

# African Research Review

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*An International Multi-Disciplinary Journal, Ethiopia*

*Vol. 3 (5), October, 2009*

ISSN 1994-9057 (Print)

ISSN 2070-0083 (Online)

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## **Prevalence and Trends in Breast Cancer in Lagos State, Nigeria**

**Adetifa Felicia A.** - Department of Adult Education, University of Lagos, Akoka, Lagos, Nigeria

**Ojikutu, Rasheed K.** - University of Lagos, Department of Actuarial Science and Insurance, Akoka, Lagos, Nigeria  
E-mail: kolaojikutu@yahoo.com

### **Abstract**

*The study examined the trends in the prevalence of breast cancer in Lagos State, Nigeria. A sample of 1000 subjects was taken from a population consisting of women between the ages of 15 and 60 years spread across the 20 Local Government Areas (LGAs) of the State. Fifty questionnaires were distributed in each LGA. Employing statistical tools such as ANOVA, Chi-Square and that Duncan Multiple Range test, it was found that prevalence of breast cancer differs across age groups with the age range 26 to 45 having the highest prevalence. It was also observed that there is significant difference in prevalence across the years with 2007 recording the highest prevalence. Moreover, the study shows that women's occupation or profession is important to whether they are diagnosed with breast cancer or not. The study shows steady growth in prevalence of breast cancer over years.*

**Key Words:** Psycho-Social, Breast, Cancer, Lagos, Awareness

## **Introduction**

The Cancer Statistics Worldwide (2005) documented that worldwide; more than one million new cases of female breast cancer are diagnosed each year, making it the most commonly occurring disease in women, accounting for over 1/3 of the estimated annual 4.7million cancer diagnosis in females and the second most common tumor after lung cancer in both sexes. It is also the most common female cancer in both developed and developing countries with 55% of it occurring in the developing countries. In addition, the annual worldwide incidences had almost doubled since 1975 and the prevalence and incidences increased with increasing age (Althuis, 2005).

The report explained further that breast cancer is a major public health problem in developed countries, claiming over one million lives annually especially in industrialized nations. Statistics show that countries like United States of America, Italy, Australia, Germany, The Netherlands, Canada and France have the highest overall breast cancer rates while developing countries with lower breast cancer rates are Northern Africa and Eastern Asia (World Health Organization, 2006). Death rates of 76/100,000 females was estimated to occur in 2020.

Research shows that life time risk of this disease nearly tripled within 50 years as 1 in 20 women had it in 1960, 1 in every 7 in 1980 (Kirtland,2006). However, WHO (2004) documented that since 1987, breast cancer rates increased by 0.5% each year and between 85% and 90% of the cases cannot be attributed to inherited genetic predisposition.

On the burden of cancer in Nigeria, Lambo (2007) explained that there is likely to be 100,000 new cases each year, and that by 2010 there may be 500,000 new cases. To understand the problem facing cancer patients in Nigeria, it is worthy of note that the survival rate for breast cancer in the Unites States of America. is 85 % while it is a dismal 10% in Nigeria Olopade, 2004). Durosimi (2004) reported a survival rate of 1.9% for Nigeria and over 50% for East Africa and other countries. The Lagos State Ministry of Health documented that the annual 15% of the cases occur in women less than 30 years.

Table 1 reveals that in Nigeria, between 1960 and 1980, Cervical Cancer had 19.9% prevalence while breast cancer had 11.2% but between 1981 and 1995, breast cancer has taken over the lead with 25.7% while cervical cancer followed closely with 22.7%. These statistics which are the most recent shows breast cancer to be rated first in all among all other cancers and

majority of cases occurred in pre-menopausal women with the mean age at occurrence ranging between 43 – 50 years across the regions. The youngest age recorded in Lagos State was 16 years (Adebamowo and Ajayi, 2006).

Table 2 shows the mortality rates from all cancers in Nigeria. It could be seen, however, that breast cancer deaths rates higher than other types of cancers with 8,454 (15.9%) deaths.

### **The Nigerian Situation**

Beginning from 1960, Nigerian government tried to curb breast cancer disease with the establishment of cancer registries in the Department of Pathology of the University College Hospital, Ibadan. This effort was directed at recording cancer incidences for use by health planners and research purposes. Souza (2006) explained that the whole continent of Africa is battling with primary diseases like Malaria, Polio, and HIV/AIDS with limited resources left for cancer information and management. According to Durosinmi (2004), WHEDA (2005), Lambo (2007), there are only 6 laboratories in Nigeria and out of the estimated 4 million Nigerians requiring radiotherapy, only 15% have access to facilities. To buttress the health care delivery services, a committee was set up by the Federal Ministry of Health to draw a National Cancer Policy after the World Cancer Congress in 2006, with the theme *“bridging the gap and transforming knowledge into action”*. However, up till 2007 when the Federal government inaugurated the National Commission on Cancer Control and a National policy on reproductive health and strategic framework, no item on the agenda was implemented.

In Lagos State, despite the comprehensive health policies aimed at coping with health care delivery services, breast cancer awareness campaigns only came to lime- light in 2004 with a campaign in Ogudu primary school in Kosofe Local government area of the State. This was strengthened with the installation of detecting machines in Ikeja and Orile-Agege General Hospitals. Non government organizations such as Care Organization Public Enlightenment (COPE), Bloom Cancer Care and Support Services, Medical Women Associations and other individuals supported the programmes of the State government with activities geared towards creating awareness on the disease.

Kirtland (2006), explained that Breast Cancer claims the lives of many women because when all known risks factors and characteristics such as obesity, smoking, high fat diet and changes in life style are added together

including genetics and family history, up to 50% of breast cancer remain unexplained. This makes the problem alarming and worrisome because the main cause of the disease could not be ascertained. Linked to this is the ignorance of women who believe that symptoms would normally accompany the emergence of breast cancer in individuals as it is the case in malaria and other related sicknesses. In support of this position, Vernon, Vogel, Halabi, and Bondy (1993) discovered that many women reported that they did not think about the high risks involved in breast cancer since there were no signs and symptoms.

Research studies that focus on the patterns of the prevalence of breast cancer across time frame (years), age of patients and occupational categories are non-existent in Lagos State. It is the aim of this paper to fill the gap in this respect. Apart from the introductory section, the paper is divided into other six sections which include : The Study Area which explains the characteristic of the area within which the study was conducted, Causes and prevalence of breast cancer which examines studies that had been conducted on prevalence of breast cancer with respect to other study areas, Methodology where the population, sampling techniques and the statistical tools employed in the study are examined , Data Analysis for analyzing the data, Results where the results are displayed and finally, Findings and Recommendations.

### **Study Area**

Lagos State has witnessed lot of activities in the health sector with Government and Non Government Organizations (NGO) involved in creating awareness on the impact of various diseases. The State has comprehensive health policies aimed at coping with the high and growing demand for health care delivery services due to the rapidity with which the State is growing.

Lagos State was created on May 27, 1967, through Decree Number 14, by the Federal Government. What was then the Federal Capital of Nigeria was merged with the old colony province of the defunct Western Region of Nigeria to form the new State. The state lies approximately between longitude 2<sup>o</sup>42' East and 3<sup>o</sup>42' East and latitude 6<sup>o</sup>22' North and 6<sup>o</sup>52' North. It is bounded in the South by the Guinea Coast of the 180km Atlantic Coastline, in the West by the Republic of Benin and in the North and East by Ogun State (Odumosu, Balogun and Ojo, 1999). The State has twenty local government areas, namely; Agege, Alimosho, Ibeju-Lekki, Surulere, Ojo, Lagos Island, Awori-Ajeromi, Ajeromi-Ifelodun, Shomolu, Epe, Ikorodu, Apapa, Eti-Osa, Badagry, Lagos Mainland, Ikeja, Mushin, Kosofe, Amuwo-Odofin and Ifako-Ijaye.

It has a total area of 3,577 square kilometer about 22 percent of which is water. (Oke *et al.*, 2000). Despite its position as the smallest State in the Federation in terms of land mass, occupying only 0.4 percent of the area of Nigeria, it has gone through series of administrative transformation to metamorphose into a frontline position amongst the thirty-six states making up the federation of modern day Nigeria. Lagos State with a population of 9,013,534 million, distributed as 4,678,020 males and 4,335,514 females), is the most urbanized state in Nigeria. In 1963, the population of Lagos State was 1,444,000 with 603,000 males and 591,000 females. This grew to 5,725,116 in 1991 with a male population of 3,010,604 and 2,714,512 females. The population density of Lagos State is 2,455.( National Population Commission and National Bureau of Statistics, 2006)

The state remains the economic nerve center and the most urbanized state in the country. This explains the health challenges faced by the Lagos state government with respect to the growing demand for health care delivery

As a result of this, various projects are been funded by different organizations such as Aids Intervention and Care projects by the United States Agency for International Development (USAID) in blindness prevention, School Health Programmes, Ambulance Boat Services, Comprehensive Social Health care services and development of institutions such as the Orthopedic referral services and drugs supply. Campaigns have also been undertaken to reduce incidences of diabetes, breast cancer, hypertension and related eye problems with provision for screening for the public. On malaria pandemic, massive efforts, according to Ode (2003) are geared towards the reduction of death toll resulting from the disease. In addition, NGO's , Community of Women living with AIDS, Nigerian Police and Armed Forces in conjunction with Pathfinder International, Engendering Health Groups, The Catholic Secretariat of Nigeria, Young Christian Men and Women Associations (YMCA and YWCA) among others have contributed their quota in providing assistance in the health sector of the State.

### **Causes of Prevalence of Breast Cancer**

Prevalence of breast cancer could be due to many reasons which vary from increased ability to treat diseases in order to delay their progression to inability to diagnose and treat a disease which leads to disability and death. In essence, the survival rate will determine change in disease prevalence (Crimmins, Hayward and Saito; 1994).

Researchers such as Finlieb (1995), Brown et al (1996), Hann et al (1996) Liebson (1997), Shahar et al (1997) in Crimmins and Saito (2000) explained that, change in both the prevalence of disease and the processes by which the prevalence changes have come generally can be attributed to increases in lengthening survival after disease diagnosis with varying pattern of change in incidences. In this regard, it was found out that the highest increases in disease prevalence have been heart and cancer related.

There has been considerable research on trends of health which show that changes in the prevalence of disease, for instance, breast cancer is an important indicator of the combined effects of past level of and changes in mortality and disease incidences. In addition, trends in disease presence do not necessarily represent trends in disease of a specified severity. With the constant prevalence of disease overtime, the severity of the disease could change. It is also possible that in more recent years, people are learning of the presence of less severe disease at an earlier stage because of the growing ability to diagnose non-invasively. According to the study carried out by Eileen, Crimmins and Saito (2000), Olopade (2004) Congdon (2004) age is found to be a causal factor for prevalence of diseases. Gender (being female or male) could trigger the prevalence of a disease due to changes in the components of the body. This position was documented by Eileen, Crimmins and Saito (2000), Oncologist (2001) Olopade (2004), Ikpah (2002), Coe (2003), Ferley (2005) and Ogunidipe and Obinna (2008) believe that diet and environment which arose as a result of lifestyle or westernization and lack of awareness, access to health care facilities, no plan for such diseases in the National Health Insurance Scheme (NHIS), lack of empowerment of women, bad economy and other social factors are responsible for prevalence diseases. In addition, inadequate clinical services for life threatening diseases and poor distribution assist in prevalence (Olopade, 2004; Adebamowo 2006; Lambo, 2007; Ogunidipe and Obinna, 2008). The issue of limited access and scope of services which does not allow multidisciplinary care, obesity and genetic mutation are also mentioned by Ikpah, (2002), Adebamowo and Ajayi (2000).

### **Methodology**

The population of this study consists of women between ages 15 and 60 years in the 20 Local Government Areas of the State. The group was chosen because a previous study by Oluwatosin and Oladepo (2006), shows this age bracket to be more affected in risk assessment.

A total of 1000 respondents were considered with 50 randomly selected from each local government area. This represents 5% of the total sample used. This is statistically robust and justified to produce a good result (Fraenkel and Wallen 1990). However, a major determinant for selection of respondents is gender. Other criteria include the fact that the respondent must be at least 15 years, must not be older than 60 years, and must be resident in the LGA in question.

A questionnaire tagged “Women Questionnaire” (WQ) was designed for women in Lagos State. A total of 1,000 subjects were selected for this study from the 20 Local government areas through stratified sampling technique. This technique was adopted because the elements to be tested are homogenous in the sense that they belong to the same LGA and same age bracket, 50 questionnaires were administered to each LGA. To select locations or settlements for administration of the questionnaires, names of the different location in the local government were written on pieces of paper and the hat and draw method of random sampling was used to select the location for the study.

Eleven (11) year prevalence health record were requested from hospitals (if available) while the remaining ones gave records available to them as at when the breast cancer units were established. The choice of these hospitals was informed by their size, volume and proximity of service to people. In the case of the general hospitals, the geographical locations informed the choices made.

Data collected were analyzed using the 2-way ANOVA tests. ANOVA was used because it is adequate for any observation that involves more than two groups. It also enables us to measure and evaluate the interactions of groups and factors involved in the study.

Three hypotheses were tested to examine the prevalence of breast cancer across age groups, years and occupational groups. They are

$H_{01}$  : There is no significant difference in the prevalence of female breast cancer disease across all age – groups.

$H_{02}$  : There is no significant difference in the prevalence of breast cancer disease over years in Lagos State

$H_{03}$  : Occupation or Profession of women will not significantly influence the rate of diagnosis of breast cancer and its prevalence in Lagos State.

The third hypothesis was tested using the  $\chi^2$  statistic, a statistical tool that is most appropriate for testing categorical data.

### **Result**

This section shows the result of the three hypotheses tested in the study.

### **Hypothesis One**

$H_{01}$  : There is no significant difference in the prevalence of breast cancer disease across all age groups studied.

For this test, a Two-way Analysis of Variance (Anova) table was used and the result is as shown in Table 1

The analysis showed two factors that are been tested – Age and Years. The test sought to find out whether breast cancer prevalence rate is the same across all age-groups and across years under study. Since the P-value for both age and years (0.000 each) is less than 0.05, the hypothesis of equal prevalence across different age groups and years under study is rejected. However, the Duncan multiple range tests were carried out to determine which years and age-group differ. Duncan multiple tests identify homogenous subsets of means that are not different from each other (See table 2).

The Duncan multiple range tests were carried out to determine which years and age-group differ. Duncan multiple tests identify homogenous subsets of means that are not different from each other.

The Duncan multiple range test which groups variables according to their magnitude indicated 3 groups and the groups are formed according to their similarity in prevalence. Group 15-25 seemed to be the least in prevalence level while age groups 26 -35 and 36 – 45 are the highest in terms of prevalence of the disease. Other groups constituted the last group.



### **Hypothesis Two:**

$H_{02}$  : There is not significant effect in the prevalence of breast cancer disease over years under study in Lagos State. (1997 – 2007)

Table 2 shows that there is significant difference in prevalence of breast cancer across the years

The Duncan grouping was done for years and Table 3 shows that 2007 had the highest prevalence rate of breast cancer compared with other years for which data were available while 2005, 2002 and 2006 were similar in terms of prevalence while the other years have equal prevalence level statistically.

The Duncan multiple range tests for years studied revealed three groups formed according to their similarity in prevalence. 1998, 1997, 2000, 2004, 1999, 2001 and 2003 have equal prevalence level statistically and they form the first group. Group 2 showed 2005, 2002 and 2006 with 48.17, 49.67 and 70.50 respectively to be similar in terms of prevalence. Group 3 indicated that 2007 had the highest prevalence with 139.00.

### **Hypothesis Three:**

$H_{03}$  : States that women's occupation/profession will not significantly influence the rate of being diagnosed with breast cancer and its' prevalence in Lagos State. To test this hypothesis, a test of proportion was used.

Frequency analysis of the data revealed that traders were in the majority, followed by housewives and then Civil Servants. A test of proportion shows that the prevalence of breast cancer significantly vary from one profession to the other ( $\chi_{\text{Calculated}} = 467.4571$  while  $\chi_{\text{Critical}} = 12.5916$ ).

### **Findings**

There is a significant difference on the prevalence level of breast cancer across ages and years under study. The Duncan Multiple Range Test for age groups shows that the 15 to 25 year age bracket has the least breast cancer prevalence level while age groups 26-35 and 36-45 recorded the highest prevalence of the disease. In terms of the distribution of breast cancer over the years (1997-2007), the result shows that there is significant difference across the years and the Duncan Test also revealed that 2007 recorded the highest incidence of breast cancer, followed by 2006, then 2005, 2003, 2001, 1999, 2004, 2000, 1997 and 1998 in that order. While 1997 and 2000 have the

same prevalence level and 1998 has the least prevalence level.

The result of our study shows that prevalence of breast cancer significantly varies from one profession to the other. In other words, some jobs are more prone to breast cancer than others.

### **Conclusion and Recommendation**

This study examines the trends in the prevalence of breast cancer in Lagos State, Nigeria. The results showed that the prevalence of the disease differs for different age groups while the age range 26 to 45 seems to have the highest prevalence. This result will serve as a guide to health practitioners and educators in designing and execution of campaign towards such target groups. There is also evidence of steady increase in the prevalence of the disease with 2007 being the highest. A study of this trend could help in understanding the effect of time on data on breast cancer and also assist in understanding the underlying time series component of it.

Traders and housewives were found to have the highest prevalence of the disease. This is probably the group with low literacy rates and as such should be targeted for continuous education on the dangers and risk of breast cancer.

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Table 1: Showing Cancer rates in Nigeria

Site	Frequency %	Site	Frequency %
	1960 – 1980		1981 – 1995
Cervical	19.9	Cervical cancer	22.7
Breast cancer	11.2	Breast cancer	25.7
Colorectal	8.5	Colorectal	2.8
NHL {including Burkitts}	7.4	NHL (including Burkitts)	4.4
Ovary	6.1	Ovary	4.0
Connective tissues	3.7	Connective tissues	3.4

Source: Durosinmi (2004)

Table 2: Showing Mortality From Cancers in Nigeria – Both Sexes, All Ages Deaths

8,454 (15.9%)	Breast
8,030 (15.1%)	Cervix Uteri
5,098 (9.6%)	Prostrate
4,672 (8.8%)	Liver
3,508 (6.6%)	NHL
3,307 (6.3%)	Colon and rectum
2,416 (4.6%)	Kaposi Sarcoma
1,330 (2.5%)	Ovary
1,201 (2.3%)	Stomach
15,048 (28.4%)	Other cancers

Globacan (2002)

Table 1: Two-way Analysis of Variance (Anova) on the result of testing the significance of breast cancer prevalence across different age groups

Source	Sum of Squares	df	Mean Square	F	Sig.
Age	33,925.409	5	6,785.082	16.310	0.000
Years	68,402.333	10	6,840.233	16.442	0.000
Error	20,800.758	50	416.015		
Total	265,837.000	65			

( F=16.442,  
P<0.05)

**Table 2:** Output of Duncan Multiple Range Test for Age-groups studied

Age group				
Age group	N	Subset		
		1	2	3
15 – 25	11		41.91	
56 and above	11		45.00	
46 – 55	11		56.09	
26 – 35	11		59.64	59.64
36 – 45	11			74.64

**Table 3:** Output of Duncan Multiple Range Test for Years studied

Years		Subset		
Years	N	1	2	3
1998	6	22.67		
1997	6	25.33		
2000	6	25.33		
2004	6	29.83		
1999	6	30.83		
2001	6	33.17		
2003	6	37.00		
2005	6	48.17	48.17	
2002	6	49.67	49.67	
2006	6		70.50	
2007	6			139.00
Sig.		0.055	0.078	1.000