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Therapeutic Itineraries of Breast Cancer Patients in Burkina Faso

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Abstract: We therefore conducted this study with the objective of analyzing the association between their therapeutic route and their consultation time at the CHU-YO. This was a retrospective study based on medical records of patients followed in the cancer department of the CHU-YO during the period from January 2017 to December 2021. Their first consultations in different health centers were informed as well as the chronology of these consultations. The consultation time was compared according to different parameters by the tests of Student, Wilcoxon and Kruskal-Wallis. A total of 220 patient files were retained. The average age of these patients was 48.3 (13.6) years. Salaried patients accounted for 27.3%. One hundred and eighteen patients (53.6%) resided in Ouagadougou, 18 patients (8.2%) resided in a locality located within 100 km of the city of Ouagadougou and 84 patients (38.2%) resided in a locality located more than 100 km from Ouagadougou. The first contact with the modern health system was CSPS or CMA in 70% of cases, CHR in 5.5% of cases, private health centers in 3.6% of cases and CHU in 20.9% of cases. Thus, 46 patients consulted directly at the CHU, 4 patients consulted in a CSPS before being referred to the CHU, 120 patients consulted in a CMA before being referred to the CHU. The average time did not differ significantly according to the usual place of residence, the place of the first consultation and the therapeutic route. However, it differed significantly according to the stage of diagnosis. Measures allowing geographical and financial accessibility, training of paramedics and awareness of populations would promote the early diagnosis of breast cancer in Burkina Faso.

Keywords: Cancer, Breast, Therapeutic Itinerary, Delay in Consultation, Burkina Faso

1. Introduction

One of the problems associated with the high number of cancer deaths in resource-limited countries would be late diagnosis [1]. In Africa, in particular, many cases of cancer are diagnosed at an advanced stage, whereas they would be easily curable if they were discovered earlier [2]. The causes related to this delay in diagnosis are multiple. Some are related to patients: low socio-economic level, beliefs and culture, etc.; others are linked to the health system: inadequate infrastructure and equipment, dilapidated and poor maintenance, quantitative and qualitative lack of human resources.

The Burkinabe healthcare system is based on a pyramidal organization based on the administrative organization of the country. Each level of the health pyramid exercises a particular competence over a well-defined portion of territory. Care provision is provided by three sectors: the public sector, the private sector and the traditional sector [3]. Public care structures are organized into three levels that provide primary, secondary and tertiary care. The first level is the Health District which consists of two echelons: the first echelon of care is the Health and Social Promotion Centers (CSPS); the second level of care is the Medical Center with Surgical Unit (CMA). The CMA serves as a reference for the CSPS. The second level is represented by the Regional Hospital Centre

(CHR). It serves as a reference for the CMA. The third level is the University Hospital Centre. It is the highest reference level (Figure 1). In addition to public health facilities, Burkina Faso has private health facilities mostly located in the cities of Ouagadougou and Bobo-Dioulasso. In 2021, there were 2126 CSPS, 46 CMA, 6 CHU and 738 private care facilities in Burkina Faso [4]. The traditional sector, meanwhile, is in full organization. It is gradually integrated into the health system under the auspices of the Directorate for Medicine and Traditional Medicine of the Ministry of Health.

According to the organization of the health system of Burkina Faso, the Centers of Health and Social Promotion (CSPS) are the first contact of the population with modern health structures. These centres are run by nurses, midwives and maieuticians who offer curative and promotional services to the population of their health coverage area. If the patient cannot be managed by the CSPS, the patient is then referred to a structure that meets the first reference level criteria: the Medical Center with Surgical Antenna (CMA). The second reference level consists of regional hospitals which, in turn, refer patients to the third reference level if necessary [5].

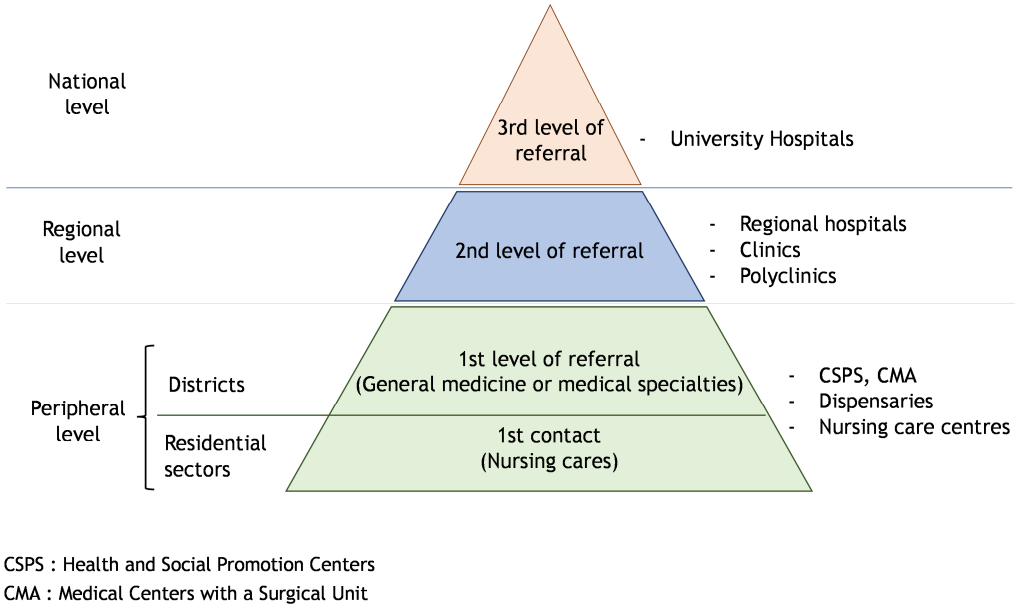

Figure 1. *Burkina Faso's health pyramid.*

Breast cancer is a condition that requires specialized management in a properly equipped centre [6]. Ouagadougou is the only city in Burkina Faso that has at least one cancer service. Yalgado Ouédraogo University Hospital (CHU-YO) is home to the city's first cancer ward. He receives patients from several cities and villages in Burkina Faso. These patients arrive after a more or less long therapeutic route depending on their place of residence and access to care. This route, consisting of several levels of references, could be a cause of delay in the consultation in a specialized center. However, no studies evaluated the influence of the therapeutic route of breast cancer patients on the consultation time. We therefore conducted this study with the objective of analyzing the association between the therapeutic route of breast cancer patients and their consultation time at the CHU-YO.

2. Methods

2.1. Type and Period of Study

This is a retrospective study based on medical records of patients followed in the cancer department of the CHU-YO during the period from January 2017 to December 2021.

2.2. Study Framework

The CHU-YO is one of the highest reference level centers in the management of breast cancer in Burkina Faso. It receives patients from the first level health centers corresponding to the Centers of Health and Social Promotion (CSPS) and Medical Centers with Surgical Antenna (CMA). It also receives patients from second level centers corresponding to the Regional Hospital Centers (CHR). The CHU-YO includes a cancer department and other medical, surgical and technical services involved in the management of cancers using a multidisciplinary approach.

2.3. Sampling

We collected 243 records of patients followed up for histologically confirmed breast cancer during the relevant period. Twenty-one records were excluded for lack of required information regarding the treatment route and patient consultation time. Two cases of non-epithelial tumors were also excluded (sarcoma and lymphoma).

2.4. Data Collection

Patient characteristics and cancer were collected. Their first

consultations in different health centers were informed as well as the chronology of these consultations. The consultation period was defined as the time between the first symptoms and the first consultation at the CHU-YO.

2.5. Data Analysis

Categorical variables were described by proportions. Quantitative variables were described by mean and standard deviation. The consultation time, estimated in months, was compared according to different parameters by parametric and non-parametric tests of comparison of means (Student, Wilcoxon and Kruskal-Wallis). A significance threshold of 0.05 was used for these analyses.

3. Results

A total of 220 patient files were retained. The average age of these patients was 48.3 (13.6) years. Salaried patients accounted for 27.3%. One hundred and eighteen patients (53.6%) resided in Ouagadougou, 18 patients (8.2%) resided in a locality within a 100 km radius of Ouagadougou and 84 patients (38.2%) resided more than 100 km from Ouagadougou (Figure 2). The circumstances of discovery of the disease were breast self-examination in 122 cases (55.5%), functional signs (breast pain, nipple discharge) in 92 cases (41.8%) and individual screening in 6 cases (2.7%). Infiltrating ductal carcinomas not otherwise specified was the most represented (90%) followed by infiltrating lobular carcinoma (7.7%) and carcinomas without further indication in 2.3% of cases. Twelve patients (5.5%) consulted at stage IIA and stage IIB of the American Joint Commission on Cancer (AJCC) classification, 36 patients (16.4%) at stage IIIA, 72 patients (32.7%) at stage IIIB, 12 patients (5.5%) at stage IIIC and 36 patients at stage IV. Forty-four patients (20%) consulted after surgery at another health centre, without information about the characteristics of the primary tumour (Table 1).

The first contact with the modern health system was CSPS or CMA in 70% of cases, CHR in 5.5% of cases, private health centers in 3.6% of cases and CHU in 20.9% of cases. Four patients consulted in a CSPS before being referred to the CHU, 120 patients consulted in a CMA before being referred to the CHU, 12 patients consulted in a CHR before being referred to the CHU and 8 patients consulted in a private health center, before being referred to the CHU. Thirty patients received two referrals: 24 patients were referred to the CSPS to an CMA and then to the CHU, 6 patients were referred from an CMA to a CHR and then to the CHU.

The average consultation time was 10.4 (8.7) months, with a median of 8 months, an interquartile interval of 5 to 12 months and extremes of 1 and 48 months. The average delay did not differ significantly according to the usual place of residence of the patients, according to the place of the first consultation and according to the therapeutic route. However, it differed significantly according to the stage of diagnosis. The average time was 5.6 months, 9.6 months and 14.3 months for stages II, III and IV respectively; patients for whom staging could not be done had a mean consultation time of 11.4 months (p = 0.006) (Table 2).

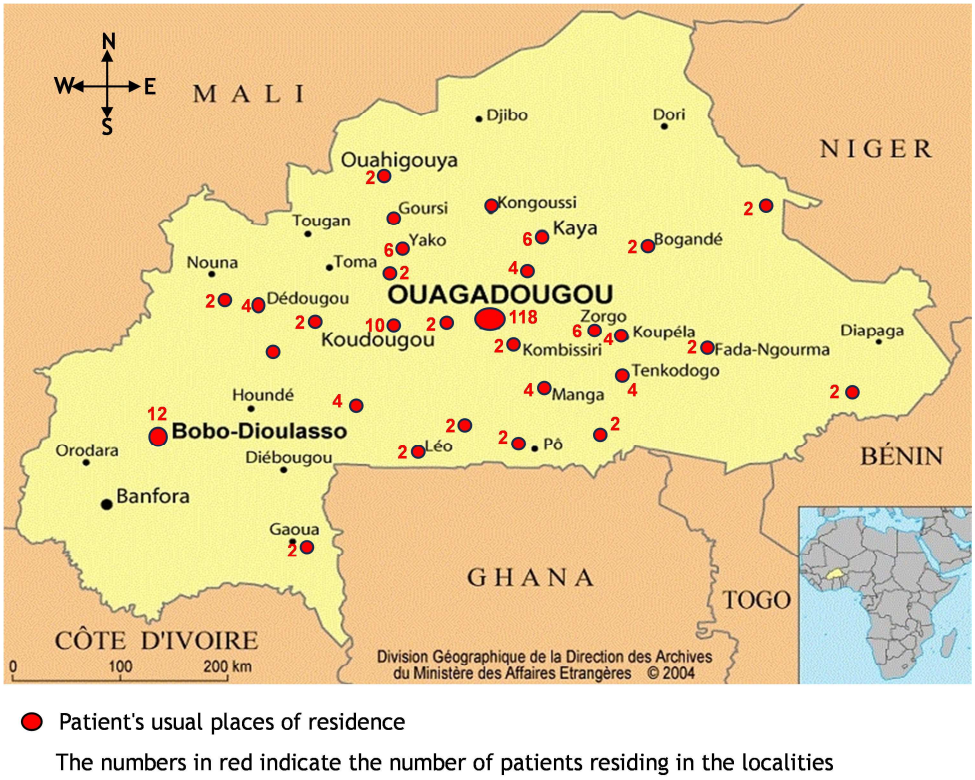

Figure 2. *Breast cancer patients' usual place of residence in relation to Ouagadougou, the only town with referral centres for cancer treatment.*

Adapted from the map of Burkina Faso consulted on 14/08/2023 at https://www.atlas-monde.net/afrique/burkina-faso/

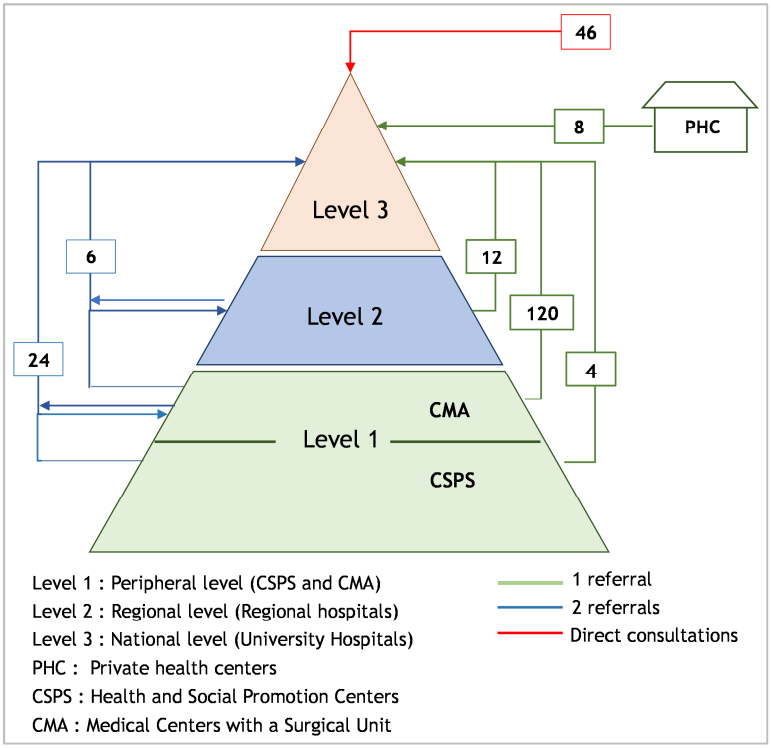

Figure 3. *Therapeutic itinerary of breast cancer patients according to the Burkina Faso health pyramid. (The numbers correspond to the number of patients for each itinerary).*

Table 1. *Patient characteristics (n=220).*

Features	Numbers	Percentages
Source of income		
- Self-employed	160	72.7
- Employed	60	27.3
Level of education		
- No education	142	64.6
- Primary	12	5.5
- Secondary	48	21.8
- Higher	6	2.7
- Unspecified	12	5.5
Residence		
- Ouagadougou	118	53.6
- Within a radius of 100 km	18	8.2
- Within a radius of more than 100 km	84	38.2
Place of first consultation		
- CSPS or CMA (level 1)	154	7.0
- CHR (level 2)	12	5.5
- University Hospital (level 3)	46	20.9
- PHE	8	3.6
Circumstances of discovery		
- Breast self-examination	122	55.5
- Functional signs	92	41.8
- Screening	6	2.7
Histology		
- Non-specific infiltrating carcinoma	198	90.0
- Invasive lobular carcinoma	17	7.7
- Other carcinomas	5	2.3
AJCC stage		
- IIA	12	5.5
- IIB	12	5.5
- IIIIA	36	16.4
- IIIB	72	32.7
- IIIC	12	5.5
- IV	36	16.4
- Not specified	44	20.0

Table 2. *Average consultation times according to residence, place of first consultation, therapeutic itinerary and stage of extension of breast cancer patients (n=220).*

Variables	Numbers	Delays for consultation (months)		p value
		Means	SD	
Residence				
- Ouagadougou	118	10.1	8.8	
- Within a radius of 100 km	18	7.3	3.7	0.31
- Within a radius of more than 100 km	84	11.5	9.2	
Place of first consultation				
- CSPS or CMA (level 1)	154	11.0	9.5	
- CHR (level 2)	12	7.3	3.7	0.68
- CHU (level 3)	46	9.0	6.3	
- PHC	8	11.3	8.5	
Itinerary				
- Direct consultation	46	9.0	6.3	
- CSPS to CHU	4	8.5	0.6	
- CMA to CHU	120	11.1	9.8	
- CHR to CHU	12	7.3	3.7	0.82
- PHC to CHU	8	11.3	8.5	
- CSPS to CMA to CHU	24	12.6	9.0	
- CMA to CHR to CHU	6	3.7	2.3	
Number of referrals				
- 0 referral (Direct consultation)	46	9.0	6.3	
- 1 referral	144	10.7	9.3	0.77
- 2 referrals	30	10.8	8.8	
AJCC stage				
- II	24	5.6	3,6	
- III	120	9.6	7,3	0.006
- IV	32	14.3	12,5	
- Not specified	44	11.4	10,3	

SD: standard deviation; CSPS: Health and Social Promotion Centers; CMA: Medical Centers with a Surgical Unit; CHU: University hospital; AJCC: American Joint Commission on Cancer

4. Discussion

This study analyzed the therapeutic route of breast cancer patients by reporting it to the consultation time in a national health center. The therapeutic route of patients can be understood as the succession of treatments during an episode of illness [7]. It has three modalities: the use of self-medication, public health services and private health services [8]. The use of self-medication was not addressed in this study.

Our sample consisted of mostly non-salaried patients with low literacy skills. This is consistent with the socio-economic profile of women in our context [9]. There is no screening program in Burkina Faso. The main diagnostic circumstance was therefore the discovery, by the patient, of a breast nodule at autopalpation [10]. Between the first sign of the disease and diagnostic confirmation, a number of steps mark the patient's journey.

Our context is characterized by insufficient resources and sanitation infrastructure. There are only two adult cancer services for more than 20 million people. These services are located in Ouagadougou, the capital, which has only 12% of the population [11]. As a result, more than 80% of the population faces a problem of geographic accessibility to cancer services. Our study corroborates this. Indeed, more than half of the patients come from Ouagadougou and only 38% come from localities located more than 100 km away. According to the organization of the health system of Burkina Faso, CSPS and CMA are the first recourse of populations in health care. These centres are located in towns and villages so that 70% of the patients in our study were able to access them for their first consultation. In Essiben's study, on the other hand, hospital was the first port of call for women with any sign suggestive of breast cancer in Yaounde [12]. This was the case for one patient out of 5 in our study. These are self-references that can have several explanations: geographical proximity, advice from a relative, and the confidence placed in level 3 centres. For the same reasons, some patients consulted in level 2 health centers without going through a level 1 center. In almost all cases, the patient route did not follow all levels of the health system. Indeed, only 6 patients consulted in a level 1 center and then referred successively in a second and third level center.

More than half the patients were referred to a university hospital after a consultation at a level 1 centre. This is most likely due to the fact that health workers who practice in the CSPS and CMA know that level 2 does not have infrastructure and staff necessary for the management of cancers.

Our sample is characterized by a long consultation time. Several studies in Africa have shown long consultation times. As in our study, the average delay was 10 months in Morrocco and Algeria [13, 14]. In other African studies, it was shorter (6 months) [12, 15]. We found no association between the therapeutic route and the average consultation time. Patients residing in Ouagadougou have a similar consultation period as those residing outside Ouagadougou. There was also no difference according to the level of the first consultation.

Patients who visited the CHU directly and those who went through the peripheral levels of the health system had similar consultation times.

We can therefore assume that factors other than the therapeutic route had a decisive influence on the consultation time. Indeed, several factors have been mentioned in the literature to explain the delay in consultation in breast cancer: lack of financial means, socio-cultural habits with traditional treatments in first line, errors in diagnosis, and insufficient therapeutic management [2]. The use of traditional medicine could play a major role. Indeed, the high cost of diagnostic and therapeutic procedures, the remoteness of reference centers motivates people to use traditional medicine to solve their health problems [16]. These practices are as common in cities as in villages. They are largely responsible for delays in consultation.

Other factors may be involved. These are factors related to health workers. Gombé Mbalawa [17] showed that more than 40% of the delay in consultation at a specialized center was related to the practices of paramedics. The harm is greater for patients, especially since the delay in the consultation is associated with inadequate management in peripheral health facilities. This was the case in 20% of the patients in our study who received a consultation in a specialized center after undergoing non-carcinological tumor removal in a peripheral health center.

Another cause of delay in consultation appears frequently in the literature: fear of cancer diagnosis and treatments. This fear is not specific to our context, as it has been found by authors from different socio-economic backgrounds [18-20]. Fear could be one of the major causes of the delay in consultation in our series.

Consultation time is largely responsible for advanced stages of diagnosis. In our study consultation time was strongly associated with the stages of diagnosis. Breast cancers that were inadequately removed had a mean consultation time greater than stage II and III. It is therefore necessary to promote early consultation to significantly improve the prognosis of breast cancer in Burkina Faso.

5. Conclusion

Our context is characterized by a delay in consultation in a specialized center. Advanced stages at diagnosis reflect this delay in consultation; they represented more than three quarters of cases. The majority of patients had a therapeutic itinerary marked by an initial consultation in a first-level health center before referral to a third-level health center. A few patients consulted a second-level health center before being referred to a specialist center. Around a fifth of patients consulted a specialist center directly. These different itineraries are sometimes marked by inadequate treatment in peripheral health centers. There was no association between health itinerary and consultation delay. On the other hand, the stage at diagnosis is strongly associated with consultation delay. It is necessary to explore other factors responsible for delays in consulting a specialist center, in particular recourse to traditional medicine. Measures to improve geographical and financial accessibility, train paramedical staff and raise public awareness would help to promote early diagnosis of breast cancer in Burkina Faso.

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