



# Knowledge and Attitude of Pregnant Women Attending Antenatal Clinic to Cervical Cancer Screening in Pregnancy in Ibadan, Nigeria

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**Abstract:** Intensive global efforts are currently on-going to ensure the elimination of cervical cancer by 2030. To achieve this, identification of populations and settings to optimize implementation is important. Pregnant women in antenatal setting provide one of such opportunities. This cross-sectional study conducted among pregnant women in a tertiary health facility evaluates the knowledge and attitude of cervical cancer screening in pregnancy. A total of 372 of the 380 (97.9%) women responded to the survey. The knowledge about cervical cancer among the respondents was 16.0%, 27.0% with good knowledge about cervical cancer screening and 21.0% had been previously screened for cervical cancer. If offered in the index pregnancy, about 74.2% were willing to undergo the screening. The age of respondents ( $p < 0.001$ ) and the knowledge about cervical cancer screening ( $p = 0.034$ ) were statistically significant factors associated with the respondents' attitude to screening in pregnancy. Fear of the screening affecting their pregnancies was the reason in about half of the 26.8% of the respondents unwilling to undertake cervical cancer screening in pregnancy. The knowledge about risk factors for cervical cancer among our participants was poor. However, the attitude of participants towards cervical cancer screening in pregnancy was good. While policy makers might find this encouraging to incorporate routine cervical cancer screening into maternity services, there is urgent need for more awareness creation among our pregnant women, adequate counselling to correct misconceptions and education on the benefits of cervical cancer screening among our parturient.

**Keywords:** Pap Smear, Knowledge, Attitude, Cervical Cancer Screening, Pregnancy

## 1. Introduction

Cervical cancer (CC) is one of the most common malignancies among females worldwide [1]. In 2020, an estimated 604,000 women were diagnosed with cervical cancer and there were 342,000 deaths from the cancer [2, 3]. This human papillomaviruses (HPV) – associated genital cancer is the second most common female cancer, after breast cancer with predisposition for middle-aged women [1, 3, 4]. In Nigeria, at least 53.3 million women are estimated to be at significant risk of developing CC, our national standardised prevalence rate is put at 33.0 per 100,000 [5].

This high burden in most developing countries has been attributed to the poor screening rate for the precancerous lesions of this malignancy, delays in seeking care, delays in appropriate referral to specialist centres for care and high cost of care for this malignancy [4, 6-9].

Cervical cancer is a highly preventable disease with access to comprehensive cervical cancer prevention services that incorporates HPV vaccination among adolescents, screening all at-risk women and effective treatment of the pre-cancerous and early cancer lesions [9, 10]. These principles, which have been proven effective in many developed countries [11, 12] form the pillars of the

recent global strategies to eliminate cervical cancer by the year 2030 [13, 14] with its major aim to reverse the increasing incidence and mortality rates of CC in developing countries [1, 4, 11, 15].

Beyond the proven effectiveness of cervical cancer screening to reduce the burden of cervical cancer, integration into an established reproductive health (RH) service may facilitate improved utilization coverage and alternative algorithms to screen a significant population of women at risk of cervical cancer. Pregnancy is a physiological condition that causes most women of reproductive age group to present for health care even in low- and middle-income countries (LMIC). The antenatal care service thus provides a unique RH service opportunity for women to have contact with the health system. Most cervical abnormalities in pregnancy are detected at the antenatal care service in developed countries where such screening is available [16]. In the United States, about 2 - 3 million abnormal Pap smears are diagnosed each year and 5% - 13% of these are detected in pregnant women [16, 17]. In Nigeria, 67% of pregnant women receive antenatal care from a skilled provider at least once for their birth and 57% make four or more ANC visits [6]. As more women are being sensitized about antenatal care in Nigeria, the clinic visit is an opportunity to commence and integrate women into the stream of cervical cancer screening [4, 15, 18]. This will bridge the gap of poor attendance and organization associated with the currently existing opportunistic screening services in Nigeria [11]. However, the success of such a programme requires the involvement of the stakeholders like the pregnant women, in this case. In Nigeria, there are scanty data about utilization cervical cancer screening services in pregnancy [18-23]. Most of the previous studies in the country were among non-pregnant women [24, 25]. This study, therefore, aims to assess the knowledge and willingness of pregnant women attending antenatal care service in a tertiary health facility in Nigeria to utilize cervical cancer screening service of the hospital to achieve the beneficial outcomes as stakeholders.

## 2. Materials and Methods

### 2.1. Study Design and Setting

This was a cross-sectional study conducted among women attending antenatal clinics at University College hospital, Ibadan, South-west Nigeria. The study was conducted between 2<sup>nd</sup> October 2019 and 31<sup>st</sup> March 2020.

### 2.2. Study Participants and Sample Size

The respondents were consenting pregnant women who presented for antenatal services at the institution antenatal clinics that run on every working Mondays, Tuesday, and Thursdays of the week. The sample size was calculated using the formula for single population proportion. This was estimated using an expected cervical cancer screening uptake of 40.0% [8], with sample size margin of error of 5%, confidence interval of 95% and an annual population of

antenatal attendees of 3,000. A minimum sample size of 363 was derived and with addition of 10% participants' non-response rate, a total sample size of 399 was obtained and used.

### 2.3. Survey Instrument and Data Collection

The study utilized questionnaire to obtain information about: (a) sociodemographic characteristics of the respondents, (b) Knowledge of risk factor for cervical cancer, (c) Knowledge about cervical cancer screening methods, and (d) willingness to screen for cervical cancer in pregnancy by the respondents. The Knowledge about risk factors and methods for cervical cancer screening were assessed using the Likert-like scale where the respondents who picked "strongly agree, agree" were classified as getting the prompt questions right while those who picked "not sure, disagree and strongly disagree" were classified as getting the prompt question wrong. There were nine prompt questions those who got 5 and more of the questions correctly were classified as having good knowledge and the reverse was true for those who were classified as having poor knowledge. Prior to administration of the questionnaire, information about the study was provided to the women each of the days of the antenatal clinics during the routine health talk. They were screened for eligibility using the study criteria, and informed consent was obtained. Questionnaires were distributed to the eligible participants, consecutively, until the sample size was reached. Each participant self-completed the questionnaire and subsequently dropped in a sealed box provided for that in the clinic complex beside the nurses' station. Participants who could not communicate in English language had the interpreted version of the questionnaire in their local languages administered with assistance from the trained research assistants for the study.

### 2.4. Study Criteria

The inclusion criteria were every consenting pregnant woman presenting for antenatal care during the study period. Pregnant women who presented with obstetric emergencies or did not give consent were excluded from the study.

### 2.5. Data Analysis

Data was analysed using IBM Statistical Package for Social Sciences (IBM SPSS®) version 23. Respondents' demographic characteristics, knowledge, and willingness were presented as frequencies and percentages. Chi Square and Fisher exact Test were used to determine the association between knowledge and willingness questions and respondent's characteristics. The responses were transformed into scores using the following criteria: 1 and 0 for strongly agree/agree, and neutral and disagree/strongly disagree, respectively. Negative questions were reverse coded. Mann-Whitney U and Kruskal-Wallis Tests were used to determine the differences in the knowledge and willingness scores based on the characteristics of the respondents.

### 3. Results of Study

During the study, completed questionnaires of 372 participants of the 399 administered questionnaire (93.2%) were found suitable and formed the basis for analysis as reported for this study.

#### 3.1. Socio-demographic Information of the Participants

The socio-demographic information of the participants is presented in the Table 1. The average age of women who participated in this study was 31.4 years (SD±4.8 years) with most in the age range of 30 – 34 years (42.5%) and least in ages 40 years and above. About 98.7% of the participants were married, 93.5% had tertiary level of education, 84.9% were Yorubas, 75.0% were Christian and 45.4% were self-employed.

**Table 1.** Socio-demographic Characteristics of Participants.

	Frequency (n = 372)	Percentage
Age [31.4 ± 4.8]		
≤ 24 years	24	6.5
25 – 29 years	102	27.4
30 – 34 years	158	42.5
35 – 39 years	68	18.3
≥ 40 years	20	5.3
Marital Status		
Married	364	97.9
Single	6	1.6
Cohabiting	2	0.5
Occupation		
Student	26	7.0
Civil servant	135	36.3
Unemployed	35	9.4
Self-employed	169	45.4
Private employed	7	1.9
Level of Education		
Primary	4	1.1
Secondary	19	5.1
Higher/Tertiary*	349	93.8
Religion		
Christianity	279	75.0
Islam	93	25.0
Ethnic Group		
Yoruba	316	84.9
Igbo	35	9.4
Others (including Hausa)	21	5.7

\* - Includes College of education, Polytechnic, University and Post-degree.

#### 3.2. Knowledge About Risk Factors for Cervical Cancer

The participants identified multiple sexual partners (60.8%), recurrent sexually transmitted infection (59.9%), early age at onset of sexual debut (44.6%), advanced age (31.7%) and cigarette smoking (32.8%) as risk factors for cervical cancer. Other identified risk factors included: high number of children (19.6%), low socio-economic status (12.6%) and sex with uncircumcised male partners (12.1%). Table 2 shows the frequency and percentages of correct response to the questions

about the risk factors for cervical cancer.

**Table 2.** Knowledge about Risk Factors for Cervical Cancer.

Variables	Frequency	percentage
Multiple sexual partners	226	60.8
Recurrent sexually transmitted infections	223	59.9
Early age at sexual debut	166	44.6
Cigarette smoking	122	32.8
Advanced age	118	31.7
Increasing number of children	73	19.6
Low socioeconomic status	47	12.6
Sex with uncircumcised males	45	12.1

#### 3.3. Knowledge About Cervical Cancer Screening

Information on the respondents' awareness about cervical cancer screening presented on Table 3, revealed that about three-quarter have heard about the Pap test, as a method of cervical cancer screening (75.5%). Major sources of information about Pap smear test were health professional (63.4%), media (20.1%), books/newspaper (9.7%) and friend & relatives (6.7%). About three-quarters of the participants (76.1%) rightly ascertained that all women who has had sexual intercourse and above 21 years should be screened for cervical cancer. Only 16.9% correctly specified the frequency as 3 years for which the Pap smear test should be done. About 39.5% agreed that the Pap smear test can be done in the course of a woman's pregnancy. Classification of the participants knowledge based on their responses to the awareness questions about cervical cancer screening practices was done using responses of the participants as either right or wrong (those who pick 'I don't know' are classified as wrong). Each rightly answered prompt attracted one point. There were seven prompts and participants who had 4 or more right were adjudged to have good awareness while the reverse was true for those participants with poor awareness. It was found that only 27% of participants had a good awareness level of the cervical cancer screening.

**Table 3.** Awareness about cervical cancer screening.

	Frequency (n = 372)	Percentage
Heard about Pap Smear Test		
Yes	281	75.5
No	91	24.5
Heard about other screening tests for cervical cancer		
Yes	160	43.0
No	212	57.0
Other types of cervical cancer screening methods known (n = 160; multiple response)		
HPV test	113	70.6
Visual inspection with acetic acid	38	23.8
Colposcopy	21	13.1
All women who has had sexual intercourse and above 21-years should be screened for cervical cancer		
Yes	283	76.1
No	17	4.6
Don't know	72	19.4
Frequency at which Pap Smear test should be done		
6-monthly	72	19.4
1-yearly	78	21.0
3-yearly	63	16.9

	Frequency (n = 372)	Percentage
Don't know	159	42.7
Pap Smear test can be done in pregnancy		
Yes	147	39.5
No	225	60.5
Period in pregnancy when it should be done		
First trimester	29	19.7
Second trimester	24	16.3
Third trimester	18	12.2
Anytime	76	51.7

### 3.4. Attitude Towards Screening in Pregnancy

About three-quarter of the participants (74.2%) acknowledged they would undergo cervical cancer screening if they were offered during the index pregnancy. Specified reasons for unwillingness to accept cervical cancer screening by the other (26.8%) participants were belief that it will affect the pregnancy (51.0%), feeling shy to take the screening (18.9%), thoughts of getting the disease upon screening (10.4%), plans to take up the screening after delivery (9.6%), not been comfortable with pains/stress (3.1%), and due to having had a cervical cancer screening recently (2.1%).

**Table 4.** Attitudes towards Cervical Cancer Screening among the participants.

	Frequency (n = 372)	Percentage
Been screened for cervical cancer before		
Yes	78	21.0
No	294	79.0
Number of times screened before (n = 78)		
One	50	64.0
Two	24	30.8
Thrice	2	2.6
Four times	2	2.6
Reasons for not up-taking cervical cancer screening (multiple response)		
Don't know about it	134	45.6
Don't have time	71	24.1
I am not sick	28	9.5
I feel shy	21	7.1
Willingness to undergo cervical cancer screening in this pregnancy (if offered)		
Yes	276	74.2
No	96	25.8
Reasons for not willing to accept free cervical cancer screening (multiple response)		
It will affect my pregnancy	49	51.0
I feel shy	18	18.9
I will get the disease	10	10.4
I want it after delivery	5	9.6
Not comfortable with the pains/stress	3	3.1
Had one recently	2	2.1
No reason	2	2.1

## 4. Discussion

The average age of the respondents in this study was 31±4.8 years which is the age when cervical intraepithelial neoplasia is commonly seen. This is similar to findings from a study in Gabon [26]. More than 90% of the participants had tertiary education; this is likely due to the urban location of

the study site. Despite the literacy level of respondents, their overall level of knowledge of the risk factors for cervical cancer was poor as only about 16% of them displayed good knowledge about the risk factors. While this finding is not different from reports from similar studies from other parts of the country [12, 27] and Ghana [28], it suggests an urgent need for further and on-going enlightenment about the disease and its risk factors. However, the findings from this study were significantly lower than reported by similar study done in Uganda [29].

The occupation of the respondents was the only factor that significantly influenced the level of knowledge about risk factors for cervical cancer in this study. The employees with the government and private companies had the highest level of knowledge. This is likely, as they might have had previous cervical cancer awareness programmes in their organizations. Although women with tertiary level of education had higher odds for knowing about the risk factors for the disease, this was not statistically significant in this study, like findings in Gabon [26].

The level of awareness of our participants about Pap test was good, although there was poor awareness about other methods of cervical cancer screening. This finding was significantly higher than reported in similar studies from Lagos and Ekiti in Nigeria [1, 30]. A similar multicentre study earlier done in Ibadan, reported poor awareness about Pap smear test among its participants, which may be due to the predominantly uneducated participants in their study [24]. The awareness of the participants about Pap smear test was in contrast to their level of knowledge about the risk factors for the disease. This might suggest poor communication between patients and their health care providers regarding appropriate information about disease conditions before requesting a test, which may affect the attitude of women to screening. The health care professionals, who are the main source of information about the disease from this study (63.4%), should ensure detailed dissemination of information about the disease to their clients as part of counselling prior to requesting investigations. This will enable the patients to be involved in their health care and therefore, ensure compliance. The media will also play a significant role in this regard as affirmed by other studies and should be properly utilized [27, 31].

The awareness of the respondents about the feasibility of screening in pregnancy was poor. This is not surprising because lack of clear information from the health professional and their fear of bleeding or abortion are some of the common reasons from previous similar study in Ceará, North-eastern Brazil [32]. Good level of awareness about preventive services like cervical pre-cancer screening might not lead to uptake among patients without deliberate information by health care providers. This poor awareness about feasibility of screening in pregnancy among these respondents might be related to failure of the health professional to offer it. This signifies the need for increased awareness about the prospects of screening in pregnancy by health care professionals and other sources of information. The occupation of respondents and their

knowledge about risk factors for the disease were the significant factors associated with the awareness of participants about screening. This is however, in variance with the findings in Sokoto where participants' religion and level of education determined the odds for awareness about screening methods [27]. Also, findings by Babatunde *et al* in Ekiti, revealed parity and educational status as the significant determinants [30].

Cervical pre-cancer screening uptake was low from this study as only 21.0% of participant had ever been screened in the past and about 65% of those who ever screened had it just once. The low utilization of this important preventive service reflects poor compliance associated with opportunistic screening exercise and services that are not linked with an organized programme like maternity services and family planning programme [12, 26-31, 33-35]. This is in variance with studies from developed countries where uptake is as high as 80-90% [36]. The reason by participants for lack of screening uptake in this study was prominently due to poor knowledge about the disease as reflected in their level of awareness about the risk factors. Other reasons enumerated include thought of not been sick and feeling shy about the screening procedure, which was similar to findings by Ndikom *et al* and Assoumou *et al* in their studies [24, 26]. Another notable barrier to screening in this study was lack of time for the screening as a good proportion of our respondents were government employees and distance to screening centres may be discouraging. Expansion of screening services to secondary and possibly primary health care centres will increase the accessibility of screening to the populace as suggested by other studies [24, 37].

About 74.2% of respondents indicated their willingness to undergo cervical cancer screening in the index pregnancy. This signifies acceptability of the respondents to the screening process even in pregnancy. It also suggests likelihood of successful implementation if it is adopted as a routine antenatal investigation. Reports from studies done in Lagos, Sokoto and Zaria, although outside pregnancy, revealed similar findings [1, 27, 38].

Most of the respondents who were unwilling to undergo screening in the index pregnancy revealed that it will affect their pregnancy. Some of the participants revealed they will want to take it after pregnancy. This may be connected to the nature of the information received from the health workers, as reported by similar study done in Brazil [32]. This raises a need for re-orientation and retraining of health care professionals about the prospects of cervical cancer screening in pregnancy.

## 5. Conclusion

The knowledge about risk factors for cervical cancer among respondents in this study was poor. This is reflected in their awareness about cervical pre-cancer screening and uptake. Detailed health information to the populace is therefore recommended to enhance awareness and uptake of screening methods. However, the attitude of participants

towards cervical cancer screening in pregnancy was good from this study. Policy makers should consider this positive attitude and make proactive efforts to add cervical pre-cancer screening to the routine antenatal investigations and increase the screening centres which is expected to increase the screening coverage to women at risk and encouraging their subsequent screening after pregnancy.

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