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Cervical Cancer Screening Among College Students in Ghana: Knowledge and Health Beliefs

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Abstract

Background—Cervical cancer is the most incident cancer and the leading cause of cancer mortality in women in Ghana. Currently little is known about Ghanaian women's knowledge and beliefs about cervical cancer screening, yet this information is essential to the success of cervical cancer screening programs. The purpose of this study, therefore, was to describe the knowledge and beliefs of women university college students in Ghana.

Methods—A cross sectional survey among college women in a university in Ghana elicited information about sociodemographics, knowledge and beliefs and acceptability of cervical cancer screening, screening history, and sexual history. Bivariate analyses were conducted to identify factors associated with screening.

Results—140 females were recruited; the age range was 20-35 years. The prior pap screening rate was 12.0%; Women were unaware of local screening initiatives and only 7.9% were aware of the link between HPV and cervical cancer. The most prevalent barriers were lack of awareness that the purpose of pap screening is to diagnose cancer, concerns about what others may think, and lack of information about how to obtain screening services. Although women perceived the benefits of screening, only about half perceived themselves to be at risk. Women received few screening cues. Three barriers were negatively associated with screening in bivariate analyses: lack of belief that cervical screening diagnoses cancer, belief that pap test is painful and belief that the test will take away virginity.

Conclusion—New screening programs in Ghana should address these barriers and increase screening cues to the public.

Keywords

cervical cancer screening; health beliefs; Ghanaian women

Introduction

Cervical cancer is the commonest occurring cancer among women in sub-Saharan Africa, accounting for an estimated 20-25% of all new cancers among women (1-3). The World Health Organization (WHO) estimates the annual age-standardized cervical cancer incidence rate in Ghana as 29.3/100,000, which is four times the US rate, while the mortality rate is 23.8/100,000, or ten times the US rate (4). Some studies have reported that among

gynecological cancers diagnosed at a large hospital in Ghana, cervical cancer accounts for about 60% of cases, while 70% of these cases are diagnosed at an advanced stage (1,2,5,6).

Cervical cancer screening is uncommon in Ghana. The Papanicolaou (Pap) test, which is the most commonly performed test in developed countries, is limited to a few healthcare locations in the country and the absence of a comprehensive national screening program limits the number of women who receive screening (1,2). One survey has reported a two percent prevalence of cervical cancer screening, using the Pap test (5). In order to help low-resource countries like Ghana to improve cervical cancer screening rates, the WHO and other research agencies have evaluated and reported efficacy, effectiveness, specificity and sensitivity results of an alternative model of cervical cancer screening known as visual inspection (7-13).

To perform visual cervical inspection, a trained nurse inserts a speculum into the cervix, applies mild acetic acid solution and examines the cervix with a light source, paying particular attention to the squamo-columnar junction for any signs of raised and thickened white intraepithelial cells (7,12,14,15). The Johns Hopkins Program of International Education in Gynecology and Obstetrics (JHPIEGO) has implemented visual inspection screening pilot programs at two sites in Accra, and the government of Ghana has indicated its intention to adopt this screening model (16).

However, improvement in screening services will not by itself be sufficient to result in increased screening uptake, unless we understand and address the multifaceted health beliefs that are likely to influence women's willingness to schedule and obtain screening (3,17). While a study conducted in 2003 found that education was significantly associated with screening among a large sample of women in Accra, little is known about Ghanaian women's knowledge and beliefs about cervical cancer and screening (5). The purpose of this study is to describe the knowledge and beliefs of cervical cancer and cervical cancer screening among a sample of female students in a university in Accra, Ghana.

Methods

Subjects, Procedures and Measures

We conducted a cross sectional survey among college students aged 18 years and above, attending a large university in the capital city, Accra. A sample of 157 students was selected from an alphabetical list of approximately 1000 dorm residents in Volta Hall. Starting from the first student, every fifth student was selected and contacted for recruitment. Two female graduate students were recruited to deliver the survey instrument to the selected students. Informed consent was obtained from participants at that time. The survey was self administered and anonymous and completed surveys were anonymously returned to a deposit box on campus. The survey was conducted in February and March 2006. Survey procedures were approved by the Committee for the Protection of Human Subjects of the University of Texas Health Science Center in Houston and the Noguchi Memorial Institute for Biomedical Research in Accra.

The Health Belief Model (HBM) was used as the guiding framework for the survey. The model is a theoretical framework that seeks to explain behavioral factors that influence an individual's willingness to engage in health-enhancing behaviors (18,19). It postulates that a person's willingness to engage in a health-seeking behavior is influenced by perceived benefits, perceived barriers, perceived susceptibility, perceived seriousness of the disease and cues from the social environment to take action to enhance one's health. The survey instrument was adapted from a study of cervical cancer knowledge and health beliefs conducted on the Texas–Mexico border (20). Some questions that were specific to a Spanish-speaking population were reworded or removed. The format was changed from interviewer administered to self

administered questionnaire and some items were added to assess knowledge and beliefs about the visual inspection screening model. Women were asked a series of questions regarding knowledge of cervical cancer risk factors (6 items), knowledge of cervical cancer screening (3 items), past pap screening behavior, perceived benefits (3 items) perceived barriers (11 items), perceived susceptibility (3 items), perceived seriousness (2 items), and cues to action (2 items). All response categories on the belief items were 5 point Likert scales, ranging from strongly agree to strongly disagree with an uncertain category. Additional items determined sources of information about cervical cancer and screening, and the acceptability of visual inspection for screening. Demographic characteristics and sexual history were also elicited.

Data Analysis

Univariate descriptive statistics were utilized to describe the sample. Missing responses on the knowledge questions were coded as incorrect. Missing responses on the remainder of the items were excluded from analysis. Health belief model scales were summed and internal consistency reliability was checked on all scales. Since the reliabilities were low, the item responses are reported separately. Bivariate testing was performed with chi square testing or fisher's exact test for small cell sizes to assess the association between previous pap testing and knowledge, beliefs and demographic variables. Data storage and analysis were performed using SPSS versions 11 and 14.

Results

Study group characteristics

A total of 157 female students enrolled at the University of Ghana participated in the study and 140 completed the survey, giving a response rate of 89.2%. Table 1 presents information on demographic and socioeconomic characteristics, and sexual and past screening behavior. The age range of respondents was 20 to 35 years, the majority of respondents were between 21 and 25 years old and very few were 26 or more years old. Half of the students (50.8%) hailed from upper income households where the head of household either earned income from senior management, public service or private business, while about one-fifth had parents or heads of household who engaged in lower income activities such as small business or junior public service or managerial employment. The majority of respondents (78%) reported obtaining medical care for cash at private clinics, a minority (17%) obtained care from employer funded healthcare from the head of household's employment. About one-fifth admitted ever having had sex while the reported prevalence of ever having had a Pap test was 12.0%.

Knowledge of cervical cancer risk factors

Table 2 provides information about the college students' knowledge of risk factors for cervical cancer. The results show low knowledge about recommended screening age and frequency, and very low awareness of the link between HPV and cervical cancer or smoking and cervical cancer. On the other hand, there was better awareness of the link between sexual activity and cervical cancer, including the influence of the number or previous partners, although less was known about the importance of the past sexual experiences of their partner. Very few (less than 1%) had ever heard of or knew about JHPIEGO's alternative cervical cancer screening projects based on visual inspection and mild acetic acid.

Cervical cancer health beliefs

In general respondents seemed to understand that cervical cancer screening had benefits. Over 64 percent believed that the test could find cervical changes before they became cancerous while 78.5% thought those changes could be easily cured. Among the perceived barriers to screening, the most prevalent perceived barrier was that only half of respondents believed that

the purpose of cervical cancer was to diagnose cancer, the second commonest reported barrier (40.6%) was the belief that their partner would not allow them to obtain cervical cancer screening, the following barriers were also important; cost (23.2%), not knowing where to go (24.3%), and belief that everyone would think they were sexually active (24.6%). Encouragingly, few believed that a pap test would be painful (9.4%). While more than 68% perceived that young women were susceptible to cervical cancer, a lower percentage (52.5%) believed that they themselves were at risk for cervical cancer. About three quarters of respondents (73%) believed that cervical cancer was a serious disease that would make a woman's life difficult and about 62% of students also believed that there were effective cures for cervical cancer. In general, a low percentage received screening cues from their social environment by way of knowing peers who had screened or from a healthcare worker recommendation. Six of the fifteen who had received at least one recommendation from a healthcare worker to get cervical screening scheduled and obtained one. The subset reporting having received a health care worker recommendation but that reported not having the test, indicated the following reasons; they could not afford it, they did not know where to get screening, they had no time to schedule and obtain screening and they felt it was embarrassing to expose themselves for screening. About a third reported ever having heard a mass media discussion on cervical cancer while a fifth have at least once listened to a discussion on cervical cancer at a church or other social gathering. About half also stated that they would be willing to obtain the cheaper alternative cervical cancer screening using visual inspection and mild acetic acid, if a doctor recommended it. In exploratory bivariate analysis, the following three perceived barriers were negatively associated with ever screening for cervical cancer: lack of belief that the purpose of screening is to diagnose cancer ($p=.002$), the belief that the Pap test is painful ($p=.001$), and the belief that if a woman is a virgin, Pap test will take away her virginity ($p=.001$).

Discussion

This is one of the first studies describing knowledge and beliefs about cervical cancer and screening among a population of women in Ghana. Overall we found good awareness of the issues related to screening, although there were specific gaps in knowledge about risk factors and screening intervals. For instance, we found that although the relationship between sex and cervical cancer was known, less was known about other risk factors (their partner's prior sexual experiences, smoking, diet, and family history) and very little was known about the link between HPV and cervical cancer. This result is not unexpected, given that literate young women in a college environment might have been exposed to public health education messages on sexually transmitted diseases, especially HIV/AIDS. However, according to the American Cancer Society HPV is the most important risk factor for cervical cancer (21). A notable finding is that only 7.9% of students knew about HPV. This low level of knowledge has implications for future strategies to prevent cervical cancer with the HPV vaccine. Our study findings mirror those of Adanu who also found that Ghanaian health science students, workers, university professors and staff persons in the health professions had adequate knowledge about cervical cancer, compared to those without a medical background. They also observed a good understanding of the role of sex and multiple sexual partners in the etiology (1). However, a cause for concern is that even in these highly educated populations, there is a lack of knowledge about the role of HPV.

Ghana does not have an active national screening program with guidelines that are widely disseminated to the public. It is not surprising that very few students could identify the most commonly recommended screening start age and interval for young adults in other countries or alternative screening recommendations in other African countries (21,22). The Ghana Government official document on reproductive health admits that "although the Pap smear was the encouraged primary prevention strategy for cervical cancer, the cost involved in setting up

a national screening programme based on Pap smear was the one factor that limited the setting up of such a programme” (16). We could conclude from these results that, in general, the absence of an actively promoted national cervical screening program has resulted in a lack of basic knowledge about important risk factors for cervical cancer and a lack of information on screening age and intervals. College students are among the most informed group of women in Ghana. Their lack of knowledge on cervical cancer and the need for periodic screening is indicative of a greater lack of awareness among the larger population of less educated women, as reported in other African populations (17,23).

The Health Belief Model postulates that people will engage in health seeking behavior if they perceive benefits to themselves accruing from that behavior. The fact that students of the University of Ghana perceive that cervical screening is beneficial is encouraging and suggests that a program of public education within the context of a national screening program is likely to result in increased screening uptake and repeat screening among women.

Women are also more likely to engage in health-seeking behavior if they perceive the cost and barriers to such a behavior to be reasonable. This population had good awareness of barriers to screening, furthermore, we found three of these barrier variables to be correlated with screening in this population. The first was the belief that the purpose of a pap smear is to diagnose cancer, this could be potentially easily addressed by the provision of information. However, some of the other important barriers (whether their partner would want them to have a pap, whether a pap would affect their virginity and fear that the public may think that a young woman who goes for cervical screening is having sex) suggest that there are cultural and traditional beliefs about societal roles that are influencing these responses. This finding has implications for public health interventions and suggests that broad based public health initiatives will be needed to overcome these barriers. Other important barriers that were mentioned, such as lack of information about screening sites, are more logistical in nature and are relatively easily addressed with simple information provision. Cost barriers were mentioned by a quarter of respondents and may be resolved when the Ghana government makes cervical screening part of subsidized routine healthcare for women. This population also demonstrated some fatalistic beliefs about cancer (*If I am destined to get cancer, I will get it no matter what*) that have also been reported in elderly minority populations in the US. These may be additional cultural barriers to screening, rooted in faith, that will need to be explored further, and addressed, particularly in older and less educated populations, in whom they may be more prevalent. (24)

The high level of perceived susceptibility to cervical cancer probably had much to do with the word cancer. The students also understood quite well that cervical cancer is a serious disease that is likely to make a patient's life very difficult even though most believed there is a cure for it. The public health implication of this perception of a cure may be the tendency among students to take screening recommendations less seriously. This possibility must be addressed as part of any screening program by emphasizing that curability is related to stage of disease.

In general, women reported very few cues in the media or from primary care physicians and other health care workers about the importance of cervical screening. A higher percentage of students who were prompted by a healthcare worker obtained screening. Even if a national screening program is introduced as part of routine care for women, the absence of appropriate cues from the media, healthcare workers and peers is likely to hamper screening uptake. Media messages, healthcare worker reminder and outreach have been used to raise screening rates in communities in other parts of the world (25). This suggests that primary healthcare workers such as community health nurses should be an important part of any new program aimed at increasing cervical cancer screening rates.

Our population included young college women, and this has implications for the generalizability of the findings to less educated or older women. The cross sectional nature of the survey means causal inferences cannot be made from the results reported. Furthermore, the survey was self administered and is therefore open to the usual reporting biases inherent in such surveys. However, we believe that this was minimized because the survey was anonymous. Strengths of the study include the fact that we were able to access a population that has not been widely studied, and that this is one of the first studies describing knowledge and beliefs about cervical cancer in this population and reveals potential targets for interventions to improve cervical cancer screening rates.

In conclusion, this study showed that a literate population of college women in Ghana lack complete information on cervical cancer and its risk factors. Perceived barriers to screening have the most significant influence on screening behavior and this is in line with the literature in other populations (26). From a public policy point of view, it may be important to further explore the extent to which perceived barriers to screening will affect screening uptake when a national screening program is implemented. In order to influence perceptions, strategies will have to address these barriers by targeting the women themselves, but also society at large and ensure that eligible women receive the right screening cues from both the media and healthcare workers.

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Table 1
Sociodemographic and screening characteristics of respondents

Sociodemographic characteristics	N*	Percent
Age		
18–20	38	27.9
21-25	90	66.2
26-30	6	4.4
31-35	2	1.5
Employment type of head of household		
Upper management/Senior public servant	34	27.0
Business Owner/Import Export Business	30	23.8
Mid management/clerical/junior public servant	29	23.0
Trader/small business owner	24	19.0
Other	9	7.1
Access to medical care		
Private medical practitioner (cash)	105	78.4
Medical insurance benefit at head of household's employment	23	17.2
Free public clinic, polyclinic, health center	0	0
Mostly herbal medicine	2	1.5
Other	4	3.0
Ever had Pap test		
Yes	13	12.0
Ever had sex		
Yes	31	28.4

* Numbers may not sum to 140 because of missing responses. Missing data excluded from analyses.

Table 2
Knowledge of risk factors and cervical cancer screening

Risk Factors	Correct Responses N (%)
Being sexually active (having sex) puts a woman greater risk of cervical cancer	53 (38.4)
Human Papillomavirus infection increases cervical cancer risk	11 (7.9)
What do you think might put a woman at higher risk of cervical cancer?	
Having more than one sex partner	69 (49)
Smoking	4 (1)
A sex partner who has had other partners	18 (12.9)
Family history	16 (11.4)
Screening*	
Only women who have had babies need a Pap test	135 (97.1)
When a woman should have her first cervical screening	19 (16.8)
How often do you think that a woman your age should have cervical screening	10 (8.5)

* Missing data excluded from analysis

Table 3
Percent respondents in agreement or strong agreement with HBM items

HBM Variables	N (%) agreed/strongly agreed
Perceived benefits	
Pap test can find cervical changes before they become cancer	89 (64.1)
If cervical changes are found early they are easily curable	110 (78.5)
It is important for a woman to have a Pap test so she will know if she is healthy	121 (87.6)
Perceived barriers	
Getting cervical test would only make me worry	24 (17.5)
If I am destined to get cancer, I will	19 (13.8)
The purpose of screening is to diagnose if I have cancer or not	68 (50.7)
Screening is not necessary since there is no cure for cancer	6 (4.3)
The pap test is painful	13 (9.4)
It is too expensive to have a pap test	32 (23.2)
It is embarrassing to have a pap test	22 (16.1)
If a woman is a virgin, pap test will take away her virginity	16 (11.5)
I don't know where I could go if I wanted a pap test	33 (24.3)
My partner would not want me to have a pap test	54 (40.6)
If a young woman goes for pap test everyone will think she is having sex	34 (24.6)
Perceived susceptibility	
Cervical cancer only happens to women over 50	3 (2.2)
Young women are at risk for cervical cancer	96 (68.6)
I am at risk for cervical cancer	73 (52.5)
Perceived seriousness	
Having cervical cancer would make a woman's life very difficult	103 (73.6)
There are effective treatments for cervical cancer	87 (62.1)
Cues to screening	N (%) had cues
Most young unmarried women that I know go to have Pap smears done	15 (11.0)
Has any healthcare worker ever told you to get cervical screening?	15 (12.3)

HBM: health belief model; Missing data excluded from analysis