A Survey of Incidence and Prevalence of Cancers in Lokoja

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Abstract:

Introduction: *Cancer is a multifactorial, polygenic complex genetic disease arising from a series of somatic mutations. The etiology for many cancers may arise spontaneously or chemical action of either endogenous or exogenous agents' mutation in genes that usually belong to classes of caretaker, gatekeeper, or landscaper.*

Aim of the Study: *This study aimed to determine the incidence and prevalence and pattern of distribution of different cancer types in Lokoja with the goal of extending current knowledge on cancer occurrence in lokoja.*

Materials and Methods: *The source of data was Kogi State Specialist Hospital, Lokoja. A desk review of the level of occurrence and pattern of distribution of different cancer types in Lokoja over a 5 year period (2013-2017) was carried out.*

Results and Discussion: *Between 2013 and 2017, 111 cancer cases were registered in Kogi specialist hospital Lokoja, Kogi state. Frequency analysis revealed that prostate cancer was the commonest cancer accounting for (41.4 %), followed by ovarian cancer (24.4%), breast cancer (17.1%), leukaemia (6.3%), skin cancer (4.5%), liver cancer (4.5%), cervical cancer (1.8%) and stomach cancer (0.9%). There were significant differences ($P \leq 0.05$) in the level of occurrence between cancers of the prostate, ovary, breast, leukaemia, skin, liver, cervix, and stomach. While some cancers are strictly sex specific, the overall incidence of cancer is nevertheless considered broadly similar in both sexes. This is evident in the ratio of the incidence in male and females (1:1.06 respectively). The prevalence of cancer increases with age, as the age bracket between 40 and 80 recorded higher prevalence.*

Conclusion and Recommendation: *The findings of this study provide insights to cancer epidemiology in Lokoja Kogi State Nigeria. This study confirms earlier findings that prostate, ovary, breast and cervical cancers account for the majority of cases of cancers in Nigeria. Consequently, there is need to inaugurate extensive acceptable methods for early detection of these diseases especially in rural communities.*

Keywords: *Cancer; Mutation; incidence; epidemiology; Lokoja*

1. INTRODUCTION

Cancer is a multifactorial, polygenic complex genetic disease arising from a series of somatic mutations and the most dreaded non-communicable malignant emerging public health problems globally (Kolawole, 2011; Sylla and Wild, 2011; Binu et al., 2007). The cancer disease is actually a family of disorders having the common characteristic of uncontrolled cell growth in which group of abnormal cells involved disregard the normal rules of cell division (Malcolm, 2001; Alberts et al., 2008). All types of human cancer cells have a degree of autonomy and shared common physiological features to aid malignant growths. Phenotypically, malignancy is characterised by eight essential alterations in cell physiology: (i) self-sufficiency in growth signals; (ii) insensitivity to growth inhibitory (antigrowth) signals; (iii) evasion of programmed cell death (apoptosis); (iv) limitless replicative potential; (v) sustained angiogenesis; (vi) tissue invasion and metastasis; (vii) reprogramming of energy metabolism and (viii) evasion of immune destruction (Sonnenschein and Soto, 2013; David and Volker, 2009; Hanahan and Weinberg, 2000).

Globally, approximately 10 million people are diagnosed with cancer annually (Stewart and Kleihues, 2003). The increase of cancer incidence is occurring at a faster rate of 48% in developed countries and

52% in developing countries (Parkin et al., 1994). With increasing industrialization and westernization of dietary and other socio-behavioural attitudes in most developing countries, Okobia, 2003 projected that the burden of cancer will increase to epidemic proportions in twenty-first century. The cancer epidemiological report in Africa showed 667,000 incident cases and 518,000 deaths in 2008 with Nigeria contributing 15% to the estimated cancer cases (Morounke et al., 2017; Sylla and Wild, 2011; Boyle and Levin, 2008). Olufunsho et al., 2011 projected that by 2020, cancer incidence for Nigerian males and females may rise to 90.7/100,000 and 100.9 /100,000,respectively. For this reason, this research is aimed at the estimation of the current incidence and prevalence and pattern of distribution of different cancer types in Lokoja Kogi State in order to tackle these issues and increase survival from cancer medically in Lokoja. Information on incidence, prevalence, pattern and high risk factors are essential to plan, implement and to evaluate control of cancer in Lokoja. But this information is not readily available may be due to attitude of people to health facilities utilization, level of education of people, poverty and poor Hospitals record keeping (Binu et al., 2007; Boyle and Levin, 2008).

2. MATERIALS AND METHODS

2.1. Description of Study Area

The source of data is Kogi state specialist hospital Lokoja, located at the north central part of Nigeria. Lokoja is the capital of Kogi state with an area of 3,180km^2 with heterogeneous population of 195,261 at the 2006 census made up of the Igala, Ebira, Yoruba, Nupe, Okun, Oworo, Bassa-Nge, Kakanda, Egbura and Hausa. About 45% of the population comprises the civil servants and business people, while 30% is made up of students and vocational workers and 25% farmers.

2.2. Ethical Consideration

An ethical approval was obtained from the Research and Ethical Committee of the Kogi specialist hospital lokoja, kogi state to obtain data on level of cancer occurrence and cancer distribution pattern in the Hospital.

2.3. Data Collection and Analysis

Data were gotten from government owned hospital Kogi specialist hospital Lokoja,Kogi state, Nigeria on the level of occurrence and pattern of distribution of different cancer types overa period of 5 years (2013–2017). Data were reported based on cancer type, gender and age groups and presented in frequency distribution tables with percentages and Chi square analysis to test the significance at p ≤ 0.05.

3. RESULT

A total of 111 cancers patients were registered between 2013 and 2017 in Kogi state specialist hospital, Lokoja. Male and female accounted for 54 and 57 in ratio 1:1.06 respectively. Prostate cancer had the highest percentage 46(41.4%), followed by Ovarian cancer 26(24.4%), Breast cancer 19(17.1%), Leukaemia 7(6.3%), Liver cancer 5(4.5%), Skin cancer 5(4.5 %), Cervical cancer 2(1.8%), and the cancer of the Stomach was the lowest type 1(0.9%)as shown in table 1. Generally, there is little significance difference in the distribution of cancer incidence between the sexes, where females recorded higher prevalence each year over the studied period except in 2016. The year 2013, recorded aprevalence rate of (70.8%) cancer incidence in female and (27.2%) in male. 2014 recorded (52%) in female and (48%) in male. 2015 recorded (58.8%) in female and (41.2%) in male. 2016 recorded (68.8%) in male and (31.3%) in female. 2017 recorded (53.8%) in female and (46.2%) inmale (table 2). There was higher prevalence of cancer among the adults and elderly between the age of 40- 80 (figure 1).
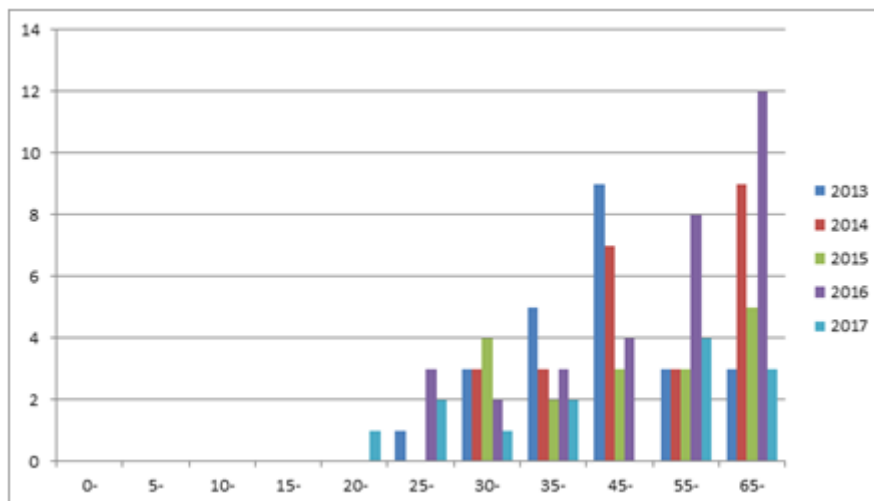
Figure1. *Age distribution of patients with cancer in Kogi specialist hospital Lokoja.*

Table1. *The frequency (%) of cancer by type and sex*

cancer type	Liver	Breast	Prostate	Leukemia	Ovary	Skin	Stomach	Cervix	Total
Year									
2013	0(00.0)	5(4.5)	6(5.4)	1(0.9)	10(9.0)	1(0.9)	0(00.0)	1(0.9)	24(21.6)
2014	0(00.0)	5(4.5)	10(9.0)	2(1.8)	5(4.5)	2(1.8)	0(00.0)	1(0.9)	25(22.5)
2015	0(00.0)	3(2.7)	6(5.4)	2(1.8)	5(4.5)	1(0.9)	0(00.0)	0(00.0)	17(15.3)
2016	4(3.6)	2(1.8)	18(16.2)	1(0.9)	5(4.5)	1(0.9)	1(0.9)	0(00.0)	32(28.8)
2017	1(0.9)	4(3.6)	6(5.4)	1(0.9)	1(0.9)	0(00.0)	0(00.0)	0(00.0)	13(11.7)
Total	**5(4.5)**	**19(17.1)**	**46(41.4)**	**7(6.3)**	**26(24.4)**	**5(4.5)**	**1(0.9)**	**2(1.8)**	**111(100)**

Table2. *Frequency (%) of cancer distributions by year of diagnosis between both sexes*

Sexes	Males	Females	Total
Years			
2013	7(27.2)	17(70.8)	24(21.6)
2014	12(48)	13(52)	25(22.5)
2015	7(41.2)	10(58.8)	17(15.3)
2016	22(68.8)	10(31.3)	32(28.8)
2017	6(46.2)	7(53.8)	13(11.7)
Total	**54(48.6)**	**57(51.4)**	**111(100)**

4. DISCUSSION

Cancer has become a major source of morbidity and mortality globally. Despite the threat that cancer poses to public health in Nigeria, Hospital base data on cancer incidence is relatively lower as compared to other diseases conditions like malaria, typhoid fever etc as only 7.2% of the population is covered in reports (Jedy-Agba et al., 2012; Olufunsho et al., 2011; Akinwande et al., 2009).There are marked differences in distribution of cancers in different regions of the world, epidemiology information on this cancer including the incidence; pattern and prevalence are important basis for determining the priorities for cancer control in any population group (Olufunsho et al., 2011; Pisani, 1994). Environmental and socio-cultural factors such as tobacco smoking, use of non-smoking tobacco, alcohol intake, and exposure to ultraviolet rays, dietary factors, pollutants of air, water and soil contribute to the development of different types of cancers (Page and Asire, 1985; Satarianoand Swanson, 1988; Stewart and Kleihues, 2003; Binu et al., 2007). However, this present study could not access some of the environmental andsocio-cultural factors of the patients as only the Hospital registers was used for this study.

The data obtained revealed that prostate cancer is the most common type of cancer among males while ovarian and breast are common in females, this agrees with the work of Jemal et al., (2011) who recorded high prevalent rate of prostate and breast cancer in southern Africa and western Africa but not in agreement with the findings by other authors (Forouzanfar et al., 2011; Adefuye, 2006; Madong et al., 2003; Adebamowo and Ajayi, 2000) who showed that cancer of the cervix is the commonest

genital tract malignancy in the female and ranked second to breast cancer. It has been established in this study that the common cancer cases are prostate, ovarian and breast. This observation may be due to remarkable association of some studied cancers with age (Battikhi, 2003), child bearing (Tretli and Haldorsen, 1990) and sexual intercourse (Akinwande et al., 2009).

The data obtained revealed that female had a higher percentage of cancers inthe study area with males and females incidence ratio of 1:1.06 respectively which is not in agreement with the earlier study of Binu et al., (2007) who showed higher male patients with cancer than female in Nepal. The males and females incidence ratio of this study is a confirmation of the findings of Stephen et al., (2017) in Lokoja. The increase in cancer incidence in women may be both deceptive and real. Despite this, some of the increase in incidence may be real due to inquisitiveness of the females about their health than male counterpart which will eventually lead to more attendance in the clinic. The highest cases of cancers among males in year 2016 (68.8%) as against the earlier years may be due to increase level of health education among people in Lokoja, Kogi State Nigeria to undergo cancer screening as early detection is important for good management of cancers.

The data obtained revealed that cancer incidence is more prevalent among the individuals between aged 40-80; this is in line with the findings of Morounke et al., (2017), which may be due to the build-up of risks factors for specific cancers that increase with age. The overall risk accumulation is combined with the tendency for cellular repair mechanisms which continue to be less effective as a person grows older.

5. CONCLUSION

This study report cancer incidence and prevalence in Lokoja from Kogi State Specialist Hospital, Lokoja North Central Nigeria showing that the most common cancers in the area were cancer of the prostate, ovary and breast. Our study highlights the need for organized wider scale suitable methods for early detection of these diseases. This study provides valuable insights to cancer epidemiology in Lokoja to assist provide useful information for health planning in adequate policy and allocation of resources for cancer treatment as well as future research in Kogi State.

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