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ABSTRACT: BACKGROUND: Cervical cancer is the second most frequent cancer among women worldwide between 14 and 49 years of age including Nigeria. Figures have greatly reduced in developed countries after the introduction and implementation of effective screening and vaccination programs which is greatly undeveloped and inefficient in Nigeria and other developing countries at large. **OBJECTIVES:** The study assessed the knowledge and attitude of reproductive age women towards cervical cancer prevention in selected tertiary institutions in Osun State. **METHODOLOGY:** The study was a descriptive cross-sectional study carried out among reproductive age women in selected tertiary institutions in Osun State, Nigeria. A probability based multistage sampling technique was adopted as the sampling technique for the study. Data was collected using a semi-structured, self-administered and interviewer guided questionnaire. **RESULTS:** Age of respondents was 25.305±8.195. 313(79.0%) of the total respondents were Christians, and 83(21.0%) of the respondents were Muslims. For the overall knowledge score, only 52.0% of the respondents had good knowledge while 48.0% of the respondents had poor knowledge. 52.0% exhibited negative attitude towards cervical cancer prevention while 48% exhibited positive attitude towards cervical cancer prevention. Only 23% of the respondents had taken part in screening and vaccination towards cervical cancer prevention while 77% of the respondents had not. **CONCLUSION:** The knowledge of reproductive age women towards cervical cancer prevention was above average while their attitude towards cervical cancer prevention was low. This issue could be addressed by increasing the awareness of the effects of cervical cancer among reproductive age women in the country.

Keywords: knowledge; attitude; women of reproductive age; cervical cancer prevention

INTRODUCTION

Cervical cancer (CC) is a cancer of the cervix, the cervix is a female reproductive organ connecting the uterus and the vagina. The human papilloma virus (HPV) is the primary cause of cervical cancer. According to ASCO (2020)[1], cervical cancer begins on the cells on the surface of the cervix once infected with the human papilloma virus. Long-term infection of HPV on the cervix may result in cancer, resulting in a lump or tumor on the cervix. Tumors can be malignant or non-malignant. A malignant tumor has the ability to spread to other body parts, whereas a benign tumor, also known as a non-malignant tumor, is one that will not spread (ASCO, 2020)[1]. The human papillomavirus (HPV) is a sexually transmitted infection that can be acquired through vaginal, oral, or anal sex or through body-to-body contact with an infected person during sexual intercourse. Most people infected with HPV do not develop cancer, but the infection can raise the risk, especially in people with compromised immune systems. Cervical cancer is the most common genital cancer in women and one of the leading causes of death. Fortunately, this cancer can be avoided by getting

vaccinated before starting sexual activities and getting screened for premalignant lesions starting at the age of 21, but in developing countries, these services are scarce and infrequently used.[2]

In addition, Cervical Cancer has been identified as the leading cause of cancer-related death among women in developing countries.[3] Cervical Cancer is the second most common disease in women worldwide, with an estimated 528,000 new cases and 266,000 deaths per year.[4] in 2008, 530,000 new cases of cervical cancer were diagnosed worldwide, with 275,000 fatalities. Surprisingly, the majority of these deaths happened in developing countries. In the same year, the WHO African region reported an additional 75,000 cases.[5] More so, an estimated 10,000 new instances of cervical cancer are recorded in Nigeria, with 8000 female mortality each year according to.[6] Women with a weakened immune system, such as those living with HIV, have a higher rate of HPV infection than women who do not have HIV, according to previous research.[7] This is because the immune system isn't fit enough to ward of the effect of HPV as it's already subjected to other viruses, hence the need to take the preventive practices of cervical cancer (CC) with utmost seriousness.

The ravaging situation of cervical cancer in Nigeria owes its high prevalence and mortality rate to the combination of the ignorance on preventive measures both primary and secondary, and unwillingness to use the preventive measures even when they are aware of it. This condition is crucial since there is a scarcity of infrastructure for effective treatment of invasive cervical cancer, especially when it is discovered late in the disease's progression. The majority of malignancies in Nigeria are discovered late in their progression, with a low chance of survival.[8] the incidence of cervical cancer is quite low in prosperous countries. The situation in developing countries, on the other hand, is considerably different. While the former is becoming less prevalent, the latter is gaining popularity.[9] this is most likely due to a low percentage of women getting vaccinated, Pap smears, poor knowledge, negative attitude and lack of awareness among women.[10]

Pap smear screening (A screening for cervical cancer) should begin at age 21 according to Saslow *et al.*, (2012).[11] As a result, regardless of the age of sexual initiation or other behavior-related risk factors, women below 21years should not be checked. Furthermore, according to WHO (2014)[12], screening for cervical cancer among women between 30 and 49 years , for at least once, will decrease mortality rate from cervical cancer.

Human papillomavirus (HPV), a sexually transmitted virus, has been identified as the causative agent. The new cervical cancer prevention strategy focuses on immunizing against this HPV infection prior to the first sexual exposure as a type of primary prevention, or screening for evidence of pre-invasive cervix lesions as a type of secondary prevention.[13] meanwhile, these services are not part of the national immunization schedule. The prices of getting vaccinated against human papilloma virus and getting screened for premalignant lesions are not pocket friendly due to the current economy. Hence our reason to conduct this study among reproductive age women to create awareness, and increase their knowledge on HPV and its risk so they can abstain from premarital sexual activities prior vaccination, and also to go for screening three to four times between the age of 21-49 if they've been exposed to sexual activities so as to lower the risk of CC. Furthermore, to implore the government to put the lives of Nigerian women into consideration by birthing these services in the national immunization schedule.

METHODS

Study design, and study setting

A descriptive cross-sectional study was employed to carry out the study. Study setting; the study was conducted among female undergraduates in selected tertiary institutions in Osun State. The institutions were selected using a simple random sampling technique by balloting. The selected institutions are: Adeleke University Ede Osun state, Redeemer's University Ede Osun State, and Osun State University, Oshogbo Osun State.

Target population

The target population included female undergraduate attending various tertiary institutions in Osun State. However, the assessed population included Osun State University (Oshogbo Chapter), Redeemers University and Adeleke University Ede, Osun State.

Inclusion and Exclusion criteria

Female undergraduates between the ages of 15-49 who were around during the period of conducting this study. While potential respondents who declined consent to participate in the study were excluded.

Definition of operational terms

1. KNOWLEDGE: The act of being familiar or having understanding of CC prevention
2. ATTITUDE: The act of expressing ones understanding in the prevention of CC
3. CERVICAL CANCER: Cervical cancer affects the human cervix
4. CERVICAL CANCER SCREENING: Cervical cancer screening is a screening that detect unusual changes in the cervix.
5. HUMAN PAPILLOMA VIRUS (HPV): Human papilloma virus is the primary cause of cervical cancer.

Sample technique and sample size determination

A probability based multistage sampling technique was adopted to select the institutions and the respondents.

Stage 1: Selection of institutions

Three (3) tertiary institutions were chosen by balloting, a simple random sampling technique to give institutions, both government owned and private owned in Osun State an equal chance of being chosen.

Stage 2: Selection of Faculties

Simple random sampling technique was adopted for the selection of faculties in each institution to give every faculty an equal chance of being chosen and two faculties from each institutions were chosen by balloting.

Stage 3: Distribution of Questionnaires

Questionnaires were distributed in the selected institutions in the respective faculties that were selected by balloting using proportionate sampling.

The sample size for this study was calculated using Taro Yamane (1967) formula to obtain the sufficient sample size. This sample size was used because we dealt with a finite population. The formula applied is given as

$$n = N / (1 + N (e)^2)$$

Where n = Sample size, N = Total population under study, e = margin error and 1 = adjusted constant. Numbers were substituted for variables and a sample size of 377 was gotten 10% attrition rate was added and the total sample size was 415.

Instrument for data collection

The study adopted a primary source of data collection. The instrument was a Semi-structured questionnaire, designed to include both open-ended and close-ended questions. The questionnaire was categorized into four sections with 47 total variables.

Data analysis

The information obtained were collated, examined for completion and was imputed into IBM SPSS (statistical product and service solution) version 25.0 for analysis. Percentages, frequencies, tables and charts were used to analyse and present data related to objectives and socio-demographic characteristics. To assess the level of knowledge, knowledge questions were scaled and scored and

categorized to the best midline such that 0-11(first half) was coded as poor knowledge and 12-23 (second half) as good knowledge, to assess the level of attitude, attitude questions were scaled and scored and categorized to the best midline such that 0-5(first half) was coded as negative attitude and 6-11(second half) as positive attitude. All right responses were coded as 1 and all wrong responses were coded as 0. Chi square was used to test the association between the knowledge and practice of cervical cancer prevention as well as attitude and practice of cervical cancer prevention among reproductive age women in the selected institutions in Osun state. The level of significance was set at 0.05. Decision rule is that at p value less or equal to 0.05, hypothesis was considered statistically significant and greater than 0.05 was considered statistically not significant.

Validity and reliability of instrument

The question undergone face and content validity by our research supervisor, who scrutinized the items and ensured they captured the true picture of variables under the study. Her comment and observation were used to revisit the questionnaire before the final draft.

Reliability was determined through a pre-test carried out among 42 female students in federal polytechnic Ede, Osun State.

Reliability test for level of knowledge variables was conducted using Cronbach's alpha with intra-class coefficient value of 0.72.

Reliability test for level of attitude variables was conducted using Cronbach's alpha with intra-class coefficient value of 0.76

RESULTS

Table 1 presents distribution of respondents' socio-demographic characteristics. The mean age of respondents was 25.305±8.195. 313(79.0%) of the total respondents were Christians, and 83(21.0%) of the respondents were Muslims. On ethnicity, (82.1%) were Yoruba, 11.9% were Igbo and 3.2% were Hausa 2.77% belonged to other tribes. On mode of study, most (97.5%) were full time students, while 2.5% were into part time programme. On level, almost half (48.5%) of the respondents were from 100 level, 12.1% were from 200 level, 11.0% were from 300 level, 24.2% were from 400 level, while 4.0% were from 500 level. On marital status, majority (93.9%) were single, while rest (6.1%) were married.

Table 1. Distribution of Respondents by Socio-Demographic Characteristics (N=396).

Variables	Frequency	Percentage (%)
Age (years)		
16-20	276	69.7
21-25	103	26.1
26-30	17	4.3
Mean age (years)	**25.305±8.195**	
Religion		
Christianity	313	79.0
Islam	83	21.0
Ethnicity		
Yoruba	325	82.1
Igbo	47	11.9
Hausa	13	3.28
Others	11	2.77

Mode of study

Full Time	386	97.5
Part Time	10	2.5
Total	396	100

Level	192	48.5
100		
200	48	12.1
300	44	11.1
400	96	24.2
500	16	4.0

Marital   Status

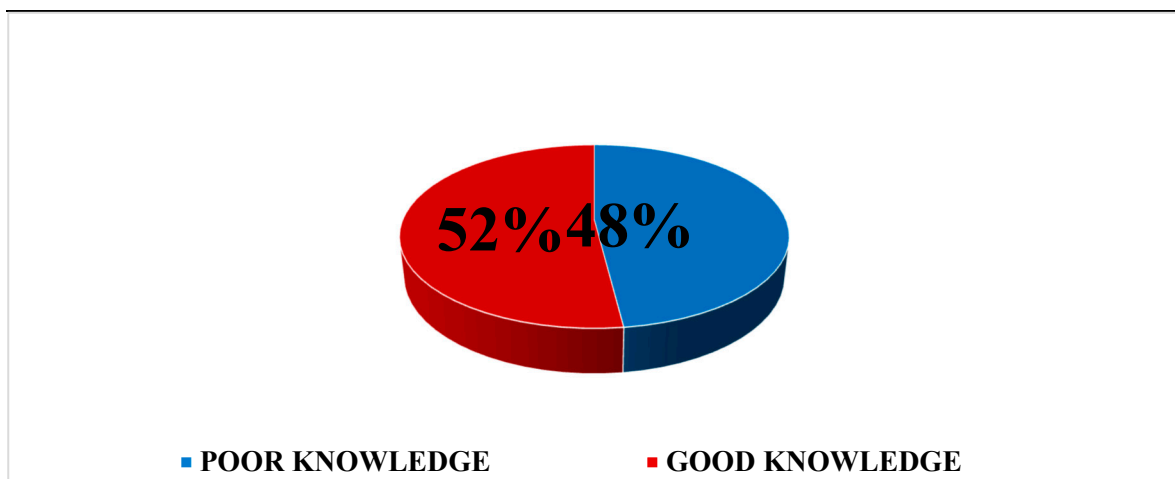|		
Single	372	93.9
Married	24	6.1
Total	396	100.0

Figure 1. Knowledge score of cervical cancer prevention.

Table 2 presents the knowledge of reproductive age women on Cervical Cancer Prevention. Overall Results revealed that 52.0% had good knowledge, while 48.0% had poor knowledge.

Table 2. Knowledge of Respondents on Cervical Cancer Prevention (N=396).

Variables	Frequency (n)	Percentage (%)
Have you heard of human papilloma virus		
No	152	38.4
Yes	244	61.6
Which of the following is your source of information		
School	17	4.29
Media	72	18.2
Friends	59	15.0
Family members	52	13.1

Church members	49	12.3
Health worker	125	31.5
Others	22	5.55

Is HPV a virus?

No	190	48.0
Yes	206	52.0

How do you think HPV is transmitted

Skin to skin contact	120	30.3
Coughing and sneezing	89	22.4
Contact with body fluids	50	12.6
Toilet seat	68	17.1
Self-inoculation (Orally)	51	12.9
I don't know	18	4.7

Which of the following health issues are related to HPV

Cervical Cancer	112	28.3
Genital warts	98	24.7
Penile cancer	52	13.1
Breast cancer	47	11.9
Vulva cancer	39	9.9
I don't know	29	7.3
None	19	4.8

Do you know that human papilloma virus can be prevented

No	294	74.2
Yes	102	25.8

Have you heard of human papilloma virus (HPV) vaccines

No	198	50.0
Yes	198	50.0

Have you heard of cervical cancer

No	66	16.7
Yes	330	83.3

Have you heard of cervical cancer screening test

No	114	28.8
Yes	282	71.2

What is cervical cancer screening test called

Pap smear	242	61.1

HPV testing	82	20.7
Visual examination	60	15.2
I don't know	12	3.02

Do you know that the intake of HPV vaccine could lower the risk of cervical cancer

No	176	44.4
Yes	220	55.6

Intake of HPV vaccines before the start of sexual activities can prevent the onset of human papilloma virus

No	272	68.7
Yes	124	31.3

Is cervical cancer a preventable disease

No	73	18.4
Yes	323	81.6

Do you know that early screening uptake can detect an abnormal growth in the cervix

No	136	34.3
Yes	260	65.7

STD is a risk to cervical cancer

No	73	18.4
Yes	323	81.6

Having sex with multiple persons can be a risk to cervical cancer

No	71	17.9
Yes	325	82.1

Having sex with a person with multiple sexual partners can also be a risk to cervical cancer

No	182	46.0
Yes	214	54.0

Smoking is a risk to cervical cancer

No	241	60.9
Yes	155	39.1

Oral contraceptives can pose a risk to cervical cancer

No	180	45.5
Yes	216	54.5

Do you know that genetic history of cervical cancer can increase a person's risk of cervical cancer

No	144	36.4
Yes	252	63.6

Cervical cancer test is only for sick persons

No	277	70.0
Yes	119	30.0

How many times should a woman undergo cervical cancer screening

Once	110	27.8
Twice	4	1.0
Thrice	28	7.1
four times	231	58.3
I don't know	23	5.8
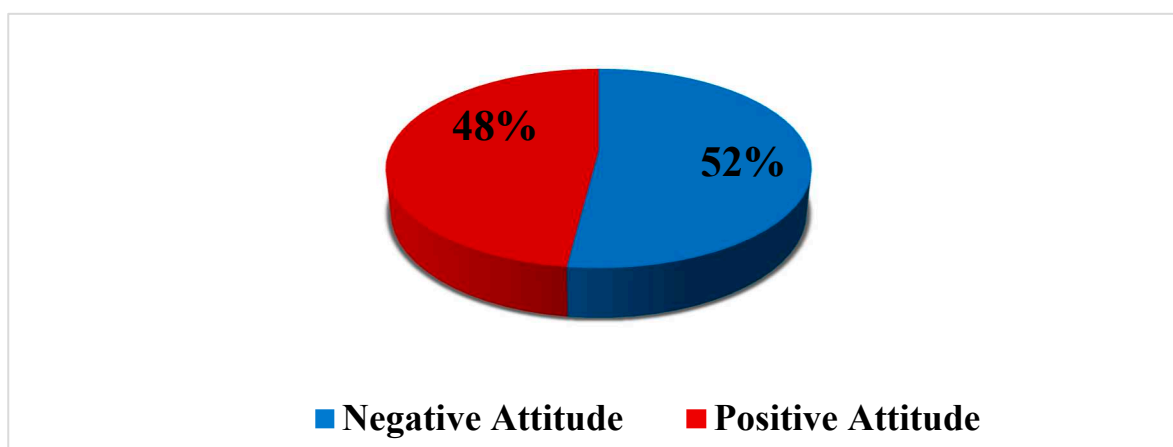
Figure 3. Overall Practice Score of Cervical Cancer Prevention among Reproductive Age Women.

Women

Table 3 presents the attitude of reproductive age women towards cervical cancer prevention. Overall Results revealed that, 52.0% had negative attitude, while 48.0% had positive attitude towards cervical cancer prevention.

Table 3. Attitude of Respondents on Cervical Cancer Prevention (N=396).

s/n	Variables		SA	A	N	D	SD
1	Human papilloma virus vaccine is meant for unhealthy individuals only	F	74	78	51	95	98
		%	18.7	19.7	12.9	24.0	24.7
2	Cervical cancer screening is meant for only those who are sick	F	43	51	33	101	168
		%	10.9	12.9	8.3	25.5	42.4
3	Having multiple sexual partners can increase the risk of cervical cancer	F	155	155	59	21	6
		%	39.1	39.1	14.9	5.3	1.5
4	HPV is transmitted through sexual intercourse	F	139	141	94	17	5
		%	35.1	35.6	23.7	4.3	1.3
5	HPV can increase the risk of cervical cancer	F	140	114	73	57	12
		%	35.4	28.8	18.4	14.4	3.0
6	Early marriage onset is a risk to cervical cancer	F	87	105	76	87	41

#							
		%	22.0	26.5	19.2	22.0	10.4
7	Cervical cancer is a major health problem for women	F	166	98	66	46	20
		%	41.9	24.7	16.7	11.6	5.1
8	Early diagnosis of premalignant lesions is good for treatment outcome	F	183	126	63	24	0
		%	46.2	31.8	15.9	6.1	0.0
9	Cervical cancer is preventable	F	188	117	62	8	21
		%	47.5	29.5	15.7	2.0	5.3
10	Cervical cancer is curable	F	137	117	51	45	46
		%	34.6	29.5	12.9	11.4	11.6
11	Early screening can help detect the onset of premalignant lesions	F	167	105	66	21	37
		%	42.2	26.5	16.7	5.3	9.3

Figure 3 presents the practice of reproductive age women towards cervical cancer prevention. Results revealed that, majority of the respondents demonstrated (77.0%) bad practice, while only 23.0% demonstrated good practice.
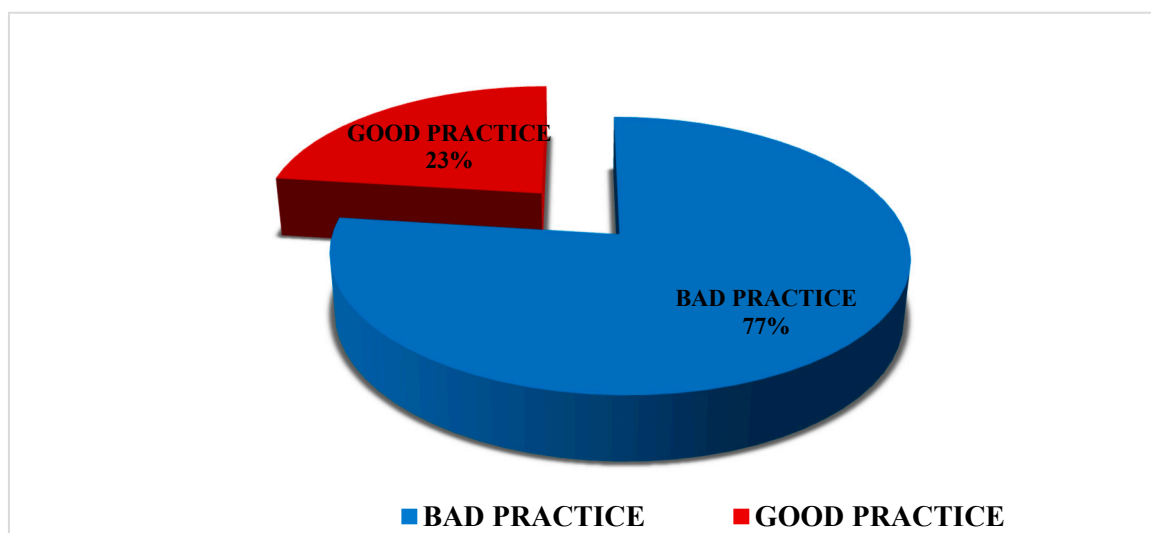
Figure 3. Overall practice of cervical cancer prevention.

Table 4 showed that there is no significant association between knowledge and Practices of cervical cancer screening and vaccine intake towards cervical cancer prevention (χ^2= 2.537[a]; p-value= .121; df =1). This implies that the knowledge demonstrated by the respondents do not have effect on the practice of cervical cancer prevention.

Table 4. Association between Knowledge of Reproductive Age Women and Prevention of Cervical Cancer.

	Categories	Knowledge on Cervical Cancer prevention		χ^2	p-value	Decision
		Low	High			
Prevention of cervical cancer	Good	153	152	2.537	.121	Not sig.
	Poor	37	54			

Table 5 showed that there is no significant association between attitude and Practices of cervical cancer prevention (χ^2= .025[a]; p-value= .905; df =1). This result implies that, attitude is not a predictor as regards cervical cancer prevention.

Table 5. Association between Attitude of Reproductive Age Women and Prevention of Cervical Cancer.

	Categories	Attitude towards cervical cancer prevention		χ^2	p-value	Decision
		Negative	Positive			
Prevention of cervical cancer	Good	158	147	.025	.905	Not sig.
	Poor	48	43			

DISCUSSION

Globally, adequate awareness have been found to be a tool for increase in preventive practices. The study revealed that, only about half (52.0%) of the respondent have adequate knowledge on Cervical Cancer prevention. This denotes that, a significant part (48%) of the respondents lack adequate knowledge of cervical cancer. This is in line with the some studies that have been conducted. Adebayo *et al.*, 2021[14] reported 60.6% of antenatal attendees in Ibadan, south west Nigeria had good knowledge on cervical cancer. Likewise, a study conducted by Ekwonwa *et al*., (2017)[15] among women of reproductive age in Ede South local government area in Osun State revealed that most of the respondents have good knowledge (72.8%) on cervical cancer and cervical cancer screening but in disparity with Ogbonna (2017)[16], who held that less than half of his respondents had good knowledge on cervical cancer screening while had poor knowledge on cervical cancer screening (38% and 62% respectively).

Most of the respondents knew that cervical cancer screening test and that intake of HPV vaccine could lower the risk of cervical cancer, they also know that early screening uptake can detect an abnormal growth in the cervix but they lack the knowledge of what cervical cancer screening test is commonly called. This can be attributed to the low level of awareness of this disease among women of reproductive age in Nigeria. This result is in disparity with the study conducted among first year nursing students of KIU (2019)[17] where all the respondents knew CCS and they all mentioned Pap smear as the screening test.

In this study, the respondents reported health workers and mass media to be their most sources of information. This is similar to Duru *et al* (2015)[18] and llika (2016)[19] where media and health workers were the most reported means of information.

Evidence have shown that, good attitude is needed for positive behavioral change as regards preventive practice of cervical cancer. The outcome of this study showed that, over half (52.0%) of the respondents had negative attitude towards cervical cancer prevention. Findings disagree with a descriptive cross-sectional study conducted by Mullatu *et al*, (2017)[20] among Female students of Mizan Tepi university, it showed that, majority of the respondents 128(61.24%) had positive attitude towards screening while 81(38.76%) had negative attitude towards screening. The plausible reason to this could be due to unfiltered information from other sources of information aside health workers. This is evidenced in the result presented in table 4.3, where a significant part agreed that Human papilloma virus vaccine is meant for unhealthy individuals only. Result is also similar to Sajid *et al*., (2019)[21], who found that, 87(51.4%) of the respondents said Cervical cancer screening is not important if there are no signs and symptoms.

The good knowledge exhibited by the respondents towards cervical cancer prevention did not translate to the level of practice. Findings revealed that, majority (77%) of the respondents had bad practices towards cervical cancer prevention. This is evidenced in the results presented where majority (74.5%) never undergo Human papillomavirus (HPV) test, (72.5%) never received Human Papilloma Virus Vaccine and (58.6) had never undergone cervical cancer screening, indicating a very low practice towards cervical cancer prevention amongst the respondents. This appears to be the case not only in this study, but also as an African problem, as several previous studies found a very low

level of practice among respondents, even among those who are aware and knowledgeable about the importance of screening in the prevention and early detection of cervical cancer, as well as vaccination to prevent the manifestation of human papillomavirus on the surface of the cervix. This study corroborates with the one conducted by Nowomuhangi (2019)[17] among first year nursing students in KIU who revealed that only 51% of the respondents had been screened for CC while only 39% had ever been vaccinated against HPV. Similarly, Oyekale *et al* (2021)[22] found that, only (30%) of the respondents had ever undergone cervical cancer screening, another study conducted among female nurses working in healthcare facilities in Lagos state revealed that only 175 out of 232 respondents had been screened for cervical cancer.

CONCLUSION

The knowledge of reproductive age women towards CC prevention was above average while their attitudes towards cervical cancer prevention was low. The practice of CC prevention among reproductive age women was very poor requiring prompt and efficient interventions.

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