ORIGINAL RESEARCH ARTICLE

Factors influencing cervical cancer screening among pregnant women in Nairobi, Kenya

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Abstract

To characterize cervical cancer screening knowledge, beliefs, behaviors, and sociodemographic factors among women aged 25-45 years who access and utilize prenatal care services in Nairobi, Kenya. A descriptive cross-sectional design using a convenience sample of pregnant women receiving prenatal health services at a public and a private hospital in Nairobi, Kenya. Constructs from the Health Belief Model (HBM) guided the design, interpretation of the results, and recommendations. Data were analyzed using SPSS version 24. Bivariate analyses were conducted to examine associations between variables. There was a significant association (*p=0.001*) between knowledge and screening behaviors. There was no association (*p=0.066*) between cervical cancer beliefs (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy) and screening behaviors. Knowledge and beliefs influence cervical cancer screening behavior. Low cervical cancer screening uptake substantiates the need for tailoring culturally specific health behavior change communication to address misconceptions about cervical cancer screening in Kenya. *(Afr J Reprod Health 2022; 26[11]: 47-55).*

Keywords: Health belief model, prenatal care, cervical cancer, screening, Nairobi

Résumé

Caractériser les connaissances, les croyances, les comportements et les facteurs sociodémographiques en matière de dépistage du cancer du col de l'utérus chez les femmes âgées de 25 à 45 ans qui accèdent aux services de soins prénatals et les utilisent à Nairobi, au Kenya. Une conception transversale descriptive utilisant un échantillon de commodité de femmes enceintes recevant des services de santé prénatale dans un hôpital public et privé à Nairobi, au Kenya. Les constructions du Health Belief Model (HBM) ont guidé la conception, l'interprétation des résultats et les recommandations. Les données ont été analysées à l'aide de SPSS version 24. Des analyses bivariées ont été effectuées pour examiner les associations entre les variables. Il y avait une association significative (p = 0,001) entre les connaissances et les comportements de dépistage. Il n'y avait aucune association (p = 0,066) entre les croyances concernant le cancer du col de l'utérus (susceptibilité perçue, gravité perçue, avantages perçus, obstacles perçus et auto-efficacité) et les comportements de dépistage. Les connaissances et les croyances influencent le comportement de dépistage du cancer du col de l'utérus. Le faible taux de participation au dépistage du cancer du col de l'utérus justifie la nécessité d'adapter la communication sur le changement de comportement en matière de santé spécifique à la culture pour lutter contre les idées fausses sur le dépistage du cancer du col de l'utérus au Kenya. *(Afr J Reprod Health 2022; 26[11]: 47-55).*

Mots-clés: Modèle de croyance en la santé, soins prénatals, cancer du col de l'utérus, dépistage, Nairobi

Introduction

Cervical cancer (CC) is preventable, yet it is the fourth most common cancer in women globally[1]. Although breast cancer is the most common cancer among women in Africa, cervical cancer is second and is the leading cause of cancer death among women in Africa[1]. In 2020 alone, 604, 127 cases of CC were diagnosed worldwide, and 341,831 women died from CC[2]. Approximately, 90 percent of deaths

from cervical cancer occurred in low and middle-income countries. Sub-Saharan African countries bear 85 percent of the global burden[1]. Eastern Africa is reported to have the highest incidences and mortalities in the world, with an estimated 54,560 new cases and 36,497 deaths in 2020[1]. This is almost four times the recorded new cases and deaths in the United States at 12,979 and 4,152 respectively[3]. Specifically, in 2018 alone, the number of new CC cases was 6,413 in Uganda,

9,772 in Tanzania, 4,163 in Malawi, and 5,240, in Kenya[1]. In Kenya, approximately 5,240 cases of CC are diagnosed, and 3,286 deaths are reported annually[4]. Cervical cancer is ranked as the second leading cause of cancer death among women in Kenya and the leading cause of cancer death among women aged 15 to 44 years[5].

Notably, the age of the highest incidence and mortality of cervical cancer in Kenya patterns the same age group of reproductive life, pregnancies, and prenatal care (15-49 years). Pregnancy often marks a woman's first encounter with formal health services in Kenya[6]. However, CC screening is recommended for Kenyan women between the ages of 25 to 65 years[7].

Over the past decade, Kenya has made significant strides in cervical cancer prevention. The accomplishments emanating from the National Cervical Cancer Prevention Program Strategic Plan (NCCPPSP) include: (a) free Human Papillomavirus (HPV) vaccines in 2019 for young girls ten years and older; (b) availability of visual screening with acetic acid in all provincial hospitals, faith-based facilities, a few health centers, and some district hospitals; and (c) availability of fee-based Pap smear tests in urban hospitals[8]. The NCCPPSP projected that 70% of women aged 30-49 would be screened by 2015. Unfortunately, the most recent 2014 Kenya Demographic Health Survey (KDHS) reports a 14% screening uptake among women aged 30-49[9]. As of 2021, the CC screening uptake falls significantly below the (70%) projected by the NCCPPSP.

Several studies have examined factors contributing to low rates of cervical cancer screening in Kenya. First, a study examining environmental and psychological barriers in Nairobi and Nyanza Counties reported that barriers to CC screening included lack of knowledge, difficulties accessing screening services, financial concerns, and spousal approval[10]. Another study that examined healthcare workers' perceptions of barriers to CC screening highlighted that wait time, distance from screening facility, discomfort with male providers, and insufficient training are associated with the lack of routine screening[11]. Similarly, in Western Kenya, s study examined barriers and facilitators to CC screening from the perspective of providers and community members[12]. The researchers reported lack of supplies, lack of trained staff, and workload were significant barriers to offering service[12]. In Eastern Kenya, Gatumo *et al.* surveyed 451 women to explore CC knowledge, CC screening knowledge, and CC attitudes. The researchers found that participants had higher levels of negative attitudes towards CC and low knowledge about cervical cancer screening[13].

Additionally, researchers have examined barriers to the rollout of the HPV vaccine[14]. An earlier study conducted in 2015 amongst hard-to-reach populations in Kenya reported a lack of parental support, lack of cervical cancer and HPV knowledge, absenteeism, and school dropout as challenges to HPV vaccine uptake[14]. Researchers have also identified barriers to the uptake of the vaccine that include lack of HPV information, safety concerns, doubt of vaccine efficacy, parental refusal, and school willingness to vaccinate[15]. The distance to vaccine centers has also been reported as a significant barrier to HPV dose completion[16].

In addition to structural barriers limiting cervical cancer screening and HPV vaccine uptake, other studies have emphasized how beliefs, including fear of pain, embarrassment about pelvic exams, fear of receiving positive results, and fear of death associated with cervical cancer, hamper the uptake of CC screening[12,17]. Rosenstock *et al.*[18] assert that health beliefs are central to behavior change, resulting in the development of the Health Belief Model (HBM), one of the most widely used theoretical frameworks used to guide health behavior change interventions. Researchers established that the HBM constructs of *perceived susceptibility, perceived severity of the disease, perceived benefits, perceived barriers, cues to action, and self-efficacy* predict cervical cancer screening behavior[19-21].

Cervical cancer screening studies conducted in rural Kenya and urban counties, including Nairobi, offered some insight into the screening knowledge, beliefs, and behaviors of HIV-positive women, women residing in rural areas, CC patients in a tertiary hospital, and among college students[13,22-23]. Unfortunately, little is known about the CC knowledge, beliefs, and behaviors of urban women who access and receive prenatal health services—women who might become part of a national strategy to promote the uptake of CC screening. Women who access and utilize prenatal health care services present a unique opportunity for health promotion to increase the

uptake of cervical cancer screening. Medical practitioners may use this opportunity to engage pregnant women in regular care and cervical cancer screening, specifically, pregnant women who have never visited a doctor.

Understanding the CC screening knowledge, beliefs, and behaviors among women receiving prenatal health services will be useful for making strategic recommendations to improve CC screening in hospitals. The objective of this study was to describe cervical cancer screening knowledge, beliefs, behaviors, and socio-demographic factors among women aged 25-45 years who access and utilize prenatal care services in two different health facilities in Nairobi County, Kenya. This study's findings can guide the development of interventions tailored to the needs of pregnant women in hospitals within Nairobi County, Kenya. The following research questions guided the study: (1) What characterizes cervical cancer screening knowledge, beliefs, and behaviors of pregnant women (25-45 years) in Nairobi, Kenya? and (2) To what extent are there differences between CC screening knowledge, beliefs, and behaviors of pregnant women (25-45 years) receiving health services at a public hospital and a private hospital in Nairobi, Kenya?

Theoretical framework

Constructs from the Health Belief Model (HBM) guided the design, interpretation of the results, and recommendations that emerged from the exploratory study. This research study guided by HBM constructs asserts that younger women will engage in screening behaviors if: (a) they consider themselves *susceptible* to cervical cancer, (b) if they believe that cervical cancer can be fatal (*perceived severity*), (c) if they believe that obtaining a Pap test will prevent cervical cancer (*perceived benefit*), and (d) if they believe they can overcome the *perceived barriers* associated with CC screening behaviors (visit a prenatal healthcare hospital, schedule a CC screening appointment, go to the appointment, obtain the Pap test, schedule a follow-up test, obtain results).

Methods

Study design

The study was a descriptive cross-sectional design of 107 pregnant women receiving prenatal health services at a public and a private hospital in Nairobi, the capital city of Kenya. The hospitals granted the lead researcher permission to speak with women regarding participation in the study while they waited for their gynecological visits. Women eligible to participate were English or Swahili speaking, aged 25-45 years, and had no history of cervical cancer.

Instrumentation

The survey was developed by integrating validated questions from the Champion Health Belief Model (CHBM)[24-29]. The first section comprised general demographic questions. The second section comprised 17 items that measured potential gaps in cervical cancer, cervical cancer screening knowledge, 5 items that measured and HPV and HPV vaccine knowledge. The third section comprised 40 items that measured CC and CC screening beliefs and 1 item that measured CC screening behaviors.

Study procedures

The survey was administered during a four-week period from May 17, 2021, to June 11, 2021. All pregnant women attending outpatient prenatal health services at the hospitals were approached at the gynecological waiting areas during the hours of operation. A member of the research team provided a detailed explanation of the study to potential participants. Participants were asked to provide informed and written consent before enrolling in the study. Consenting participants completed a self-administered paper survey. Although the sample was a convenience sample, participants were diverse in socioeconomic status, age, and hospital for gynecological visits. We attempted to survey all eligible participants (n=120); however, not all participants completed the surveys. One hospital (public) had more participants. After eliminating incomplete surveys from our sample, we found that 107 participants completed the survey. Incomplete surveys arose from participants leaving the hospitals before completing the surveys due to the influence of the gynecological visit process.

Independent and dependent variables

The *independent variables* for the study were knowledge and beliefs regarding cervical cancer

screening. The CHBM was utilized to assess the variables. The *dependent variable* was the behavior of interest which is the uptake of cervical cancer screening. Knowledge regarding cervical cancer and HPV risk factors was created through a summation of (24) questions of "yes," "no," and "do not know." The questions were scored 1 for each correct response and 0 for incorrect and "do not know" responses. The maximum score was 24 for correct answers, and the minimum score was 0 for incorrect answers. The knowledge score was stratified into three levels edge) from 0 to 7 (medium knowledge) 8 to 15, and (high knowledge) from 16 to 24.

Beliefs regarding cervical cancer and cervical cancer screening were scored on a Likert-type scale that ranges from (*1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree*). The total number of questions in each belief construct was multiplied by 5 on the Likert scale totaling 200. Perceived susceptibility included 3*5=15. The maximum score for perceived susceptibility was 15, and the minimum score was 3. Perceived severity included 12*5=60. The maximum score for perceived severity was 60, and the minimum score was 12. The perceived benefit included 5*5=25. The maximum score for perceived benefits was 25, and the minimum score was 5. Self-efficacy included 10*5=50. The maximum score for self-efficacy was 50, and the minimum score was 10. When combined, the belief scores were stratified into three levels, including (low belief) 0 to 66, (medium belief) 67 to 133, and (high belief) 134-200. Behavior regarding cervical cancer screening was measured with 1 question assessing those who performed the behavior (cervical cancer screening) and those who did not.

Data analysis

The data was entered into Qualtrics and exported into SPSS version 24. Data was processed and cleaned to minimize entry errors and check for outliers and missing values. The overall goal of the current study was to assess the association between knowledge, beliefs, and behaviors regarding cervical cancer screening. Descriptive analysis was first conducted to examine the characteristics of study participants. Bivariate analyses, using chi-square tests were then utilized to ascertain the association between the knowledge, beliefs, and behaviors of study participants. Additionally, we

conducted bivariate analyses to ascertain whether there were differences in knowledge, beliefs, and behaviors among participants attending public hospitals and those attending private hospitals. First, we hypothesized that if cervical cancer screening knowledge scores were high, then women were expected to have positive cervical cancer screening behaviors. ***Knowledge vs behaviors.*** Second, we hypothesized that if cervical cancer screening belief scores were high, then women were expected to have positive cervical cancer screening behaviors. ***Belief vs. behaviors***. Third, irrespective of whether women attended a public or private hospital, women with low knowledge scores were expected to have negative cervical cancer screening behaviors.

Results

The demographic characteristics of both the public hospital (n=64) and the private hospital (n=43) are presented in Table 1. More than half the participants (67.3%) were married/living with partners. Most of the participants were literate, including (18.7%) with an associate degree, (28%) with a bachelor's, and (6.5%) with a graduate degree. Many participants were working full-time (26.2%) or working part-time (25.2%). However, (43.1%) had an average annual household income of Ksh. 50,000 or more. A similar fraction of participants had visited a doctor in less than six months (23.3%) and those who had visited a doctor over five years ago were about (20.5%). However, most participants (93.3%) had visited a gynecologist in less than six months. Although a similar fraction of participants had other government insurance (44.9%) and employer-sponsored insurance (43.1%), most participants reported "other" (44.9%) as a means of how they paid their insurance. Interestingly, most of the participants (72%) had never been screened for cervical cancer.

Table 2 illustrates that many participants in the public hospital (57.8%) had low knowledge about cervical cancer screening, whereas (53.5%) of participants in the private hospital had high knowledge. Table 3 illustrates a significant association (*p=0.001*) between knowledge and screening behaviors. Majority of participants (93.48%) whohad never been screened for cervical cancer had low knowledge scores. Participants who no association (*p=0.066*) between cervical cancer beliefs (perceived susceptibility, perceived severity,

Table 1: Demographic characteristics (N=107)

Variable	N	%
Age		
25-29	32	30.0
30-34	30	28.0
35-39	32	30.0
40-45	13	12.0
Marital Status		
Single	24	22.4
Married/living with a partner	72	67.3
Divorced	11	10.3
Education Level		
No high school	22	20.6
Associates degree	20	18.7
Vocational training program	28	26.2
Bachelors	30	28.0
Graduate degree (Master, Ph.D.)	7	6.5
Employment Status		
Unemployed (looking for a job)	27	25.2
Unemployed (not looking for a job)	12	11.2
Working part-time	27	25.2
Working full-time	28	26.2
Student	4	3.7
Other (self-employed or housewives)	9	8.4
Annual Household Income		
Less than Ksh 10,000	7	6.5
Ksh 10,000-Ksh 29,000	21	19.6
Ksh 30,000-Ksh 49,000	33	30.8
Ksh 50,000 or more	46	43.1
Last Visit to Doctor		
Less than 6 months ago	25	23.3
6 months to 1 year ago	31	29.1
2-4 years ago	19	17.8
Over 5 years ago	22	20.5
Have never visited a doctor	10	9.3
Last Visit to Gynecologist		
Less than 6 months ago	103	93.3
6 months to 1 year ago	2	1.9
2-4 years ago	1	0.9
Have never visited a gynecologist	1	0.9
Type of Insurance		
Private insurance	7	6.5
NHIF	5	4.7
Other government insurance	49	45.7
Employer-sponsored insurance	46	43.1
Mode of payment for Health Insurance		
Employer	22	20.6
Spouse's employer	24	22.4
Parent's employer	4	3.7
I pay for my insurance	6	5.6
Government pays for my insurance	3	2.8
Other	48	44.9
Hospital attended for ANC		
Public Hospital	64	59.8
Private Hospital	43	40.2
Have you ever screened for cervical cancer?		
Yes	30	28.0
No	77	**72.0**

had been screened for cervical cancer had high knowledge scores (72.4%). The table also illustrates

Table 2: The difference in the knowledge of cervical cancer and HPV risk factors in hospitals (N=107)

Type of Hospital	Level of Cervical Cancer Screening Knowledge		
	High N (%)	Medium N (%)	Low N (%)
Public hospital	6 (9.4)	21 (32.8)	37 **(57.8)**
Private hospital	23 **(53.5)**	11 (25.6)	9 (20.9)

perceived benefits, perceived barriers, and self-efficacy) and cervical cancer screening behaviors. Majority of participants (73.5%) who had never screened for CC had medium belief scores about CC screening.

Table 4 illustrates a significant association *(p=.001)* between knowledge of cervical cancer screening and behaviors among participants in a public hospital. Majority of the women (100%) with low CC screening knowledge scores had never been screened for cervical cancer.

Table 3: Association between CCS knowledge and beliefs and CCS behavior (N=107)

	CCS Behavior		n	p
	Yes	No		
CCS Knowledge				
Low	3 (6.52)	43 (**93.48**)	46 (100%)	**0.001**
Medium	6 (18.8)	26 (81.2)	32 (100%)	
High	21 **(72.4)**	8 (27.6)	29 (100%)	
	30 (28.03)	77 (71.96)	107	
CCS Belief				
Low	0 (0)	1 (100)	1 (100%)	**0.066**
Medium	27 (26.5)	75 (**73.5**)	102 (100%)	
High	3 (75)	1 (25)	4 (100%)	
	30 (28.03)	77 (71.96)	107	

* p < .05
n number of respondents
% percentage
Knowledge and belief scores are stratified as high, medium, and low
CCS= Cervical Cancer Screening

The table also illustrates a significant association *(p=.005)* between cervical cancer screening knowledge and cervical cancer screening behaviors among participants at a private hospital. Majority of the women (73.9%) with high CC screening knowledge scores have been screened for CC. Furthermore, women who had never been screened

Table 4: Association between CCS knowledge at a public and private hospital and CCS behavior

	Cervical cancer screening behavior		n	p
	Yes	No		
Public Hospital (N=64)				
CCS Knowledge				
Low	0 (0)	37 (**100**)	37 (100%)	**0.001**
Medium	4 (19.0)	17 (**81**)	21 (100%)	
High	4 (75)	2 (25)	6 (100%)	
	8 (28.03)	56 (71.96)	64	
Private Hospital (N=43)				
CCS Knowledge				
Low	3 (33.33)	6 (66.7)	9 (100%)	**0.005**
Medium	2 (18.1)	9 (**81.9**)	11 (100%)	
High	17 (**73.9**)	6 (26.1)	23 (100%)	
	22 (51.2)	21 (48.8)	43	

* p < .05
  n number of respondents
  % percentage
  p~0.001 – Public Hospital
  p~0.005 – Private Hospital
  CCS= Cervical Cancer Screening

(81.9%) had medium CC knowledge about cervical cancer at a private hospital.

Discussion

The importance of increasing cervical cancer screening among younger women in Kenya cannot be overemphasized. In this study, (72%) of the participants had never been screened for cervical cancer. These results support the findings of a multi-site study conducted in Kenya that found only (25.6%) of participants had undergone a CC screening[30]. Likewise, other findings in multi-health centers within Nairobi, Kenya show that 81% of participants had never been screened for cervical cancer[31]. In Uganda, Ndejjo *et al.*[32] found that only 4.8% of participants had ever been screened for CC[32]. This study also found that low income was negatively associated with CC screening knowledge. These findings are consistent with a study conducted in Ethiopia that reported participants with low income (AOR=0.57,95% CI: (0.3,0.75) had low CC screening knowledge[33]. Further, in South Africa, Ducray *et al.*[34] found that low-income women in inner-city Durban had low

knowledge of <25%[34]. In our sample, older women aged 35-39 years and 40-45 years with higher education and income levels were more likely to have higher knowledge. These findings are similar to a study conducted in resource-limited countries that identified years of schooling, p<0.001, and employment, p<0.01 had a significant impact on increased CC screening knowledge[35].

The research team hypothesized that women with high knowledge and belief scores were more likely to have positive screening behaviors. The results in table 3 illustrate a significant association between knowledge and screening behavior. Most participants (93.48%) who had never screened for cervical cancer had low knowledge scores, whereas (72.4%) of participants who had screened for cervical cancer had high knowledge scores. This lack of knowledge among the unscreened may be the main reason for the low uptake of CC screening, as shown in a previous study conducted in Nairobi, Kenya that found low knowledge and 22% in screening uptake[22]. It was evident in this study that the uptake of CC screening was higher among women receiving prenatal services at a private hospital than among women receiving prenatal services at a public hospital. The low uptake of CC screening at a public hospital may be due to low knowledge and CC screening awareness that may be addressed using lay health workers who can educate and invite women to be screened. This approach has been successful with screening rate improvements of 20% to 25% among Native American and Southeast Asian women[36]. The low level of CC screening knowledge among women receiving prenatal care at a public hospital has also been identified in other public hospitals in Kenya that found 82% of participants had misconceptions about CC and did not know the role of CC screening[37].

Interestingly, the majority of participants (71%) identified HPV as a risk factor for cervical cancer, and (77%) were confident that HPV is sexually transmitted. This may imply that awareness and availability of free HPV vaccine for young girls 10 years and older have been an impactful accomplishment emerging from Kenya's National Cervical Cancer Prevention Program Strategic Plan (NCCPPSP).

One similarity across both hospitals was the lack of association between cervical cancer beliefs

and the uptake of cervical cancer screening. Across all participants in both hospitals, women did not perceive themselves as susceptible to cervical cancer. This belief may have contributed to the low uptake of screening. Our findings are similar to a study conducted in Ethiopia that concluded that CC screening uptake was directly associated with low scores of perceived susceptibility at 95.6% and low scores of cues to action 26.1[38]. Our findings suggest that increasing screening uptake in Kenya, specifically among pregnant women in Nairobi requires public health interventions that focus on changing women's perceptions about the severity of cervical cancer. Cancer risk perception is a precursor of engagement in preventive behaviors as posited by the health belief model[18].

Lessons about perceptions can be learned from an intervention conducted in Lagos, Nigeria, that showed educational campaigns that were culturally sensitive with appropriate language increased knowledge about CC and CC screening[40]. Furthermore, media and community outreach workers have been evidenced to increase CC. screening among Vietnamese American women[41]. Findings also show that more than half of the participants believed that the CC test is painful, which may translate to low uptake. This finding is similar to other studies in Western Kenya and Uganda that identified pain and fear of the exam as barriers to cervical cancer screening[12,42].

Our findings on the association between this barrier and the low uptake of CC screening suggest the need for health communication interventions in Kenya and beyond Eastern Africa, which aim to address misconceptions about screening. Outreach programs that address perceived barriers can increase CC screening uptake, as shown in Uganda[39]. Our research identified knowledge and health beliefs that may help to improve positive screening behaviors among pregnant women in Nairobi, Kenya.

This study, however, was not without limitations. The participants were pregnant women receiving prenatal services at two selected hospitals in Nairobi, Kenya. Therefore, it limits the generalizability of findings to pregnant women receiving prenatal services at other hospitals in Kenya and pregnant women not receiving prenatal services from hospitals. Additionally, this was a cross-sectional study, and beliefs regarding CC and CC screening could change over time. The scales adapted from Champion Health Belief Model have been widely utilized. Though validated in various settings, the translated Swahili version has not been validated. This may impact the interpretation of questions and the results in the Kenyan context.

Conclusion

Cervical cancer remains the leading cause of cancer deaths among younger women in Kenya, yet it is preventable through screening as an early detection strategy. Our findings describe knowledge, beliefs, and behaviors as factors that influence CC screening among pregnant women in Nairobi, Kenya. These findings show that cervical cancer screening behavior is dependent on knowledge. However, overall, health beliefs (perceived susceptibility, perceived severity, perceived benefits, and perceived barriers) are independent of CC screening behaviors. These findings substantiate the need to tailor health behavior change communication to be culturally responsive and aim to address misconceptions about CC screening. Qualitative studies are recommended to explore further *lived experience* barriers to cervical cancer screening among pregnant women in Nairobi, Kenya.

Implications for practice and health policy

This study makes unique contributions to the literature by examining potential variables associated with cervical cancer screening among pregnant women waiting for prenatal care appointments. The prevalence and mortality of cervical cancer in Kenya occur among younger women and patterns among women of reproductive age. Public health researchers, providers, and the Kenyan government must understand the knowledge and beliefs of this special population to successfully address the prevention, early detection, treatment, and care of cervical cancer. Moreover, there is a need to collaborate with traditional healers to design and conduct a similar study among rural pregnant women without access to modern health care and pregnant women who use traditional birth attendants. Researchers should also investigate the role of family members, specifically, spouses and parents in cervical cancer screening education and

participation in CC screening according to the recommended guidelines.

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Ethical approval

Appropriate ethics approval was obtained from Jackson State University protocol # (0063-21).

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