

Original Research Articles
INCIDENCE OF CERVICAL CANCER IN CALABAR, NIGERIA

ABSTRACT:

Aim: The aim of this study is to determine the incidence of cervical cancer among women living in Calabar.

Place and Duration of Study: Calabar cancer registry, May to June 2015

Methodology: Data of cervical cancer diagnosed between 1st of January 2004 and 31st December 2013 and stored in the Calabar cancer registry were accessed and fed into spss version 21 for analysis. Important data captured included the patients age ,sex, place domiciled within last one year, whether rural or urban dwelling, date of incidence as well as topography and morphology of the cervical cancer. Other Gynaecological cancers outside the cervix were excluded as well all other cancers occurring in females outside cervical cancer. The data so captured was subjected to statistical analysis.

Results: One hundred and thirty(130) cases of cervical cancer were recorded during this period Mean (SD) age of female cases was 44.6 (10.2) years, ranging from 30 to 76 years. There appears to be a fairly steady decrease in the mean age at diagnosis, especially in the later years. The crude incidence, adjusted rate and age specific incidence were,17 per `100,000, 15 per 100,000 and 20 per 100,000 respectively.

Within the 5-year period from 2004 to 2008, there was an average annual decrease in incidence rate of 9.4% (95% CI: 3.8%-11.2%). However, within the 5-year period from 2009 to 2013, there was an average annual increase in incidence rate of 12.1%% (95%CI: 2.31% to 14.4%)

Conclusion: Cervical cancer is common in Calabar effort must be redoubled towards public health measures that will bring about reduction in its incidence. This is because cervical cancer is the most easily preventable cancer.

25 **Key words:** *Calabar, Cervical Cancer, Incidence Females*

26 1. INTRODUCTION

27 According to GLOBOCAN 2012, cervical cancer is the 4th commonest cancer in women and the 7th
28 overall worldwide, and its incidence is highest in less developed areas of the world where 85% of the
29 cases now occur.(1-3).The risk factors are early age of initiation of sexual activity, multiple sexual
30 partners by a woman, multiparty, having a male partner with multiple sexual partners(4). These sexual
31 risk factors favour the sexual transmission of a carcinogen- Human Papilloma virus(HPV),which is
32 associated with nearly all cervical cancers(3, 5, 6). To date more than 150 HPV types have been isolated.
33 The high risk HPV types are 16 and 18, which are associated with most cervical cancers(3, 7-9).Current
34 vaccination programmes cover types 16 and 18,which is reported to prevent 66.2 % of cervical
35 cancers(10). It is observed that HPV infections occur in the sexually active women(8, 11, 12) with 90%
36 clearing spontaneously within months(3). Infected cells in the cervix could progress into premalignant
37 lesions known as "cervical intra epithelial neoplasia "(CIN),graded as CIN1,CIN2 and CIN 3 and
38 eventually invasive cervical cancer, through a multistep process (13). Other risk factors such as immuno
39 compromised status as seen in HIV/AIDS predispose the patients to cervical cancer due to weakened
40 immune system(14-18). Smoking, Diethyl stilbesterol use during pregnancy as was the case those days
41 and poverty as well as family history of cervical cancer(3).Poverty as a risk factor can be explained by the
42 lack of access to screening while family history will suggest some bit of familial predisposition.

43 The true incidence in Nigeria is unknown. GLOBOCAN estimates that cervical cancer is the second
44 commonest cancer in Nigerian women with an Age Standardized Incidence Rate(ASR) of 29.0 per
45 100,000(2) .This is similar to rates quoted from Abuja and Ibadan cancer registries, which are among the
46 only three population based cancer registries in Nigeria. In these registry reports, the age specific
47 incidence using world standardised population, was 30.3 per 100,000 and 36.0 per 100,000 respectively
48 (19).Incidentally GLOBOCAN data had relied on estimates from the population based registries which
49 cover less than 5% of Nigeria's population(2, 19).Although the larger population of the country is not
50 covered by a population based cancer registry, institution based reviews across the country suggest that
51 cervical cancer is common. For instance, a ten year review of Gynaecological(Gynae.) cancers in a

reference teaching hospital in South East, showed that it accounted for 78% of Gynaecological cancers(20). Briggs and Katchy in a South - South reference hospital, as well as a histopathological review of Gynae. cancers in Uyo teaching hospital in the South- South showed a predominance of cervical cancers (21-23).A large review carried out in Lagos and Ibadan(South West) in 2011 showed that cervical cancer was second only to breast cancer as the commonest cancer in the region(24).The pattern from Aminu Kano Teaching hospital in the largest metropolis in the north of the country equally shows that cervical cancer is the commonest Gynae. malignancy in women(25).

There is empirical evidence to suggest a high burden of cervical cancer in Nigeria. This can be inferred from a few surveys of Human Papilloma virus burden (HPV), the causative agent of cervical cancer . Although studies on Age Specific rates of the virus in the population at risk are few, in a limited survey in Abuja,Akarolo- Anthony et al, estimated the HPV prevalence to be 37%,and HPV type 35 was the commonest, while Okolo et al in Ibadan found a prevalence of 26.3%(26, 27). Again a population survey of HPV antibodies in the Nigerian population can be a pointer to the prevalence of cervical cancer in Nigeria. In a study in the North west Aminu et al found out that 42.9% of the women attending a Gynae. clinic in their hospital had antibodies to HPV(28).A study of a population of 231 women in a medical project in rural middle belt of the country discovered that 21.6% had high risk HPV while 16.6% had low risk HPV(29). There is equally a strong link between cervical cancer in Nigeria and HPV infection.A multinational study of cervical cancer tissue involving Nigeria, Ghana and South Africa found out that HPV was associated with 90.4% of invasive squamous cell carcinoma samples surveyed (30).Human immuno deficiency (HIV) virus infection and Acquired immuno Deficiency Syndrome (AIDS),which follows HIV infection is now worse in Sub Saharan Africa and has compounded the cervical cancer picture. Some studies, although limited in scope, have shown that high risk HPV are common in premalignant cervical lesions in this patients (14, 16).It is equally noted that high risk HPV are also common in HIV positive patients with normal cervical cytology(31).

The disparity in cervical cancer rates noted between the less developed areas of the world and the developed areas can be explained by the massive deployment of resources by the latter in understanding the evolution of premalignant lesions of the cervix into invasive cancer; the institution of

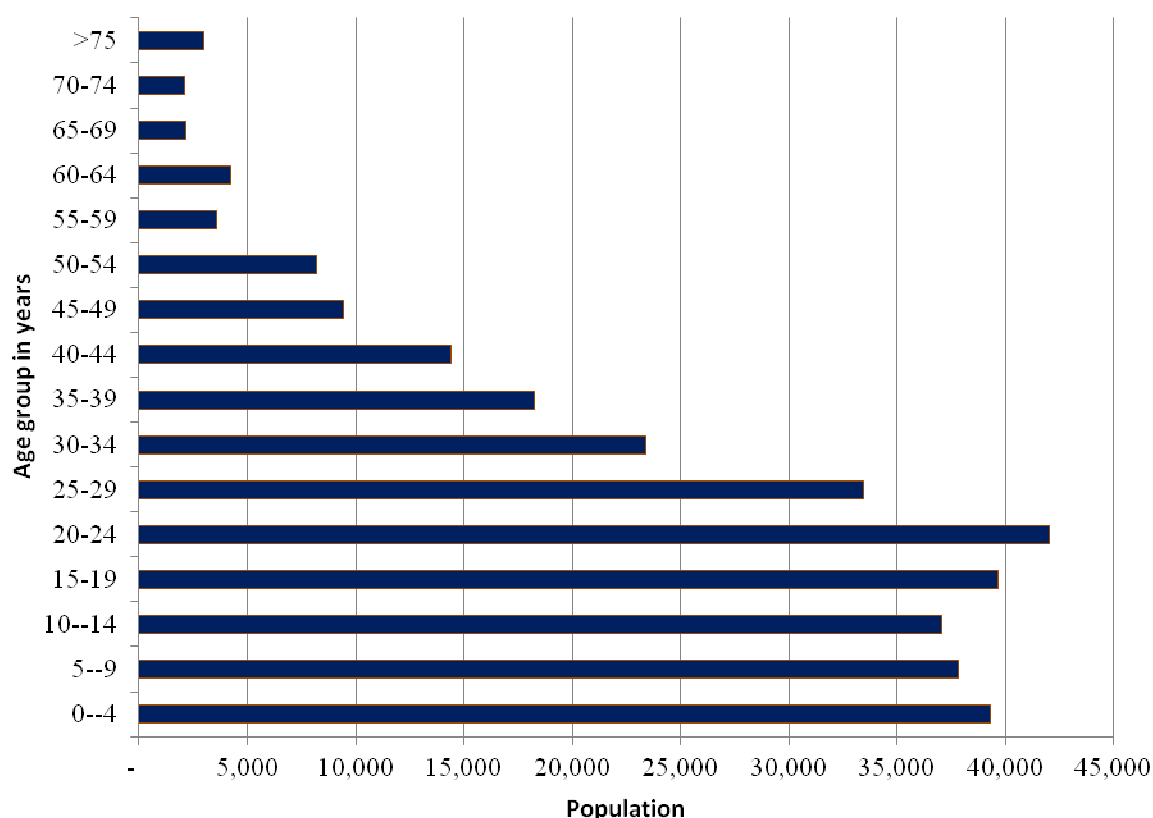
population screening for premalignant lesions, and early treatment, as well as understanding the role of high risk HPV in cervical cancer. GLOBOCAN 2012 states that 85 % of cervical cancer occur in the less developed areas of the world, the highest ASR above 30 per 100,000 occur in Melanesia 33.3, East Africa 42.7, South Africa 31.5, while the lowest risk areas are the more developed areas of Australia/ New Zealand 5.5 and Western Asia 4.4 per 100,000(2). For improvement in cervical cancer incidence and prevalence to be noticed in this part of the world, effort must be made towards improving the low knowledge attitude and practice of cervical cancer by the population, governments/non governmental agencies, public health practitioners and care givers as regularly reported here(32-46). By way of comparison, cervical cancer screening in the Faroe Islands over a three year period attained a high coverage of 67%, 81 and 71%(47). And in Norway, country wide cervical cancer screening carried out between 1956 and 2010 caused a 68% reduction in cervical cancer incidence(48). Here in Calabar cervical cancer screening is opportunistic and baseline data on cervical cancer incidence have not been defined, hence the need for this study.

2. MATERIALS AND METHODS:

Data kept in the Calabar cancer registry between 1st January 2004 and 31st was assessed, information sought after is cervical cancers within this period, the age of patients, sex and morphology of cervical cancers. All other gynaecological cancer outside cervical cancer were excluded. Equally all cervical cancer outside Calabar and Akpabuyo, though recorded in the registry were excluded from analysis.

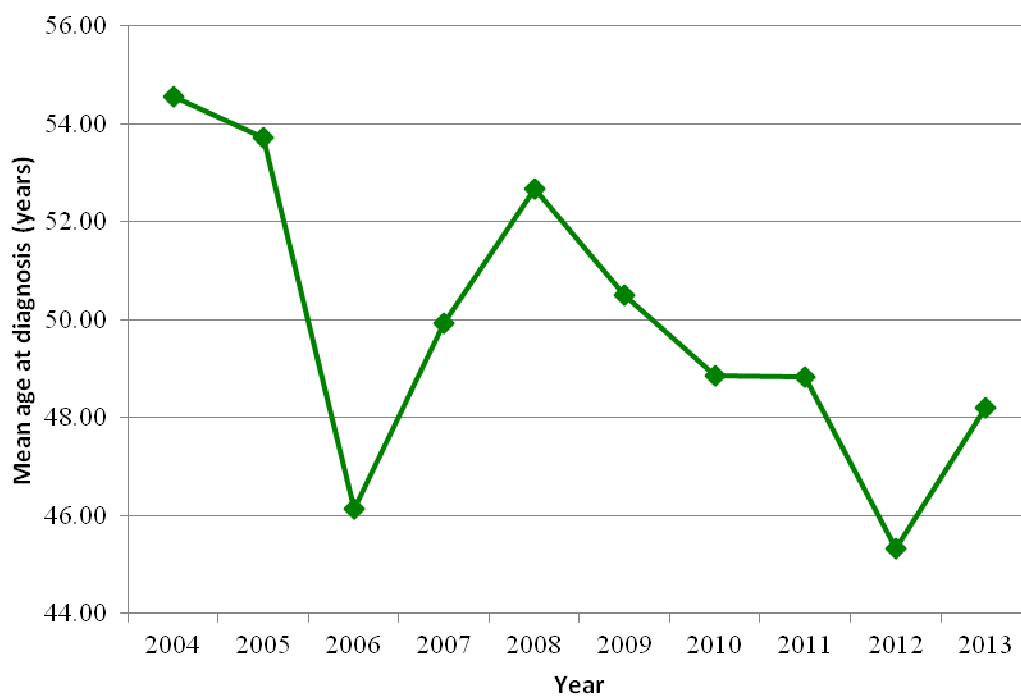
2.1 POPULATION

Age distribution of the population of female resident in the study area was obtained from database of population census conducted in 2006, with intercensal estimations made in collaboration with the National Population Commission, Calabar, Nigeria, using constant annual growth rate of 3.0% (Fig. 1). World standard population was used to calculate the age-standardized or adjusted rates.



102
 103 Figure 1: **Female population of Calabar Registry Area (Calabar Municipality, Calabar-South and**
 104 **Akpabuyo), by age group, census of 2006(49).**

105 **3. RESULT** :Data obtained from record of registered cases of cervical cancer seen within 2004 to 2013
 106 from Calabar registry area, was entered and analyzed using SPSS version 21.0. Within the study period,
 107 one hundred and thirty cases of cervical cancer were seen. Mean (SD) age of female cases was 44.6
 108 (10.2) years, ranging from 30 to 76 years. There appears to be a fairly steady decrease in the mean age
 109 at diagnosis, especially in the later years (Figure 2), but there was no significant difference in mean age
 110 comparing the years ($F=0.77$, $p=0.74$). Approximately three-quarters of cases seen (98, 75.4%) were
 111 between 40 and 64 years old at time of diagnosis, with the commonest age group being 45-49 years
 112 (Table 1). Annual frequency distribution pattern was observed to be bimodal with peak frequencies at
 113 2007 (16, 12.3%) and 2010 (28, 21.5%), and most cases (77, 59.6%) seen at the latter half of the 10-year
 114 study period (Table 2, Figure 3).



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116 **Figure 2:** Mean age at diagnosis of cervical cancer in Calabar, by year (2004-2013)

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Table 1: Age-group distribution of cervical cancer subjects (N=130)

age group (years)	frequency	percentage
30-34	6	4.6
35-39	12	9.2
40-44	21	16.2
45-49	29	22.3
50-54	25	19.2
55-59	9	6.9
60-64	14	10.8
65-69	8	6.2
70-74	4	3.1
≥ 75	2	1.5

Total 130 100.0

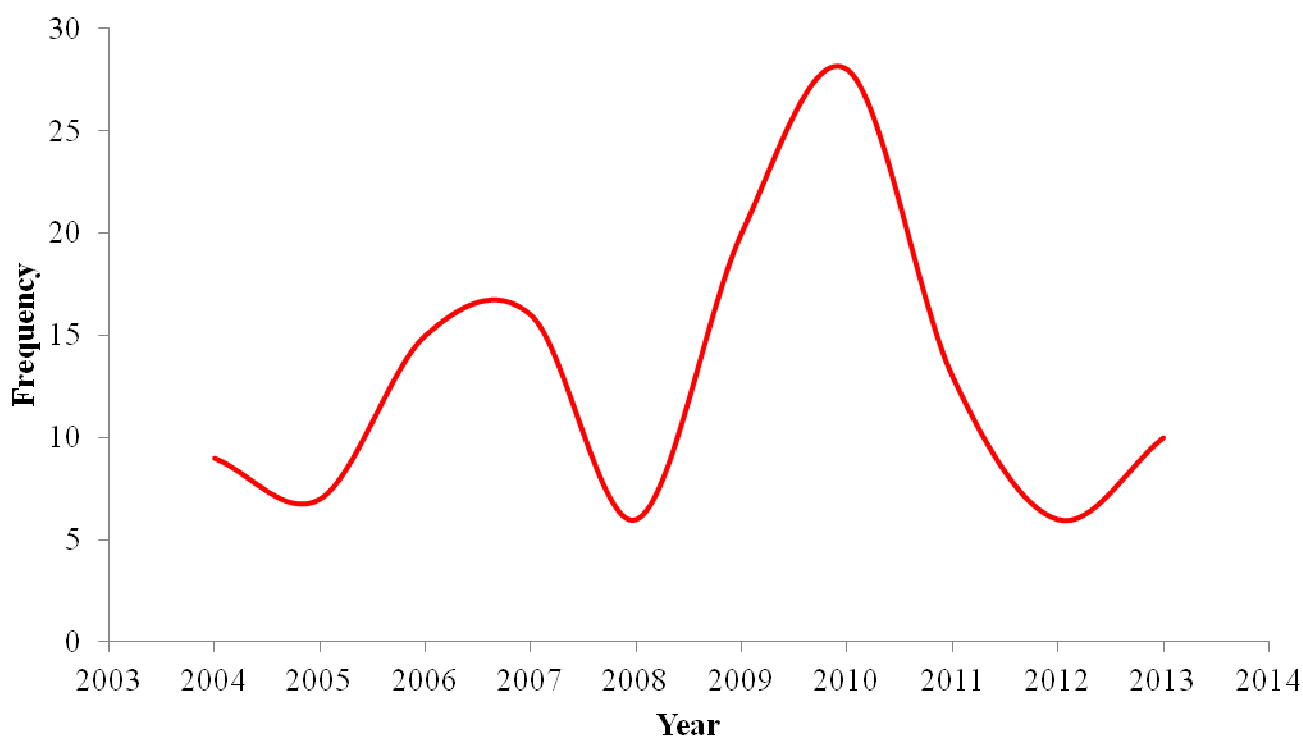
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Table 2: Annual distribution of cervical cancer cases seen in Calabar (N=130)

Year	Frequency	Percentage
2004	9	6.9
2005	7	5.4
2006	15	11.5
2007	16	12.3
2008	6	4.6
2009	20	15.4
2010	28	21.5
2011	13	10.0
2012	6	4.6
2013	10	7.7
Total	130	100.0

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122 **Figure 3: Annual distribution of cervical cancer cases seen in Calabar (N=130)**

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124 The only type of cervical cancer seen during the study period was cervix uteri (ICD - 53.9).

125 Adjusted incidence rate was highest in 2010 (31.1 per 100,000), and high incidence rates were found

126 among subject in 65-69 year age group in 2007 and 2010 (92.3 and 92.4 per 100,000, respectively), and

127 50-54 year age group in 2004 (86.8 per 100,000) (Table 3).

Table 3: Annual crude, adjusted and age-specific incidence rates of cervical cancer in Calabar (2004-2013)

			30-	35-39	40-	45-	50-	55-	60-	65-	70-	
Year	Crude	Adj.	34yr	yr	44yr	49yr	54yr	59yr	64yr	69yr	74yr	≥75yr
2004	14.5	10.2	0.0	6.0	7.0	0.0	86.8	28.0	23.6	46.6	47.4	0.0
2005	10.4	7.9	0.0	0.0	0.0	21.2	36.7	27.8	0.0	0.0	47.3	0.0
2006	17.6	16.9	4.3	5.5	20.9	63.5	24.4	27.8	23.5	0.0	0.0	0.0

2007	23.1	18.0	8.5	16.4	6.9	21.1	24.3	55.4	46.9	92.3	0.0	0.0
2008	7.1	6.7	4.3	5.4	6.9	0.0	12.1	0.0	23.4	0.0	0.0	33.0
2009	27.5	22.3	0.0	5.4	27.6	6.9	36.3	55.1	46.6	44.6	0.0	32.9
2010	37.6	31.1	8.4	21.7	34.3	52.3	36.2	54.9	92.9	92.4	46.2	0.0
2011	16.4	14.4	4.2	0.0	27.4	20.8	48.1	0.0	0.0	45.6	46.5	0.0
2012	6.5	6.6	4.2	0.0	0.0	31.2	24.0	0.0	0.0	0.0	0.0	0.0
2013	9.5	11.0	0.0	0.0	0.0	20.7	12.0	0.0	46.0	45.4	0.0	0.0

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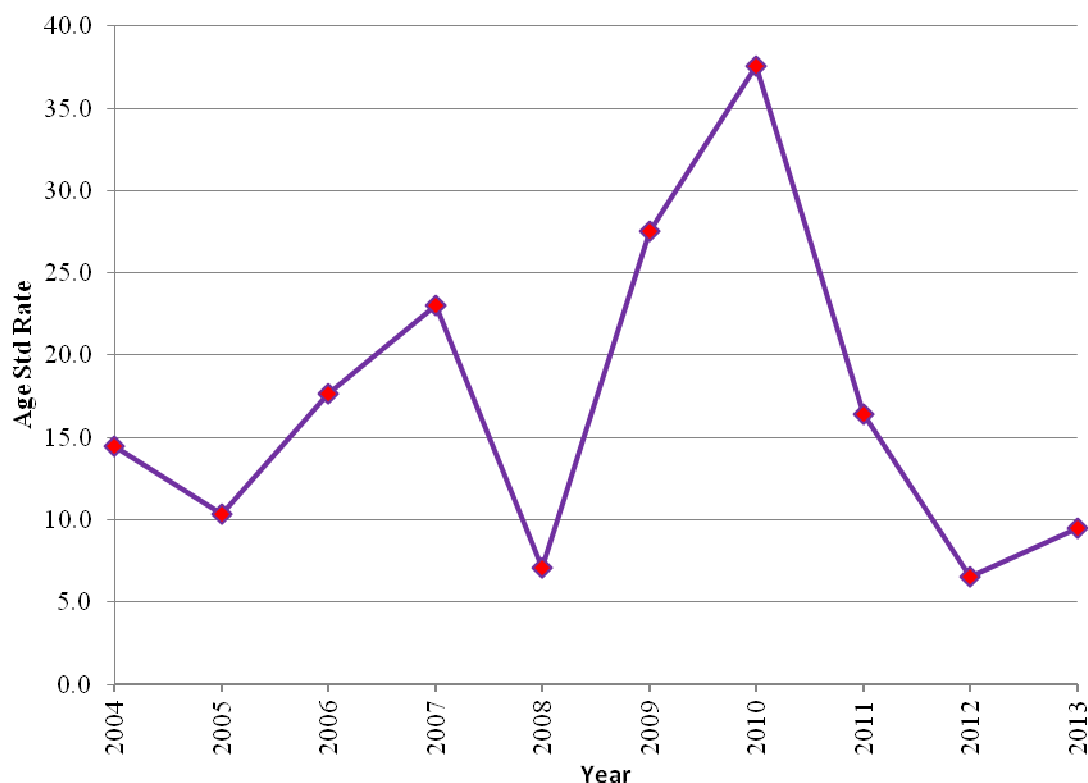
129 Within the 5-year period from 2004 to 2008, there was an average annual decrease in incidence rate of
 130 9.4% (95% CI: 3.8%-11.2%). However, within the 5-year period from 2009 to 2013, there was an average
 131 annual increase in incidence rate of 12.1%% (95%CI: 2.31% to 14.4%) (Table 4, Figure 4).

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Table 4: Incidence rate of cervical cancer cases seen in Calabar (N=130)

Year	Age Std. Rate
2004	14.5
2005	10.4
2006	17.6
2007	23.1
2008	7.1
2009	27.5
2010	37.6
2011	16.4
2012	6.5
2013	9.5

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135 **Figure 4:** Trend in age-standardized incidence rate of cervical cancer in Calabar (2004-2013)

136 **4. DISCUSSION:**

137 The mean age of diagnosis of cervical cancer in Calabar is 44.6 (10.2)years, with the last five years of
 138 the survey showing a progressive decrease in the mean age of diagnosis of this disease .Most of the
 139 patients fell in the age bracket of 45- 49 years, which is similar to 40 - 49 years reported in Ilorin in Middle
 140 belt of Nigeria(50) and 40- 49 in Kenya(51).This is significantly lower than 60-69 years reported in Nnewi
 141 in the south east of the country(52), 50.4 reported in Benin, mid west of Nigeria(53), as well as 54.5 by
 142 Onwudiegwu (54), and 50-69 years in South- south Nigeria(22).The age trend in Calabar conforms with
 143 earlier reports suggesting that cervical cancer tended to occur in the 40-49 age bracket in developing
 144 countries while in developed countries 50- 59 years(51).Several reports have documented adverse
 145 sociodemographic factors favourable for early development of cervical cancers in this part of the world.

Adewuyi et al in Northern Nigeria reported that majority in the cohort they studied had initiated sexual activity by age 17, were in polygamous marriages and were equally multiparous(55, 56). Equally impactful is the contribution of HIV and AIDS in the cervical cancer aetiology in the younger women in this environment(14, 57).

A frequency trend, showed a bimodal peak with the first and second troughs occurring in 2007 and 2010 respectively. There were more incident cases in the latter half of the study period; the last five years accounting for 59.6 % of the cases. This is in agreement with current surveys which ascribe 85% of the world burden of cervical cancer to developing countries(2), as well as 83% of all new cases(58).A high prevalence of cervical cancer is reported in several Nigerian(52, 59-62) and West African studies(63-65).The need for population screening of at risk women for cervical cancer in this environment cannot be over stated . Currently only opportunistic screening is taking place in institutions(43, 66) or occasional public outreaches dotted across the country. It has been argued that the cost of screening test may be militating against universal access(67, 68),however more studies seem to suggest that the knowledge of the disease is at best poor or in some cases nonexistent(33, 37, 69-73) as it were. Sometimes even among care givers in this environment the awareness may not be matched with attitudinal change in favour of adoption of the actual screening(32, 36, 38, 74-76).

The crude incidence, adjusted rate and age specific incidence stood at, 17 per `100,000, 15 per 100,000 and 20 per 100,000.This is high by world standards for instance GLOBOCAN 2012 reported that the highest ASR above 30 per 100,000 occur in Melanesia 33.3, East Africa 42.7,South Africa 31.5,while low ASR areas are the developed areas of Australia/ New Zealand 5.5 and Western Asia 4.4 per 100,000(2).The Calabar ASR is lower than the values reported by Ibadan and Abuja registries,36 per 100,000 and 30.3 per 100,000 respectively(19).Recall that both registries and Calabar are the only population based registries in Nigeria with a combined coverage of less than 5 % of the population. Looking at reports from both registries and the institution based reports and empirical evidence earlier alluded to, one can most certainly conclude that cervical cancer incidence is high in Nigeria. Effort must be redoubled at improving cervical cancer awareness which is still very low(33, 35, 45, 58, 68) as well is institution of population screening which is nonexistent up to this moment(77-80).It is not surprising that

most patients present with highly advanced cancers; often stage 3 and above(81).This has warranted a suggestion that a nation-wide onetime screening of all women at risk be carried out in a year , to fish out nearly estimated 8000 cases, which may include 6400 stage 3 disease and the rest being lower stage disease(81).This will be a daunting task as nearly 30 million women may have to be screened and may task the whole national resources. Also advocated is the adoption of culturally oriented strategies that will overcome both religious and cultural barriers to health education(34, 40, 82, 83).

5. CONCLUSION: Cervical cancer is a common disease in Calabar. Its incidence ranks among the high incidence zones of the world. For a disease that has been proven to be easily preventable, it represent a failure of our public health system. Effort must therefore be redoubled to reverse the trend.

ETHICAL APPROVAL: Permission for this study was granted by the Calabar cancer registry.

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