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# How a Cancer Registry Was Set up in Senegal: An Example to Follow for a Developing Country

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## Abstract

**Objectives:** Senegal, with the support of WHO, had begun the establishment of a National Cancer Registry in 2009, although it had been at a standstill since 1969; the objective of this work was to test the reliability of data collection tools and feasibility stages necessary for the validation of media before the establishment of a national cancer registry. **Methodology:** We conducted a non-exhaustive preliminary study over a period of three months from the first of January to 31 March 2010 at four major hospitals in Dakar at the time. **Results:** Two hundred and eighty-nine cases had been identified: 44% of men (n = 127) and 56% of women (n = 162) with a sex ratio of 0.8. The ages ranged from 20 to 90 years with an average of 50 years. The main diagnostic mode was essentially histological, with 76% of cases (n = 219). The most frequent locations were: ORL (ENT meaning Ear, Nose and Throat) with 25% of cases, liver 7% and bronchopulmonary 4.5% of cases. In men, liver cancer was the most common location and women for cervical cancer with 16%. Squamous cell carcinoma was the most common histological type with 68% of cases followed by adenocarcinoma with 22% of cases. Thirty-eight percent of patients were classified as stage III and IV. A quarter of our patients had received palliative treatment. In contrast, 15 (15%) had received chemotherapy and 4% had received radiotherapy. Data collection was satisfactory. **Conclusion:** Cancer is a reality in Senegal but it remains underdiagnosed. The materials made it possible to make the cancer registry effective throughout the country.

## Keywords

Registry, Cancer, Senegal

## 1. Introduction

"A registry is defined as a continuous and exhaustive collection of personal data for one or more health events within a geographical population for research or public health purposes, conducted by a well-skilled team." [1] [2] [3]

Registration of cancer cases enables epidemiological studies on the causes of cancer, exposure to carcinogens, as well as the effects of management in terms of prevention and early diagnosis [1] [4].

Senegal like most developing countries does not have a population registry [5].

1) The objectives of this study were as follows:

- Evaluate the database and computer-based system of tumor registry, both currently available.
- Appreciate the feasibility of an online registration of tumors in Senegal.

2) The specific objectives were as follows:

- Establish an inventory in every health-care facility targeted;
- Evaluate the collection, quality and reliability of data;
- Analyse the global epidemiological aspects;
- Identify problems and pitfalls encountered;
- Formulate recommendations essential for an effective kick-off and planification of registration.

## 2. Materials and Methods

➢ Study Location:

Our study was based in the four principal hospitals of Dakar namely: Idrissa Pouye Hospital of Grand Yoff (HOGGIP. Ex-HOGGY), Dakar Main Hospital (H.P.D.), Aristide le Dantec Hospital, Institute of Cancer Research, Fann Hospital

➢ Duration of Study:

The study went for a period of 3 months, from 1st January 2010 to 31st March 2010.

➢ Cancers Inclusion Criteria:

Cancers inclusion criteria as established by the International Research Center have been modified hence, we included:

- All malignant tumors;
- Uncertain and *in situ* malignant tumors for the CNS (Central Nervous System).

➢ Exclusion Criteria:

Were excluded: Recurrent previously diagnosed cancers, tumor growth? benign tumors, childhood tumors?

The definition of tumor location was based on the International Classification applied at Oncology, 3rd edition.

Patients' records were used as our source of information, data collection was done using a pre-established patient form, data processing and validation was done using Wed-Dev software.

## 3. Results

From 1st January 2010 to 31st March 2010, we identified 289 cancer cases and studied their epidemiological, clinical, therapeutic and progression aspects with the aim of setting up a registry for tumors in Senegal.

➢ **Epidemiological Aspects:**

✓ Distribution by health-care facility

Of the 289 cancer cases identified, 154 cases were followed-up at the cancer institute that is 53%, 46 cases at Aristide Le Dantec Hospital *i.e.*, 16% and 46 cases at Fann Hospital *i.e.*, 16% (Figure 1).

✓ Gender Distribution

We noticed a slight increase in females (56%) with a sex ratio of 0.8 (Figure 2).

✓ Age-group Distribution

The most affected age-group within our cancer patients population were 51 - 60 years with 72 cases, 41 - 50 years with 56 cases and 31 - 40 years with 53 cases given us a total percentage of 61.62% (Figure 3).

The average age for all genders was 50 years.

✓ Occupation-based Distribution

The occupations of patients were not recorded on the vast majority of files that is 260 cases out of 289 patients (Figure 4).

✓ Origin-based Distribution

The 243 cancerous patients *i.e.*, 84% were all from urban areas, 41 cases *i.e.*, 14% were from rural areas and 5 cases *i.e.*, 2% were of unknown origin (Figure 5).

➢ **Clinical Aspects:**

✓ Distribution based on diagnostic

The majority of patients had their diagnostic done on the basis of histology *i.e.*, 219 (76% of cases). 32 patients *i.e.*, 11% had their diagnostic based on radiological findings meanwhile, 27 patients *i.e.*, 9% had their diagnostic based on biological results (Figure 6).

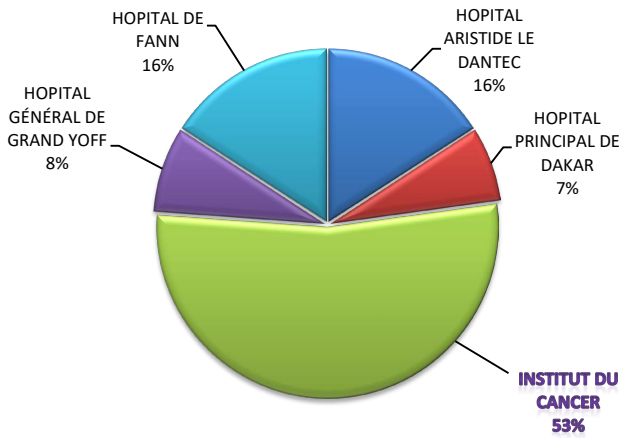


Figure 1. The distribution of cancers by health structure.

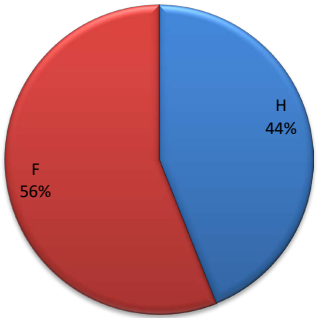


**Figure 2.** Distribution of cancers by sex.

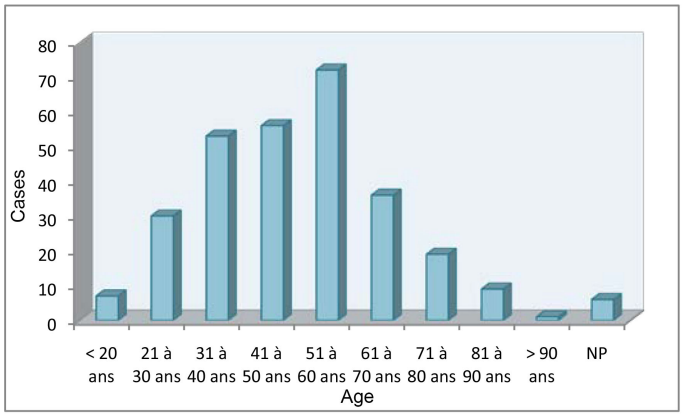


**Figure 3.** Distribution of cancers by age group.

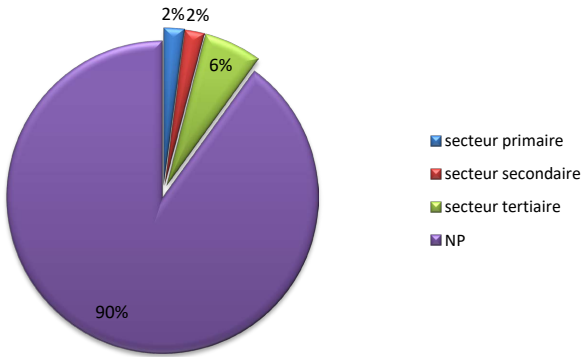


**Figure 4.** Distribution of cancers by occupation.

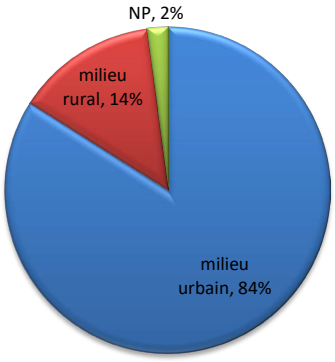


**Figure 5.** Distribution of cancers by origin.

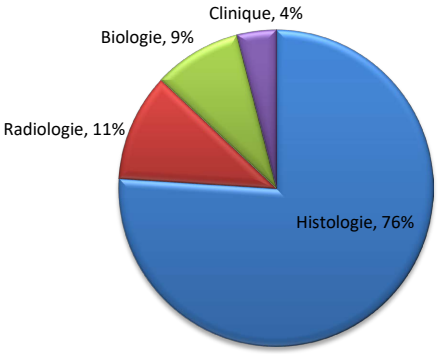


**Figure 6.** Distribution of cancers according to the basis of diagnosis.

✓ Distribution based on histology

Of the 219 cases *i.e.*, 76% formally diagnosed histologically, 149 cases that is, 68% are carcinomas, the remainder 48 cases *i.e.*, 22% are adenocarcinomas (**Figure 7**).

✓ Distribution based on site of origin

In Men

Of the 127 cancer cases in men *i.e.*, 44% of cases the distribution was as follows: 22 cases *i.e.*, 7.61% were pharyngeal cancers, 21 cases *i.e.*, 7.26% were liver cancers, 15 cases *i.e.*, 5.19% were laryngeal cancers and 12 cases *i.e.*, 4.15% were tracheal, bronchial and lung cancers (**Figure 8**).

In Women

Of the 162 cases of cancer in women, *i.e.*, 56% of cases, the distribution was as follows: 46 cases *i.e.*, 15.91% presented with cervical cancer, 29 cases *i.e.*, 10.03% were breast cancer, 22 cases *i.e.*, 7.61% were pharyngeal cancers and 10 cases *i.e.*, 3.46% were esophageal cancers (**Figure 9**).

✓ Distribution based on stage

The 98 cases *i.e.*, 34% of cancer identified were stage II, 63 cases *i.e.*, 21.70% were stage III and 48 cases *i.e.*, 16.60% were stage IV (**Figure 10**).

➢ **Therapeutic Aspects**

Of the 289 cases, 94 cases *i.e.*, 32% were treated with associated therapy, 74 cases *i.e.*, 25% were managed surgically only meanwhile, 47 cases *i.e.*, 16% were treated symptomatically (**Figure 11**).

➢ **Patients Follow-up**

A year after their cancer diagnoses, the majority of patients were living without recurrence (**Figure 12**).

## 4. Discussion

During a period of 3 months from 1st January 2010 to 31st March 2010, we conducted a preliminary study aimed at establishing a cancer registry in Senegal. It was a non-exhaustive study carried out in five health-care facilities in the city of Dakar (HOGGIP, HALD, FANN, HPD and Institut Joliot Curie) on adult patients.

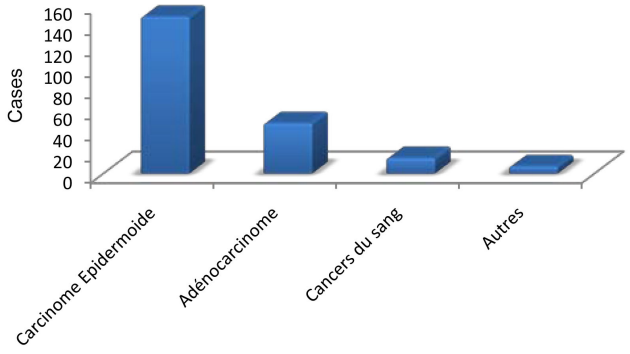


**Figure 7.** Distribution by histological type.

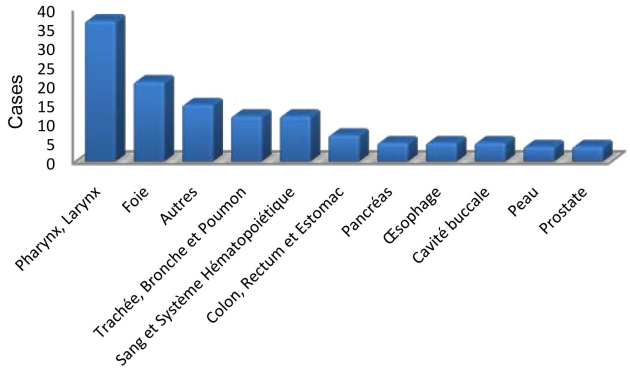


**Figure 8.** Distribution of cancers by location in men.

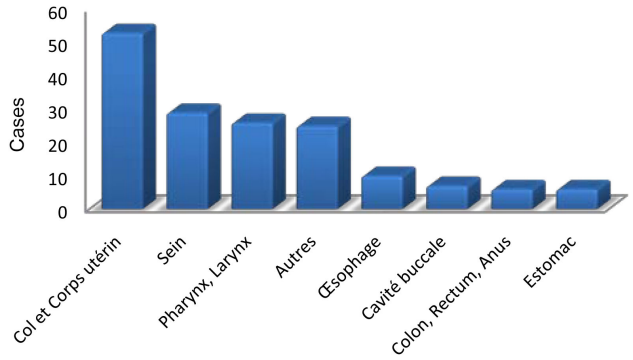


**Figure 9.** Distribution by location in women.

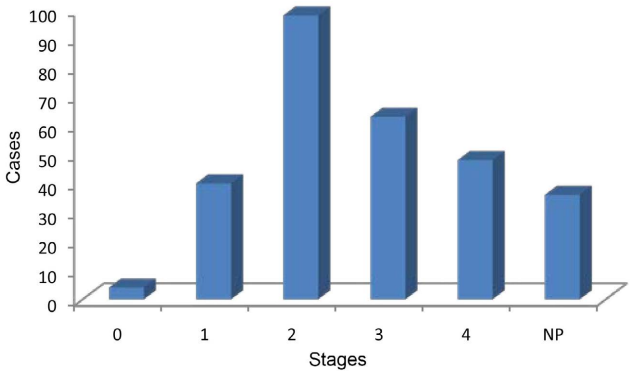


**Figure 10.** Breakdown by stages.

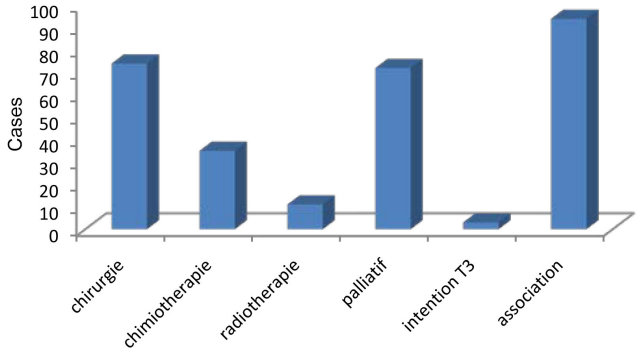


**Figure 11.** Distribution according to therapeutic strategies.

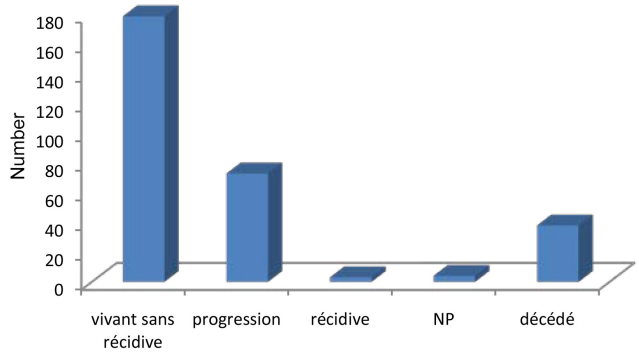


**Figure 12.** Distribution of cancers by state at the latest news at one year.

- At the end of this study, 289 cases were identified with a slight predominance in female patients with a gender ratio of 0.8. This predominance is similar to that of a previous study by H. ENNAJ *et al.* in the big region of Casablanca (Morocco) [6].
- Age varied between 20 to 90 years with a median of 50 years. The majority of patients 181 cases *i.e.*, 63% belong to the age group of 40 to 60 years.
- Patients were from all socio-professional backgrounds but, people from the tertiary sector were more.
- In men, ENT cancers were predominant meanwhile in women, it was gynecological cancers as described by Globacan 2008 [7].
- The main diagnostic method was histological (76%) compared to Setif? (88%) and North Tunisia (89.50%) [8] [9] with a large predominance being epidermoid carcinomas.
- Most of the cancers were metastatic (+70%) as is the case in the vast majority of developing countries [10] and within a year, 61% of patients were alive without recurrence.

## 5. Conclusion

All the tools used were reliable and variables were usable. The recommendations enabled the extension of registration in hospitals throughout the country and started an effective cancer registry in Senegal.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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