et al., 2018). The magnitude of the cervical cancer parallels infectious diseases and high maternal and child deaths, already a burden for Public Health (Bouassa et al., 2017; Catarino, Petignat, Dongui, & Vassilakos, 2015). While estimates by the IARC have demonstrated an upward trend in morbidity and mortality related to cervical cancer in sub-Saharan Africa, concomitantly, various studies have observed very low HPV vaccination and cervical cancer screening coverage (Black & Richmond, 2018; Clifford & Franceschi, 2005; Denny & Anorlu, 2012) and other have observed social demographic and economic factors to be associated with screening coverage (Abdikarim, Carole Atieno, & Habtu, 2017; Arrossi, Paolino, & Sankaranarayanan, 2010; Arrossi, Ramos, Paolino, & Sankaranarayanan, 2008; Kangmennaang, Onyango, Luginaah, & Elliott, 2018; Lim & Ojo, 2017). This study contributes to the understanding of the determinants of cervical cancer knowledge and screening in sub-Saharan Africa. It focuses on three countries: Ivory Coast, Kenya and Namibia and tries to bridge the gap on the limited research done on regional variation of these determinants. First, it estimates levels of knowledge and screening. Then it assesses and compares associations between women's characteristics and their relationship with cervical cancer knowledge and screening. Lastly factors associated to the probability of cervical cancer knowledge and screening, are studied.

METHODOLOGY

Source of data and sample selection

The present study was based on cervical cancer knowledge and screening information that was collected in the most recent Demographic and Health Surveys (DHS) conducted in Ivory Coast, Namibia and Kenya, in 2015 and 2014, respectively. The DHS datasets were nationally representative stratified samples and were composed of 10 060 women of reproductive age (15-49) in Ivory Coast, 31 079 in Kenya and 9 176 in Namibia. From these datasets, a sample of married women who responded to have ever heard of cervical cancer was drawn for analysis.

We used descriptive statistics to describe the proportion of married women who responded to the following questions: (1) "Have you heard of cervical cancer?" coded as Heard of CC ; and (2) "Have you ever been tested or examined for cervical cancer?" coded as CC screening. Outcome variables were coded based on the answers (yes or no) to these questions. First, we estimated the proportions of women who had heard of cervical cancer and the proportion of those who had been screened among these women. Then, bivariate analysis was performed to study associations between women's characteristics and knowledge of cervical cancer and screening. Pearson's Chi-square analysis was used to determine whether there were statistically significant differences between women's characteristics and cervical

cancer knowledge and screening. A significance factor of less than .10 was used to reject the null hypothesis that there was no significant difference for the selected factors. Finally, a probit regression model with sample selection was used to determine factors that had significant effects on the probability of cervical cancer knowledge and screening.

PRELIMINARY RESULTS

Table 1 displays the proportion of women who had ever heard of cervical cancer at the time of the survey and among these women, those who had been screened for cervical cancer. Kenya had the highest proportion of women who reported to have heard of cervical cancer, nearly 80%, followed by Namibia with 67.2% and only 31.8% of women in Ivory Coast. Despite high knowledge of cervical cancer among Kenyan women, the proportion of women who reported to had been screened was very low (21.6%). However, in Namibia, more than half of the women who reported to have heard of the disease, reported to had been screened for the disease. Ivory Coast’s prevalence of screening was found to be extremely low: 3.5% of the 31.8% of women who reported to have heard of cervical cancer.

Table 1

Proportions of Cervical Cancer Knowledge and Screening displayed by country, Standard errors in parenthesis.

Variables	Ivory Coast	Kenya	Namibia
Heard of cervical cancer (Yes/no)	31.8% (0.007)	78.9% (0.005)	67.2% (0.009)
Screened for Cervical Cancer (yes/no)*	3.5% (0.005)	21.6% (0.007)	51% (0.013)
Total number of respondents	10 060	31 097	9 176

*Among women who reported to have heard of cervical cancer.

Table 2 shows results from the probit regression with selection analysis. The likelihood that a woman is screened for cervical cancer depends on a set of observed explanatory variables: age group, level of education, parity, wealth index and place of residence. In Ivory Coast, none of these factors predicted the probability of screening. There was therefore no significant difference between cervical cancer screening and the observed explanatory variables. On the other hand, in Kenya and Namibia, a woman’s age group predicted her probability to be screened, as well as the wealth index with the rich having a higher probability to be screened.

Table 2

Results from probit regression with selection model. Probit Regression Coefficients and Standard errors in parenthesis for women who have heard of cervical cancer.

Women's characteristics	Ivory Coast	Kenya	Namibia
	CC screening	CC screening	CC screening
Age group			
25-34	-0.226 (0.193)	0.262 (0.096)***	0.431 (0.125)**
35-49	0.245 (0.215)	0.468 (0.083)***	0.773 (0.129)***
Level of education			
Primary	0.219(0.176)	-0.042 (0.137)	-0.124 (0.139)

Secondary and above	-0.039 (0.269)	-0.074 (0.153)	0.011 (0.136)
Parity			
1-3 children	0.129 (0.265)	-0.075(0.112)	-0.119 (0.129)
4-7 children	-0.036 (0.299)	-0.218 (0.131)	-0.292 (0.142)
8 or more	-0.499 (0.469)	-0.396 (0.182)	-0.642 (0.241)*
Wealth index			
Middle	0.095 (0.258)	0.038 (0.060)	0.009 (0.953)
Rich	0.426 (0.258)	0.0258 (0.058)***	0.242 (0.092)*
Place of residence			
Rural area	-0.096 (0.202)	-0.055 (0.048)	-0.033 (0.074)
Log-likelihood	-3476.17	-6963.91	-2764.394

* P <0.10, **P <0.05, ***P <0.01

CONCLUSIONS

Given the low screening level in Ivory Coast and in Kenya, we argue that communication on the essence of screening for cervical cancer coupled with efficiency in the implementation of screening programs and adequate health infrastructure, could greatly contribute to increasing the observed low levels of screening, hence early diagnosis of the disease. Consequently, high cervical cancer mortality rates would decrease.

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