Bayero Journal of Nursing and Health Care
bjnhc.nur@buk.edu.ng
Volume 2 Issue 1, June, 2020
Pages 560-572 ISSN: 2659-1464

Assessment of Knowledge, Perception of Cervical Cancer and Screening Among University Students in Kaduna State, Nigeria

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Abstract

Background: Cervical cancer is the most common gynaecological cancer and a leading cause of cancer death in women in Nigeria. Risky behaviours, lack of knowledge and preventative measures among university students and many young women, increase the risks of cervical cancer later in life. **Aim**: This study was aimed at assessing the knowledge and perception of cervical cancer prevention among university students in Kaduna State. **Methods:** This was a cross-sectional study carried out among university students in Kaduna State. The participants were selected by a two-stage random sampling method and relevant data were collected with the use of a self-administered questionnaire. Data entry and analysis were done using SPSS version 23. Descriptive and inferential statistics were computed for all data. **Results**: Findings shows that 87.1% had heard about cervical cancer. However, 24.2% did not know about screening for cervical cancer. The knowledge of cervical cancer and its prevention was 75.4% among the respondents. The most commonly known method of cervical cancer screening identified by the respondents was Papanicolaou smear (70.9%). Only a few of the students had an idea of at least a screening methods for cervical cancer. More than 40% of the respondents were unaware of the etiology of the disease and use of HPV vaccine as a preventive measure. Most (75%) believed the disease is preventable. Some respondents believed that medicinal supplements (37.9%), antibiotics (35%) and drinking herbal mixtures (13.6%) will help manage cervical cancer. Perceived reasons for low screening include fear, cost, religion and traditional beliefs. Result of Independent T-test showed that age of students and their marital status showed a significant difference in what the students know and believe about cervical cancer. **Conclusion**: Though many of the students had heard about cervical cancer, they had poor knowledge towards its etiology, symptoms, prevention methods and different risk factors that increases the progression of the disease. They also have poor perception of the chance of acquiring it.

Keywords: Cervical cancer, Knowledge, Perception, Screening.

Introduction

Cervical cancer is cancer arising from the cervix. It is due to the abnormal growth of cells that have the ability to invade or spread to other parts of the body. Early on, typically no symptoms are seen. Later symptoms may include abnormal vaginal bleeding, pelvic pain, or pain during sexual intercourse (National Cancer Institute (NCI), 2019). It constitutes a major public health threat to women in many low and medium resourced countries in South and Central America, sub-Saharan Africa, South and Southeast Asia where it is still the leading type of cancer among women (Parkin, Whelan, Ferlay and Storm (2012). Its incidence in the Sub-Saharan African countries ranges from 30 to 40 per 100,000 women (GLOBOCAN, 2012).

In Nigeria, cervical cancer is the most common gynaecological cancer and a leading

cause of cancer death in women, it kills one woman every hour and over 9000 women every year. (Ferlay, Shin, Bray, Forman, Mathers and Parkin (2010). It evidently constitutes a huge public health burden as the attendant loss of lives is needless due to its preventable nature (WHO, 2006).

Knowledge and access to regular screening will reduce the incidence of the disease (Mfuh and Lukong, 2016). The primary causative agent is the human papillomavirus (HPV) with the high-risk genotypes (HR- HPV) being responsible for the development of invasive cancer. Over 70% of all cases of cervical cancer are directly due to infection with HPV-16 and 18 strains thus making it the only human cancer whose necessary cause is known (Adeola, Okunade, Roberts, Salako, Oridota and Adebao (2017). There are currently vaccines that protect against common cancer-causing types of human papillomavirus (HPV) and can significantly reduce the risk of cervical cancer (WHO, 2019).

Morbidity and mortality statistics for cancer are high in Nigeria, due to the 'late presentation syndrome' involving 83-87 percent of cancer patients (Mfuh and Lukong, 2016). This is because the awareness level of Nigerian women about cervical cancer is very low. Level of knowledge of cervical cancer forms part of the basis for designing successful preventive strategies.

Comprehensive cervical cancer control includes primary prevention (vaccination against HPV), secondary prevention (screening and treatment of pre-cancerous lesions), tertiary prevention (diagnosis and treatment of invasive cervical cancer) and palliative care. Vaccines that protect against HPV 16 and 18 are recommended by WHO and have been approved for use in many countries. Screening and treatment of pre-cancer lesions in women of 30 years and more is a cost-effective way to prevent cervical cancer (WHO 2019).

Nigeria has not had a great deal of success in implementing effective cervical cancer screening to date. Services are only available in teaching hospitals and are not adequately utilized. There is currently no mass screening program for the detection of cervical cancer either in Kaduna State or in Nigeria as a whole. Request for cervical cancer screening by Pap smear and cytology or any other screening methods have been found to be exceedingly low even among health workers in Zaria (Anyebe *et al.,* 2014).

The more knowledgeable women (including university students) are about cervical cancer, Pap smear testing, the more likely they are to make screening visits and to adhere to recommended follow-up for an abnormal result. Studies in the Northern part of Nigeria showed low knowledge among women about cervical cancer screening (Mfuh and Lukong 2016, Saad *et al.,* 2013) demonstrated poor knowledge about cervical cancer screening among 260 market women in Zaria, Kaduna State.

The specific objectives include:

- ✧ Determine the knowledge of cervical cancer among university students in Kaduna
- ✧ Identify the belief about cervical cancer among university students in Kaduna State.
- ✧ Identify the perceptions of Cervical Cancer Screening uptake among participants

Hypothesis: HO1: There is no significant relationship between sociodemographic characteristics and knowledge of cervical cancer screening

Materials and Methods

A cross-sectional survey design was adopted for this study, data was obtained from primary sources only. Kaduna State is located globally between latitudes 9˚ 03¹N and 11˚ 32¹ North of the Equator and longitudes 6˚ 05¹ and 8o 38¹ East of the Greenwich Meridian. Study location were the Campuses of the three

Universities in Kaduna State, which include Zaria and Kaduna towns. Participants for the study include female students from Ahmadu Bello University (ABU) Zaria, Kaduna State University (KASU), Kaduna and National Open University of Nigeria (NOUN) Kaduna Study Centre, Kaduna.

Sample size determination: This was calculated using Fishers sample size formula (Araoye, 2004).

A prevalence rate of 14.0% from a similar study in Zaria, Nigeria by Anyebe *et al.,* (2014) was used. N= 185. An attrition rate of 10% was added to the calculated sample size. of 185, thus we have 185/0.9 = 206.

Inclusion Criteria This includes all students who gave us consent to participate in the study and were in their second year of study and above. The age range of participating students was 15 years and above.

Exclusion Criteria: All students who declined from giving their consent were excluded from the study, all newly admitted students in the campus, 100 Level students and students less than 15 years of age.

Sampling Procedure: Non-probability sampling method was used. Respondents were recruited based on the availability of the students.

Two hundred and six (206) undergraduate students were selected by simple random sampling method from the three institutions. This was based on the proportionate allocation of the sample size as given by the different institutions using the sampling ratio of 2:1:1. The eligible students were recruited during visits to the schools for six weeks. Thus, 96 respondents from ABU Zaria, 60 from NOUN and 50 from KASU were enrolled respectively.

Sampling Technique: A multistage sampling was used. Firstly, randomly selected faculties were chosen within the three universities. In the second stage, simple random sampling was used to select the departments namely Nursing, Public Health, Human Anatomy and Medicine from the health-related faculties. Meanwhile, Business administration, Law, Electrical Engineering, Chemistry and Education departments were randomly selected from the Non health-related faculties. In the final stage, proportionate simple random sampling was used to select the respondents and questionnaires were distributed based on the number in each department.

An instrument for data collection: Data for the study was obtained with the use of questionnaires. The questionnaire was organized into four different sections based on the objectives of the study. Section A comprised the Socio-demographic characteristics of participants; B Participants' knowledge of cervical cancer, which consisted principally of simple questions with options of Yes, No and Don't Know; C Belief about cervical cancer, and D perceptions about cervical cancer screening uptake.

Reliability of the instrument: A pilot study was conducted. Data were analysed using Cronbach alpha was the correlation coefficient. 0.74 was obtained for knowledge of cervical cancer, 0.78 for itemized belief questions and 0.89 for itemized questions on perception.

For the validity study, data were retrieved from a few questionnaires from each university making. Spearman correlations and Bland-Altman plots (or non-parametric approach) were used to analyse criterion validity, separately for the three groups and the instrument was found valid.

Ethical clearance: Approval was sought from the Directors of students Affairs of each university and each participant was required to give consent by signing the consent form attached to the questionnaire.

Data Analysis: This was by the use of a statistical package for Service Solution (SPSS)

Version 23.0. Descriptive and inferential analysis measures were done. Frequency distribution, mean and standard deviations were calculated. Inferential statistics using chi-square tested the hypothesis at 5% statistical level of significance. The results were presented in frequency tables, pie chart and bar charts.

Results

Out of 220 self-administered questionnaires, 206 were correctly filled and analyzed with a response rate of 93.6%. The respondents were drawn from the three universities in Kaduna State because of the population ratio of each school.

Table 1: *Socio-demographic Characteristics Characteristics of the Respondents (n=206)*

Variables	Frequencies	(%)	df	X^2	P - Values
AGE			6	240.95	**0.021**
16-20	46	22.3			
21-25	92	44.7			
26-30	20	9.7			
31-35	15	7.2			
36-40	11	4.9			
41-45	9	4.5			
>45	13	6.4			
ETHNICITY			4	122.86	**0.077**
Hausa	66	32.0			
Igbo	30	14.6			
Yoruba	31	15.1			
Others	79	38.3			
MARRITAL STATUS					
Singles	132	64.0	2	111.91	**0.005**
Married	53	25.8			
Once Married	21	10.2			
TYPE OF MARRIAGE			2	250.45	**0.064**
Non Married	132	64.1			
Monogamy	54	26.2			
Polygamy	21	9.7			
RELIGION			2	165.02	**0.091**
Christianity	134	65.0			
Islam	71	34.5			
Others	1	0.5			
OCCUPATION			4	567.17	**0.068**
Non-working students	161	78.2			
Health Workers	25	12.1			
Civil Servants	14	6.8			
Business	5	2.4			
Others	1	0.5			

Table 1 showed that the age of respondents in the study ranged from 16 to 50 years with a mean age of 24.6 ± 2.2 years. More than half (64.0%) of the respondents were single and out of the 74 married students, 9.7% were from a polygamous family. The majority

(65%) were Christians. Over one-quarter of the students (32.2%) were Hausa. The majority (78.2%) of them were non-working class students.

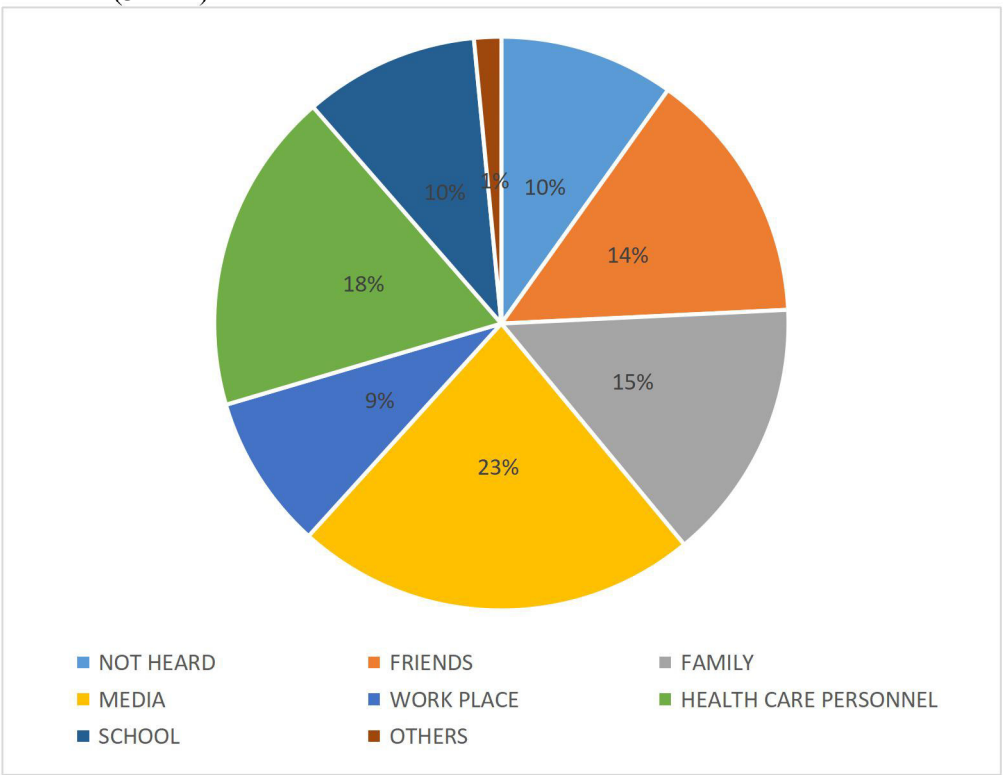

Figure 1: *Sources of Knowledge about Cervical Cancer*

The above pie chart represents the sources of knowledge about cervical cancer amongst the participants. Over 90% of the respondents had heard of cervical cancer from different sources. These include health care personnel (18.2%), media (22.7%), family members (14.80%), school lecture (9.8%) and friends (14.4%) as presented on Figure 1 above

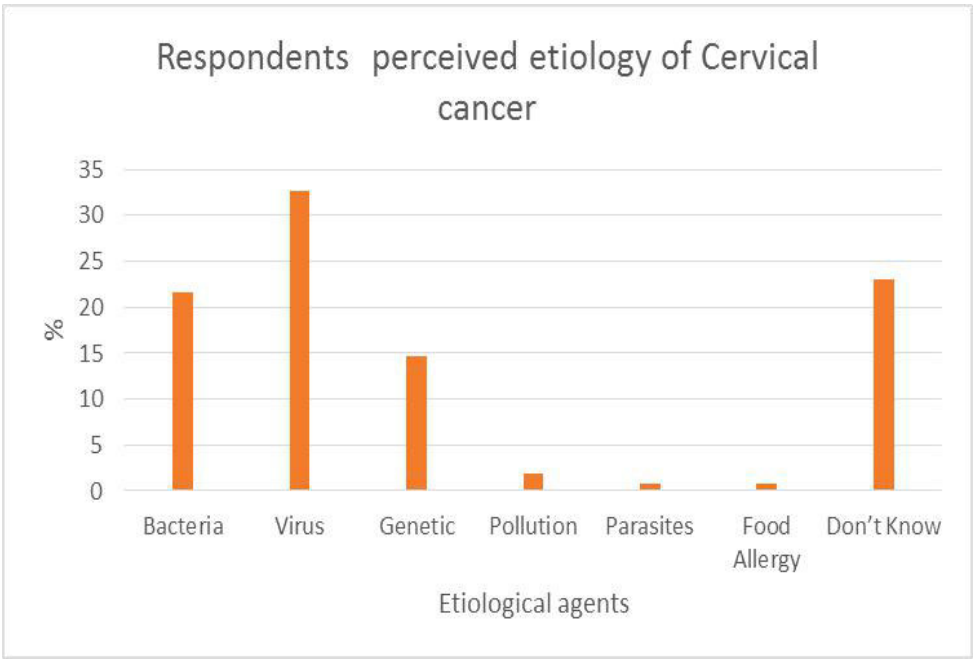

Figure 2: *Respondents Perceived Etiology of Cervical Cancer*

Findings on Fig 2 on knowledge of the etiology of cervical cancer among the respondents revealed that majority (32.6%) of the respondents are aware that it is a viral infection, 21.6% think bacteria may be the cause, and others (14.6%) think genetic factor may be responsible, among other causes.

Table 2: *Knowledge of Risk Factors for Cervical Cancer among Respondents.*

RISK FACTORS	YES	(%)	n=206	NO	(%)	P value
Advanced Age	87	42.2		119	57,8	0.001
*Multiple Sexual Partners	113	54.9		93	45.1	0.084
*Early Sexual Exposure	108	52.4		98	47.6	0.001
*Sexual Transmitted Disease	89	43.2		117	56.8	0.038
Close Family Relation	38	18.4		168	81.6	0.609
Corticosteroids	61	29.6		145	70.4	0.042
*Oral Contraception	82	39.8		124	60.2	0.001
*Smoking	94	45.6		112	54.4	0.001
Alcohol Consumption	61	29.6		145	70.4	0.034
*Infections	131	63.6		75	36.4	0.001

**Responses not mutually exclusive*

Table 2 shows that there was generally, variable level of awareness of the risk factors for cervical cancer among the respondents. Identified factors include multiple sexual partners (54.9%), early sexual exposure (52.4%), sexually transmitted diseases (43.2%) and advanced age (42.2%). Other factors perceived as risks by the students were family history of cervical cancer (18.6%), use of oral contraceptives (39.8%), corticosteroids (29.6%), smoking (45.6%) and alcohol consumption (29.6%).

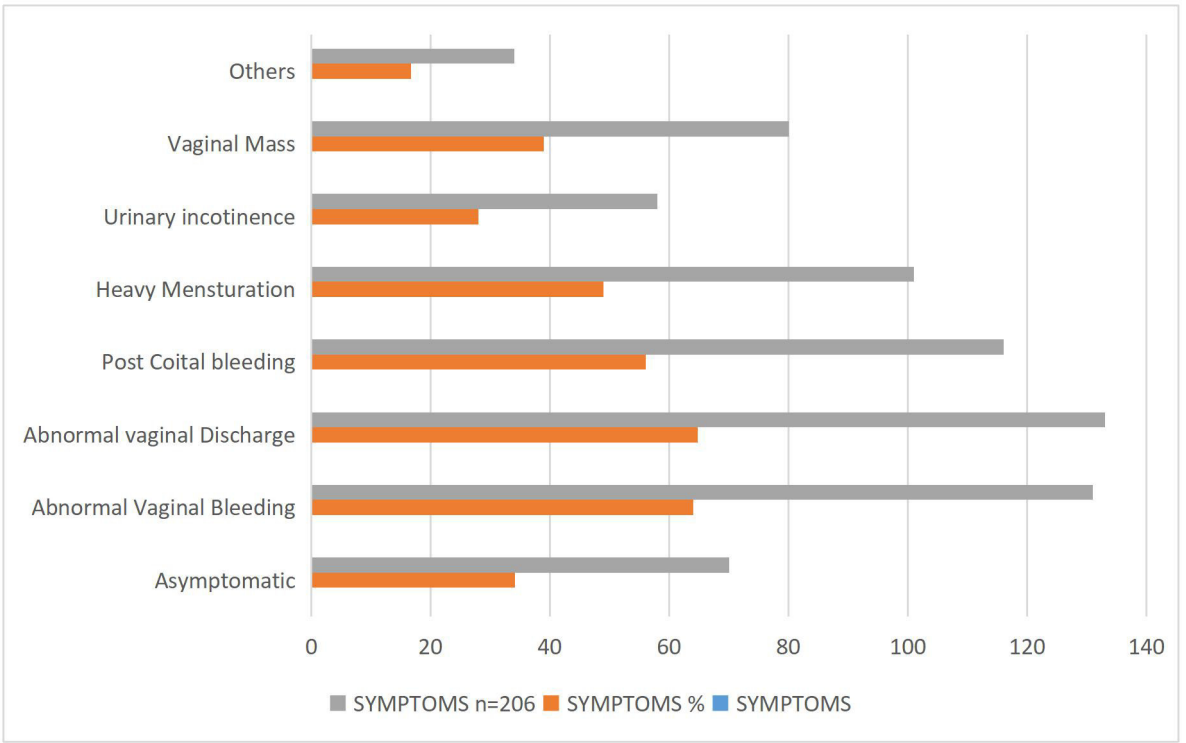

Figure 3: *Respondents knowledge of signs and symptoms associated with cervical cancer*

Figure 3 shows that 64% of the respondents were of the view that cervical cancer presents with abnormal vaginal bleeding and discharge while 56.1% and 48.9% believed post-coital pain and heavy menstrual bleeding are a strong indications of the diseases respectively. However, less than half (34%) of the students think that the disease is asymptomatic among others.

Table 3: *Knowledge on methods of Preventing Cervical Cancer.*

Preventive Measures	**Frequencies n=206**	**%**
Abstinence from Sex	66	32.0
*Avoid Multiple sexual partners	133	64.6
*Regular Pap Smear	146	70.9
*Drinking Herbal Mixture	28	13.6
*Taking Medicinal Supplements	78	37.9
*Taking Antibiotics	73	35.4
Post menopause sex	26	12.6
*Health Education	170	82.5
*Reduce Radiation Exposure	135	65.5
*Regular HPV screening	129	62.6

*Responses not mutually exclusive

The result in Table 3 showed that majority of the students (82.5%) were of the opinion that, cervical cancer can be prevented by adequate health education. The most commonly known method of cervical cancer prevention among the respondents was Papanicolaou smear (70.9%). Other preventive methods include; avoiding multiple sexual partners (64.6%), regular HPV screening (62.6%), reduce radiation exposure (65.5%) among others.

Table 4: *Belief about Cervical Cancer*

Variables	***n=206***	***%***
Preventable	155	75.4
Contagious	35	17
Curable	117	56.8
Hospital Management	131	64
Traditional Management	20	9.8
Spiritual Management	34	16.3
HPV Vaccination	186	90.2

Table 4 reveals that, the majority (90%) of the respondents' believe that vaccines can be very helpful in preventing the disease. A large proportion (75.4%) belief that the disease is preventable. They, however, vary in their views concerning how cervical cancer patients could be managed or treated. Over half (64%) of the respondents' believe that management of patients with the condition should be in the hospital, but 16.3% and 9.8% are in support of spiritual and traditional management respectively.

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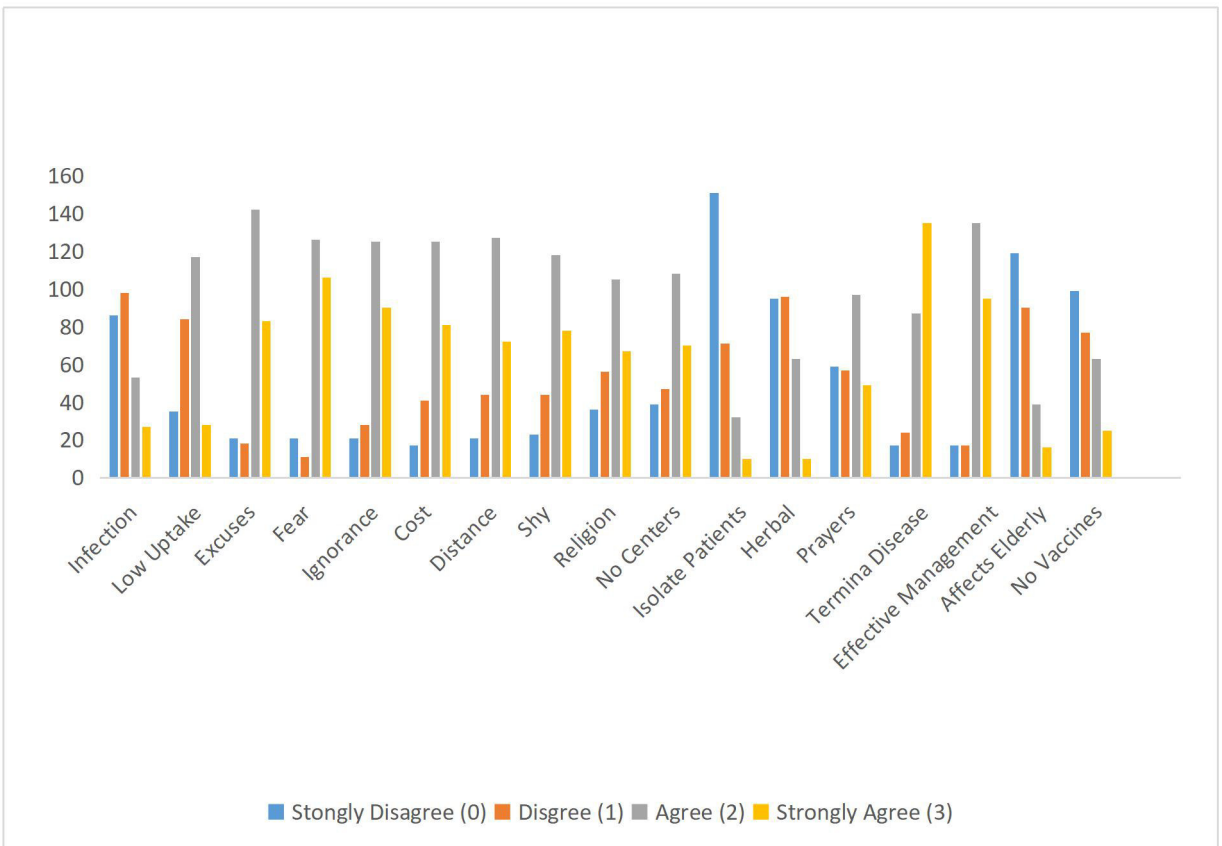

Figure 4: *Perceptions of Cervical Cancer Screening Uptake among Participants (n=206)*

Figure 4 above showed that more than 50% of the respondents agreed that there is a low uptake of cervical cancer screening among participants. Reason for poor uptake include; fear (87.9%), ignorance (81.4%), cost (78.0%), distance of screening centers (75.4%) and religion (65.2%). Others include non-availability of screening centres (67.4%), non-availability of vaccine and shyness (74.2%) among others.

Table 5: *Association between Socio-Demographic Factors and Knowledge of Cervical Cancer Screenings.*

	Screening Uptake	PAP Smear	Colposcopy	Hysterectomy	Chemotherapy	Radio therapy
Age	0.250	0.043	0.369	0.002	0.694	0.024
Tribe	0.321	0.226	0.144	0.059	0.235	0.025
Marital Status	0.026	0.045	0.044	0.466	0.035	0.060
Types of Marriage	0.012	0.413	0.071	0.481	0.185	0.287
Religion	0.422	0.011	0.057	0.015	0.033	0.008
Occupation	0.303	0.065	0.899	0.018	0.216	0.571
Level of Study	0.061	0.007	0.072	0.085	0.923	0.118

Table 5 shows the Independent T-test (P values) for the significance of demographic factors on respondents knowledge on cervical cancer screening tests with the level of statistical significance set at $P < 0.05$. Religion and marital status were the most significant factors influencing the knowledge of the students on cervical cancer. Other demographic characteristics like tribe, occupation and level of the study had minimal effect on the knowledge of the students about screening uptakes, pap smears, colposcopy, and types of treatment and management of the disease.

Discussion

The response rate of the structured questionnaires distributed across the three universities in Kaduna State was 93.6%. The mean age of the respondents was 24.6 years and the modal age group is 21-25 years. In view of the population of each university, 46.6% of the respondents were from Ahmadu Bello University (ABU), 29.1 % from the National Open University (NOUN) Kaduna Study Centre and 24.3% from the Kaduna State University (KASU). Most (43.9%) of the students interacted with were in 400 Level with 57.8% of them studying non health-related courses.

Many (75%) of the respondents were non-working class students. Christianity was the dominant religion practised by more than half (65.0%) of the students who participated in this study. About one-third of them are Hausas by tribe and over 64% were not married. Out of those married, 26.2% were from polygamous marriage.

The result on knowledge of cervical cancer among university students revealed the following;

The major source of information about cervical cancer was from media (23%), health workers (18%), families (15%) and friends (14%). This finding agrees with that by Saad *et al* (2013), who funds that many of the market women in Zaria identified healthcare personnel as the major source of information on cervical cancer. Similarly, Ayinde *et al.,* (2004) reported that 39.5% of his respondent's sources of information was the media. However, this is in contrast with the study of Jacobs (2014) where the media was not a major source of information about cervical cancer compared to family and friends.

Among all the students who responded to our quest to determining the knowledge about cervical cancer, 87.1% had heard about the disease. However, 24.2% did not know screening for cervical cancer. Our findings of the high level of knowledge and awareness in this study corroborate that of 71% reported by Ayinde *et al*., (2004) and 97.4% observed by Anyebe *et al*., 2014 who respectively noteda high level of awareness of the disease. This high value may be attributable to the fact that the respondents are within the university environment and have access to information through their lectures, mass media, print media and internet. This finding is however at variance with Mfuh and Lukong (2016) and that of Saad *et al*., (2013) were a good number of the participants were not aware of cervical cancer. This is not unconnected with the category of the respondents in this study who are university students and expected to be more knowledgeable than the market women and women in the community.

More than half (87.1%) of the respondents who had heard about cervical cancer screening had poor knowledge of the risk factors, signs and symptoms. Similar findings have been reported by Abotchie, (2009) in Ghana where most (73%) of the young females interviewed had knowledge of the symptoms and risk factors of cervical cancer. Abnormal vaginal bleeding, smelling vaginal discharge, abdominal pain and post-coital bleeding were all similar to reports among women in Lagos and Zaria. This contrast the report by Saad *et al.,* (2010) who reported that 62.5% of the respondents believed sexually transmitted infections was a risk factor as only 24.6% of the respondents in this study shared a similar belief on the signs and symptoms of cervical cancer.

Participant's knowledge was poor towards etiology of cervical cancer. Only 32% think that it is a viral disease. Many of them claim ignorant of the causative agent as 21% attributed it to bacteria, 14% to genetics, 1.9% pollution and 0.8% parasites and food allergy respectively while others had no idea on the cause of the disease. Our findings on the poor knowledge on the etiology of cervical cancer among respondents is in agreement with a similar study at Debre Berhan University (DBU), where Kalayu and Tesfay (2017) reported that only 11.7% of the participants knew that HPV is the causative agent of the disease.

There was generally, variable level of awareness of the correct risk factors for cervical cancer among the respondents. Advanced age was identified by 41.7% of the respondents as a risk factor associated with cervical cancer. Despite their knowledge of cervical cancer, gaps in knowledge still exist about other risk factors for cervical cancer. Over half (54,9%) of the respondents were of the opinion that only women with multiple sex partners or promiscuous women are at risk of cervical cancer. This is a misconception because women who are faithful but whose husbands have other wives or visit sex workers are equally at risk of being infected with HPV as they might be infected by their husbands. This notion should be corrected in intervention programs as it could lead to stigmatization and wrong labelling of those who are suffering from the disease as being promiscuous and could be a big barrier to women accessing screening services.

The result on the belief about cervical cancer revealed that most (82.6%) prefer continuous health education, regular cervical cancer screening tests like routine pap smears (70.8%) and avoiding multiple sexual partners (70.8%). Sadly, a good number of the respondents think that medicinal supplements (37.9%), antibiotics (35%) and drinking herbal mixtures (13.6%) are reliable preventive measures that can be taken against cervical cancer. About three quarter (75.4%) of participants in this study agreed that cervical cancer can be prevented in a somewhat similar fashion to the 87% figure reported by Udigwe (2006) in Nnewi, Nigeria. Pap smear was the most known screening test by the respondents (70.8%). The fact that Pap smear was the most known screening test is

understandable considering that the Pap smear test has been in existence for over 60years, unlike other cervical screening tests and has been used over decades even in developing countries including Nigeria. Other screening methods such as liquid-based cytology (LBC) and HPV tests which are modern and used in developed countries are not widely available in this country, because of high financial and technological requirements. The prospect of cheaper screening methods such as the Visual Inspection with Acetic Acid (VIA) for mass screening programmes in resource-poor countries like Nigeria are new developments that are just being experimented by some state government health services including Kaduna State and some nongovernmental organizations (NGOs), hence, the low level of respondents' knowledge of these tests in this study.

The result on perception about cervical cancer screening showed that the majority (90.2%) of the respondents think that HPV vaccination is a preventive measure for the disease. The high figure had not been demonstrated in previous studies to translate to the actual vaccination rate of respondents. The reasons given for this remarkably low vaccination rate by respondents were mainly due to lack of sufficient information about the HPV infection and the vaccine itself and the negative sociocultural beliefs about the vaccine among the populace similarly to findings in other previous studies (Adeola *et al.,* 2017). This was also supported by the findings of Saad (2013) and Anyebe *et al.,* (2014) whose studies demonstrated low knowledge about HPV, but with most respondents supporting the introduction of the vaccine after the provision of adequate information and hence reinforcing the need for more educational intervention in order to raise awareness about cervical cancer and its prevention.

The socio-demographic characteristics of respondents are probably the most important influence on the knowledge and perception of cervical cancer in our society. Education, occupation, ethnicity, and type of family life such as background and marital experiences (divorce and separations) including degree and effectiveness of communication may have a different effect on the knowledge and perception of young undergraduate students. Age of students and their marital status showed a significant effect on what they know and believe about cervical cancer. Other factors had no statistically significant effect on knowledge about the disease as indicated in Table 5. The age distribution and demographic characteristics in this study have a similar pattern with another study conducted among undergraduate students of the University of Ibadan, Nigeria (Ayinde *et al*., 2004).

Conclusion

Majority of the students were knowledgeable about cervical cancer. However, knowledge and perception on the subject matter is shallow. The participants lacked knowledge on etiology, specific risk factors and symptoms of cervical cancer. Even though the participants had a fair perception of cervical cancer, awareness level was significantly influenced by religious and cultural affiliation while cervical cancer screening was significantly determined by the marital and working status of the students. This can increase their chance of acquiring the disease. Specific knowledge of cervical cancer and its risk factors as well as regular screening behaviour is paramount to the prevention of cervical cancer. The majority believed that the disease is preventable. Some belief in medicinal supplements, antibiotics and drinking herbal mixtures as a treatment for the disease. The knowledge of cervical cancer and screening needs to be improved, considering how common the disease is in developing countries.

Recommendations

- ✧ Reproductive health education specialists have a significant role to play in reversing the trend of poor knowledge of cervical cancer among students as they constitute one of most significant sources

of information about health matters to their parents, families and for the general populace especially women. The continuing education program such as institution-based health workshops and seminars should provide an opportunity for doing this.

- ✧ Consequently, the University Health Services should focus on promoting regular cervical cancer awareness campaigns and even screening among older students.
- ✧ HPV vaccination is a major opportunity for cervical cancer control given limitations in screening thus should be included in the national immunization programs.
- ✧ One of the key implications of this study is the need for cervical cancer screening education programs to be carried out in our tertiary intuitions at all levels especially among females students.
- ✧ Students are not only to be provided with comprehensive health education services regularly but to also be motivated to practice what they learn and lead other people in society by example.
- ✧ Health Education specifically targeting the prevention of cervical cancer may be added to student academic curriculum as this will give wider coverage of improving awareness and knowledge amongst university student in Kaduna State and Nigeria as a whole.

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