IJSRIS 1 (2021) 12-20

International Journal of Scientific Research and Innovative Studies
www.bluepenjournals.org/ijsris

Attitude, knowledge and socio-demographic determinants of healthy women of reproductive age towards cervical cytology screening

doi.org/10.33500/ijsris.2021.01.002

BEJIDE Ronald Ayodele[1], ADELODUN Taiye Stephen[2], OLATUNJI Sunday[2], ARAYOMBO Babatunde Elijah[3], ABIONA Titilayo[4], ADEWOLE Olarinde Stephen[3], OJO Kayode Surajudeen[3], AJENIFUJA Kayode Olusegun[5]

[1]Department of Morbid Anatomy and Forensic Medicine, Faculty of Basic Medical Sciences, Obafemi Awolowo University, Ile-Ife, Nigeria.
[2]Anatomy Department, Ben Carson School of Medicine, Babcock University, Ilishan-Remo, Nigeria.
[3]Department of Anatomy and Cell Biology, Faculty of Basic Medical Sciences, Obafemi Awolowo University, Ile-Ife, Nigeria.
[4]Department of Community Health, College of Health Sciences, Obafemi Awolowo University, Ile-Ife, Nigeria.
[5]Department of Gynaecology, Oncology and Obstetrics, Faculty of Clinical Sciences, Obafemi Awolowo University, Ile-Ife, Nigeria.

Article History
Received 26 August, 2021
Received in revised form 09 October, 2021
Accepted 11 October, 2021

Keywords:
Cervical cytology screening,
Pap smear,
Cervical cancer.

Article Type:
Full Length Research Article

ABSTRACT

Potentially pre-cancerous changes in the cervix can be detected by a Pap test, in which epithelial cells are obtained from the surface of the cervix and examined under a microscope. Pap test screening has greatly reduced cervical cancer incidence and mortality in nations with regular screening programs. Most cervical cancers are detected in this way and without any other symptoms. However, most women who develop cervical cancer have never had a Pap test, or have not had one within the last ten years. Many women were not having regular Pap smear tests nor were they being tested with a new and improved immuno-cytochemistry/maturation index approach in Ile – Ife, Nigeria. Questionnaires were administered to subjects to assess awareness of cancer of the cervix, knowledge of Pap smear, attitude towards cervical cytology screening, and bio-data. This study showed that participants would, as a result of their pregnancies, want to go for cervical cytology screening ($p<0.0001$) and thereafter continue having the test ($p = 0.019$). This study has created an awareness to enhance the attitude of Ile – Ife women and their environment towards cervical cytology screening.

INTRODUCTION

Worldwide, cervical cancer is the second most common (Armstrong, 2010; Cohen et al., 2019), and the fifth deadliest cancer in women (Ngoma, 2006; Richard et al., 2020). It affects about 16 per 100,000 women per year and kills about 9 per 100,000 per year (Parkin et al., 2005). Each year, more than half a million women are diagnosed with cervical cancer and the disease results in over 300,000 deaths worldwide (Cohen et al., 2019).

Approximately 80% of cervical cancers occur in developing countries (Kent et al., 2010) worldwide. In 2008, it was estimated that there were 473,000 cases of cervical cancer (Anorlu, 2008) and in 2010 225,000 deaths (Lozano et al., 2012; Coalition, 2017). Figures from the Ibadan According to the Cervical Cancer Global Crisis Card, Nigeria ranks 5th among countries with regards to death count from cervical cancer, after India, China, Brazil and Bangladesh [Cervical Cancer Free Population Based

*Corresponding author. E-mail: ayotemi@gmail.com.

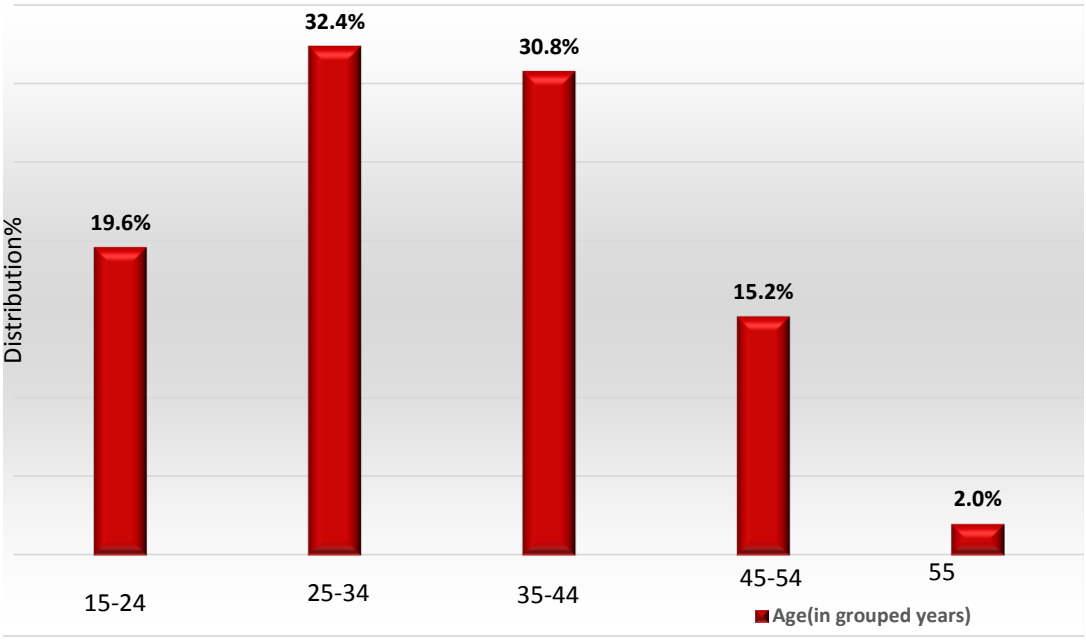

Figure 1. Age group of participants.

Cancer Registry (IBCR) covering a 2 year period 2009-2010, show that cervical cancer age standardized mortality rate (ASR) was 36.0 per 100,000] (Elima et al., 2012) which is higher than in most developed countries (Olubodun et al., 2019). In Nigeria, the incidence of cervical cancer is 14,550 per 100,000, and the mortality rate is 9,659 per 100,000 (Ferlay et al., 2008). The mortality rate in Africa on the average is 53,000 per 100,000, while Asia has the worst mortality rate of 159,000 per 100,000 (Ferlay et al., 2008).

MATERIALS AND METHODS

Two hundred and fifty (250) questionnaires were physically administered to participants and provide answers by writing or documented by interview to assess their attitude, knowledge and socio-demographic data towards Cervical Cytology Screening.

The parameters studied in the participants included their age (in grouped years), marital status, religion, ethnicity and their level of education. The numbers of pregnancies participants ever had as well as the number of children they have alive were also obtained. The ethical clearance with protocol number ERC/2013/02/11 was obtained from the ethical committee of the institution and informed consent from subjects before the commencement of the study.

The Statistical Product and Service Solution, SPSS IBM version 20 (SPSS, Chicago, IL) was used to analyse the data. SPSS output of chi-square statistics and *p* –values were obtained.

RESULTS

Most of the participants (32.4%) are within 25 – 34 years old and followed closely by those within 35 – 44 years old. The oldest participants (55 years) are just 2.0% of the entire sample size. As shown in Figure 1, (85%) were married while 15% were single.

Most (80.8%) of the participants were Christians, 16.4% were Muslims and 2.8% were Traditionalists. About 92% of the participants were Yoruba speaking peoples, 6% speak Igbo and 2.4% speak Hausa. Most (66.4%) of the participants had secondary education, 13.6% had post-secondary education while the remaining 22% had primary or no formal education.

Twenty-one participants (8.4%) have never been pregnant (Gravida 0) while 13.2% had one pregnancy (Gravida 1), however, a total of 78.4% reported to have been pregnant more than two times before (Gravida 2+) (Figure 2). Twenty-seven participants (10.8%) have never had a child alive (Para 0); but 17.6% have had one child alive (Para 1). Nevertheless, a total of 71.6% of the participants have had more than two children alive (Para 2+) (Table 1).

Forty-nine (49) participants in this study reported ‘they had at one point advised a woman to go for Pap smear test’ and ‘all of them would want to have Cervical Cytology

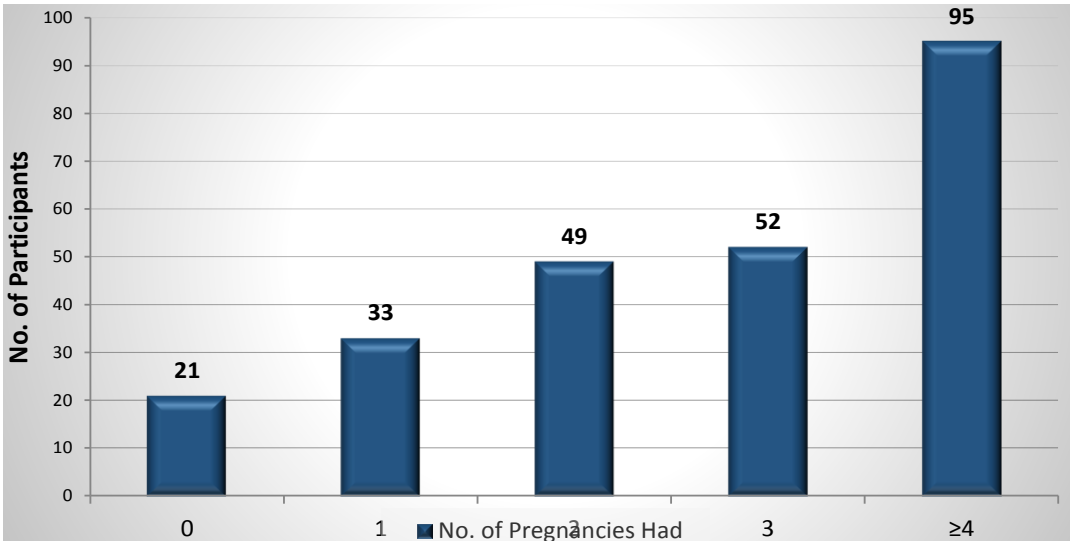

Figure 2. Gravidity.

Table 1. Demographic characteristics of participants: frequency distribution of 250 participants, selected by background characteristics.

Demographic characteristics	Frequency
Age (in grouped years):	
15 – 24 years	49 (19.6)
25 – 34 years	81 (32.4)
35 – 44 years	77 (30.8)
45 – 54 years	38 (15.2)
55 years	5 (2.0)
Marital Status:	
Single	38 (15.2)
Married	212 (84.8)
Religion:	
Christianity	202 (80.8)
Islam	41 (16.4)
Traditional	7 (2.8)
Ethnicity:	
Yoruba	229 (91.6)
Igbo	15 (6.0)
Hausa	6 (2.4)
Level of Education:	
No formal education	30 (12.0)
Primary education	20 (8.0)
Secondary education	166 (66.4)
Post-Secondary education	34 (13.6)
No. of previous pregnancies:	
Nil	21 (8.4)
Once	33 (13.2)
Two times	49 (19.6)
Three time	52 (20.8)
Four and above	95 (38.0)
No. of Children Alive:	
None	27 (10.8)
One	44 (17.6)
Two	42 (16.8)
Three	78 (31.2)
Four and above	59 (23.6)
TOTAL	**250**

Table 2. Contd.

screening' ($p<0.05$). The participants who 'believed that all adult females are susceptible to Cervical Cancer' do not affect their willingness to go for cervical cytology screening. However, it affects their willingness positively that 'all adult females should continue to have the test' ($p<0.001$), since it has been presumed that they are at risk of Cervical Cancer. A follow-up question that 'it is likely that I develop cervical cancer' was totally agreed on by 90.5% of the participants who would want to go for cervical cytology screening, whereas all the participants 'who would continue having the test' strongly agreed that they could develop cervical cancer as at the time of collecting data for this study. Most of the participants (91%) believed that 'Cervical Cancer is not deadly' and 'would go for the screening' ($P>0.05$) but not as much important as to continue going for the screening ($P<0.05$). The believe that 'Cervical Cancer can lead to infertility in reproductive women' affected their willingness positively to go for the screening ($P = 0.041$) and thereafter, continue having the screening ($P<0.001$) (Table 2).

Table 2 and 3 show the attitude and knowledge of the

Table 2. Contd.

Percent distribution of healthy women showing who:							
	Would want to go for the test?			Would want to continue having the test?			
	Yes (%)	NO (%)	p-value	Yes (%)	NO (%)	p-value	n = 250
Cervical cancer has association with severe inter-menstrual bleeding							
Strongly agreed	91.3	8.7	0.076	100.0	0.0	**<0.000**	**195**
Agreed	100.0	0.0		82.5	17.5	**1**	**40**
Undecided	100.0	0.0		100.0	0.0		**15**
Oestrogen and Progesterone are common hormones that influence menstrual cycle							
Strongly agreed	88.9	11.1	**0.001**	93.5	6.5	**0.009**	**108**
Agreed	100.0	0.0		100.0	0.0		**104**
Undecided	86.8	13.2		100.0	0.0		**38**
The awareness of the masses about Pap smear is high							
Agreed	100.0	0.0	0.472	100.0	0.0	**<0.000**	**6**
Undecided	100.0	0.0		46.2	53.8	**1**	**13**
Strongly disagreed	92.6	7.4		100.0	100.0		**231**
The awareness of masses about Pap smear is low							
Strongly agreed	93.0	7.0		97.1	2.9		**244**
Undecided	100.0	0.0	0.799	100.0	0.0	0.915	**3**
Strongly disagreed	100.0	0.0		100.0	0.0		**3**
Percent distribution of healthy women showing who:							
	Would you want to go for the test?			**Would you want to continue having the test?**			
	Yes (%)	NO (%)	p-value	Yes (%)	NO (%)	p-value	n = 250
Do you believe that regular Pap smear can reduce the prevalence of cervical cancer							
Yes	92.8	7.2	0.608	97.0	3.0	1.000	**235**
No	100.0	0.0		100.0	0.0		**15**
Have you ever advise at least a woman to go for pap smear?							
Yes	100.0	0.0	**0.029**	100.0	0.0	0.351	**49**
No	91.5	8.5		96.5	3.5		**201**
All adult females are susceptible to cervical cancer?							
Strongly agreed	91.8	8.2		100.0	0.0		**207**
Agreed	100.0	0.0	0.285	100.0	0.0	**<0.0001**	**12**
Undecided	100.0	0.0		100.0	0.0		**24**
Disagreed	100.0	0.0		0.0	100.0		**7**
It is likely that I develop cervical cancer							
Strongly agreed	90.5	9.5		100.0	0.0		**179**
Undecided	100.0	0.0	0.065	100.0	0.0	**<0.0001**	**30**
Disagreed	100.0	0.0		56.2	43.8		**16**
Strongly disagreed	100.0	0.0		100.0	0.0		**25**
Cervical cancer is not a deadly disease							
Strongly agreed	91.0	9.0		100.0	0.0		**188**
Agreed	100.0	0.0	0.198	63.2	36.8	**<0.0001**	**19**
Undecided	100.0	0.0		100.0	0.0		**18**

Table 2. Contd.

Disagreed	100.0	0.0		100.0	0.0		**6**
Strongly disagreed	100.0	0.0		100.0	0.0		**19**
Cervical cancer can cause infertility							
Strongly agreed	90.8	9.2	**0.041**	100.0	0.0	**<0.0001**	**185**
Agreed	100.0	0.0		88.1	11.9		**59**
Undecided	100.0	0.0		100.0	0.0		**6**
Person with cervical cancer is likely to have severe painful sexual intercourse							
Strongly agreed	91.7	8.3		96.6	3.4		**204**
Agreed	100.0	0.0	0.250	100.0	0.0	0.654	**27**
Undecided	100.0	0.0		100.0	0.0		**3**
Disagreed	100.0	0.0		100.0	0.0		**16**

Table 3. Knowledge and attitude of healthy women of reproductive age towards Cervical Cytology Screening.

Percent distribution of healthy women showing who:							
	Would want to go for the test?			**Would want to continue having the test?**			
	Yes (%)	NO (%)	p-value	Yes (%)	NO (%)	p-value	**n = 250**
Have you encountered a patient with cervical cancer?							
Yes	100.0	0.0	0.610	56.2	43.8	**<0.0001**	**16**
No	92.7	7.3		100.0	0.0		**234**
Mother have previously suffered cervical cancer							
Yes	100.0	0.0	1.00	0.0	100.0	**<0.0001**	**7**
No	93.0	7.0		100.0	0.0		**243**
Have you previously suffered malignant change of the cervix?							
Yes	100.0	0.0	0.608	100.0	0.0	1.000	**15**
No	92.8	7.2		97.0	3.0		**235**
Is cervical cancer curable?							
Yes	97.3	2.7	**<0.0001**	96.3	3.7	0.198	**188**
No	80.6	19.4		100.0	0.0		**62**
Have you heard of cervical cytology (Pap smear) before?							
Yes	100.0	0.0	**0.004**	100.0	0.0	0.196	**70**
No	90.6	9.4		96.1	3.9		**180**
Heard about Pap smear in a formal training/School							
Yes	100.0	0.0	1.00	100.0	0.0	1.00	**6**
No	93.0	7.0		97.1	2.9		**244**
Heard about Pap smear from books/journals/pamphlets/hospital							
Yes	100.0	0.0	0.231	100.0	0.0	1.00	**28**
No	92.3	7.7		96.8	3.2		**222**
Percent distribution of healthy women showing who:							
	would want to go for the test?			**would want to continue having the test?**			
	Yes (%)	NO (%)	p-value	Yes (%)	NO (%)	p-value	**n = 250**

Table 3. Contd.

Heard about Pap smear from co-workers/students							
Yes	100.0	0.0	1.00	100.0	0.0	1.00	**6**
No	93.0	7.0		97.1	2.9		**244**
Heard about Pap smear from friends							
Yes	100.0	0.0	0.384	100.0	0.0	1.00	**24**
No	92.5	7.5		96.9	3.1		**226**
Is cervical cytology being done in Okeogbo State Hospital?							
Yes	100.0	0.0	1.00	46.2	53.8	**<0.0001**	**13**
No	92.8	7.2		100.0	0.0		**237**
At what age should the cervical cytology test commence?							
18 – 25 years	91.7	8.3		96.6	3.4		**204**
26 – 33 years	100.0	0.0	0.128	100.0	0.0	0.444	**12**
At the onset of sexual activity	100.0	0.0		100.0	0.0		**34**
How frequent should the test be performed?							
Monthly	100.0	0.0		100.0	0.0		**14**
Every six month	93.8	6.2		96.4	3.6		**195**
Yearly	80.8	19.2	0.127	100.0	0.0	0.845	**26**
Every two years	100.0	0.0		100.0	0.0		**9**
Every three years	100.0	0.0		100.0	0.0		**3**
Once in a lifetime	100.0	0.0		100.0	0.0		**3**
Who should determine the need for a woman to go for a Pap smear							
The woman	89.9	10.0		100.0	0.0	**<0.0001**	**168**
The husband	100.0	0.0	0.064	100.0	0.0		**6**
The doctor	100.0	0.0		63.2	36.8		**19**
The medical scientist	100.0	0.0		100.0	0.0		**29**
The health worker	100.0	0.0		100.0	0.0		**28**
Have you had a cervical smear?							
Yes	100.0	0.0	0.141	100.0	0.0	0.602	**31**
No	92.2	7.8		96.8	3.2		**219**

women to cervical cytology screening. Most (91%) believed that regular Pap smear reduces the prevalence of cervical cancer; however, many of the women (87.6) have never had Pap test done before. Most of the women (92.8%) are willing to go for the test.

Participants who have met a patient suffering from Cervical Cancer have the tendency to go for screening ($P>0.05$) and more significantly, would want to continue having the test done ($p<0.05$). Similarly, participants whose mothers have suffered from Cervical Cancer at one point in their lives also have inclination to go for screening, but they are ready to also continue having the test ($p<0.05$) (Table 3).

The study also revealed that participants who had the knowledge that 'Cervical Cancer can be cured' would want to have screening ($p<0.05$). However, it does not affect their willingness positively to continue having the screening ($p>0.05$). Twenty-eight percent (70) of the participants claimed to have heard about Cervical Cytology screening before and they were sure they "want to go for the test" ($p<0.004$). Nevertheless, it does not affect their willingness to continue having the test ($p>0.05$) (Table 3).

Majority of the participants (67.2%) believed that "the women should determine the need to go for the test" (Table 3). Table 4 showed that age (25 – 34 years) of participants can have positive attitude towards cervical cytology screening and it was observed that participants would want to go for the test as they progressed to menopausal ($p<0.0001$) and as well continue having the

Table 4. Socio-demographic characteristics of healthy women of reproductive age towards Cervical Cytology Screening.

	Percent distribution of healthy women showing who:						
	Would want to go for the test?			Would want to continue having the test?			
Socio-demographic Characteristics	Yes (%)	NO (%)	p-value	Yes (%)	NO (%}	p-value	**n = 250**
Age (in grouped years):							
15 – 24 years	65.3	34.7		100.0	0.0		**49**
25 – 34 years	100.0	0.0	**<0.0001**	91.4	8.6	**0.005**	**81**
35 – 44 years	100.0	0.0		100.0	0.0		**77**
45 – 54 years	100.0	0.0		100.0	0.0		**38**
55 years	100.0	0.0		100.0	0.0		**5**
Marital Status:							
Single	100.0	0.0	0.083	100.0	0.0	0.599	**38**
Married	92.0	8.0		96.7	3.3		**212**
No. of previous pregnancies:							
Nil	100.0	0.0		100.0	0.0		**33**
Once	100.0	0.0		100.0	0.0		**49**
Two times	75.5	24.5	**<0.0001**	100.0	0.0	**0.019**	**52**
Three time	100.0	0.0		100.0	0.0		**95**
Four and above	94.7	5.3		92.6	7.4		**21**
No. of Children Alive:							
None	100.0	0.0		100.0	0.0		**44**
One	100.0	0.0		100.0	0.0		**42**
Two	71.4	28.6	**<0.0001**	100.0	0.0	**0.003**	**78**
Three	100.0	0.0		91.0	9.0		**59**
Four and above	91.5	8.5		100.0	0.0		**27**
Religion:							
Christianity	94.1	5.9		100.0	0.0		**202**
Islam	87.8	12.2	0.269	100.0	0.0	**<0.0001**	**41**
Traditional	100.0	0.0		0.0	100.0		**7**
Ethnicity:							
Yoruba	92.6	7.4		96.9	3.1		**229**
Igbo	100.0	0.0	0.433	100.0	0.0	0.719	**15**
Hausa	100.0	0.0		100.0	0.0		**6**
Level of Education:							
No formal education	100.0	0.0		76.7	23.3		**30**
Primary education	75.0	25.0	**0.004**	100.0	0.0	**<0.0001**	**20**
Secondary education	92.8	7.2		100.0	0.0		**166**
Post-Secondary education	100.0	0.0		100.0	0.0		**35**

screening (p = 0.005). The gravidity of the participants also affected their attitude towards screening. This study showed that participants would, as a result of their pregnancies, want to go for Cervical Cytology screening (p<0.0001) and thereafter continue having the test (p = 0.019). These actions could be influenced by Pap smear awareness talk during antenatal clinic. The same goes for the number of children of participants that are still living, analysis revealed that this might as well buttress their actions to claim they would want to have screening (p<0.0001), and also continue having the test (p = 0.003).

The study also showed that religion could be a deciding factor as well. Participants could have been 'pushed' to claim that they would want to have Cervical Cytology screening (p>0.05) because their religion allows it (or not) and they also would want to continue having the test (p<0.0001). The level of education positively affects the willingness to go for screening. Participants have positive willingness to have Cervical Cytology screening (p = 0.004) and would want to continue having the test

afterwards ($p<0.0001$).

DISCUSSION

The attitude, knowledge and socio-demographic characteristics of healthy women of reproductive age surveyed in this study have positively affected their willingness to have cervical cytology screening. The results of this study suggested that the participants are at risk of developing cancer, because of their very poor knowledge and negative attitudes to the utilization of cervical cytology screening services which is in agreement with the work of Olubodun et al. (2019) that said knowledge of cervical cancer, screening and human papilloma virus (HPV) immunization was poor. Most respondents did not consider themselves at risk for cervical cancer. Most especially, a greater proportion of these women have not had cervical cytological screening done. This is also supported by the work of Zietkowski et al. (2010) who noted that most women who develop cervical cancer have never had a Pap test, or have not had one within the last ten years.

In this study most of the participants have a low level of awareness of the cancer of the cervix; there was poor facility on ground and none adequate professionals to establish a stable programme for willing populace. This study shows that the level of education, marital status and age affects the attitude of the participants towards cervical cytology screening and not ethnicity or religion. This could be as a result that most women with these attributes attends antenatal clinics in this environment. This was also demonstrated in the study of Oche et al. (2013) and Okunowo et al. (2020) who also noted that there was no awareness among population studies.

Conclusion

The attitude, knowledge, and socio-demographic characteristics of healthy women of reproductive age surveyed in this study had a significant relationship with their willingness towards cervical cytology screening. The results revealed that the studied respondents were at risk of developing cancer, other cellular abnormality of the cervix, and other hormonal disorders, because of their very poor knowledge and negative attitudes to the utilization of cervical cytology screening services. Fortunately, the number of women that came for the test increased after the study period came to an end. Therefore, this study has now become a major success in the early prevention of cervical cancer in the study area.

ACKNOWLEDGEMENTS

“They will not ask his help unless they believe in Him, and they will not believe in Him unless they have heard of Him, and they will not hear of Him unless they get a preacher, and they will never have a preacher unless one is sent, but as the scripture says: “The footsteps of those who bring good news is a welcome sound”. My profound gratitude goes to Almighty God for the successful completion of this study. I thank the constituted authorities of the Obafemi Awolowo University for the opportunity given me to embark on this research work. With all my heart, I hereby expressed my special appreciation to the high standard of intellectual exposure and keen supervision given to me by my supervisors, Dr O.S. Adewole and Dr. G.O. Omoniyi-Esan.

In this same vein, I appreciate the contributions and support from Professor J.A.O. Ojewole, Dr T.Abiona, Professor W.O Odesanmi, Prof. K.A Adelusola, Late Prof. E.E.U. Akang**,** Prof O. Adejuyigbe, DR. K.O. Ajenifuja, Dr. Ayoka, Dr. (Mrs) Komolafe, Dr. Offusori, Dr. S.K. Ojo, A., Goke, A.O., Oyasola, O. *Olaleye*, and Mrs.A.S.Okeleye, Prophet Adeniyi, Mr. Adeleye, Dr. Irabor, Kemi Erhiaganoma and Dr. A.O. Komolafe. I also appreciate the strong acceptance and opportunity given me at the Obafemi Awolowo University, Urban Day Comprehensive Health Centre, Ile – Ife, most especially the Consultant in charge of the “Well Woman Clinic” Dr. (Mrs.) Esimai, Dr. Ogini, the chief Medical Officer, and Mr. or Mrs. Akinwande, the Nursing officer at the State Hospital Oke Ogbo, for the successful completion of the study and continuity of the Cervical Cytology Screening Programme in these centres.

My appreciation also goes to Prof. Owotade, Olaniyan Kayode .D, Dr. Sola Asa, and Dr. Bisiriyu .L. for their assistance in data analysis. My Uncle, W. Olaoye and Mrs. A.C. Akinola, for their wonderful support during the study. I also thank Mrs. T. Akinosun, members of staff, students, and my respondents, for their various roles in distribution, collection and filling of questionnaires.

Above all, may the good Lord bless all those who have contributed in one way or the other to the successful completion of my project work in Ile – Ife, Nigeria.

REFERENCES

Anorlu R. I. (2008). Cervical cancer: The sub-Saharan African perspective. Reprod. Health Matt. 16(32):41-49.

Armstrong E. P. (2010). Prophylaxis of cervical cancer and related cervical disease: a review of the cost-effectiveness of vaccination against oncogenic HPV types. Journal of managed care pharmacy. 16(3): 217-230.

Cohen P. A., Jhingran A., Oaknin A. & Denny L. (2019). Cervical cancer. The Lancet. 393(10167): 169-182.

Elima E. J., Maria P. C., Olufemi O., Emmanuel O., Toyin F. & Festus I. (2012). Cancer incidence in Nigeria: A report from population-based cancer registries. Cancer Epidemiol. 36(5): e271-e278.

Ferlay J., Shin H., Bray F., Forman D., Mathers C. & Parkins D. M. (2008). Estimates of worldwide burden of cancer. Int J Cancer. 127(12): 2893-2917.

Kent H., Heffernan M. E., Silvers J., Moore E. & Garland S. M. (2010).

Role of the nurse immuniser in implementing and maintaining the National Human Papillomavirus 'Cervical Cancer' vaccine rollout through a school-based program in Victoria. Sexual Health. *7*(3): 391-393.

Lozano R., Naghavi M., Foreman K., Lim S., Shibuya K., Aboyans V., ... & AlMazroa M. A. (2012). Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. The lancet. 380(9859): 2095-2128.

Ngoma T. (2006). World Health Organization cancer priorities in developing countries. Ann. Oncol. 17:9-14.

Oche M. O., Kaoje A. U., Gana G. & Ango J. T. (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 Sciences. 5(4): 184-190.

Okunowo A. A. & Smith-Okonu S. T. (2020). Cervical cancer screening among urban Women in Lagos, Nigeria: Focus on barriers and motivators for screening. The Nigerian Journal of General Practice. 18(1): 10.

Olubodun T., Odukoya O. O. & Balogun M. R. (2019). Knowledge, attitude and practice of cervical cancer prevention, among women residing in an urban slum in Lagos, South West, Nigeria. The Pan African Medical Journal. 32. doi:10.11604/pamj.2019.32.130.14432

Parkin D. M., Bray F., Ferlay J. & Pisani P. (2005). Global cancer statistics, 2002. CA: A Cancer Journal For Clinicians 55(2), 74-108.

Richard T. S., Ndopwang L. C., Etet P. F. S., Kamdje A. H. N., Mohamadou H., Bruno T. P. & Nangue C. (2020). Breast Cancer Awareness and Detection of Asymptomatic Cases Using Breast Palpation and Fine-needle Aspiration in Bafoussam, Cameroon. Asian Pacific Journal of Cancer Care. 5(1): 61-66.

Zietkowski D., Davidson R. L., Eykyn T. R., De Silva S. S., Desouza N. M. & Payne G. S. (2010). Detection of cancer in cervical tissue biopsies using mobile lipid resonances measured with diffusion-weighted 1H magnetic resonance spectroscopy. NMR in Biomedicine: An International Journal Devoted to the Development and Application of Magnetic Resonance *In vivo*. 23(4): 382-390.