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Knowledge and Perception of Cervical Cancer and Its Prevention among Female Nurses in the Ga South Municipality, Ghana

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Abstract **Background:** Cervical cancer is the second most common cancer worldwide for women after breast cancer. Every year, around 494,000 females develop cervical cancer globally and almost 49.5% (233,000) die from the disease annually with about 80% (376,000) of such deaths occurring in developing countries. Little evidence exists on the extent of cervical cancer awareness among nurses in the Ga South Municipality in the Greater Accra Region of Ghana. This study was conducted with the aim of assessing the knowledge and perception of cervical cancer and its prevention among nurses in selected health facilities within the study area. **Method:** A sample of 200 respondents was selected with a multi-stage sampling technique. Univariate and bivariate analyses were respectively conducted to estimate frequencies and measure the level of associations between selected variables outputs. **Results:** The knowledge of cervical cancer among the nurses was generally high (85.5%). The predominant source of information is from public health workers (30.99%) followed by the School (24.56%). Knowledge about the signs and symptoms of the disease were insufficient as about half of the respondents did not know whether persistent lower back pain, bleeding from the vagina, persistent pelvic pain 68(34%) and unexplained weight loss 25(12%) were signs and symptoms of the disease or not. Also, knowledge about the risk factors was inadequate as some of the respondents were not sure whether smoking any form of cigarettes 56(28%), infection with Chlamydia 46(23%), having a sexual partner who is not circumcised 35(17%), having many children 75(35%) and not going for regular pap smear 55(27%) increased one's risk of developing cervical cancer or not. **Conclusion:** The study revealed inadequate knowledge about cervical cancer among nurses in the Ga South Municipality. Interventions by stakeholders especially the Ga South Municipal Health Directorate should be geared towards addressing the inadequacy of cervical cancer knowledge among its health providers by organizing training programs to address the setback.

Keywords: *cervical cancer, nurses, Ga South Municipality, Ghana*

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1. Introduction

Cancer is a disease in which cells in the body grow out of control. There are five main types of cancer that affect women's reproductive system namely cancer of the cervix, ovary, uterus, vagina, and vulva. Of these, the most common ones are cervical and breast cancer. About 99.7% of cervical cancer is caused by persistent infection with a high risk of Human Papilloma Virus (HPV) [1]. There are many types of HPV, but 16 and 18 (oncogenic types) are the ones responsible for cervical cancer [2].

Cervical cancer is the second most common malignant neoplasm affecting women worldwide with about 86% in developing countries. Less than 50% of women affected by cervical cancer in developing countries survive longer than 5 years. In 2008, an estimated 529,409 new cases and 274,883 deaths from cervical cancer occurred globally [3]. Cervical cancers account for 15% of female cancers in developing countries and about 3.6% in developed countries. Globally, the ratio of mortality to incidence is 55% with a poor survival rate in developing countries and a good survival rate in developed countries (WHO, 2010). Cervical cancer is seen as an important cause of lost years because it affects young women. It is responsible for 2.7 million years of lost life worldwide [4].

In Ghana, cervical cancer constitutes about 57.8% of all gynaecological cancers. It is the second most common cancer in women aged 15 to 44 years with an estimated incidence of 26.4 per 100,000. Every year, 3,038 new cases are recorded and out of this, over 2000 women die from the disease [5].

Cervical cancer is curable if detected and treated at an early stage. About 80% of those detected at the early stage are cured with suitable treatments [6]. In developing

countries, cervical cancers are often diagnosed at very late stages due to poor or lack of good screening and treatment methods as opposed to the developed countries that have continuously been able to detect and treat early stages of cervical cancer mostly in the precancerous stages [7].

Prevention of the disease involves identifying and treating women with HPV induced pre-cancerous lesions of the cervix [8]. In the developed countries, where effective screening, treatment and follow up programs for these pre-cancerous lesions exist, the mortality from cervical cancer has reduced by 70% [9]. Sherris (2005), adds that in developing countries including Ghana, cervical screening programs have not been so successful. Some of the reasons given for this are lack of awareness among women about the disease itself, limited screening programs, lack of resources and ineffective use of available resources [8].

Education and knowledge on both breast cancer and cervical cancer continue to decrease as the cancer fatalism increases not because there is no available information but because the women have been ignorant to enlighten themselves. There is the belief that women diagnosed with cancer are directly sentenced to inevitable death. Therefore, they find it better to avoid going for screening and are with no knowledge whatsoever on their health status [10].

Healthcare professionals are the key persons to provide knowledge towards the goal of cervical cancer prevention. Even though some of them including laboratory workers or ancillary staff are not directly involved in clinical care and health education, they still need accurate knowledge about cervical cancer, HPV and the vaccine for preventing themselves from cervical cancer. Therefore, female healthcare professionals, especially nurses and physicians must be skilled and have an important task to give women advice and education about cervical cancer-preventive behaviors and encourage them.

The knowledge of healthcare providers does not mean their active involvement. The course of treatment for cervical cancer at any age is based on the extent of the disease as well as the woman's general health and personal circumstances. Treatment options include surgery (Radical trachelectomy), chemotherapy and radiotherapy. Despite suspecting that symptoms could be cancer, some women delay in seeing a doctor because they fear the consequences of medical intervention. The side effects of chemotherapy such as hair loss, nausea, and vomiting have also contributed to the delay in reporting symptoms of cervical cancer to the hospital. However, in the last 40 years, new drugs have become available which can almost completely control nausea and very few people have persistent nausea and vomiting from chemotherapy [11]. Current radiation techniques are now safe and effective for treating cervical cancer, with few complications. This usually clears up after the treatment [12].

Despite numerous cervical cancer awareness campaigns dedicated to education, outreach and advocacy and the growing body of scientific information available to both the public and the medical community regarding cervical cancer detection and control, many myths, misconception, and misinformation about cervical cancer continue to exist within many communities. These myths, misconceptions, and misinformation have been noted to a large extent to be partly responsible for the delay in seeking medical care after most women have discovered symptoms suggestive of breast cancer [11]. A very common one is that cervical cancer always presents as unusual blood flow and always painless. In a quantitative survey among 158 college students in the United States of America in 2005, only 21% believed that profuse vaginal bleeding that is cancerous could be painful and 15% believed that trauma to the lower abdomen could cause cancer [10]. In this same study, the majority (97%) also identified doctors and nurses as the only ones who could find the unusual profuse bleeding as cancerous and only 41% associated high fat and low vegetable diet with increased cervical cancer risk.

Lack of knowledge about cervical cancer and associated risk factors may lead to inaccurate perceptions of the disease and a lack of utilization of early detection techniques. Low level of knowledge and the lack of perceived risk coupled with the inundation of cervical cancer information that focuses on older women reinforces the belief that young women are not at risk and do not need to be aware of cervical cancer. Cervical cancer can strike at any age and the disease is curable if detected early.

This study therefore aimed at assessing the level of awareness and prevention of cervical cancer among female nurses within the Ga South Municipality, in the Greater Accra Region of Ghana.

2. Methods

2.1. Profile of Study Area

The Ga South Municipal lies at the South Western part of Accra with Weija being the Municipal capital. It shares boundaries with the Accra Metropolitan Area to the South-East, Ga Central to South-East, Akwapim South to the North-East, Ga West to the East, West Akim to the North, Awutu-Senya to the West, Awutu-Senya East to the South-East, Gomoa to the South-West and the Gulf of Guinea to the South. It occupies a total land area of about 341.838 square kilometers with about 95 settlements [13]. The study was conducted at the Ga South Municipal Hospital and three other health centers (Amanfrom Health Center, Kokrobite Health Center, and Bortianor Health Center) all located within the municipality. The target population for the study included all professionally trained female nurses working in any of the selected health facilities within the catmint area. Any female nurse not willing to consent to participation or psychologically unstable at the time of the study was excluded from participating in the study.

2.2. Study Design and Sample Size

A cross-sectional descriptive quantitative design was adopted to assess the knowledge and perception of nurses on cervical cancer using a structured questionnaire consisting of both open and closed-ended questions. A multistage sampling technique was used to select a sample of 200 female nurses. Four participatory facilities were

randomly selected out of the seven existing facilities in the Municipality using a Simple Random sampling technique. These four health facilities have an estimated female-nurse population of about 600. With a 6% margin of error, the sample size was derived using the Yamane's formula [14]:

$$n = \frac{N}{1+N(e)^2} = \frac{600}{1+(600)(0.06)^2} = 189.87$$

Where,
n = sample size
N = total population
e = Margin of error set at 6%.

Adjusting the estimated figure with a 10% non-response rate brought the preferred total sample size to about 200. Proportional allocation technique was then used to determine the needed stratum size for each of the four (4) facilities using the formula;

$$n_h = \left(\frac{N_h}{N}\right) \times n$$

Where
n_h = sample size of a particular stratum
N_h = Population size of a particular stratum
N = total size of the population
n = total sample size.

Hence, the number of nurses selected from the Municipal Hospital, Amanfrom Health Center, Kokrobite Health Center, and Bortianor Health Center were 73, 50, 40 and 37 respectively. Participants in each facility were chosen randomly using the facility's duty roaster as the sampling frame.

2.3. Data Collection and Management

A quantitative data collection technique was employed using a structured questionnaire with both closed and open-ended questions that were administered to participants. The study was pretested using a sample size of 30 female health professionals at the Kasoa Polyclinic; a population with similarities characteristics as the selected study population.

The data extracted from the administered questionnaire were cleaned, coded and entered into STATA Statistical Software package (*StataCorp.2007. Stata Statistical Software. Release 14. StataCorp LP, College Station, TX, USA*) for analysis. Descriptive analysis was employed to show the level of knowledge about cervical cancer among the respondents, chi-square test to evaluate the level of associations between the outcome variable and selected indicators. Both numeric and graphical presentations were used to project the key findings.

2.4. Ethical Considerations

Ethical approval for the study was obtained from the Ethical Review Committee of Ensign College of Public Health and administrative permission was sought from the Municipal Health Directorate of Ghana Health Service (GHS). Respondents were duly informed about the purpose of the study. The right to privacy and confidentiality were maintained throughout the period of interaction with the respondents. Anonymity was ensured by labeling the questionnaires with numbers instead of the names of respondents. Written consent was also sought from respondents, and they were adequately informed that participation in this study is voluntary and that they could opt-out of the process any time they so wished.

3. Results

3.1. Study Population Characteristics

The average age of respondents was 2.97±1.73years. Other demographic variables were also studied. A detailed presentation on the demographic profile can be found in Table 1. Most of the respondents were between the age of 26 and 35 years (57%) which constituted more than half of the total respondents with the least age group 20-25 years (11.50%). Almost all of the respondents were Christians (77.50%) and 22.50% of the respondents being Islamic. In terms of education, it was found that the majority of the participants 84(42.00%) had Certificate, followed by Diploma 62 (31.00%). The rest reported making it to a 1st Degree 54 (27.00%) and above at the time of the study. Looking at the occupation of the respondents all of them were Nurses (100%). The marital status of respondents showed that the majority were married (36.50%) whilst close to a third of the respondents reported being single (30.00%).

Table 1. Demographic Characteristics of Respondents

Characteristics (N=200)	Categories	n (%)
Age –group (years)	20-25	23(11.50)
	26-30	47(23.50)
	31-35	67(33.50)
	36-40	39(19.50)
	41+	24(12.00)
Religion	Christian	155(77.50)
	Islam	45(22.50)
Educational Level	Certificate	84(42.00)
	Diploma	62(32.00)
	Degree	54(27.00)
Occupation	Nurse	200(100.00)
Marital Status	Cohabiting	73(36.50)
	Married	67(33.50)
	Single	60(30.00)
	Mean Age = 2.97	**SD= 1.173**

3.2. Awareness of Signs of Cervical Cancer

Of the total respondents, 171 representing 85.50% reported that none of their friends or family members have been diagnosed with cervical cancer, whilst 14.57% indicated not knowing if any of their relatives have been diagnosed with the disease. Almost all the respondents 181 (90.50%) admitted that vaginal bleeding was a sign of cervical cancer while the remaining 19 reported they don't know if vaginal bleeding was a sign of cervical as at the time the study. More than half of the participants 159(79.50%) said persistent lower back pain could be a sign of cervical cancer. About the persistent vaginal discharge that smells unpleasant being a sign of cervical

cancer 178(89.00%) of them indicated yes while 4(2.00%) reported they don't know. When the participants were asked if discomfort or pain during sex could be a sign of cervical cancer 183(91.50%) and 7(3.50%) confirmed yes and don't know respectively. A higher proportion of respondents 160 (80%) indicated that they think menstrual periods that are heavier or longer than usual could be a sign of cervical cancer while the rest 29(14.50%) said no. The majority of the participants, 166(83.00%) reported persistent diarrhea could not be a sign of cervical cancer while 11(5.50%) said they don't know.

When probed if they think vaginal bleeding after the menopause could be a sign of cervical cancer, 107(53.50%) of them indicated "no", whilst the rest responded in the affirmative. 132(66.00%) of the participants think persistent pelvic pain could be a sign of cervical cancer but 3(1.50%) said they don't know. More than half of the participants 142(71.00%) reported they think vaginal bleeding during or after sex could be a sign of cervical cancer and 12(6.00%) indicated they don't know (Table 2).

Table 2. Awareness of signs of cervical cancer

Signs (N=200)	Categories	n (%)
Vaginal Bleeding	Yes	181(90.50)
	Don't Know	19(9.50)
Persistent lower back pain	Yes	159(79.50)
	No	18(9.00)
	Don't Know	23(11.50)
Persistent vaginal discharge that smells unpleasant	Yes	178(89.00)
	No	18(9.00)
	Don't Know	4(2.00)
Discomfort or pain during sex	Yes	183(91.50)
	No	10(5.00)
	Don't Know	7(3.50)
Menstrual periods that are heavier or longer	Yes	160(80.00)
	No	29(14.50)
	Don't Know	11(5.50)
Persistent diarrhea	Yes	34(17.00)
	No	166(83.00)
Vaginal bleeding after the menopause	Yes	79(39.50)
	No	107(53.50)
	Don't Know	14(7.00)
Persistent pelvic pain	Yes	132(66.00)
	No	65(32.50)
	Don't Know	3(1.50)
Vaginal bleeding during or after sex	Yes	142(71.00)
	No	46(23.00)
	Don't Know	12(6.00)
Blood in the stool or urine	Yes	136(68.00)
	No	64(32.00)
Unexplained weight loss	Yes	175(87.50)
	No	25(12.50)

Almost all the respondents 169 (84.50%) admitted that virus is the causative organism for cervical cancer while 31(15.50%) indicated bacteria as the causative organism. When further asked if the participants are aware that HPV is the cause of cervical cancer, 160 (80.00%) of them indicated answered in the affirmative. Evaluating the professional confidence levels of the participants to notice a cervical cancer patient, revealed that more than half (59%) had an appreciable level of confidence to identify a cervical cancer patient, whilst the rest admitted having no confidence.

On the question of whether they will seek healthcare if they notice any of the perceived signs of cervical cancer, the majority representing 36.50% indicated they will do so within a month, 33.50% mentioned doing so within few months and 14% within a week.

3.3. Awareness of Woman's Chance of Developing Cervical Cancer

The results from the study showed more than half of the respondents 116 (58.00%) agreed with the fact that infection with HPV and smoking any form of cigarettes increase a woman's chance of developing cervical cancer. Concerning the weak immune system as a result of HIV/AIDS, immunosuppressant drugs or having a transplant, 135(67.50%) of female nurses agreed to it while 16(8.00%) were not sure. On the question regarding long term use of the contraceptive pill increasing woman's chance of developing cervical cancer 168(84.00%) of the participants agreed, 21(10.50%) disagreed and 11(5.50%) were not sure.

Table 3. Awareness of a woman's chance of developing cervical cancer

Factors (N=200)	Categories	n (%)
Infection with HPV	Agree	116(58.00)
	Disagree	46(23.00)
	Not sure	38(19.00)
Smoking any form of cigarettes	Agree	116(58.00)
	Disagree	56(28.00)
	Not sure	28(14.00)
Having a weakened immune system	Agree	135(67.50)
	Disagree	49(24.50)
	Not sure	16(8.00)
Long term use of the contraceptive pill.	Agree	168(84.00)
	Disagree	21(10.50)
	Not sure	11(5.50)
Infection with Chlamydia	Agree	169(84.50)
	Disagree	25(12.50)
	Not sure	6(3.00)
Having a sexual partner who is not circumcised.	Agree	153(76.50)
	Disagree	35(17.50)
	Not sure	12(6.00)
Starting sexual intercourse at a tender age	Agree	136(68.00)
	Disagree	55(27.50)
	Not sure	9(4.50)
Having many sexual partners.	Agree	127(63.50)
	Disagree	56(28.00)
	Not sure	17(8.50)
Having many children.	Agree	104(52.00)
	Disagree	75(37.50)
	Not sure	21(10.50)
Having a sexual partner with many previous partners	Agree	88(44.00)
	Disagree	89(44.50)
	Not sure	23(11.50)
Not going for regular smear (Pap)	Agree	128(64.00)
	Disagree	55(27.50)
	Not sure	17(8.50)

Majority of the study participants 169(84.50%) identified infection with Chlamydia (a sexually

transmitted infection) can increase a woman's chance of developing cervical cancer. More than half 153(76.50%) of them at the time of study agreed that having a sexual partner who is not circumcised will increase a woman's chance of developing cervical cancer, while 35(17.50%) thought otherwise. When the respondents were asked if both starting sexual intercourse at a tender age and having many sexual partners can increase a woman's chance of developing cervical cancer, 136(68.00%) and 127(63.50) responded agree respectively. In the same question, 9(4.50%) and 17(8.50%) were not sure respectively. 104(52.00%) of the female nurses agreed that women having many children can increase her chance of developing cervical cancer while 75(37.50%) disagreed and 21(10.50%) were not sure (Table 3).

3.4. Female Nurses' Perception of Cervical Cancer

Except for 12 (6%) of the nurses, almost all admitted they have not attended any form of a seminar on screening and treatment of cervical cancer. However, a higher proportion (85.50%) indicated that they have ever heard about cervical cancer. The source of information on cervical cancer among the nurses who mentioned they have ever heard of cervical cancer indicates a substantial number heard about the disease via Mass media 59(34.50%) and from other health workers 58(33.92%). The majority 65(38.01%), also acknowledged seeking care at the Ridge Hospital in Accra when they notice any health problem concerning cervical cancer.

Regarding respondent's perceptions of health facilities' effort in creating awareness, the majority 103(60.23%), answered in the negative. When the members in this sub-group were further asked what they think could be done to address the challenge, almost all of them 102(99.03%) indicated health education, whilst 1(0.97%) said Pap smear must be done at all levels (Table 4).

Table 4. Female nurses' perception on cervical cancer

Factors (N=200)	Categories	n (%)
Attending a seminar on screening and treatment of cervical cancer	Yes	12(6.00)
	No	188(94.00)
Have you ever heard about cervical cancer?	Yes	171(85.50)
	No	29(14.50)
Among those who heard of cervical cancer (n= 171)		
Source of information on cervical cancer	Church	15(8.77)
	Mass media	59(34.50)
	Health worker	58(33.92)
	School	39(22.81)
The facility to visit with any health problem concerning cervical cancer	Ga South	51(29.82)
	KBTH	53(30.99)
	Ridge Hospital	65(38.01)
	WGMH	2(1.17)
Do health institutions do well in cervical cancer awareness creation	Yes	68(39.77)
	No	103(60.23)
Among those who said "No" (n= 103)		
What should be done to create awareness of the disease?	Health Education	102(99.03)
	Pap smear must be done at all levels	1(0.97)

3.5. Participants' Attitude towards Cervical Cancer

Majority 197(98.50%) were aware of Pap smear. However, when asked if they have been screened for cervical cancer before, 87 of them representing 43.50% indicated they have not. Within the sub-group screened, 54(47.79%) of them indicated that their last screening was between 1-3 years while 13(11.50%) of them had theirs less than a year ago. Looking at the availability of cervical cancer services at health institutions in Ghana, more than half of the female nurses 136(68.00%) indicated "no". On the question, "*What is the cause of non-availability of these services?*" it was interesting to note that 85(62.50%) of them attributed it to "lack of trained personnel", 48(35.29%), "service very expensive", and "lack of education" 3(2.21%) (Table 5).

Table 5. Female nurses' attitude towards cervical cancer

Factors (N=200)	Categories	n (%)
Are you aware of Pap smear?	Yes	197(98.50)
	No	3(1.50)
Have you ever been screened for cervical cancer?	Yes	113(56.50)
	No	87(43.50)
For those who said "Yes" (n= 113)		
When was the last time?	< 1yrs	13(11.50)
	1-3 yrs	54(47.79)
	4-5 yrs	46(40.71)
Are health institutions in Ghana have available cervical cancer services?	Yes	64(32.00)
	No	136(68.00)
Among those who said "No" (n= 136)		
What is the cause of the non - availability of these services?	Expensive	48(35.29)
	Lack of Education	3(2.21)
	Lack of trained personnel	85(62.50)

3.6. Prevention of Cervical Cancer

More than half of the nurses 111(55.50%) were aware of the cervical cancer screening program in the Municipality. Among this subgroup, 68 representing 61.26% stated a woman's age for first screening for the disease in Ghana is between 10-17years of age. A check on whether their respective health institutions offer vaccination to protect women against cervical cancer, 150 (75%) of the nurses responded positively. 118 out of the 150 respondents, further indicated that the minimum age their respective facilities offer such vaccination to their female clients is 9 years. A probe on the respondents' opinion on the level of acceptance of cervical cancer vaccination among women in Ghana revealed 51% of them hold such a view. In ascribing reasons for the level of popularity perceived, 35.71% of them stated the inexpensive nature of the vaccine, 32.65% mentioned proximity to screening centers, and 31.63% hinted more awareness is being created. Out of the sub-group who said the vaccine is not gaining popularity, 54.90% of them stated high cost of the vaccine as the reason, 27.45% indicated lack of screening centers and 17.65% indicated lack of awareness creation.

3.7. Bivariate Analysis of Selected Demographic Factors and Awareness of CC

The output from the bivariate analysis as shown in Table 6 below, clearly indicated only one significant statistical association between the response variable (awareness of cervical cancer) and health facility ($p<0.0001$). From the same output, it was however noted the lack of significant association between four (4) other variables and the respondents' awareness at the time of the study. These included the Age-group ($p = 0.181$), religion ($p = 0.508$), educational level ($p = 0.064$) and marital status ($p = 0.217$).

Table 6. Bivariate analysis of selected demographic factors on awareness of cervical cancer

Variables	Awareness of cervical cancer (%)		Chi-square
	Yes (171)	**No** (29)	**P- value**
Age Group			
20-25 yrs.	18(10.53)	5(17.24)	
26-30 yrs.	36(21.05)	11(37.93)	0.181
31-35 yrs.	59(34.50)	8(27.59)	
36-40 yrs.	36(21.05)	3(10.34)	
41+	22(12.87)	2(6.900	
Religion			
Christian	132(77.19)	23(79.31)	0.508
Muslim	39(22.81)	6(20.69)	
Educational Level			
Certificate	70(40.94)	14(48.28)	0.064
Diploma	58(33.92)	4(13.79)	
Degree	43(25.15)	11(37.93)	
Marital Status			
Cohabiting	61(35.88)	11(37.93)	0.217
Married	61(35.88)	6(20.69)	
Single	48(28.24)	12(41.38)	
Health Facility			
Amanfrom	51(29.82)	0(0.00)	<0.001*
Bortianor	29(16.96)	7(24.14)	
Ga South	73(42.69)	0(0.00)	
Kokrobite	18(10.53)	22(75.86)	

Note: * indicates the measured association is statistically significant at $\alpha < 0.05$.

3.8. Bivariate Analysis of Perceptions on Chances of Developing Cervical Cancer and Awareness of Cervical Cancer

There were significant statistical associations between the response variable (awareness of cervical cancer) and some selected held perceptions. Smoking any form of cigarettes ($p < 0.001$), having a weakened immune system ($p < 0.001$), having many sexual partners ($p = 0.003$) and having many children ($p = 0.001$) showed significant associations to the level of awareness. However, long term use of the contraceptive pill ($p = 0.051$), and not going for a regular pap smear ($p = 0.091$) did not reveal any significant statistical association.

Table 7. Bivariate analysis of perceptions to chances of developing cervical cancer on awareness of CC

Variables	Awareness of CC (%)		Chi-square
	Yes (171)	**No** (29)	**P- value**
Smoking any form of cigarettes			
Agree	108(63.16)	8(27.59)	<0.001*
Disagree	45(26.32)	11(37.93)	
Not sure	18(10.53)	10(34.48)	
Having a weakened immune system			
Agree	123(71.93)	12(41.38)	<0.001*
Disagree	32(18.71)	17(58.62)	
Not sure	16(9.36)	0(0.00)	
Long term use of the contraceptive pill			
Agree	142(83.04)	26(89.66)	0.051
Disagree	21(12.28)	0(0.00)	
Not sure	8(4.68)	3(10.34)	
Having many sexual partners.			
Agree	113(66.86)	12(41.38)	0.003*
Disagree	46(27.22)	10(34.48)	
Not sure	10(5.92)	7(24.14)	
Having many children.			
Agree	80(46.78)	24(82.76)	0.001*
Disagree	71(41.52)	4(13.79)	
Not sure	20(11.70)	1(3.45)	
Not going for regular smear (Pap)			
Agree	105(61.40)	23(79.34)	0.094
Disagree	49(28.65)	6(20.69)	
Not sure	17(9.94)	0(0.00)	

Note: * indicates the measured association is statistically significant at $\alpha < 0.05$.

4. Discussion

It is well documented that cervical cancer is the leading cause of death from gynecological cancers in Ghana [15], yet knowledge about its etiology among the general population and health care providers is limited. Empirical studies have therefore continuously proven that women with knowledge on cervical cancer respond positively to the great need for screening which to a greater extent help in the early treatment of the disease should it occur [16].

A study by Anorlu *et al.*, (2008), on knowledge and awareness of cervical cancer in other developing countries have reported low awareness of the disease [17]. However, in this study, the level of awareness was found to be 85.5% among the respondents. This is not surprising given the fact that the study population was health professionals, who were nurses. The main source of cervical cancer information as reported by the respondents was mainly from Public Health Worker. This was in line with a study conducted by Manortey *et al.*, (2018) which was of the view that other sources of information identified in cervical cancer-related studies are information from health professionals, the internet, Radio/TV and through friends and relatives [18].

Most studies on knowledge about cervical cancer, HPV infection and its prevention in the general population have shown inadequate information among the study participants [16,19,20]. Considering these findings, it can be expected that the knowledge about this disease in the general population of the Ga South Municipality will even be less compared with the nurses. Almost all the respondents admitted that a virus is a causative organism for cervical cancer, whilst about a third indicated bacteria as the causative organism.

Risk factors for cervical cancer include early onset of sexual activity, multiple sexual partners, infection with HPV, poor hygiene, family history of the disease, smoking, high parity, low socioeconomic status, old age, and prolonged use of oral contraceptives [21,22,23]. In this study, knowledge about the risk factors of cervical cancer was assessed using the psychometric response scale which measures the degree of agreement with a set of statements. The result showed varying responses about the risk factors with nearly three-quarters strongly agreeing that HPV is the causative organism of the disease. This is consistent with the study Anoud *et al.*, (2013) conducted in Kuwait among primary health care physicians where the knowledge of HPV being the causative agent of cervical cancer was found to be sufficient among the respondents [24]. However, the results differ from other studies done where the knowledge about the causative agent was found to be insufficient in the community as well as among health professionals [18,20,25].

On the other hand, the majority of the respondents also agreed that weakened immune system, long term use of contraceptive pills, starting sexual intercourse at an early age, having many sexual partners and having a sexual partner with many previous partners were among the risk factors associated with cervical cancer. Surprisingly, a significant proportion of the respondents did not know that smoking any form of cigarette, infection with Chlamydia, having a sexual partner who is not circumcised, having many children and not going for regular Pap smear were risk factors of cervical cancer. This is in line with a study conducted by Saha *et al., (*2010) in India, to find out the awareness level and knowledge about awareness of cervical cancer among female students of Premier Colleges in Kolkata, the study showed that knowledge of the risk factors was found to be low among the students [26]. It is, therefore, imperative to improve the knowledge level through education in order to improve the quality of cervical cancer services provided by the nurses in the Municipality.

As part of assessing the knowledge and awareness among the female health professionals, a series of questions pertaining to signs and symptoms were asked. In line with the study conducted by Shapley *et al.*, (2006), in this study majority 181 (over 90%) of the respondents were able to identify vaginal bleeding between periods, persistent vaginal discharge with unpleasant smell 178 (89%), discomfort or pain during sex 183(91.5%), vaginal bleeding after menopause 79 (39.5) and vaginal bleeding during/after sex 142(71%) as possible warning signs and symptoms of cervical cancer [27]. However, only about 52 (30%) did not know whether persistent lower back pain, persistent pelvic pain 68(34%) and unexplained weight loss 25 (12%) were signs and symptoms of the disease, a situation which is perturbing taking into account the fact that the health professionals who provide the service do not have sufficient knowledge about the signs and symptoms of the disease.

It was further revealed that besides the given health facility where the respondents officially work as nurses, all other indicators such as their professed religious faith, their ages, reported level of attained education and marital status at the time of the study have no significant association with the knowledge of this dreadful disease. A clear indication of the need to intensify the sensitization effort among the nurses given the fact that they first need to be well informed on the potential risk factors so they can educate susceptible female clients to their facilities.

Attitude and perception of cervical cancer could affect one's behavior in seeking treatment. Hence, a positive attitude and perceptions are expected to influence the individuals' behavior in seeking early treatment when they observe signs and symptoms related to cervical cancer. The study revealed a positive attitude towards seeking cervical cancer treatment. The majority (36.5%) of the respondents reported that they would seek medical assistance within a month after seeing a symptom which they thought might be a sign of cervical cancer. Nearly half (49%) of the respondents perceived cervical cancer to be most likely to develop among women aged 10 to 19 years. The above study, are in line with a study conducted in Germany where, though HPV infection occurs in women of all age groups, the highest rates of infection are known to be prevalent in young women aged 20 to 24 years old [28].

Empirical studies, including the ones conducted in China, show that early screening can efficiently reduce cervical cancer mortality [23,29]. The results of previous studies also indicate that the lack of knowledge about cervical cancer among Ghanaian may be a barrier to cervical cancer screening [30]. However, in this study about two-thirds of the respondents had ever screened for cervical cancer though nearly ninety percent reported non-availability of cervical cancer services in health institutions in Ghana. The majority further suggested that non-availability might be due to inadequate drug/personnel/facility. This is indicative of the non-existence of dedicated cervical cancer services in most health facilities in the Municipality, a reflection of the current situation existing in most health facilities in other parts of the country.

Unlike most other cancers, cervical cancer is readily preventable when effective programs are implemented to detect and treat its precursor lesions [8]. Hence, the prevention of HPV infections is very essential in the prevention of cervical cancer. The advent of the HPV vaccine has been a major breakthrough. However, in this study, more than half of the respondents reported the non-availability of vaccination programs and its existence in health facilities in the Ga South Municipality. The absence of this essential service will have a direct implication on the quality of life of the vulnerable female population in this geographical area.

5. Conclusions

Cervical cancer is curable if detected and treated at an early stage. However, the lack of adequate knowledge

about the disease and its and associated risk factors may lead to inaccurate perceptions and a lack of utilization of early detection services. This study has highlighted insufficient knowledge about cervical cancer among female nurses in the selected institutions. Despite the admitted high level of awareness, there will be the need for continuous education in the form of workshops and seminars to help correct the erroneous perceptions some of them hold of the disease. It also calls for the need to intensify the level of training on the emerging non-communicable diseases at the Nursing Training Colleges in Ghana. Boosting nurses' level of confidence in identifying signs and symptoms of diseases will offer them the impetus to improve the health-seeking behaviours of their clients in the communities. This is very essential since nurses form the first line of contact when it comes to healthcare delivery.

Future research work could focus on the use of a qualitative methodology involving in-depth interviews and focus group discussions to explore the factors contributing to the low-level knowledge on the risk factors of cervical cancer as demonstrated by the caliber of respondents who participated in this type of study.

Authors' Contributions

This work was carried out in collaboration between all authors. RR and SM participated in conceiving the study and in the development of data collection tools. RR carried out data collection. SM and RR participated in the data analysis and drafting of the manuscript. All authors read and approved the final manuscript.

Conflict of Interest

All authors declare no conflict of interest.

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