

Original Article

Perceived Consequences of Late Diagnosis and Utilization of Cervical Cancer Screening among Gynecology Clinics Attendees in Ibadan, Nigeria

Ndikom Chizoma M, PhD

Department of Nursing, College of Medicine, University of Ibadan, Nigeria

Fadahunsi Tosin S, BNSc

Department of Nursing, College of Medicine, University of Ibadan, Nigeria

Adekanmbi Victor, PhD

School of Medicine, Cardiff University, Cardiff, Wales, United Kingdom

Young Annie, PhD

Warwick Medical School, University of Warwick, Coventry, England, United Kingdom

Correspondence: Chizoma M. Ndikom Department of Nursing, College of Medicine, University of Ibadan, Nigeria
Email: cmndikom@gmail.com

Abstract

Background: Cervical Cancer (CC) is the second most common cancer in women after breast cancer in the developing countries. It has been reported that case fatality rate (CFR) of CC is high especially at the late and invasive stage. Available statistics shows that majority of women are unaware of CC nor utilized screening services as these have remained low in the developing world.

Objectives: To evaluate the perceived consequences of late CC diagnosis and utilization of Cervical Cancer Screening Services (CCSS) among gynecology clinic attendees in Ibadan, Nigeria.

Methodology: This cross-sectional study was carried out among 138 women and undergoing treatment for gynaecological condition in a tertiary institution in Nigeria. They were selected through simple random sampling method. Data were collected using self-administered questionnaire after obtaining ethics approval and informed consent from the participants. Data was analyzed using Stata statistical software for windows version 14; Chi-square test was used to determine associations between the variables with significant level of $p < 0.05$.

Results: Most respondents 78(56.5%) lacked understanding of consequences of late diagnosis of CC and only 27(19.6%) of the respondents had ever utilized CCSS. There is significant association between: perceived consequences and readiness to be screened for CC ($\chi^2 = 44.142$, $p < 0.001$); educational level and readiness to utilize CCSS ($\chi^2 = 18.125$, $p < 0.006$) as well as knowledge and readiness for CCSS ($\chi^2 = 38.818$, $p < 0.001$). No significant association was found between perceived consequences of late diagnosis of CC and utilization of CCSS ($\chi^2 = 0.013$, $P = 0.910$) but Educational level and utilization of CCSS has significant association ($\chi^2 = 8.998$, $p = 0.029$).

Conclusions: Since most women attending the gynaecological clinic have not utilized cervical cancer screening services and have poor perception about the consequences of late diagnosis. There is need for structured educational strategies to improve knowledge of consequences of not screening for cervical cancer.

Keywords: Cervical Cancer Screening, Gynaecology, Late Diagnosis, Perceived Consequences Utilization.

Background

Cervical cancer is recognized as a global health challenge with about 500,000 new cases and

250,000 deaths each year worldwide (Ferlay, et al. 2015). The incidence of mortality associated with cervical cancer has also reduced substantially following the introduction of effective cervical

screening programs in developed countries (Awodele, et al. 2011). This is in contrast to what is obtained in Africa where many women are diagnosed late as they are not aware of cervical screening and late diagnosis of the disease results in increased mortality (Owoeye and Ibrahim, 2013). Geetha and Santhy (2013) stated that Cervical cancer has continuously been striking hard on the poorest countries such as central and south America, the Caribbean, sub-Saharan Africa (SSA), some parts of Oceania and Asia with rates as high as 30 per 100,000 women, compared with North America and Europe that have reports of about 10 per 100,000 cases. According to the World Health Organization (2018), Cervical cancer is the fourth most frequent cancer in women with an estimated 530,000 new cases in 2012 representing 7.9% of all female cancers with approximately 90% the 270,000 deaths from cervical cancer in 2015 occurred in low- and middle-income countries.

Sub-Sahara Africa is the region with the highest incidence of cervical cancer in the world with concomitant high mortality affecting women at their prime (Bray et al., 2018). There will be an estimated 18.1 million new cancer cases and 9.6 million cancer deaths in 2018 and among females, breast cancer is the most commonly diagnosed cancer and the leading cause of cancer death, followed by colorectal and lung cancer. Cervical cancer ranks fourth for both incidence and mortality (World Health Organization, 2018). There are only very few screening programs for early detection of precancerous lesions within the countries of SSA; most screening activities are done as pilot or research projects which are discontinued on completion (Ntekim, 2012). A challenge in most developing countries is that most women seek medical care after they have developed signs and symptoms (Chadza, et al 2012).

In Nigeria, the national incidence of cervical cancer is 250/100,000, the most recent government estimate put the number of new cases at 14,089 per year (Bruni, et al, 2017). Cancer deaths have continued to increase among young women (Ubajaka , et al, 2015). Previous studies have shown a prevalence of major risk factors for cervical cancer among Nigerian women and these factors include low socioeconomic level, early age

at first sexual intercourse, multiple sexual partners and previous history of sexually transmitted diseases (Balogun et al, 2012). Given the above, we set out to evaluate the perceived consequences of late CC diagnosis and utilization of screening services among women attending gynecology clinics in Ibadan, Nigeria. In order to further understand how Nigerian women feel about cervical cancer as well as the level at which they utilize cervical cancer screening so that new women-centered approaches and services may be implemented

Research questions and hypotheses

H₀₁: There is no significant association between perceived consequences of late diagnosis of cervical cancer and readiness to be screened for cervical cancer.

H₀₂: There is no significant association between knowledge and readiness to be screened for cervical cancer.

H₀₃: There is no significant association between perceived consequences of late diagnosis of cervical cancer and utilization of cervical cancer screening services.

H₀₄: There is no significant association between educational level and utilization of cervical cancer screening services.

H₀₅: There is no significant association between knowledge of cervical cancer and utilization of cervical cancer screening services.

Materials and Method

Study design: This is a cross-sectional study using questionnaire among gynaecology clinic attendees.

Study population: These include women who were registered and attending gynaecology clinics in University College Hospital and Adeoyo maternity teaching hospital Ibadan, Nigeria. These clinics attend to both rural and urban women of various ages and ethnic groups. Most of the respondents attending the facilities for gynaecological care were literate.

Inclusion criteria: women who were registered and had attended the gynaecology clinic more than once. Well oriented women and willing to participate in the study.

Exclusion Criteria: Women coming to the clinic for the first time or accompanied other women to clinic. Those who are too sick to respond to questions.

Sampling: The respondents were selected by the researchers on a weekly basis for four (4) weeks using simple random sampling technique. The appointment list from the clinics was used as sampling frame. The weekly average at the clinics was 45 and monthly average of 180. Period of data collection was 4 weeks.

Sample size determination: The sample size for this study was determined using the Solven formula:

N

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

N = Estimated population of gynaecology patients (180)

e = level of error tolerance 5%

n = 124

Adjusting the sample size to 10% attrition rate

$n_f = 137.8 \approx 138$

These were distributed proportionally between the facilities.

Instrument: The study utilized a self-administered questionnaire consisting of both closed and open-ended questions which was developed by the researchers from reviewed literature based on gaps identified from previous studies. Since most of the respondents were literate, the questionnaire was in English language which is the common mode of communication in Ibadan apart from the indigenous language. The questionnaire covered information on sociodemographic data, knowledge of cervical cancer, utilization of cervical cancer screening services and perceived consequences of late diagnosis of cervical cancer. Data was collected from the selected women using the instrument. The period of filling the questionnaire by each respondent was approximately of 10 minutes.

Institutional Review Board: Ethics Approval for the study was obtained from the University of Ibadan/University College Hospital, Ibadan

(UI/UCH) Ethics Committee, Approval Number; UI/EC/16/0296. Informed consent was obtained from each of participant before the administration of the questionnaires.

Statistical Analysis: The data obtained were cleaned and coded. Stata statistical software for windows version 14 was used for the analysis and Chi-square test was used to determine associations between the dependent and independent variables with statistical significant level of $p < 0.05$

Result

The socio-demographic characteristics of the respondents is shown in Table 1. Almost half of the respondents were in the age range of 26-30 years; the mean age of the respondents was 28 years. The Yoruba ethnic group dominated the study with 116 respondents (84.1%); were married (92.7%) with 62.3% being Christians and 37.2% being Muslims.

Figure 1 shows that 72(52.2%) of the respondents were knowledgeable about cervical cancer while 66(47.8%) had low knowledge as they scored < 7 out of a maximum score of 14 on knowledge items.

Table 2 indicates that most of the respondents were unable to respond appropriately to the questions on perceived consequences of late diagnoses of CC except for item 2 in which 77(55.8%) agreed that when CC is detected early, it can be managed properly.

Figure 2 shows that 60 (43.5%) had good perceived consequences late diagnosis of cervical cancer while over half 78 (56.5%) of the respondents had poor perception.

The majority of the respondents (80.4%) reported they have not utilized cervical screening services while few 19.6% of the respondents reported they have utilized cervical screening service as seen in figure 3.

Table 3 on the association between variables and readiness to be screened for cervical cancer revealed that there is a significant association between perceived consequences and readiness to be screened for cervical cancer ($\chi^2 = 44.142$, $p < 0.001$). Educational level had a significant association with readiness to utilize screening for CC ($\chi^2 = 18.125$, $p < 0.006$). There also is a

significant association between knowledge and readiness to be screened CC ($\chi^2=38.818$, $p<0.001$).

Table 4 indicates that there is no significant association between perceived consequences consequences of late diagnosis of cervical cancer and utilization of cervical cancer screening services ($\chi^2=0.013$, $P=0.910$) but educational level and utilization of cervical cancer screening

services has significant association ($\chi^2 =8.998$, $p=0.029$). There is no significant association between knowledge of cervical cancer and utilization of cervical cancer screening services ($\chi^2 =1.566$, $P=0.150$). Educational level has significant association with knowledge level ($\chi^2 =21.542$, $p=0.001$)

Table 1: Socio demographic characteristics of the respondents

Variables	Frequency(N=138)	Percentage (%)
Age		
21-25	23	16.6
26-30	48	34.8
31 and above	67	48.6
Ethnicity		
Yoruba	116	84.1
Igbo	13	9.4
Hausa	2	1.4
Others	7	5.1
Marital status		
Single	6	4.4
Married	128	92.7
separated/divorced	4	2.9
Religion		
Christianity	86	62.3
Islam	51	37.2
Others	1	0.5
Educational attainment		
Primary School	9	6.6
Secondary School	29	21.0
Tertiary not University	48	34.7
University	52	37.7
Number of children		
0	26	18.9
1	66	47.8
2	23	16.8
3	16	11.7
4 and above	7	4.8

Respondents' Knowledge of Cervical Cancer

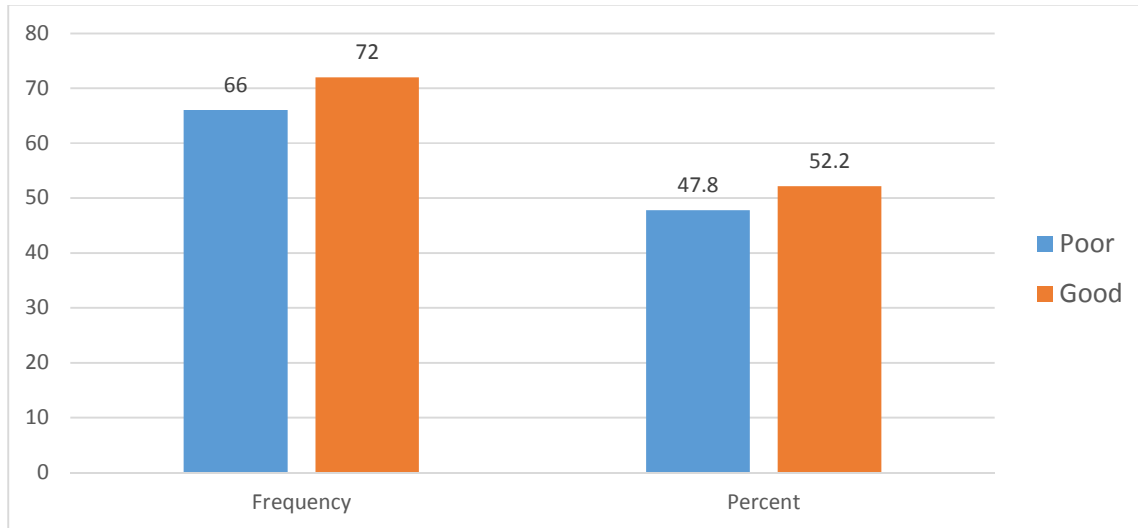


Figure 1: Respondent's level of Knowledge

Table 2: Perceived consequences of late diagnosis of Cervical Cancer (CC)

Perceived Consequences	Agree	Disagree	Not Sure
Underutilization of CC screening services can lead to late diagnosis	47(34.1%)*	10(7.2%)	81(58.7%)
When CC is detected early, it can be managed properly	77(55.8%)*	5(3.6%)	56(40.6%)
Late diagnosis of CC screening services can lead to more cost in the management of cervical cancer	59(42.8%)*	6(4.3.0%)	73(52.9%)
Advanced CC has poor prognosis	44(31.9%)*	12(8.7%)	82(59.4%)
The effects of well grown cervical tumor are severe	60(43.5%)*	5(3.6%)	73(52.9%)
Late diagnosis of CC prevents early intervention	56(40.6%)*	13(9.4%)	69(50.0%)
Advance CC is more painful	50(36.2%)*	9(6.5%)	79(57.2%)

*Appropriate responses

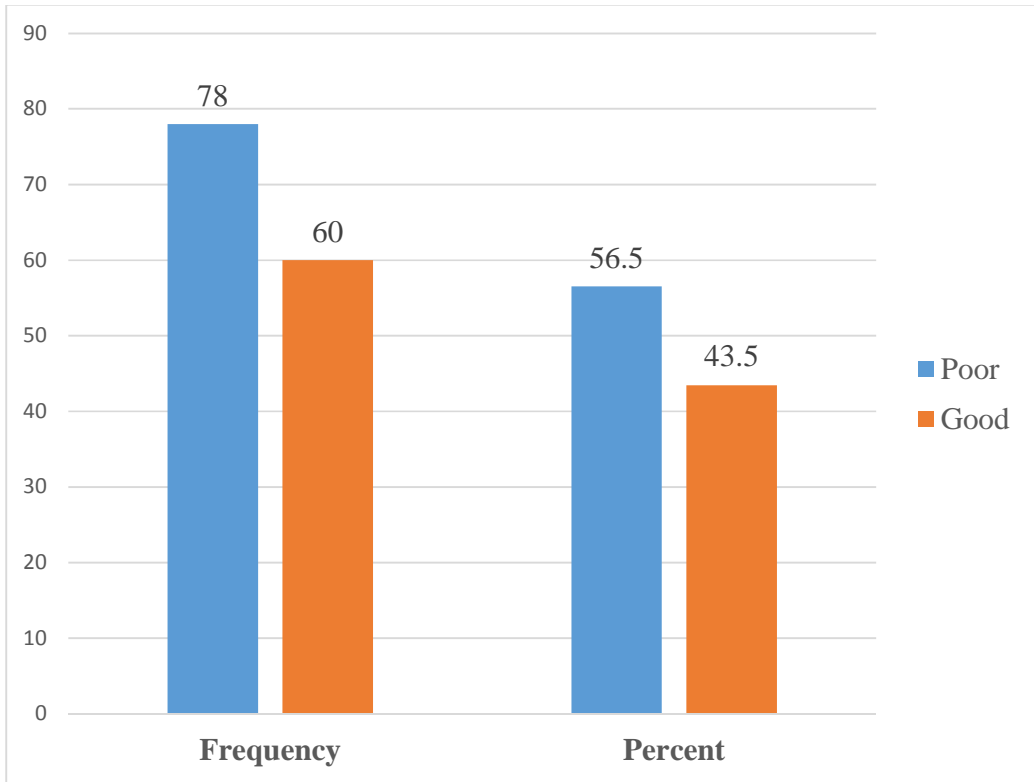


Figure 2: Respondents' Level of Perceived Effect of Late Diagnosis of Cervical Cancer

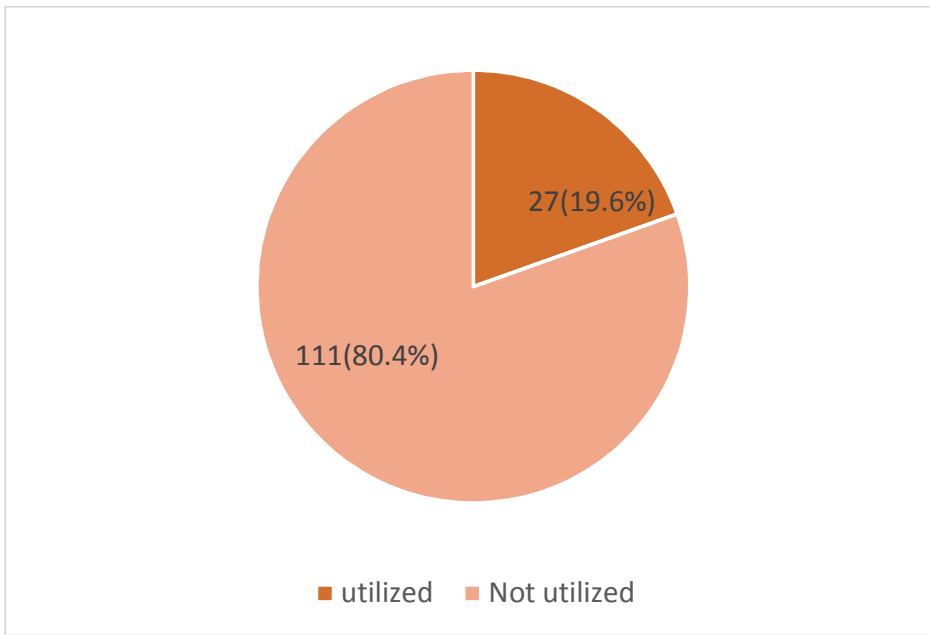


Figure 3: Utilization of cervical cancer screening services

Table 3: Association between Independent variables and Readiness for Cervical Cancer Screening

	Readiness to screen			Total	χ^2	df	p-value
	No	Don't Know	Yes				
Perceived Consequences							
Poor	5(6.4)	50(64.1)	23(29.5)	78(100)	44.142	2	<0.001
Good	8(13.3)	5(8.3)	47(78.3)	60(100)			
Level of Knowledge							
Low	5(7.6)	44(66.7)	17(25.8)	66(100)	38.818	2	<0.001
High	8(11.1)	11(15.3)	53(73.6)	72(100)			
Educational Level							
Primary	1(11.1)	5(55.6)	3(33.3)	9(100)	18.125	3	0.006
Secondary	2(6.9)	20(69.0)	7(24.1)	29(100)			
Tertiary	6(12.5)	17(35.4)	25(52.1)	48(100)			
University	4(7.7)	13(25.0)	35(67)	52(100)			

Table 4: Association between Independent variables and Utilization of Cervical Cancer screening

	Utilization of screening					
	No	Yes	Total	χ^2	df	p-value
Perceived Consequences						
Poor	63(80.8)	15(19.2)	78(100)	0.013	1	0.910
Good	48(80.0)	12(20.0)	60(100)			
Educational Level						
Primary	4(44.4)	5(55.6)	9(100)	8.998	3	0.029
Secondary	26(89.7)	3(10.3)	29(100)			
Tertiary	39(81.2)	9(18.8)	48(100)			
University	42(80.8)	10(19.2)	52(100)			
Level of Knowledge						
Low	56(84.8)	10(15.2)	66(100)	1.566	2	0.150
High	55(76.4)	17(23.6)	72(100)			
	Knowledge of cervical cancer					
Educational Level	Low	High	Total	χ^2	df	P-value
Primary	6(9.1)	3(4.2)	9(6.5)	21.542	3	0.001
Secondary	24(36.4)	5(6.9)	29(21)			
Tertiary	19(28.8)	29(40.3)	48(34.8)			
University	17(25.8)	35(48.6)	52(37.9)			

Discussion

This study sought to find out the perceived consequences of late diagnosis of cervical cancer. Looking at the Health Promotion model, behaviour specific cognitions like perceived benefit of an action is very important in carrying out an action (Berman et al., 2008). Various studies (Ubajaka, et al. 2015; Balogun et al. 2012; Ndikom, Ofi and Omokhodion, 2014; Bammeke and Ndikom, 2014) have been carried out among women in various settings in Nigeria in which most studies reported low level of awareness, the researchers chose to study women attending gynaecology clinic who are expected to be better informed to ascertain their understanding of the consequences of late diagnosis of cervical cancer.

Most of the previous studies were carried out among healthy population of women but this study focused on a population accessing regular health care to see if there will be difference in their perception of consequences and uptake of cervical cancer screening services compared to the general population.

Knowledge on Cervical Cancer

This study revealed that participants had knowledge of cervical cancer and its risk factors. The result on

knowledge is divergent to previous studies like that of Abiodun, (2011); Ubajaka, et al. (2015), among general population of women in which they found that awareness and knowledge were very low. This study is similar to that among health workers by Oche, et al' (2013) in which over 50% of the respondents had good knowledge about cervical cancer but only 10% had been screened for the disease. In this study though over 50% were knowledgeable but most of them had not been screened but there was a significant association between knowledge of cervical cancer and readiness to utilize cervical cancer screening services.

This correlates with what Owoye, and Ibrahim (2013) reported in a research study on knowledge and attitude towards cervical cancer screening among female students and staff in a tertiary institution in the Niger Delta, that the more knowledgeable women are, the more likely they are to make a screening visit and to adhere to recommended follow-up for an abnormal result. Also, a study by Breitkopf, et al. (2016) found that the more knowledge women had on cervical cancer and importance of early screening the more likely they were to visit the screening center as opposed to women that had insufficient knowledge on screening and the need for continuous follow-ups.

Perceived Consequences of Late Diagnosis of Cervical Cancer

The outcomes of this study also revealed that the perceived consequences of under-utilization of cervical cancer screening services and late diagnosis of cervical cancer among gynecology patients was low which supports the findings of a study by Wong et al. (2009) which showed that many women did not have a clear understanding of the meaning of cervical cancer and the need for the early detection of cervical cancer. The result also showed that there was a significant relationship between perceived consequences of late diagnosis of cervical cancer and readiness to utilize screening services which is in accordance with the findings in a research study on perceived susceptibility and cervical cancer screening benefits and barriers among Malaysian women visiting outpatient's clinics (Baskaran et al, 2013). It appears that in Nigeria and some parts of the SSA that the understanding of women about the risk of cervical cancer and dangers of late diagnosis of cervical cancer screening are not improving. This is a call to action for health worker and governments to intensify effort in educating women and the society on the dangers of not adhering to cervical cancer prevention and early detection strategies as suggested in previous studies (Nwankwo, et al. 2011).

Utilization of Cervical Cancer Screening Services

This study also found that only 19.6% of the respondents have ever utilized cervical cancer screening and it correlates with a study on evaluating Awareness and Screening of Cervical Cancer among Women by Zakia et al. (2015), which found that awareness and practice of the screening procedure of cervical cancer was low, though more than 70% of the participants had a positive attitude towards the screening. Furthermore, this study revealed that among some of the participants that knew about cervical cancer screening, only few had undergone the screening which is similar to a study by Utoo, Ngwan and Anzaku (2012) on the Utilization of screening services for cancer of the cervix in Makurdi, Nigeria.

Educational level and knowledge of cervical cancer has positive influence on readiness to be screened for cervical cancer among the respondents. This is similar to findings by Baskaran et al. (2013) which showed that education had influence on perceived susceptibility to cervical cancer and utilization of screening services. A study on Knowledge, attitude and demographic factors influencing cervical cancer

screening behaviour by Mupepi et al. (2011) revealed that women who are financially independent were 6.61% more likely screened compared with those who were dependent on their husbands. . Since their perceived susceptibility was associated with their readiness to be screened but not with their cervical cancer screening uptake, there is need to evaluate other factors that influence their actual uptake of cervical cancer screening services.

Implications for further study: There is need to carry out an intervention study in the facilities among the gynaecology patient using pre-test and post-test intervention design to improve their knowledge and perception of consequences of late diagnosis. The focus of intervention should be both educational and screening service provision.

Strengths and limitations

Strengths: Previous studies (Ndikom and Ofi, 2012; Ndikom, Ofi and Omokhodion, 2014; Bammeke, OO. & Ndikom, 2014) carried out by CMN among pregnant women showed low level of awareness of cervical cancer screening among healthy pregnant women. Carrying out this study among women attending gynaecology clinic seems better as these women are from different sectors of the society and different life experiences which ensures more coverage and representation. The instrument covered the items required to achieve the objectives of the study.

Limitations: The study utilized a self-report which is sometimes subjective, though these respondents were quite objective in their responses. The sample size was small as only patents attending gynaecology clinic were selected for the study. Also, some of them were very weak to respond and were excluded from the study thus the small number.

Conclusion

This study revealed low perceived consequences of late diagnosis of cervical cancer. It implies that more work still needs to be done to improve knowledge of the consequences of not screening for cervical cancer until signs and symptoms present. If women attending gynaecological clinic have not utilized the screening services, what happens in the general population. Structured educational strategies will be important for improving awareness of consequences of underutilization of cervical cancer services thus improving uptake of cervical cancer screening services. Therefore, more effort should be made to

improve this situation through effective and evidenced based research, increased and practical awareness campaigns among younger and older adults, establishment of screening centres and active involvement of nurses and midwives in the fight against cervical cancer.

References

- Abiodun OA, Fatungase Ok, Olu-Abiodun OO, Idowu-Ajiboye BA, Awosile JO. (2011) An Assessment of Women's Awareness and Knowledge about Cervical Cancer and Screening and the barriers to Cervical Cancer Screening in Ogun State, Nigeria. *IOSR Journal of Dental and Medical Sciences* 10 (3)- 52-58
- Awodele, O., Adeyomoye, A. A. A. Awodele, D. F. . Kwashi, V Awodele, I. O. and Dolapo, D. C. (2011) A Study on Cervical Cancer Screening Amongst Nurses in Lagos University Teaching Hospital, Lagos, Nigeria. *Journal of Cancer Education* 26(3): 497-504
- Balogun MR, Odukoya OO, Oyediran MA, and Ujomu, PI. (2012) Cervical Cancer Awareness and Preventive Practices: A Challenge for Female Urban Slum Dwellers in Lagos, Nigeria. *African Journal of Reproductive Health*. 16(1): 75
- Bammeke, OO. & Ndikom, C M. Awareness and attitudes of women towards cervical cancer screening in Oyo state, Nigeria. *African Journal of Midwifery and Women's Health* 2014; 8(2) 179-185
- Baskaran P, Subramanian P, Rahman RA, Ping WL, Mohd Taib NA, Rosli R.
- Perceived susceptibility, and cervical cancer screening benefits and barriers in Malaysian women visiting outpatient clinics. *Asian Pac J Cancer Prev*. 2013; 14(12):7693-9.
- Berman, A., Snyder, S. J., Kozier, B., & Erb, G. (2008) Kozier and Erb's Fundamentals of Nursing 8th Edition. New Jersey: Pearson Educational International Publishing Company.
- Bray, F. , Ferlay, J. , Soerjomataram, I. , Siegel, R. L., Torre, L. A. and Jemal, A. (2018), Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*, 68: 394-424.
- Breitkop, C. R., Rutten, L. J. F., Findley, V., Jacobson, D. J., Wilson, P. M., Albertie, M., Jacobson, R. M., & Colón-Otero, G. (2016) Awareness and knowledge of Human Papillomavirus (HPV), HPV-related cancers, and HPV vaccines in an uninsured adult clinic population. *Cancer Medicine*. 5(11):3346-3352
- Bruni L, Barrionuevo-Rosas L, Albero G, Serrano B, Mena M, Gomez D, Munoz J, Bosch FX, de Sanjose S. (2017) ICO Information Centre on HPV and Cancer (HPV Information Centre). Human Papillomavirus and Related Diseases in Nigeria. Summary Report 2017. <http://www.hpvcentre.net/statistics/reports/NGA11>.
- Chadza, E. , Chirwa, E. , Maluwa, A. , Malata, A. , Kazembe, A. and Chimwaza, A. (2012) Factors that contribute to delay in seeking cervical cancer diagnosis and treatment among women in Malawi. *Health* 4 (11) 1015-1022. .
- Ferlay J, Soerjomataram I, Dikshit R, et al. (2012) Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *International Journal of Cancer* 2015; 136(5): E359-86
- Geetha, B and Santhy, KS. (2013) Sexual risk factors for cervical carcinogenesis - A case control study. *International Journal Current Microbiology and Applied Science* 2(8): 394-399 <https://www.ijcmas.com>
- Mupepi, S. C., Carolyn M, Sampelle, C. M., Timothy RB, Johnson, T. R. B. (2011). Knowledge, Attitudes and Demographic Factors Influencing Cervical Cancer Screening Behaviour of Zimbabwean Women. *Journal of Womens Health* 20(6):943-52.
- Ndikom, C.M and Ofi, B.A. (2012). Awareness, perception and factors affecting utilization of cervical cancer screening services among women in Ibadan, Nigeria: a qualitative study. *Reproductive Health* 9: 11
- Ndikom, C.M., Ofi, B.A., Omokhodion, F. (2014) Willingness to Utilize Cervical Cancer Screening Services Among Antenatal Clinic Attendees in Selected Hospitals in Ibadan, Nigeria. *Journal of Women's Health, Issues & Care* 3(3) 1-5
- Ntekim A. (2012) Cervical Cancer in Sub Sahara Africa, Topics on Cervical Cancer with an Advocacy for Prevention. *Intech Open*, DOI: 10.5772/27200. Available from: <https://www.intechopen.com/books/topics-on-cervical-cancer-with-an-advocacy-for-prevention/cervical-cancer-in-sub-sahara-africa>
- Nwankwo K, Aniebue U, Aguwa E, Anarado A, Agunwah E. (2011) Knowledge attitudes and practices of cervical cancer screening among urban and rural Nigerian women: A call for education and mass screening. *European Journal of Cancer Care* 20(3):362-7.
- Oche, M, Kaoje A, Gana, G and Ango J. (2013) Cancer of the cervix and cervical screening: Current knowledge, attitude and practices of female health workers in Sokoto, Nigeria. *International Journal of Medicine and Medical Science* 5(4)184-190
- Owoeye I, and Ibrahim I. (2013) Knowledge and attitude towards cervical cancer screening among female students and staff in a tertiary institution in the Niger Delta. *International Journal of Medicine and Biomedical Research* 2(1): 48-56
- Ubajaka, C., Ukegbu, A., Ilikannu, S., Ibeh, C., Onyeonor, U., Ezeanyim, A. (2015) Knowledge of cervical cancer and practice of pap smear testing among secondary school teachers in Nnewi North local government Area of Anambra state, South Eastern Nigeria, *J Advances in sexual medicine* 5,13-21
- Utoo, T., Ngwan, B. D. and Anzaku, A. S. (2012) Utilization of screening services for cancer of the cervix

- in Makurdi, Nigeria. *Journal of Reproductive Biology and Health*, ISSN 2054-0841
- Wong L, Low W, Khio E, Shuib R. (2009) Knowledge and awareness of cervical cancer and screening among Malaysian women who have never had a pap smear. *Singapore Medical Journal*. 50(1):49-53.
- World Health Organization (2018) Cervical Cancer: Early Diagnosis and Screening
<http://www.who.int/cancer/prevention/diagnosis-screening/cervical-cancer/en/>
- Zakia M, Fatima A, Sawsan S, Sarah A, Fadi S. (2015) Evaluating Awareness and Screening of Cervical Cancer among Women in Sharjah, United Arab Emirates. *IOSR Journal of Pharmacy* (e)-ISSN: 2250-3013, (p)-ISSN: 2319-4219:5 (2)57-64