

Gynecology & Reproductive Health

Cervical Cancer: Knowledge, Attitude and Practice of Screening among Women in Bongo District of the Upper East Region of Ghana

Kwarase R^{1*}, Adu-kyere D¹ and Der EM²

¹School of Medicine and Health Sciences, University for Development studies, Tamale, Ghana.

²Department of Pathology, School of Medicine and Health Sciences, University for Development studies, Tamale, Ghana.

***Correspondence:**

Dr. Raphael Kwarase, School of Medicine and Health Sciences, University for Development studies, Tamale, Ghana, Tel: 0209802422.

Received: 18 July 2019; **Accepted:** 10 August 2019

Citation: Kwarase R, Adu-kyere D, Der EM. Cervical Cancer: Knowledge, Attitude and Practice of Screening among Women in Bongo District of the Upper East Region of Ghana. *Gynecol Reprod Health*. 2019; 3(4): 1-7.

ABSTRACT

Background: In Ghana, cervical cancer is the leading cause of gynaecological cancer related deaths. Early and regular screening has resulted in the decline of the disease burden in developed countries. The aim of this study was to assess the knowledge, attitude and practice of cervical cancer screening among women aged 18 years and older in the Bongo district of the Upper East region of Ghana.

Materials and Methods: This was a cross sectional descriptive study among 203 women in the Bongo District. Sampling was done at two stage; random selection for the study and systematic for the Household. Associations between variables were determined Chi-square test.

Results: The mean age of the study population was 26.71 ± 11 . A little above half (54.2%) have never heard of cervical cancer ($P=0.1121$). Knowledge level was poor with a mean score of 11.32 ± 5.6 (Scale 0- 24). Only 5.9% of respondents were screened for the disease ($P<0.0001$). Majority (84.5%) of respondents cited lack of knowledge of screening service as a barrier. However, 85.6% were willing to undergo screening if the service was made available. There was significant association between age ($P=0.027$), level of education ($P<0.001$), knowledge of cervical cancer ($P<0.001$) and have been screened for the disease.

Conclusion: The awareness level and the knowledge score level of the disease were low. A very small percentage had ever been screened for the disease; similarly, a very small percentage knew they were at risk of the disease. However, the majority will like to be screened in the future if the service is made available to them.

Keywords

Cervical cancer screening, Knowledge, attitude and practice, barriers, Bongo District, Upper East Region, Ghana.

Introduction

Cervical cancer is a common cause of cancer related morbidity and mortality among females in less developed countries [1]. In Ghana, cervical cancer is the commonest female genital tract malignancy [2] and a leading cause of cancer related death among Ghanaian women [3,4]. For instance, in the year 2018, it was Globocan estimated that 3,151 new cases of cervical cancer with 2,119 deaths occurred in Ghana [5].

In Sub-Saharan Africa, most women present late with invasive

cervical cancer compared to their counterparts in the developed countries where currently the disease is diagnosed at the preneoplastic stage with good prognosis [2,6,7]. This is so in Sub-Saharan Africa partly due to low level of awareness of the disease among women, and the lack of population base screening centres, even when available, are only located in the big tertiary health facilities beyond the reach of most at risk women[8].

Studies have shown that infection with high risk human papillomavirus (HPV) genotypes (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68, 73, and 83), [9] is an important cause of cervical cancer. The disease usually takes decades to progress from the preneoplastic stage to invasive cancer. Thus prevention of the disease entails identification and treatment of this precancerous

lesions [10,11].

In Ghana, and indeed most Sub-Saharan countries, cervical cancer is the most common gynaecological cancer and a leading cause of cancer related deaths in women [4,12,13]. Studies have also shown that a positive relationship between women levels of education and their screening status [14,15]. Published data from the southern part of Ghana, reported that majority of the women who present with advance stage of the disease [6,7], have either no information on the disease or have not been screened for the disease before [14,21,28]. In an attempt to reduce the high incidence of cervical cancer and the associated mortality in any community, it is imperative to assess the knowledge base of the people and their attitudes towards the disease and its screening. There was a previous study in this respect in the Bolgatanga Municipal assembly, which excluded the Bongo district, which is one of the densely populated districts in the Upper East of Ghana. The aim of the current study was to assess the knowledge, attitude and the practice of cervical cancer screening among women in the Bongo District of the Upper East Region of Ghana and relate the findings to previous study.

Materials and Methods

Study design

A cross-sectional descriptive study was conducted among women aged 18 years and older in the Bongo District of Upper East Region of Ghana.

Study area

The Bongo district was selected for this study because it is one the densely populated within the Upper East Region of Ghana, with majority of the residents being females. These imply a higher number of women are at risk within this relatively small sized district. For instance, the population of the Bongo district rose from 77,885 in 2000 to 84,545 in 2010, representing an increase of 8.6%. In terms of sex distribution, females constitute 52.4 % of the population (44,461) compare 47.6% (40,084) for males. With a growth rate of 8.6%, the District's population is expected to reach 91,723 comprising 48,236 females and 43,487 males, by 2020 [12,16]. Therefore with such an increase in the potential risk, the district therefore needs adequate preventive efforts since screening is not available to women therein.

The Bongo district is divided into six sub-districts namely; Bongo central, Balungu, Beo, Valley Zone, Zorko, and Namoo.

The population of Bongo central stands at 5,169 persons with 2,878 females and 2,291 males. About half (49.6%) of women in Bongo central are less than 19years of age, thus 1,450 females are above 19 years of age in Bongo central.

Health facilities available in the district include a district hospital, five health centers, thirty six functional community based health planning and services zones and fifty nine outreach points, ten feeding centers and one rehabilitation center.

The minimum sample size of respondents required for the study was determined using Yamane's Formula:

$$n = N/1+Ne^2$$

Where n is the corrected sample size, N is the population size, and e is the level of precision. A 95% Confidence level and a 5% (0.05) precision level were used. The total female population of Bongo town is at 2,878.

$$\begin{aligned}n &= 2,878/1+2,878(0.05)^2 \\ &= 2,878/1+2,878(0.0025) \\ &= 351.19\end{aligned}$$

Sample size of 351.2 women was obtained using the formula above. An error margin of 15.0% (52.68) was added to account for missing data and incomplete filled questionnaires, and gives sample size of 404.

Sampling techniques

Study location

Random sampling was used to select Bongo central among the six sub-districts in the Bongo district. This was done by writing the names of each sub-district on pieces of paper and a resident of the district made a selection. Bongo central has 651 houses and each house served as a cluster for the study.

Selection of the households

A coin was tossed and the direction of the head was used to identify a compound for the starting point and every third house was then included in the study.

Data collection tool

A total of 450 questionnaires were administered but only 203 were retrieved.

Study population

Women above 18 years of age and resident in the community at the time of the study were included in the study. However, women who lived less than a year in the area were excluded from the study.

Time of data collection

Data collection was mostly done in the morning between the hours of 6:00 and 10:00AM, in order to meet eligible participants at their homes before they leave for their workplaces.

Data entry and analysis

Data collected from the field was cross checked for errors and inconsistencies and entered into a pre-coded Statistical Package for the Social Sciences (SPSS) software Version 20. Normality (completeness of questionnaires and contents) of the data was checked and found to be correct before descriptive statistics were used to summarize continuous variables such as age, and presented as means, standard deviations.

To assess the knowledge of the respondents on cervical cancer, 24 responses from the questionnaires were analyzed and a correct response was assigned a score of 1. The highest possible score therefore was 24 and 0 being the lowest. A respondent who had no

correct score out of these 24 was considered to have no knowledge. A score less than 12 or 50% was considered as poor knowledge, 13-19 (50-79%) as good knowledge and above 19 (80%) was categorized as excellent knowledge. Furthermore, variables were compared where necessary using the Fisher's exact Test (Graphpad prism vision 5.01), with 95.0% confidence intervals and a statistical significant of <0.05.

Results

A total of 203 respondents were interviewed, with an age range of 18 – 82 years, mean age of 26.71 ± 11.0 years and a modal age group of 20 – 29 years (Figure 1). A high proportion of the respondents had their menarche when they were between 15-17 years, with a mean age of 14.75 ± 1.5 years. Many of respondents were married (61.1%). Majority of the respondents were Christians (85.2%), and about 41.9% of them were self-employed. Approximately 32.0% were senior high school graduates (Table 1).

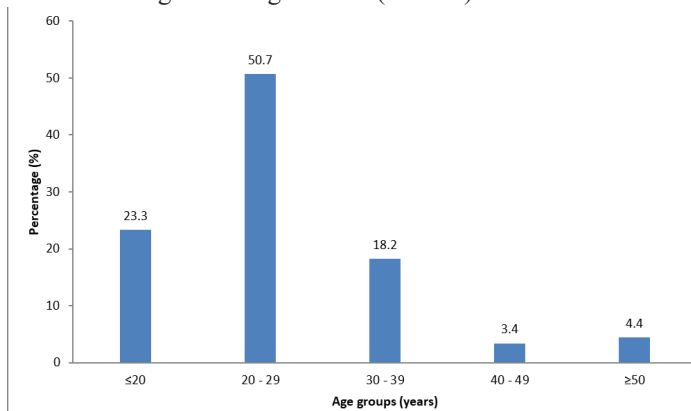


Figure 1: Age distribution of respondents.

Characteristics		Frequencies (n)	Percentage (%)
Marital Status	Married	124	61.1
	Single	73	36.0
	Divorced	1	0.5
	Widow	5	2.5
	Total	203	100
Religion	Christianity	173	85.2
	Muslim	20	9.9
	Traditional	10	4.9
	Total	203	100
Level of Education	No formal education	31	15.3
	Primary	20	9.9
	JHS	39	19.2
	SHS	65	32.0
	Tertiary	48	23.6
	Total	203	100
Employment status	Self-employed	85	41.9
	Government employment	40	19.7
	Unemployed	78	38.4
	Total	203	100

Age of 1st sexual intercourse	<12	13	6.4
	12-17	74	36.5
	18-23	72	35.5
	>24	13	6.4
	Not yet	31	15.3
	Total	203	100
Lifetime number of sexual partners	None	26	12.8
	One	61	30.0
	Two	77	37.9
	Above three	39	19.2
	Total	203	100

Table 1: Demographic characteristics and sexual behaviour of the study population Central.

Majority of the respondents (85.2%) had sexual partners, specifically, 37.9% of them had two sexual partners in their lifetime. Additionally, 36.5% and 35.5% of them had their first sexual intercourse between the age of 12 – 17 years and 18 – 23 years respectively (Table 2).

Sex-related characteristics		Frequencies (n)	Percentage (%)	P-values
Do you have a sexual partner?	Yes	173	85.2	<0.0001
	No	30	14.8	
	Total	203	100	
Have you ever had sexual intercourse?	Yes	173	85.2	<0.0001
	No	30	14.8	
	Total	203	100	
Age of 1st sexual intercourse	<12	13	6.4	
	12-17	74	36.5	
	18-23	72	35.5	
	>24	13	6.4	
	Not yet	31	15.3	
	Total	203	100	

Table 2: The distribution of the sexual behaviour of the study population.

A little over half (54.2%) of respondents never heard of cervical cancer (P=0.1121). A total of 46 (49.4%) had the information from the electronic media followed by 38.7% who heard from healthcare workers (Figure 2).

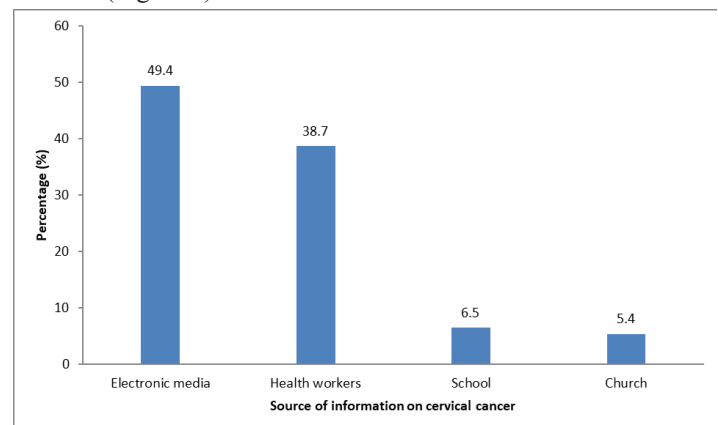


Figure 2: Sources of information of cervical cancer identified by the women in the Bongo district.

The mean score of respondents on the knowledge of the disease was 11.32 ± 5.60 . Whilst, 58.1% had no knowledge of the disease, 2.5% had excellent knowledge of the disease (Table 3). Respondents who had knowledge (poor to Good) of the disease were further asked to indicate some risk factors and clinical features associated with cervical cancer. A little over half (57.6%) identified infection, followed by 16.5% who identified frequent sexual intercourse as a risk factor. Approximately 47.1% of respondents identified vaginal discharge as the commonest symptom of cervical cancer (Table 3).

		Frequency (n)	Percentage (%)
Level of Knowledge (Score)	No knowledge	118	50.1
	Poor knowledge	42	20.7
	Good knowledge	38	18.7
	Excellent knowledge	5	2.5
	Total	203	100
Risk factors of cervical cancer	Genetics	12	14.1
	Infection	49	57.6
	Environment (smoke/ smoking)	6	7.1
	Frequent sex	14	16.5
	Multiple sexual partners	2	2.4
	Unprotected sex	1	1.2
	Poor hygiene	1	1.2
	Total	83	100
Symptoms of cervical cancer Abnormal	Vaginal bleeding	20	23.5
	Inter-menstrual bleeding	13	15.3
	Vaginal itching	10	11.8
	Vaginal discharge	40	47.1
	Total	83	100

Table 3: The level of knowledge, risk factors and symptoms of cervical cancer among women in Bongo.

Level of education of respondents was compared with their knowledge score. Twenty eight (90.3%) of the 31 respondents who had no formal education, had no knowledge of the disease. A total of 28 (58.3%) out of the 48 respondents who had tertiary level of education had good knowledge (Table 4).

	No knowledge	Poor knowledge	Good knowledge	Excellent knowledge	Total	P values
No formal education	28	3	0	0	31	<0.001
Primary	19	1	0	0	20	
JHS	34	3	2	0	39	
SHS	35	18	12	0	65	
Tertiary	2	13	28	5	48	
Total	118	38	42	5	203	

Table 4: The relationship between level of education and knowledge of the disease among the study population.

*Fisher's exact test, with confidence interval of 95%, and statistical significant <0.05.

Many of the respondents (62.6%) had no idea regarding the category of women at risk of the disease. However, 24.1% of respondents agreed they were at risk of developing the disease (Table 5).

		Frequency (n)	Percentage (%)
Cervical cancer affects only women who have given birth	Agree	11	5.4
	Disagree	65	32.0
	No idea	127	62.6
	Total	203	100
Cervical cancer cannot affect young women without children	Agree	11	5.4
	Disagree	65	32.0
	No idea	127	62.6
	Total	203	100
I am at risk of cervical cancer	Agree	49	24.1
	Disagree	15	7.4
	No idea	139	68.5

Table 5: Beliefs and misconceptions of cervical cancer among the study population.

Only 5.9% have ever been screened before. Of this number, the great majority (83.3%) of these women agreed they were at risk of the disease and thus went for the screening services. Furthermore, for those who have ever been screened for the disease, there were significant positive associations between the age, level of education, the knowledge level of the disease and the probability of going for the screening (Table 6).

		Ever been screened		Total	P-values
		Yes	No		
Age	<20	0 (0%)	47 (24.6%)	47 (23.2%)	0.0270
	20-29	3 (25%)	100 (52.4%)	103 (50.7%)	
	30-39	9 (75%)	28 (14.7%)	37 (18.2%)	
	40-49	0 (0%)	7 (3.7%)	7 (3.4%)	
	>50	0 (0)	9 (4.7%)	9 (4.4%)	
	Total	12 (100%)	191 (100%)	203 (100%)	
Education	No formal education	0 (0%)	31 (16.2%)	31 (15%)	<0.0001
	Primary	0 (0%)	20 (10.5%)	20 (9.9%)	
	JHS	0 (0%)	39 (20.4%)	39 (19.2%)	
	SHS	2 (16.7%)	63 (33%)	65 (32%)	
	Tertiary	10 (83.3%)	38 (19.9%)	48 (23.6%)	
	Total	12 (100%)	191 (100%)	203 (100%)	
Knowledge level	No knowledge	0 (0%)	118 (61.8%)	118 (58.1%)	<0.0001
	Poor knowledge	2 (16.7%)	36 (18.7%)	38 (18.7%)	
	Good knowledge	7 (58.3%)	35 (18.3%)	42 (20.7)	

	Excellent knowledge	3 (25%)	2 (1%)	5 (2.5%)	
	Total	12 (100%)	191 (100%)	203 (100%)	
I am at risk of developing the disease	Agree	10 (83.3%)	39 (20.4%)	49 (24.1%)	<0.0001
	Disagree	2 (16.7%)	13 (6.8%)	15 (7.4%)	
	No idea	0 (0%)	139 (72.8%)	139 (68.5%)	
	Total	12 (100%)	191 (100%)	203 (100%)	

Table 6: The associations between ages, level of education, knowledge of the disease and screening status of respondents.

*Fisher's exact test, with confidence interval of 95%, and statistical significant <0.05.

The majority (85.6%) compared to (14.8%) were willing to voluntarily go for the screening if the service is made accessible and affordable to them (P<0.0001).

Discussion

In this current study, respondents were very young with a mean age of 26.71 ± 11 years. This value is closer to the mean age of 33.3 ± 9.2 years reported in Domfeh et al., study among women attending a gynaecological clinic at Korle-Bu teaching hospital (KBTH), Accra [17]. It is however much lower than the 48.1 ± 17.7 reported among women who also live in Accra city [18]. The differences in the age characteristics of the current study and the two previous studies conducted in Accra the capital town of Ghana may be that, the Bongo study was a community based study, and not restricted to any particular age group(s) of women. For instance, report from the 2010 population and Housing Census of the district indicated that within the age group 15 – 64 years, females constitute the majority (23,686 vs 18,763) [16]. This age range is closer to that of the current study (18 – 84), and thus representative of the age structure of the females in the district. However, the others studies were directed at women attending clinics in the gynaecology unit of the KBTH.

Early coitus is a known risk factor of cervical cancer. Some (42.9%) of respondents in the current study had coitus before 17 years of age, which is unacceptably high. This is about seven times higher than the 6.1% reported in a similar study among women of an urban community in Kwara state, North Central Nigeria [19].

More than half of the study population had two or more sexual partners in their life time. Their sexual life style thus placed them at an increased risk; having multiple sexual partners in life has been identified as a major factor in acquiring sexually transmitted infections caused by the high risk human papilloma genotypes and the possibility of preneoplastic lesion and possible invasive cervical cancer. This differs from previous studies in Nigeria by Hyacinth et al., [13] and Durowade et al., [19] that reported rates such as 1.4% and 4.5% respectively. The Bongo central district is in the heart of the district with increased human and commercial activities, improved social amenities and as in many urban centres. It was thus expected the sexual behaviour of the women would be similar to those urban community within the neighbouring country, Nigeria. The difference however observed between the two studies may be attributed to the difference in sociocultural and economic

factors that exist between the two study areas.

Approximately, 54.2% of the participants in the current study have never heard of cervical cancer, signifying low awareness of the disease. This is in contrast to Assoumou et al., study, which reported a very high rate of 91.6% among women in Libreville, Gabon also in West Africa [20]. This may be because Assoumou et al., conducted their study in the capital town of Gabon where most of the elites live. For instance, 63.7% of their study population had tertiary education [20] while in the Bongo (Ghana) study conducted in the district capital only 23.6% of the study population had tertiary level of education. This is not a surprise as study findings are influence by several variables even within the same country or region. For instance, Ziba et al., in their study among women in Bolgatanga Municipality a neighbouring district also in the upper east region of Ghana reported that 70.7% of the respondents have never heard of cervical cancer, [21] a bit higher than the 54.2% in central Bongo.

Electronic media was the source of information on the awareness of cervical cancer for many (49.4%) of the participants in this study. This is similar to findings in Nigeria [13] and Gabon [20].

The mean knowledge level score of respondents regarding cervical cancer in this study was 11.32 ± 5.6 (Normal range: 0 – 24), suggestive of a poor knowledge of the disease among respondents. This is higher than the mean score of 3.25 (SD ± 2.41) reported by Wong et al., in their study conducted among female students in a public university in Malaysia [22]. However, Oche et al found a mean score of 82.2 (SD ± 13.8), which was considered very high and depicted good knowledge of the disease among respondents in that study [23]. Oche et al., study was conducted among female health workers whom by virtue of their work or training would have acquired some good knowledge of the disease.

Significant association was found between respondent's level of education and knowledge of cervical cancer in this study (P<0.001). A study in Kolkata, India among female students in a premier college also found significant association (P=0.013) between level of education and knowledge of cervical cancer [24]. In contrast, Nganwai et al found no association between level of education and knowledge of cervical cancer [25].

Only 24.1% of the women in this study perceived that, they were at risk of developing cervical cancer. This is consistent with Were et al., study at Moi Teaching Hospital, Eldoret Kenya that reported that 23.0% of their study population agreed they were at risk of developing the disease [26], but differs from Sundenga et al., study that found that 65% of respondents perceived, they were at risk of developing the disease [27].

Approximately 5.9% of women in this study have ever been screened for the disease. This is consistent with Ziba et al., study which that reported that 5.3% of respondents were screened [21], but higher than Ebu et al., finding that 0.8% of the women in their study had a form cervical screening [28]. The population screened

in the current study is however; lower than the 11.6% in Adageba et al., study in Kumasi Ghana [29] and the 22.6% by Lyimo et al, in Tanzania [15].

Great majority (84.5%) of respondents, who were not screened, indicated no knowledge of screening and screening centres. This differs from a study which found the major contributory factors to the poor patronage of cervical cancer screening service among women in the Bolgatanga Municipal to be lack of accessibility and the cost involved [21].

There was significant association between age ($P=0.027$), level of education ($P<0.001$) and knowledge of cervical cancer ($P<0.001$) and being screened for cervical cancer respectively in this study respectively. Lyimo et al also found strong relationship between knowledge of cervical cancer and screening ($P<0.001$) and level of education and screening ($P<0.001$) [15]. Similarly, Al Sairifa et al., also found significant relationship between age and taking a Pap smear test ($P=0.022$) as well as the level of education and taking a Pap smear test ($P=0.132$) in their study among Kuwaiti women [14].

Although, only 45.8% of respondents ever heard of the disease, the overwhelming majority (85.6%) were willing to undergo the screening process if it was made accessible and affordable to them in their communities. This is consistent with a study among women at Moi Teaching hospital, in Kenya that found that 65.0% of respondents were willing to be screened for the cervical cancer [26].

Conclusion

Respondents started their sexual activity early in life, most having multiple sexual partners. The awareness and the knowledge score level of the disease among the respondents were low. The great majority were willing to go for the service if made available to them. Public education on cervical cancer should be intensified through the electronic and social media. Basic knowledge of the disease could also be incorporated into the curricula of the Senior High School, in order to increase the knowledge of the risk factor of the disease.

Acknowledgement

We will like to thank all health workers in the Bongo district and also the participants for the time and consent to be part of this study.

Author's contributions

RK, DA and EMD conceptualized the manuscript, collected and analysed data, and wrote the manuscript. RK, DA and EMD cross-checked the data, read through the final manuscript and approved it for publication.

Ethical consideration/informed consent

The University for Development Studies School of Medicine and Health Sciences (UDS-SMHS) gave approval to conduct this research through the Department of community health and family

medicine in partial fulfillment of the requirements to be awarded the MBCHB degree.

The Department of community health and family medicine wrote a letter of introduction which introduced the researchers and sorted approval from the Upper East regional health directorate through the Bongo district health directorate. Approval was given by the Chief and Elders of the Bongo traditional area to conduct my research.

Participants were made to know that, the research is purely for academic purposes and they will be interviewed privately to ensure confidentiality. Participants were told they have the right to answer or ignore sensitive questions. Sensitive questions were however asked in a way that minimized such discomfort as research assistants will be properly trained on that. Questions asked were not harmful but could cause some discomfort. Participants were told they have the right to answer or ignore such sensitive questions.

References

1. Torre AL, Bray F, Siegel LR, et al. Global Cancer Statistics, 2012. *CA CANCER J CLIN.* 2015; 65: 87-108.
2. Der E, Kwame-Aryee R, Tettey Y, et al. Malignant Tumours of the Female Genital Tract: A 10-Year Histopathological Review at the Korle-Bu Teaching Hospital (2002-2011). *J Clin Exp Oncol.* 2015; 4: 4.
3. Murthy PL. Cervical cancer mortality: A preventable tragedy. *Women's global health and human rights (1st edition).* 2010; 267-278.
4. Wiredu EK, Armah HB. Cancer mortality patterns in Ghana: a 10-year review of autopsies and hospital mortality. *BMC Public Health.* 2006; 6: 159.
5. <https://gco.iarc.fr/today/data/factsheets/populations/288-ghana-fact-sheets.pdf>
6. Der E, Adu-Bonsaffoh K, Tettey Y, et al. Clinico-Pathological characteristics of cervical cancer in Ghanaian women. *Journal of Medical and Biomedical sciences.* 2014; 3: 3.
7. Nkyekyer K. Pattern of gynaecological cancers in Ghana. *East African Medical Journal.* 2000; 77: 10.
8. Akujobi CN, Ikechebelu JI, Onunkwo I, et al. Knowledge, Attitude and Practice of Screening for Cervical Cancer female students of a tertiary institution in south eastern Nigeria. *Nigerian Journal of Clinical Practice.* 2008; 11: 216-219.
9. Munos N, Bosch FX, Sanjose Sd, et al. Epidemiologic Classification of Human Papillomavirus Types Associated with Cervical Cancer. *The NEW ENGLAND JOURNAL OF MEDICINE.* 2003; 348: 518-527.
10. Chuschieri KS, Cubie HA, Whitley MW, et al. Persistent high risk HPV infection associated with development of cervical neoplasia in a prospective population study. *Journal of Clinical Pathology.* 2005; 58: 946-950.
11. Sherris J, Herdman C, Elias C. Beyond our Borders; Cervical Cancer in the developing world. *Western Journal of Medicine.* 2001; 175: 231-233.
12. https://www.ghanahealthservice.org/downloads/Ghana_

13. Hyacinth H, Adekeye O, Ibeh J, et al. Cervical cancer and pap smear awareness and utilization of papsmear test among Federal civil servants in North Central Nigerian. *PLOS one*. 2012; 7: e46583.
14. Al Sairafi M, Mohamed AF. Knowledge, Attitudes, and Practice related to cervical cancer screening among Kuwaiti women. *Journal of medical principles and practice*. 2009; 18: 35-42.
15. Lyimo SF, Beran NT. Demographic, knowledge, attitudinal, and accessibility factors associated with uptake of cervical cancer screening among women in a rural district of Tanzania: Three public policy implications. *BMC Public Health*. 2012; 1471-2458.
16. www.statsghana.gov.gh/docfiles/2010_District_Report/Upper%20East/Bongo.pdf
17. Domfeh AB, Wiredu EK, Adjei AA, et al. Cervical human papillomavirus infection in Accra Ghana. *Ghana med j*. 2008; 42: 2.
18. Adanu R, Seffah J D, Duda R, et al. Clinic visits and cervical cancer screening in Accra. *Ghana Med J*. 2010; 44: 2.
19. Durowade K, Osagbemi G, Salaudeen A, et al. Prevalence and risk factors of cervical cancer among women of Kwara State, North Central Nigeria. *Journal of Preventive Medicine Hygiene*. 2012; 53: 213-219.
20. Assoumou SZ, Mabika BM, Mbiguino AN, et al. Awareness and knowledge regarding of cervical cancer, Pap smear screening and human papillomavirus infection in Gabonese women. *BMC Women's Health*. 2015; 15: 37.
21. Ziba F, Baffoe P, Dapare P, et al. Awareness and Knowledge level of cervical cancer among women of reproductive age in Bolgatanga Municipality. *Journal of Medical and Biomedical Sciences*. 2015; 4: 1-6.
22. Wong L, Wong Y, Low W, et al. Knowledge and awareness of cervical cancer and screening among Malaysian women who have never had a Pap smear: a qualitative study. *Singapore Med Journal*. 2009; 50: 49.
23. Oche MO, Kaoje AO, Gana Get al. Cancer of the cervix and cervical screening: current knowledge, attitude and practice of female health workers in Sokoto, Nigeria. *International Journal of Medicine and Medical sciences*. 2013; 184-190.
24. A Saha, Chaudhury AN, Bhowmik P, et al. Awareness of Cervical Cancer Among Female Students of Premier Colleges in Kolkata, India. *Asian Pacific J Cancer Prev*. 2010; 11: 1085-1090.
25. Nganwai P, Truadpon P, Inpa C, et al. Knowledge, Attitudes and Practices vis-à-vis Cervical Cancer Among Registered Nurses at the Faculty of Medicine, Khon Kaen University, Thailand. *Asian Pacific J Cancer Prev*. 2007; 9: 15-18.
26. Were E, Nyaberi Z, Buziba N. perception of risk and barriers to cervical cancer screening at Moi teaching and Referral hospital (MTRH), Eldoret, Kenya. *African health sciences*. 2011; 58-64.
27. Sudenga SL, Rositch AF, Otieno WA, et al. Brief Report: Knowledge, attitudes, practices and perceived risk of cervical cancer among Kenyan women. *Int J Gynecol Cance*. 2013; 23: 895-899.
28. Ebu IN, Mupepi CS, Siakwa PM, et al. Knowledge, practice, and barriers toward cervical cancer screening in Elmina, Southern Ghana. *International Journal of Women's Health*. 2015; 7: 31-39.
29. Adageba KR, Danso AK, Ankobea KF, et al. Knowledge of cervical cancer and patronage of cervical cancer screening services among female health workers in Kumasi, Ghana. *Afr J Haematol Oncol*. 2011; 2: 157-161.