



Public Health Implications of Types of Cancers in Anatomy-Pathology at the Souro Sanou University Center in Bobo-Dioulasso, Burkina Faso

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Abstract: Cancers are the second largest epidemiological burden in Africa. This led us to study the hospital proportions and histological and histogenetic types of cancers in anatomical pathology at the Souro Sanou University Hospital (CHUSS) in Bobo-Dioulasso, and the possible implications for public health. This was a cross-sectional study that ran from June 1 to December 10, 2021 with data inclusion from January 1, 2013 to December 31, 2020. The data collected concerned: notified cases of tumors and those diagnosed with cancer, sociodemographic characteristics, location and histological and histogenetic types of these cancers. Of the 6,316 cancer cases notified by the different clinical services from 2013 to 2020, there were 1,388 cases of cancer confirmed (or 22.0%) by histology at the CHUSS anatomy-pathology department. Of the 3,605 specimens analyzed, this represented a malignancy proportion of 38.5%. There was an average annual number of 173.5 confirmed cancer cases per year. For a sex ratio of 0.4 and a female predominance of 72.1%, the average age of the cancer cases was 49.3 ± 3.9 years (extremes from 1 to 92 years), with the 40–60-year age group being the most represented (46.4%) and those under 15 years of age representing 3.2%. The organs most affected by cancer were breast (25.5%), uterus (22.4%) and stomach (9.1%). Breast (32.9%) and cervical (31.1%) cancers were the most common in women. In men, the most frequent cancers were: stomach (19.8%) and prostate (13.9%). Histologically, more than two out of five cancers were carcinomas. Squamous cell carcinomas accounted for 43.37%, and adenocarcinomas were found in 13.61%. There was no difference in histogenetic or histological type according to age or sex. Affecting more the less than 60 years with 75.1%, it is about cancers avoidable by actions of promotion and prevention in public health. This underlines the importance of setting up a cancer registry and organizing cancer care based on promotion and primary prevention.

Keywords: Africa, Epidemiology, Histology, Noncommunicable Diseases, Neoplasms

1. Introduction

Non-communicable diseases (NCDs) kill 41 million people each year, accounting for 71% of deaths worldwide. Cancers are the second leading cause of death worldwide and

about 70% of cancer deaths occur in low- and middle-income countries [1]. These countries account for sixty-four percent of new cancer cases worldwide [2]. Cancer mortality is proportionally higher in Africa than elsewhere in the world, with cancers accounting for between 10 and 20% of diseases

on the African continent [3].

Cancer is an important and increasingly recurrent challenge in the African health sector [4-7]. Indeed, in addition to the increasing incidence, there is always the problem of access to diagnosis and appropriate treatment. This is aggravated by the fact that the diagnosis is most often made at an advanced stage.

Cancer control strategies involve early detection, regular registration, and follow-up of cases in health services and the community. The cancer registry is the systematic collection of data on individuals with cancer in an identified population [3]. For example, hospital-based cancer registries collect relevant information on cancer patients followed in a hospital [8]. In addition, the World Health Organization (WHO) and several other research groups have recognized the importance of cancer registries as an essential tool for health research, providing database for planning and research purposes [3], as well as containing the data from the anatomy-pathology area.

In several developing countries such as Burkina Faso, the absence of a cancer registry masks the incidence and mortality of cancers and limits research possibilities. It seemed appropriate to lay the groundwork for the creation of a cancer registry at the Sourou Sanou National Teaching Hospital (SSNTH) by presenting data from the anatomopathological cancer registry. In doing so, the present research studied the hospital proportions and the histological and histogenetic types of cancers in anatomy-pathology at the SSNTH of Bobo Dioulasso, Burkina Faso.

2. Methods

2.1. Study Setting

The present study took place in the anatomy-pathology service of the SSNTH, a reference hospital of the third level of care in the health system of Burkina Faso. The activities of this department are represented by the diagnosis of cancerous pathologies. There are two (02) anatomy-pathologists and paramedical staff.

2.2. Study Type and Period

This was a retrospective cross-sectional study based on the results from the biopsies of patients sent to anatomy-pathology, with data extraction from January 1, 2013 to December 31, 2020. The study took place from September 14, 2021 to January 5, 2022.

2.3. Study Population and Inclusion Criteria

The study involved patients whose specimens were received in the anatomy-pathology service of the SSNTH. Were included in this study all cases of cancer diagnosed at histology in the anatomy-pathology.

2.4. Sample Size and Sampling

The sample was exhaustive, including all 1388 specimens from patients with histologically diagnosed cancer in

anatomy-pathology during the study period.

2.5. Data Collection Method, Techniques and Tools

This consisted of a literature review with content analysis of the following documents: the anatomy-pathology register, annual activity reports and available databases of the SSNTH. The data were collected using a data collection form.

2.6. Variables Description and Data Collection Process

The data collection took place from September 14 to November 05, 2021. It was collected the socio-demographic characteristics (age and child versus adult, sex), the number of samples received and results per year from 2013 to 2020, the number of cases of tumors notified in the SSNTH per year, the location (organ affected) and histological and histogenetic types of cancers (malignant tumors) of patients diagnosed in anatomy-pathology service of the SSNTH.

2.7. Data Analysis

The collected data were entered and analyzed on a computer using Epi info software version 7.2.0.1. The qualitative variables were described by the number and proportion (or percentages). Then the location and the histological and histogenic types according to age and sex were analyzed.

2.8. Ethical Considerations

For the present study, the authorization of the Director General of the SSNTH was required and the anonymity and confidentiality of the data were ensured by coding the names of the patients and the terms of the variables. Access to the data was limited to the research team.

3. Results

3.1. Hospital Proportion of Cancers at the SSNTH

From 2013 to 2020, a total of 1,388 cases of cancers were histologically confirmed at the SSNTH anatomy-pathology service from the analysis of 3,605 received samples, representing an average annual incidence of 173.5 cases of cancers diagnosed at the department and a malignancy proportion of 38.5%. During the same period, 6,316 cases of cancer were notified by the various clinical services at the SSNTH, giving a percentage of cancers notified and sampled at the SSNTH of 57.1%, and 22.0% diagnostic confirmation by histology.

3.2. Socio-Demographic Characteristics of Patients Having Confirmed Cancers by the Anatomy-Pathology Service of the SSNTH

The mean age of the patients was 49.3 ± 3.9 years-old with extremes of 1 and 92 years-old. It was 47.9 ± 2.7 years-old with extremes of 2 and 90 years-old for the women and 52.7 ± 3.1 years-old with extremes of 1 and 92 years-old for the men. It is noted that 75.1% of the cases

were under 60 years of age. There were 44 (3.2%) patients aged 14 years-old or less. There were 999 (72.1%) female patients for a sex ratio of 2.6.

3.3. Location, Histological and Histogenetic Types

The organs most affected by cancer were: breast (25.5%), uterus (22.4%) and stomach (9.1%). The table 1 shows the distribution of cancers by location or site.

Table 1. Distribution of histologically confirmed cancer cases by location.

Location	Numbers (n)	Percentages (%)
Breast	354	25.5
Cervix	311	22.4
Stomach	126	9.1
Maxillo-facial	84	6.1
Prostate	54	3.8
Esophagus	54	3.8
Colon	44	3.2
Skin	41	3.0
Bladder	41	3.0
Hemo-lymphatic system	39	2.8
Anorectal	39	2.8
Endometrium	30	2.2
Ovary	30	2.2
Kidney	30	2.2
Vulva	28	2.0
Vagina	20	1.4
Liver	18	1.3
Others	45	3.2
Total	1 388	100.0

More than two out of five cancer cases were squamous cell carcinoma. The table 2 shows the distribution of cancer cases by histological type.

Table 2. Distribution of cases by histological type.

Histological type	Numbers (n)	Percentages (%)
Squamous cell carcinoma	602	43.4
Invasive carcinoma	321	23.1
Adenocarcinoma	189	13.6
Non-specific type of carcinoma	62	4.5
Dermatofibrosarcoma	56	4.0
Lymphoma	28	2.0
Cylindroma	26	1.9
Choriocarcinoma	23	1.7
Nephroblastoma	13	0.9
Urothelial carcinoma	12	0.9
Poorly differentiated carcinoma	8	0.6
Osteosarcoma	8	0.6
Rhabdomyosarcoma	8	0.6
Burkitt's lymphoma	7	0.5
Medullary carcinoma	6	0.4
Retinoblastoma	5	0.4
Melanoma	5	0.4
Basal cell carcinoma	4	0.3
Phyllodes sarcoma	2	0.1
Kaposi's sarcoma	2	0.1
Ewing's sarcoma	1	0.1
Total	1 388	100.0

It was found that carcinomas represented 88.3% of histologically diagnosed cancers. The other main histological types were sarcoma (5.6%), lymphoma (2.5%), and melanoma (0.4%).

Breast (32.9%) and cervical (31.1%) cancers were the most frequent in women (Table 3). Among the men, the most frequent cancers were stomach (19.8%) and prostate (13.9%).

Table 3. Location of cancers by gender.

Localisation	Femmes		Hommes	
	Numbers (n)	Percentages (%)	Numbers (n)	Percentages (%)
Breast	329	32.9	25	6.4
Cervix	49	4.9	77	19.7
Stomach	47	4.7	37	9.5
Maxillo-facial	28	2.8	26	6.7
Prostate	22	2.2	19	4.9
Esophagus	21	2.1	18	4.6
Colon	17	1.7	24	6.2
Skin	15	1.5	29	7.5
Bladder	13	1.3	26	6.7
Hemo-lymphatic system	13	1.3	17	4.4
Anorectal	7	0.7	11	2.8
Endometrium	311	31.1	0	0.0
Ovary	30	3.0	0	0.0
Kidney	30	3.0	0	0.0
Vulva	28	2.8	0	0.0
Vagina	20	2.0	0	0.0
Liver	0	0.0	54	13.9
Others	19	1.9	26	6.7
Total	999	100.0	389	100.0

In children according to histological types of cancer, the most frequent cancers were lymphoma (40.9%), retinoblastoma (27.3%), nephroblastoma (13.6%), osteosarcoma (13.6%), and carcinoma (4.6%).

4. Discussion

After The study objective was to investigate the hospital proportions and the histological and histogenetic types of

cancers in anatomical pathology at the SSNTH of Bobo Dioulasso, Burkina Faso. The main results showed that diagnosed cancers represented 22.0% of the cancers notified at CHUSS. Predominantly female (72.1%), the age group most represented was 40-60 years, with those under 15 years representing 3.2%. As for the location, the breast was the most affected organ. Histologically, carcinomas were the most frequent histogenetic type (88.3%).

4.1. Study Limits

The limitations are methodological, in line with those of any cross-sectional study, which gives only a snapshot of the data for each patient. Also, the retrospective nature of the data collection did not allow us to be exhaustive in terms of variables, forcing us to limit ourselves to the only data available in the documents consulted, in the absence of a more complete cancer registry including epidemiological, clinical, paraclinical, therapeutic and follow-up data.

4.2. Hospital Proportion of Cancers at the SSNTH

The average annual incidence of cancer cases diagnosed at the service found in the present study was low compared to the 200.2 cases reported by Lompo *et al* in Burkina Faso in 2009, and the 210 cases reported in Togo [9]. On the one hand, this could be explained by the low histological confirmation of cancers at CHUSS. Indeed, the present results showed that only about one (1) cancer out of five (5) notified at CHUSS was histologically confirmed. The major difficulties in the management of cancers in the countries of the West African sub-region constitute an obstacle to the use of histological confirmation [10]. Compared to countries with a better socio-economic level such as the Maghreb countries, the figures were higher, around 922 cases per year [11]. On the other hand, we are dealing here with data on diagnosed morbidities that are strongly influenced by the use of health services and the accessibility of these services. The establishment of a population-based cancer registry would considerably improve the quality of epidemiological data [12]. A better organization of cancer care with the reinforcement of human resources with medical oncologists and radiotherapists and the raising of the level of a well-coordinated technical platform could also contribute to the improvement of the level of histological confirmation of notified cancers.

4.3. Confirmed Cancers Patients' Socio-Demographic Characteristics

In the present study, cancer occurred at a relatively young average age. This figure is higher than the 45.9 and 45.3 years reported respectively by previous studies conducted by Lompo *et al* in Burkina Faso [15] and by Amegbor *et al* in Togo [9]. It is lower than the 55 years-old reported in the Maghreb [11]. This could be attributed to an improvement of the life expectancy over the past decade in Burkina Faso. Indeed, compared to 2006, the life expectancy has improved by 5.2 years-old, from 56.7 years-old to 61.9 years-old in 2019 [14].

Female gender was predominant in the present study. The predominance of females was found in previous works by: Lompo *et al* with 54.9% [13], Amegbor *et al* with 52% [9], Compaore *et al* with 67.9% [16]. The present figures could be explained by the improvement of diagnostic means and awareness in the last decade, but more in favor of female cancers. Indeed, since 2016, there is a national policy of the free care for women and infants under five years-old, including free care for breast cancer and cervical cancer in women in Burkina Faso.

In addition, in the present study, the mean age of cancer onset in women was lower than in men. This was observed in many studies such as those from Lompo *et al*. [15], from Amegbor *et al* [9] who respectively found 44.7 years-old and 43.8 years-old for the women, and 47.5 years-old and 46.9 years-old for the men.

4.4. Locations of the Confirmed Cancers

In the present study, the most frequent cancers were breast, cervical and stomach. These results were superimposed on those from Kanté in Mali in 2011, who found these cancers to be predominant with 15.8%, 26.3% and 9.3% respectively [11]. This similarity could be explained by the fact that the two neighboring populations experience the same socio-economic realities in West Africa.

4.5. Histological Types of the Confirmed Cancers

In the present study, the epithelial cancers (carcinomas) were predominant. This is to be compared with the predominant sites in the present study which were breast, cervix and stomach, where it is the epithelial tissues that are affected by the neoplastic process. This observation is found in most of the series in the literature where it was reported 75.5% by Lompo *et al*. [15] et 68,1% by Amegbor [9].

4.6. Implications in Public Health

This study reports on data that were only a hospital proportion that underestimates population-based incidence and prevalence. This highlights the need for a comprehensive population-based cancer registry. The cancers diagnosed were mostly cancers that could be prevented by public health promotion and prevention actions. For cervical cancer, it is important to carry out preventive actions through vaccination against persistent sexual infection by the Human Papillomavirus (HPV) and early detection of precancerous lesions.) Regarding breast cancer, it is necessary the early detection by self-salpation and mammography. As for stomach cancer, it is suggested effective stress management, effective treatment of *Helicobacter pylori* in the treatment of peptic ulcer and chronic gastritis, prevention of smoking, and diet rich in salty products and poor in fresh vegetables and fruits.

5. Conclusion

The hospital-based pathology cancer diagnosis data at

CHUSS showed an average incidence of 173.5 histologically confirmed cancers at CHUSS per year. Women were the most affected. The breast and cervix are the most affected organs. Breast cancer was most common in women, while stomach cancer predominated in men. The cancer mainly affects the epithelial tissues of the body. These are mostly preventable cancers. It is therefore imperative the establishment of a permanent multidisciplinary cancer registry. Also, it is necessary to organize cancer care at the Souro Sanou National Teaching Hospital (SSNTH) by emphasizing promotion and primary prevention in collaboration with peripheral health facilities.

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