

Urban Poor Community Settings' Knowledge and Screening Practices for Cervical Cancer in Ibadan, Nigeria

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PURPOSE This study investigated knowledge and screening practices for cervical cancer among two urban poor community settings in Ibadan, Nigeria.

METHODS A cross-sectional design was used. ODK tool was used to collect quantitative data among a sample size of 500 respondents. Data were analyzed using IBM SPSS version 21 for descriptive and inferential statistics. Scores for knowledge were on a scale of 0-39 points (0-18 low, 19-23 fair, and 24-39 high knowledge).

RESULTS A majority of respondents (77.2%) had low knowledge of cervical cancer and were not aware (93.6%) of the Papanicolaou test (Pap smear test) or cervical cancer screening (91.2%). Very few women (10%) were aware of the human papillomavirus vaccine for the prevention of cervical cancer, 4% had been screened with the Papanicolaou test, and one woman (0.3%) with visual inspection with acetic acid. Four (1.1%) women had taken human papillomavirus vaccine before.

CONCLUSION The findings of this study have underscored a necessity for increased awareness creation through health promotion interventions and strategies to alleviate low knowledge, prevention, and screening practices for cervical cancer in poor community settings in Nigeria.

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BACKGROUND

Cancer of the uterine cervix has become a growing public health challenge with increasing mortality and morbidity among women in lower human development index countries.¹ It is reported as the foremost and fourth most common cause of cancer deaths among women.^{2,3} Bray et al² reported estimated global new cases of 569,847 (3.2%) and a mortality of 311,365 (3.3%) in 2018. Low- and middle-income countries account for one of the highest prevalence of cervical cancer, with an estimated 90% of global deaths occurring in this region. Cancer of the uterine cervix is the second leading female cancer among Nigerian women, after breast cancer,⁴ and accounts for more than 10,000 annual deaths.^{2,5}

The major cause of cervical cancer is the human papillomavirus (HPV), and the disease is sexually transmitted. Other risk factors include high parity, smoking, sexual initiation at an early age, multiple sexual partners, and prolonged use of oral contraceptives. The prevention rate for cervical cancer is high if detected and treated early.⁶ The WHO recommends regular screening every 3-5 years among women age 30-49 years, in addition to timely

treatment of precancerous lesions.² More recently, the World Health Assembly endorsed the WHO Global Strategy for elimination of cervical cancer. The global targets for 2030 emphasize primary prevention (90% coverage of HPV vaccination of girls by age 15 years) and secondary prevention (70% of women to be screened by age 35 and 45 years).⁷

Vaccination is reported as an important public health primary prevention approach to reduce the risk of HPV, whereas cervical cytology or Papanicolaou test (Pap smear) is documented as secondary form of prevention.⁸ In Nigeria, primary prevention through HPV vaccination is not yet part of the national routine immunization program; it is, however, accessible, at a high cost, through a limited number of private and public health care settings. Conventionally, secondary prevention through screening is carried out in Nigeria using Pap smear test.⁹ However, Pap smear test is not suitable as primary screening in low-resource settings although it has played a substantial role in reducing cervical cancer in developed countries over the past 70 years. Awareness and knowledge of cervical cancer are, however, necessary for improved involvement of women in prevention and screening practices. Several studies have been carried out among Nigerian women

ASSOCIATED CONTENT

Data Supplement

Author affiliations and support information (if applicable) appear at the end of this article.

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CONTEXT

Key Objective

What are men and women's knowledge and screening practices of cervical cancer in urban slum community settings?

Knowledge Generated

The mean knowledge score of cervical cancer detection was 5.0 ± 2.6 on a 0- to 39-point scale. Cervical cancer prevention practices (screening and human papillomavirus vaccination) were very low.

Relevance

Low knowledge potentially translates to low practice, as shown in this study. These may result in late detection and presentation at health facilities with poor treatment outcomes. Prevention strategies, at primary and secondary levels, including educational interventions should be encouraged in clinical and other settings to prevent an overburdening of the health system.

to assess the knowledge and screening practices for cervical cancer (including HPV vaccine and Pap smear test) and among HIV-infected women. Most studies have shown an appreciable high knowledge of cervical cancer in urban workplace settings, women attending health facilities, or health workers. Conversely, many studies have documented low knowledge and practice among women,^{1,10,11} especially at population levels. Incessant creation of awareness about cervical cancer has the potential to increase knowledge and utilization of cervical cancer screening practices.¹² More research documenting both men's and women's knowledge of cervical cancer and screening practices among women in urban slum community settings is needed. Focus on men in addition to women on cervical cancer studies is very scanty in Nigeria. Thus, the inclusion of men, and not only women, is important because of the decision-making role of men in Nigerian families and in improving family health. This study therefore investigated the knowledge and screening practices for cervical cancer among male and female adults in urban poor settings in Ibadan, Nigeria. The findings from this study would inform baseline data for planning appropriate health promotion and education, prevention interventions, and policy formulation to prevent and control cervical cancer in poor community settings in Nigeria.

METHODS

Study Design and Setting

This study used a cross-sectional design in two urban community-based settings in Ibadan, Oyo State, Nigeria. Data collection lasted for 3 weeks in both communities. Ibadan is the largest city in Africa situated in the western region of Nigeria. Ibadan has a population of 3 million and is a combination of both urban and semiurban community settings. Two underserved communities located in the urban slum areas of Ibadan North Local Government Areas (LGAs) were identified. The two communities selected for this study are at the heart of Ibadan city in an urban LGA but have a mixture of higher- and lower-educated people and subsequently a combination of

high-, middle-, and low-income communities. The LGA has an estimated population of 308,119, and sanitary conditions in the slum areas are poor as the majority of houses do not have access to potable water and water-flushed toilets.

Study Population, Sampling, and Sample Size

All consenting male and female adults in both communities age 18-65 years were eligible to participate in this study. Exclusion criteria included persons who did not give consent to participate in the study and physically or mentally ill men and women, who were unable to provide adequate information. A previous community-based study by Nnodu et al¹³ informed the calculation of the sample size of 500, using the Leslie Kish formula. The prevalence of knowledge about HPV was 33%, with calculations on the basis of 95% confidence level, a margin of error of 5%, and a design effect of 1.5. The final sample size calculated was 334, but to cater for attrition and to cover a larger sample area, the sample size was increased to 500. Community members age 18-65 years were randomly selected from the total community population. Simple random sampling technique was used to select participating households, whereas one respondent was selected in each household by ballot to avoid selection bias. A total of 147 males and 353 females completed the electronic data.

Data Collection Methods and Instruments

The research team had earlier visited and interacted with the communities' stakeholders including the heads of the landlord association, executives of the association, and religious leaders. The two communities had committed to support the study and paved the way for easy connection to the community members. In the two communities, 552 people were approached and only 52 declined to participate, mostly because they had to engage with other commitments at the time of the interview. Most of those who consented to participate were self-employed so could create time for the interview.

Data collection instrument was developed and converted into an electronic data capture tool (ODK Collect). Data collection was interviewer administered using the translated instrument into the local language Yoruba and back-translated to English for content validity. Data tool contained both open- and closed-ended questions (Data Supplement). Interviewers were trained before data collection process to ensure increased quality of data set, and all followed a homogenous procedure. Data were pretested in similar community settings before actual data collection was undertaken. The ODK tool included questions on sociodemographic characteristics of respondents and cervical cancer questions on awareness and knowledge of cervical cancer risk factors, symptoms, and detection. Questions were also asked about screening practices with Pap smear, visual inspection with acetic acid, reasons for nonscreening, and HPV vaccination. Respondents were asked to identify their responses to knowledge questions with yes or no as appropriate. Open-ended question responses were recorded on the ODK tool by interviewers. Knowledge questions were scored (on a scale of 0-39) for respondents' knowledge of cervical cancer detection, symptoms, and risk factors. Total scores were added together, and a mean knowledge score for respondents was calculated.

Quality Assurance

Throughout the data collection process, research assistants were monitored and gave daily feedback on the research process. The electronic data collected were uploaded daily and checked for completeness and errors. In those cases where there were errors, research assistants were asked to collect additional data and the data previously collected were discarded. Quality assurance meetings were held weekly to review the data collected, weekly targets, and any challenges that research assistants encountered. This enabled immediate response to facilitate ease of data collection procedure.

Data Analysis

Electronic data collected using the ODK tool were checked before they were transferred into the Statistical Package for Social Sciences (IBM SPSS) version 21. Both descriptive and inferential statistics analyses were used to meet the criteria of the study objectives. Categorical variables were presented using frequencies and percentages, whereas continuous variables reported means and standard deviations. Inferential statistics was obtained using chi-square statistics to estimate the degree of association between the variables in the study. Multivariate regression analysis was not carried out because there was no statistical significance from the chi-square statistics.

Ethical Consideration

The study protocol was approved and informed (by signing an informed consent form), and voluntary consents were sought and obtained from community leaders, stakeholders, and all study respondents, before the

commencement of data collection (Data Supplement). There were no physical risks to the respondents; data were collected in privacy, and respondents were assured that they would not be penalized in any way if they chose to stop the data collection at any stage. Respondents were assured of confidentiality of responses, and only identification codes were assigned to ODK files. Study findings were disseminated to participating communities after the completion of the study.

The study protocol was approved by the University of Ibadan/University College Hospital Nigeria Ethical Review Committee, Nigeria, with the reference number UI/EC/17/0410.

RESULTS

Socioeconomic Characteristics of Respondents

A majority of respondents were females (70.6%), and the mean age was 35.36 ± 12.24 years. More than half (52.6%) of the respondents had completed secondary school education, with most numerous ethnic group among them being Yoruba (88.8%). A majority (64.0%) of respondents were married, and the most predominant religions were Christianity (51.0%) and Islam (49.0%). A majority of respondents (72.6%) were self-employed with small-scale business. Many (67.2%) had a monthly income of 20,000 naira (\$51 US dollars) or less. More than half of the respondents (54.8%) had a household size of two to four people, whereas 37.0% had more than five members (Table 1).

Awareness of Cervical Cancer

A majority of respondents were not aware of cervical cancer screening (91.2%) and Pap smear test (93.6%). Few (10%) had ever heard of HPV vaccine for the prevention of cervical cancer.

Knowledge of Cervical Cancer (detection, symptoms, and risk factors)

The knowledge of the risk factors for cervical cancer showed that majority (92.4%; 0.92 ± 0.27) reported that old age, low socioeconomic status (88%; 0.88 ± 0.33), unhealthy diet (75.8%; 0.76 ± 0.43), and high rate of abortion (73%; 0.73 ± 0.44) were risk factors for cervical cancer (Table 2).

A majority of respondents (91.60%; 0.92 ± 0.28) reported that the absence of menstruation or irregular menstruation, itching at the vagina (91.00%; 0.91 ± 0.29), and painful menstruation (95.40%; 0.95 ± 0.21) constitute symptoms of cervical cancer (Table 2).

The results of knowledge on detection of cervical cancer showed less than half (41.4%; 0.41 ± 0.49) of the respondents reported that cervical cancer can be terminal. However, a majority of respondents (88.6%; 0.89 ± 0.32) reported that it is sufficient to only do cervical cancer test once to eliminate its risk, and 83.4% (0.83 ± 0.37)

TABLE 1. Sociodemographic Characteristics of Respondents (N = 500)

Variable	Frequency	Percent
Sex		
Male	147	29.4
Female	353	70.6
Age group,^a years		
Youth (18-25)	119	23.8
Adult (26-45)	271	54.2
Middle age (46-65)	110	22.0
Education		
No formal schooling	49	9.8
Primary education	78	15.6
Secondary education	263	52.6
College or university education	110	22.0
Ethnic group		
Yoruba	444	88.8
Igbo	26	5.2
Hausa	4	0.8
Others (Akwa Ibom, Benue, Cross River, Delta, Edo, Ibibio, Kogi, Tapa, and non-Nigerian)	26	5.2
Marital status		
Never married	142	28.4
Married	320	64.0
Not married	38	7.6
Religion		
Christianity	255	51.0
Islam	245	49.0
Years of residence^b		
< 10	329	65.8
11-20	75	15.0
21-30	60	12.0
> 30	36	7.2
Employment status		
Employed	64	12.8
Self-employed	363	72.6
Unemployed	73	14.6
Monthly income^c		
No income	34	6.8
20,000 naira or less (\$51 US dollars)	336	67.2
> 20,000 naira (\$51 US dollars)	130	26.0
Size of household^d		
1 person	41	8.2
2-4 persons	274	54.8
> 5 persons	185	37.0

^aMean age = 35.36 ± 12.24 years.

^bMean years of residence = 11.41 ± 11.64.

^cMean monthly income = 19,714.60 ± 22,975.14.

^dMean household size = 4.07 ± 1.85.

TABLE 2. Knowledge of Cervical Cancer (Risk Factors, Symptoms, and Detection)

Risk Factor for Cervical Cancer	Mean ± SD	Level (%)
Having sex with uncircumcised male partner	0.13 ± 0.33	12.6
Old age	0.92 ± 0.27	92.4
Family history of cancer	0.22 ± 0.42	22.2
Low socioeconomic status	0.88 ± 0.33	88
Spiritual attack	0.66 ± 0.47	66
Uncontrolled cigarette smoking	0.24 ± 0.43	23.8
Unhealthy diet	0.76 ± 0.43	75.8
High numbers of sexual partners	0.29 ± 0.46	29.6
High rates of abortion	0.73 ± 0.44	73
HPV infection	0.21 ± 0.41	21
Early age of sexual debut	0.21 ± 0.41	21
Previous history of sexually transmitted diseases	0.27 ± 0.45	27.2
Tobacco use	0.21 ± 0.41	21.2
Poor menstrual hygiene	0.73 ± 0.44	73.4
Prolonged use of birth control pills	0.14 ± 0.35	14.6
High rate of pregnancy	0.07 ± 0.26	7.2
Mean	6.7 ± 1.6	
Symptom of Cervical Cancer	Mean ± SD	Level (%)
Absence of menstruation or irregular menstruation	0.92 ± 0.28	91.60
Bleeding between periods	0.12 ± 0.33	12.40
Foul smelling vagina discharge	0.14 ± 0.35	13.80
Longer and heavier menstrual flow	0.06 ± 0.24	6.20
Postmenopausal bleeding	0.08 ± 0.28	8.20
Itching at the vagina	0.91 ± 0.29	91.00
Bleeding after intercourse	0.09 ± 0.30	9.60
Painful menstruation	0.95 ± 0.21	95.40
Mean	3.3 ± 0.8	
Detection of Cervical Cancer	Mean ± SD	Level (%)
Cervical cancer is terminal	0.41 ± 0.49	41.4
Cervical cancer is associated with infection	0.29 ± 0.46	29.4
There is an effective method that can considerably reduce cervical cancer risk	0.21 ± 0.41	21.4
Cervical cancer can affect you in the future	0.07 ± 0.26	7.4
Screening gives 100% chance of early diagnosis of cervical cancer	0.20 ± 0.40	20.2
Heard of cytologic examination	0.03 ± 0.16	2.6
It is sufficient to only do the test once to eliminate the risk of cervical cancer	0.89 ± 0.32	88.6
Cervical cancer is a genetic disease	0.83 ± 0.37	83.4
Cervical cancer can be detected in its earliest stages	0.29 ± 0.45	28.8
Cervical cancer can be cured if detected early	0.28 ± 0.45	28.2
Postmenopausal women still have the risk of getting cervical cancer	0.93 ± 0.26	92.6
HPV infection has been identified as a key factor for the occurrence of cervical cancer	0.10 ± 0.30	10
Cervical precancerous lesions may be detected by screening	0.16 ± 0.37	16.2
Sustaining sexual hygiene can prevent cervical cancer	0.29 ± 0.45	29
Mean	5.0 ± 2.6	

NOTE. The overall mean knowledge score was 15.0 ± 4.1 (poor [77.2%], fair [19%], and poor [3.8%]).

Abbreviations: HPV, human papillomavirus; SD, standard deviation.

TABLE 3. Knowledge of Cervical Cancer, Employment Status, and Sex

Variable	Knowledge			Chi-Square Value	P
	Poor (n = 386) (%)	Fair (n = 95) (%)	Good (n = 19) (%)		
Sex					
Male	75.5	21.1	3.4	0.64	.725
Female	77.9	18.1	4.0		
Employment status					
Employed	64.1	32.8	3.1	10.35 ^a	.028
Self-employed	79.6	17.1	3.3		
Unemployed	76.7	16.4	6.8		

^aShows significant relationship; Fisher's exact test.

reported that cervical cancer is a genetic disease, whereas 92.6% (0.93 ± 0.26) reported that postmenopausal women still have the risk of getting cervical cancer.

The mean knowledge score of cervical cancer detection was 5.0 ± 2.6 with a minimum knowledge score of two and a maximum of 13, the mean knowledge score of cervical cancer symptoms was 3.3 ± 0.8 with a minimum knowledge score of one and a maximum of eight, and the mean knowledge score of risk factors for cervical cancer was 6.7 ± 1.6 with a minimum knowledge score of three and a maximum of 13. The overall knowledge of participants was pooled and assessed on a (0-39) point scale. This was further categorized into ranges with 0-18 points as poor knowledge, 19-23 points as fair knowledge, and 24-39 points as good knowledge of cervical cancer. Respondents' overall mean knowledge score was 15.0 ± 4.1 . Majority (77.2%) had low knowledge score for cervical cancer.

There was a statistically significant association between knowledge of cervical cancer and employment status of respondents ($\chi^2 = 10.35$; $P < .05$). There was no statistically significant difference between knowledge and sex (Table 3).

TABLE 4. Cervical Cancer Screening Practices

Cervical Cancer Screening Practice	Frequency (No.)	Percent
Have you ever taken HPV vaccine for protection against cervical cancer?		
Yes	4	1.1
No	349	98.9
Total	353	100
Have you gone for visual inspection with acetic acid before?		
Yes	1	0.3
No	352	99.7
Total	353	100
Have you gone for Pap smear before?		
Yes	14	4.0
No	339	96
Total	353	100

Cervical Screening Practices

Only women (n = 353) reported about cervical cancer practices. Very few women had been screened for cervical cancer with the Papanicolaou test (4%), and one woman with visual inspection with acetic acid (0.3%). Four women had taken HPV vaccine before (1.1%) (Table 4).

DISCUSSION

The overall results of this study indicated low knowledge of cervical cancer and screening practices. The study findings revealed a considerable proportion of the respondents to have had either secondary or tertiary education. Average to high level of education did not seem to translate to awareness or good knowledge of cervical cancer among the study respondents. This was in contrast to findings reported by Ezenwa et al¹⁰ among women in similar urban community settings in Nigeria. Importantly, findings highlighted low socioeconomic status on the basis of low income of respondents with majority living on 20,000 naira or less per month (equivalent of 51 dollars per month), and moreover, majority were self-employed with petty trading. This translates to less ability to afford the cost of screening or vaccination for the prevention of cervical cancer, coupled with lack of accessibility. This result was similar to the findings of Olanlesi-Aliu et al¹⁴ on the quality of services on cervical cancer being affected by inadequate resources. Subsequently, the employment status was a variable that could exert influence on knowledge of the respondents on cervical cancer.

Poor level of awareness was reported for cervical screening, Pap smear, and HPV vaccine from the results of this study. Previous research findings^{13,15} corroborated these outcomes. These findings consequently demonstrate a need for increased awareness on cervical cancer, HPV screening, and vaccination, as well as the need for health promotion and education strategies targeting cervical cancer screening and the benefits of vaccination among adults in poor urban community settings in Nigeria. Almost all the knowledge scores for questions on risk factors, symptoms, and detection for cervical cancer had responses below the average. This is suggestive of perceived low

susceptibility to the disease, but strikingly, majority perceived postmenopausal women to still have the risk of getting cervical cancer, whereas mean score was high for testing is only needed once to eliminate the risk of cervical cancer. Knowledge gaps among study respondents highlight a crucial need for health education to increase knowledge about cervical cancer. Health education should include recommendations for screening, according to the ACOG. The ACOG highlighted that women age between 25 and 29 years are recommended for cervical cytology or Pap test only at 3-year intervals, whereas those who are 30 years to 65 years could have a combination or cotesting of Pap test and HPV test every 5 years. For women over 65 years, screening can be halted on the basis of acceptable previous negative screening within the past 5 years.¹⁶

This study highlights major gaps in prevention practices for cervical cancer and identifies an urgent need to upscale

cervical cancer prevention and intervention strategies in urban poor community settings of Nigeria. Findings are similar to a recent study carried out among women,¹ where only two women had gone through cervical cancer screening test, but none of them had taken HPV vaccination. These findings are reflective of the inadequate health programs and services regarding cervical cancer prevention in Nigeria.¹⁴

In conclusion, the findings of this study have underscored a necessity for increased awareness creation through health promotion interventions and strategies to alleviate low knowledge of cervical cancer, prevention, and screening practices in poor community settings in Nigeria. The provision of prevention services, which must be accessible and affordable to the populace irrespective of the geographical location, is also needed.

AFFILIATION

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Data analysis and interpretation: All authors

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

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