



Original Research Article

Cancer: An Emerging Health Problem in North Central Nigeria

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ABSTRACT

Background: Cancer a non-communicable disease is assuming a public health problem in the tropics. Though infectious diseases are the commonest causes of hospital admissions, the frequency of cancer is steadily on the increase.

Objectives:

- To assess the cost of treatment of cancer to the patient who is being investigated and treated for a malignant condition
- To describe the occurrence of cancer and assess implication in terms of disease burden and its implication in decreasing the cancer rate, cancer awareness and accessibility to health care.

Materials and methods: All cases of histologically confirmed cancers from the cancer registry were used for the analysis. Records of admission and cost of managing cancer patients were analyzed.

Results: There were a total of 5606 cases of confirmed cancers recorded during the period. 1995-2014. This accounted for 14.6% of all specimens sent to the regional laboratory for diagnosis. The average cost of cancer screening was \$1,600. The cost of initial treatment (chemotherapy) for cancer was \$300 per course. Most of the patients were unable to bear the cost of treatment, because of poor income, poverty and ignorance.

Conclusion: Cancer screening and treatment is expensive for an average Nigerian with per capita income of less than 1USD a day.

This may be the reason why most cancer patients seek alternative methods of treatment in most parts of Africa.

Keywords: Cancer, Poverty, Health problem, North- Central Nigeria

INTRODUCTION

The public health importance of cancer in our community can be measured by ratio, frequency and / or age specific and crude incidence rates. Until recently, the knowledge of cancer in the tropics was limited to the total number of tumours diagnosed. These findings are still usually

compiled from biopsy materials received at central or regional histopathology laboratories. ^[1] Although, relative frequency has been used to define cancer pattern, nevertheless it has helped in defining the distribution of cancer in the tropics. ^[2]

It is not long ago, when cancer was believed to be rare in the tropics. Earlier

reports in the 1960's showed that cancer was half of what is reported from America. [3] In Africa, there are variations in the frequency of cancers; for instance, cancer of the oesophagus has higher local distribution in Central, East and South Africa. [4] The leading malignancies in Nigeria in most centers are cancer of the breast, cervix, prostate, soft tissue, Non Hodgkin's lymphoma and colorectal cancer. There is a relatively high incidence of melanoma arising from the lower limbs. [5] However, in most centers despite high rate of cigarette smoking there is striking absence of lung cancer which is the leading cancer in Europe and America. [6]

One of the striking features of cancer incidence in the tropics including Nigeria is its rarity in older age group. This may be a reflection of the low number of the population at older age. In tropical Africa, there is high mortality in childhood and few live to be 55 years and with the advent of HIV/AIDS the life expectancy is further reduced. [7] All the available information suggests that in tropical areas the incidence of cancer in the elderly is low. [2]

Cancer in children in Nigeria reflects what is obtained in the tropics. The predominant tumours in our register are: Burkitts lymphoma, connective tissue tumours, Wilm's tumour, Retinoblastoma, Bone tumours and liver cancer. There is a striking decline of central nervous system tumours in Nigeria children. [8]

This paper attempts to describe the cancer an emergence health problem in North Central Nigeria and highlight some of the difficulties encountered in the management of patients.

MATERIALS AND METHODS

The study area is the Jos University Teaching hospital, a 520 bed regional referral centre for a population of about 20 million people in the North Central Nigeria.

Data Source: Specimens from the regional histopathology laboratory and record of diagnosed tumour from the cancer registry. Demographical data including age sex, site of tumour and histological diagnosis were recorded.

Cost of screening and treating cancer patients were obtained from patient's records.

Statistical analysis was carried out using SPSS version 18 software (SPSS Inc., Chicago, IL USA). Simple frequencies or cross-tabulations were used to present data. Chi-square test was used to compare variables and a $P < 0.05$ was considered to be statistically significant.

RESULTS

There were a total of 5,606 cancers recorded from 1995-2014; presenting 14.6% of all diagnosed specimens during the same period. There were 3, 503 cases of cancer in females and 2,103 in males giving a ratio of 0.6:1 (male: female). The patients' ages ranged from 5 to 68 years with a mean age of 39(SD) years.

Figure 1: shows common cancers and their relative proportions per 100, 00 populations.

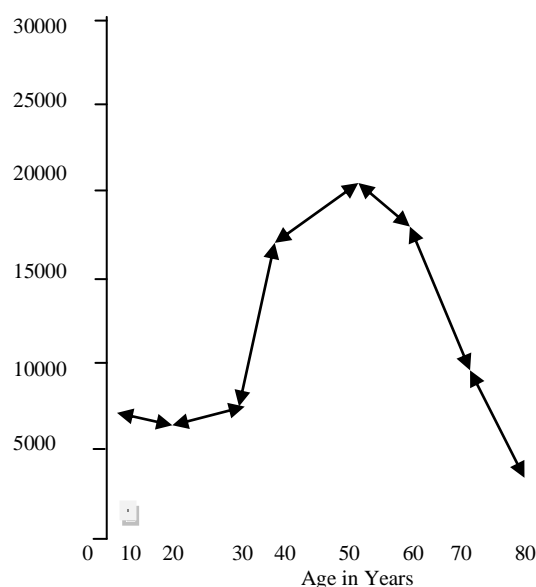


Figure 1: Cancer incidence (all sites) by age group in Jos

Figure 1: showed frequency of common primary cancers. The most frequent cancers were cervix, breast, prostate, liver and colorectal. Cancers of the cervix, breast and prostate accounted for the highest proportion of cancer in this study.

Table 1: Show common cancers in male and female and their percentages.

Table 2: Shows frequency of most common primary cancers in both sexes. The most

frequent cancers in males were prostate, liver and Non-Hodgkin's lymphoma. The most frequent cancers in female were cervix, breast and liver. In both sexes liver appears common.

Table 3 & 4: Show relationship between of occurrence of cancers between male and female, chi-square and p-value.

Table 5: Show cost of investigation and diagnosis of cancer.

Table 1: Common cancers

Site	Male	%	Female	%	χ^2	p-value		
Reproductive tract	605*	10.8	1454**	25.9	1530	0.0000001		
Breast	25	0.4	1260	22.5				
Liver	344	6.1	186	3.3				
NHL	315	5.6	156	2.8				
Skin tumour***	152	2.7	111	2.0				
Digestive tract†	345	6.2	151	2.7				
Connective Tissue	118	2.1	49	0.9				
Urinary tract‡	137	2.4	68	1.2				
Eye (Intra-ocular tumour)	35	0.6	20	0.4				
Thyroid	15	0.3	35	0.6				
Respiratory tract‡	12	0.1	13	0.2				
Total	2103		3503	5606				

*Prostate, testis, ** Cervix, ovary, uterus/tubes, ***Melanoma, skin tumours without melanoma, †Stomach, colorectal, esophagus, ‡Kidney, bladder, §Lung, larynx

Table 2: frequency of most common primary cancer by sex

Types of Cancer	Male	%	Type of Cancer	Female	%
Prostate	585	31	Cervix	1346	42.2
Liver	335	17.6	Breast	1260	39.8
NHL	315	16.5	Liver	179	5.6
Stomach	215	11.2	NHL	156	4.9
Connective Tissue	108	5.6	Colorectal	78	2.4
Colorectal	105	5.5	Skin tumour without melanoma	65	2.0
Skin tumour without melanoma	102	5.4	Ovary	55	1.7

Table 3: Relationship of occurrence of cancers between males and females

Site	Male	%	Female	%
Reproductive tract	605*	10.8	1454**	25.9
Breast	25	0.4	1260	22.5
Liver	344	6.1	186	3.3
NHL	315	5.6	156	2.8
Skin Tumour without melanoma	102	1.8	65	1.2
Stomach	215	3.8	65	1.2
Colorectal	105	1.9	78	1.4
Connective Tissue	118	2.1	49	0.9
Kidney	65	1.2	35	0.6
Urinary Bladder	72	1.3	33	0.6
Melanoma	50	0.9	46	0.8
Eye (Intra-ocular tumour)	35	0.6	20	0.4
Thyroid	15	0.3	35	0.6
Esophagus	25	0.4	8	0.1
Larynx	8	0.1	10	0.2
Lung	4	0.07	3	0.05
Total	2103		3503	

*Prostate, Testis, **Cervix, ovary, uterus/tubes

Table 4: Relationship of common cancers among males and females (n = 5142)

Site	Male (N = 1829)	%	Female (N = 3313)	%	X2	p-value
Reproductive tract	605*	11.8	1454**	28.3	0.145	0.000
Breast	25	0.5	1260	24.5		
Liver	344	6.7	186	3.6		
NHL	315	6.1	156	3.0		
Skin Tumour without melanoma	102	2.0	65	1.3		
Stomach	215	4.2	65	1.3		
Colorectal	105	2.0	78	1.5		
Connective Tissue	118	2.3	49	0.9		

*Prostate, Testis, **Cervix, ovary, uterus/tubes

Table 5: Cost of investigation to ultimate diagnosis. The average cost of biopsy was 150USD far above income of most patients.

Items	Cost in ₦
-Card/Folder	500
-Cost of excision biopsy under local anesthesia	5,000
-Tissue processing for Histological diagnosis	4,500
-Consultation	Free
-Average cost of cytotoxic drugs per treatment	8,000
-Routine Blood/Investigation FBC, Diff, and platelet count	2,000
-Urea/electrolyte including Uric acid estimation	1,500
-Chest X-ray total at first hospital admission	1,000
Total fee for out-patient diagnosis for cancer	22,500

NB: Subsequent visit of patient after diagnosis is ₦ 5,000.00, per course of treatment.

DISCUSSION

Cancer being a world-wide public health problem shows geographic variations. One of the striking features of cancer incidence in our environment is the rarity of malignant tumours in the old age groups as seen in figure 1.

This rarity may be explained by the high mortality in childhood and live expectancy of not more than 55 years of age. With the pandemic of HIV/AIDS, the population pyramid differs markedly from what obtains in Europe and America. All the available data suggest that in tropical areas, the incidence of cancer is low in the elderly especially the near absence of lung cancer despite the high rate of cigarette smoking in Northern Nigeria. [6]. In Nigeria there are many tobacco manufacturing companies and high rate of smoking especially among young generation.

Cancer in female accounted for 62% of all cancers, with breast and cervical cancers constituted the highest proportion. [9-

[11] The high incidence of breast and cervical cancer is due to absence of preventive measures such as routine mammography and pap smear screening in most of our health centres. [12] There is high prevalence of human papilloma virus (HPV) in our environment with recent figure of 10-20% among the reproductive age group (unpublished data). Other factors include the high cost of screening which is put at 80-100USD per screening for cancer. The cost of undertaking excision or incision biopsy as shown in Table 3 is about 180 USD dollars. This amount is far above the average income for the average Nigeria. Biopsy done under general anaesthesia will cost twice the average cost. Most Nigerians live on less than 1 USD per day. The epidemiological studies of various types of cancer in Nigeria showed the high rate of aflatoxin contamination in stored grains/nuts leading to high prevalence of liver cancer (10-20%). [13]

In the tropics, this high rate of aflatoxin contamination contributes to the high prevalence of liver cancer. Hepatitis C virus is also assuming prominence and serological prevalence is put at 3-5% in the Nigeria population. [14] HBV being endemic in Nigeria surgery prevalence is put at 18-20% of Nigeria population has put lower cancer as the most prevalent visceral malignancy in Nigeria.

Prostate cancer is now the leading cancer in males, surpassing liver cancer and non-Hodgkin lymphoma. [15]

Colorectal cancer believed to be rare in the past is now not only one of the leading cancers, but occurs in much younger age groups.

The African diet which is rich in fiber content was believed to be protective. It appears other environment factors, and genes may be playing causative role. [16-19]

Stomach cancer is also one of the emerging cancers believed to be rare. With high rate *H. pylori* in our environment the gastric cancer has also assumed a high proportion in the region. Recent work shows a total of 205 cases of gastric cancer in the past fifteen years. The major problems facing cancer management are as follows:

1. Absence of national cancer research programmes in Nigeria
2. Absence of screening programme for common cancers such as cancer of cervix, breast, and other major cancers
3. Late presentation of patients with cancer resulting in high mortality rate.
4. Prohibitively high cost. The cost of managing advanced cancer in Nigeria is between 2,00-5,00 USD per treatment.
5. Few centres in Nigeria have oncology units for the management of these patients.

Any attempt to improve the quality of life of cancer patients should address the problems enumerated and supported by the will of the government in power.

CONCLUSION

Cancer screening and especially treatment is expensive for an average Nigerian with per capita income of less than 1 USD a day.

This may be the reason why most cancer patients present late after seeking alternative cheaper methods of treatment.

The incidence is still on the increase for cancer of the cervix and breast in female, prostate and liver in male.

The awareness concerning early screening, detection and presentation to treatment centers should be re-evaluated.

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