

Original Research Article

Late diagnosis of breast cancer in a hospital setting in Ouagadougou in 2024: patient characteristics and associated factors

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ABSTRACT

Background: Breast cancer, like many other noncommunicable diseases, remains a public health problem today. Although the disease is more common in people over 50, younger women are also affected. The chances of following this disease depend on the stage at which it is diagnosed, since the earlier the diagnosis, the greater the chances of survival. The aim of this study was to determine the factors associated with late diagnosis of breast cancer among women in hospital settings in Ouagadougou (Burkina Faso) in 2024.

Methods: This was a cross-sectional analytical study that took place over a period of six months, from February 2 to July 31, 2024, in university hospitals in the city of Ouagadougou. The study included women with confirmed breast cancer. Data were analyzed using Statistical Package for Social Sciences (SPSS) software.

Results: The study involved 226 women. Among them, the 40-49 age group was the most represented at 39.3%. In addition, 33.63% had a secondary education. More than half (79.65%) lived in urban areas. The frequency of late diagnosis was 32.74% [IC95% (0.674-0.914)]. The factors associated with late diagnosis of breast cancer were the environment in which the patient lived (OR=0.08; p=0.001), The first resort, including traditional medicine (OR=106; p<0.001) and insufficient symptom awareness (OR=4.63; p=0.001).

Conclusions: These results reflect a constructive dialogue between traditional and modern medicine, enabling traditional practitioners to be trained to recognize the early signs of breast cancer and to refer patients rapidly to the appropriate health centers for treatment.

Keywords: Associated factors, Breast cancer, Burkina Faso, Late diagnosis

INTRODUCTION

Of all cancers, breast cancer is the most common in women, with very high morbidity and mortality rates.¹ It represents a major public health problem, often

regarded as a life-changing event.² Its prediction is strongly linked to the stage at which the diagnosis is made.³ Although the disease is more common in people over 50, younger women are also affected; they are affected by more aggressive, rapidly growing forms.⁴

Every year, there are over 1.7 million cases of breast cancer and almost 627,000 deaths worldwide.⁵ In 2020, 1,109,209 cases were recorded in Africa.⁵ Of these, 49,339 were recorded in West Africa, with 25,626 deaths.^{2,5} These incidence and mortality rates will continue to rise unless effective prevention and management strategies are put in place.^{6,7}

Generally speaking, deaths from breast cancer occur most frequently in underdeveloped countries, where diagnosis is very late due to a number of factors.² These include lack of financial resources, sociocultural barriers, previous diagnostic errors, the inflammatory nature of cancers, fear of diagnosis, lack of breast self-examination, and reliance on traditional treatment and self-medication as first-line treatment.^{8,9} This is a disease for which the means of diagnosis not only make it possible to identify the sociodemographic, clinical, and paraclinical characteristics.⁷ It helps to detect its manifestations at an early stage and also to assess the stages of progression in order to propose the most effective treatment protocols.⁷

There are four main stages of breast cancer, ranging from early stage to more advanced, numbered I to IV. The higher the stage, the more aggressive the disease. Stage I corresponds to a small, localized tumor. This is early-stage breast cancer. At this stage, there is no lymph node invasion or distant metastases. The prognosis is good.¹⁰ Stage II is characterized by a larger or slightly more invasive tumor. Limited involvement of nearby lymph nodes may be present, but no distant metastases. In stage III, the tumor is even larger. There is significant involvement of regional lymph nodes, but no distant metastases. Stage IV corresponds to metastatic cancer. The tumor can be of any size, with or without lymph node involvement.¹⁰ The main feature is the presence of distant metastases. Each stage requires specific management, adapted to the extent of the cancer and the patient's general condition.⁷ Diagnosis is said to be late when it is made at advanced stages (III and IV), reducing the chances of survival and limiting treatment options.¹¹

In Burkina Faso, breast cancer ranks first among female cancers and is the second most deadly after cervical cancer.¹² According to data from the statistical yearbook of the Burkina Faso Ministry of Health, in 2023 there were 2,571 cases of breast cancer, with 111 deaths.¹³ Of the cases diagnosed in the country, 45.7% were at stage III of the International Union Against Cancer's tumor nodes metastasis classification and 41% at stage IV.¹⁴ Faced with this situation, the government of Burkina Faso has put in place several strategies to promote early detection and reduce the incidence of the disease, including free screening and treatment of gynecological and breast cancers in the various public health facilities.^{15,16} Despite the country's best efforts, delayed diagnosis remains a problem.¹⁴ This delay results in complex and costly management, as well as reduced survival rates. The aim of the present study was to investigate late diagnosis of breast cancer, looking at the

main characteristics of women affected, the state of late diagnosis, and the factors associated with it.

METHODS

Type and site of study

This was an analytical cross-sectional study. It took place in the university hospitals (CHU) of the city of Ouagadougou, from February 2 to July 31, 2024.

Study population

The study population consisted of all women with breast cancer (stage I to IV) who consulted one of the relevant departments during the study period.

Inclusion criteria

Included in the study were patients with histologically confirmed breast cancer fulfilling stage I, II, III and IV criteria and who had consulted or been hospitalized in one of the departments concerned during the study period.

Exclusion criteria

Patients whose general condition did not allow them to participate in the study were excluded.

Sampling and sampling

This was a non-probability, convenience (accidental) sample. We recruited patients who met our selection criteria in hospital, in the chemotherapy room, and then in the consultation room.

Dependent variable

The dependent variable was the time to diagnosis of breast cancer. It had two modalities: early and late. Late diagnosis was defined as advanced or immediately metastatic, i.e., stage III and IV according to the tumor nodes metastasis classification of the International Union Against Cancer. Conversely, early diagnosis was defined as diagnosis at a less advanced stage, corresponding to stages I and II of the same classification.

Explanatory variables

We grouped independent variables into sociodemographic, clinical and paraclinical variables; variables related to breast cancer knowledge and awareness; and variables related to access to screening services and sociocultural characteristics.^{8,9}

Sociodemographic variables were age, level of education, marital status, area of residence of women, income, health insurance.

Clinical variables were inaugural symptom, first recourse, reasons for delay in medical consultation, reason for consultation with conventional medicine, symptoms experienced, time to diagnosis, main reasons for delay in diagnosis

Paraclinical variables were health system delay.

Analytical methods

To meet the study's objectives, we adopted a three-stage analytical approach: descriptive analysis, bivariate analysis, and multivariate analysis. We used descriptive analysis to characterize the individuals and variables studied. For quantitative variables, we calculated means and standard deviations, while for qualitative variables, we presented numbers and proportions (%). We performed a bivariate analysis to compare the relationship between late diagnosis (dependent variable) and each independent variable. We retained variables with a p value less than or equal to 20% for multivariate analysis. Finally, we used logistic regression to identify factors independently associated with late diagnosis. We expressed the results of this multivariate analysis in terms of adjusted odds ratios (OR), with their 95% confidence intervals. A p value of less than 5% was considered statistically significant.

Ethical and deontological aspects

The study protocol was submitted to registered under number 2023-11271 with the Health Research Ethics Committee for advice and approval. The agreement of the competent administrative authorities of the different hospitals was obtained before data collection. First, we obtained informed consent from patients who met our inclusion criteria and then we administered the

questionnaire. We collected data under the responsibility of a physician who specializes in oncology. We respected confidentiality and restricted access to the digital database to the research team.

RESULTS

Characteristics of women with cancer

We analyzed 226 women. The 40-49 age group was most represented (39.3%). In addition, 33.63% had a secondary education level. More than half of the population (79.65%) lived in urban areas. Fewer than half (42.48%) had an income of over \$300,000, and more than half (93.81%) did not have health insurance (Table 1).

Clinical and paraclinical characteristics of women

The majority of women (91.15%) included in this study were in conventional medicine. Of these, 97.33% had consulted a health-care professional after experiencing symptoms. The breast nodule was the main inaugural symptom of breast cancer for 64.16%. The lack of awareness of symptoms, mentioned by 56.05% of patients, was the main cause of delay in diagnosis, with a diagnostic time of less than 6 months in 50.44% of patients (Table 2). The mean time between first symptom and histological confirmation was 150 days, with a standard deviation of 217 days, and extreme values ranging from 27 to 771 days. The mean time between first consultation and biopsy was 80 days, with a standard deviation of 136 days and extreme values ranging from zero to 518 days. The time between biopsy and histological confirmation was 101 days, with a standard deviation of 123 days, and extreme values ranging from 2 to 511 days.

Table 1: Distribution of women with breast cancer by socio-demographic characteristics.

Characteristics	Size	Percentage (%)
Age group (years)		
<40	38	16.81
≥40	188	83.19
Level of study		
Not in school	74	32.74
Primary	46	20.35
Secondary	76	33.63
Superior	30	13.27
Residence		
Urban	180	79.65
Rural/peri urban	46	20.35
Monthly income (CFA)		
100000-300000	53	23.45
≥300000	96	42.48
No fixed income	77	34.07
Health insurance		
No	212	93.81
Yes	14	6.19

Table 2: Distribution of women with breast cancer by clinical and paraclinical characteristics.

Clinical and parazelline characteristics	Staff (n=226)	Percentage (%)
Inaugural symptoms		
Nodule	145	64.16
Pain	53	23.45
Inflammation	33	14.6
Ulceration	13	5.75
Mammary discharge	10	4.42
Other symptoms	10	4.44
Regular breast self-examination	8	3.56
First resort		
Conventional medicine	206	91.15
Traditional therapy	12	5.30
Religious practices/alternative medicine	8	3.56
Reasons for delay in medical consultation		
Negligence	96	42.86
Financial difficulty	83	37.05
Fear of diagnosis	29	12.95
Early advanced cancer	29	12.95
Fear of mastectomy	11	4.91
Previous traditional processing	10	4.46
Remoteness of health facilities	9	4.02
Diagnostic error	29	12.95
Other	24	10.71
Reason for consultation in conventional medicine		
Symptoms felt	219	97.33
Recommendation from a close friend	18	8
Awareness campaign/parents who have had the disease	9	4
Symptoms felt		
Nodule	147	65.04
Pain	63	27.88
Inflammation	38	16.81
Ulceration	15	6.64
Mammary flow	15	6.64
Main reasons for delayed diagnosis		
Lack of awareness of symptoms	125	56.05
Socio-economic factors	91	40.81
Fear of medical consultation	31	13.9
Diagnostic error	23	10.31
Other	26	11.66

Bivariate analysis

Among the study variables, the following factors were significant with a p less than or equal to 0.2%. These were the level of study ($p=0.086$), the environment of residence ($p=0.06$), the inaugural symptom (more precisely, the mammary discharge) ($p=0.17$), the first recourse (more precisely, traditional medicine) ($p<0.001$). Also significant were symptoms (mainly ulceration) ($p=0.092$), lack of sensitization to symptoms ($p=0.060$), delay between biopsy and histological confirmation ($p<0.001$), as well as delay between first symptom and histological confirmation ($p=0.085$) (Table 3).

Frequency of late diagnosis

Among the 226 women with breast cancer, 74 were diagnosed late [32.74% IC95% (0.674-0.914)].

Factors associated with late diagnosis

The final logistic regression model showed that the following were significantly associated with late diagnosis of breast cancer (Table 4): residential environment (OR=0.08; $p=0.001$); the first treatment, including traditional medicine (OR=106; $p<0.001$); and insufficient awareness of symptoms (OR=4.63; $p=0.001$).

Table 3: Links between the different study variables and late diagnosis of breast cancer in women.

Variables	Late diagnosis (%)	OR	95% CI	P value
Age group (years)				
<40	12 (16.22)	—	—	0.73
≥40	62 (83.78)	1.07	0.51-2.32	
Level of study				
Not in school	26 (35.14)	—	—	0.086
Primary	21 (28.38)	1.55	0.73-3.30	
Secondary	18 (24.32)	0.57	0.28-1.16	
Superior	9 (12.16)	0.79	0.31-1.94	
Residence				
Urban	16 (21.62)	—	—	0.06
Rural/urban peri	58 (78.38)	0.89	0.45-1.80	
Monthly income				
100000-300000	14 (18.92)	—	—	0.37
More than 300000	29 (39.19)	1.21	0.58 – 2.60	
No fixed income	31 (41.89)	1.88	0.89 – 4.11	
Health insurance				
No	71 (95.95)	—	—	0.56
Yes	3 (4.05)	0.54	0.12-1.80	
Previous diagnostic error				
No	63 (85.13)	-	-	
Yes	11 (41.09)	1.57	0.53-5.30	0.4
First resort				
Traditional therapy	4 (50.00)	17.90	12.0-26.5	<0.001
Religious practices/alternative medicine	3 (4.17)	1.22	0.24-5.10	>0.9
Conventional medicine	69 (93.24)	1.32	0.48-4.25	0.91
Reasons for delay in medical consultation				
Previous traditional processing	4 (5.48)	1.40	0.35-5.06	0.73
Financial difficulty	29 (39.73)	1.18	0.66-2.10	0.56
Negligence	32 (43.84)	1.06	0.60-1.86	0.84
Fear of diagnosis	9 (12.33)	0.92	0.38-2.08	0.85
Fear of mastectomy	3 (4.11)	0.77	0.16-2.74	>0.99
Remoteness of health facilities	4 (5.48)	1.69	0.41-6.59	0.69
Diagnostic error	12 (16.44)	1.55	0.68-3.43	0.25
Reason for consultation in conventional medicine				
Symptoms felt	70 (95.89)	0.47	0.09-2.59	0.39
Recommendation from a close friend	6 (8.22)	1.04	0.35-2.81	0.93
Awareness campaign/parents who have had the disease	2 (2.74)	0.58	0.09-2.49	>0.99
Symptoms felt				
Pain	20 (27.03)	0.94	0.50-1.74	0.84
Inflammation	14 (18.92)	1.24	0.59-2.55	0.55
Mammary flow	2 (2.70)	0.44	0.07-1.77	0.51
Nodule	48 (64.86)	0.99	0.55-1.78	0.97
Ulceration	8 (10.81)	2.51	0.87-7.44	0.092
Main reasons for delayed diagnosis				
Lack of awareness of symptoms	45 (61.64)	1.41	0.80-2.51	0.060
Fear of medical consultation	11 (15.07)	1.15	0.51-2.52	0.73
Problems with access to health care	4 (5.48)	1.68	0.41-6.54	>0.9
Socio-economic factors	(42.47)	1.11	0.63-1.95	0.59
Time limits				
Time between first medical consultation and biopsy	18 (11-106)	1	0.99-1.01	>0.9
Time between biopsy and histological confirmation	291 (193-471)	13.5	2.95-22.4	<0.001
Time between first symptom and histological confirmation	162 (121-256)	1	1.05-2.01	0.085

Table 4: Summary of the logistics analysis.

Variables	OR adjusted	95% CI	P value
Level of study			
Not in school	—	1	
Primary	1.88	0.83-4.32	0.13
Secondary	0.63	0.29-1.37	0.2
Superior	1.01	0.37-2.66	>0.9
Residence			
Urban	—	1	
Rural/urban peri	0.08	0.02-0.35	0.001
Inaugural symptom			
Mammary flow	0.19	0.01-1.13	0.13
First resort			
Traditional medicine	0.66	0.45-0.90	<0.001
Conventional medicine	0.9	0.03-0.93	0.34
Diagnostic error			
No	—	—	
Yes	2.04	0.84-4.88	0.11
Time between biopsy and histological confirmation	0.82	0.17-1.78	0.65
Time between first symptom and histological confirmation	2.81	1.76-3.87	0.082
Symptoms felt			
Ulceration	19	5.31-94	0.32
Main reasons for delayed diagnosis			
Lack of awareness of symptoms	4.63	2.25-9.75	0.001
Socio-economic factors	6.3	1.84-13.74	0.21

DISCUSSION

Study boundary

The main limitation of our study, which was conducted exclusively in a hospital setting, is that the results obtained are not generalizable to the entire female population.

Typical profile of women with breast cancer

A typical patient is a woman of a least 40 years of age, with a secondary education and living in an urban area (Table 1). Women in this age group may interpret some symptoms, such as pain or changes in the breasts, as hormonal manifestations related to menopause.¹⁷ They underestimate the risk of breast cancer, believing that the disease mainly affects older women.¹⁷ Also, in some cultures, decisions about health may be made by the spouse. This joint, mainly financial dependence could delay or limit their access to paid medical consultations or examinations.¹⁸

Frequency of late diagnosis of breast cancer

The frequency of late diagnosis of breast cancer in this study was 32.74%. Late diagnosis represents a major public health problem in terms of financial and emotional costs for the patients and the system of care delivery.

Similar studies were conducted in Benin, in which the frequency of late diagnosis of breast cancer in hospitals was 62.1% in 2023.¹⁹ This frequency was higher than ours and could be explained by several reasons, such as differences in the quality and availability of health care, as well as the performance of the respective health systems.²⁰ This difference in frequency may also reflect differences in the level of effectiveness of disease awareness among the population.²⁰

The respondents alleged various reasons for the delay in curative consultation (Table 2). These include neglect, financial hardship, and fear of a positive outcome. Breast cancer is most common in women, with symptoms ranging from a lump in the breast to changes in skin texture.^{19,21} These symptoms are not always perceived as serious.²² Many women have a limited understanding of the disease and are not familiar with screening methods.²³ They may not know that a nodule in the breast or a change in skin texture is a reason for consultation.²² They may underestimate the severity of these symptoms, attributing them to infection or hormonal changes.¹⁷ They may be reluctant to see a doctor or specialist, when they feel severe pain, usually in an advanced stage of the disease.^{24,25} The high frequency of late breast diagnosis may be explained by a lack of awareness of early signs of breast cancer. This highlights the need to increase awareness of early signs of disease in order to reduce cancer-related mortality.²⁶

Factors associated with late diagnosis of breast cancer

Factors included in the logistics model are rural residence, first use of traditional medicine, and lack of awareness of symptom recognition. Being a rural resident deprives people of regular and easy access to communication channels about breast cancer. Rural populations have less access to information.²⁷ This inequality is explained in particular by the fact that radio and television infrastructures are most often grouped in cities.²⁸ Their transmission range remains small, reducing coverage and accessibility in rural areas.²⁷ Efforts by health professionals to make breast cancer information available to rural populations are mainly based on specific programs, such as organized awareness campaigns.¹⁶ These programs, although important, are not always sufficient to bridge the information gap, particularly with regard to the frequency and relevance of messages disseminated.^{16,29} These deficiencies are even more pronounced for breast cancer, due to sociocultural taboos and geographic isolation that make it difficult to participate in screening and educational activities.³⁰

The use of traditional medicine is more systematic in rural than in urban areas.^{31,32} Indeed, this recourse is often seen as an essential alternative to modern medicine, especially in contexts where modern health services are not easily accessible.^{33,34} Traditional medicine is integrated with the sociocultural values and local practices of rural populations.^{35,36} It often meets the immediate needs of people, at affordable costs and in a familiar setting.³¹ In addition, self-medication, which involves the use of home remedies or prescription-free medicines, is also a common alternative in rural areas, exacerbated by the lack of health professionals in those areas.³⁶

Lack of awareness about the recognition of breast cancer symptoms is also more common in rural than in urban areas. Awareness campaigns play a key role in the early detection of cancer.²⁷ They inform women about the early signs of the disease, encouraging them to consult a professional promptly when suspicious symptoms appear.²⁷ Insufficient awareness campaigns contribute to the neglect of early symptoms and delay medical consultation.³⁰ Although in our study the media accounted for more than three-quarters of all information sources (Table 3), they are still under-exploited in some low-income countries.²⁷ In these situations, prevention messages do not reach a broad audience, contributing to delayed cancer detection.^{27,29}

It is important to consider the three factors discussed in adherence strategies for early breast cancer screening.^{27,30,33} This would also reduce inequalities in breast cancer management and improve the chances of recovery, especially for those living in rural areas.³⁷ More than three-quarters of our respondents were from urban areas (Table 1). An integrated approach that respects cultural beliefs is essential.³⁸ This could be achieved

through a constructive dialogue between traditional and modern medicine, training traditional practitioners in detecting the early signs of breast cancer and encouraging them to refer patients for specialized care when in doubt.³¹ It would also be beneficial to strengthen the skills of modern medical professionals in breast cancer diagnosis and plan integrated active case research at the peripheral level.^{2,5} By bringing together all the actors, diagnosis would be facilitated and knowledge enhanced on both sides.^{2,5}

CONCLUSION

The typical profile of women with breast cancer in our study was 40 years and older, secondary school educated, and living in urban areas. Rural residency, primary use of traditional medicine, and lack of awareness of symptom recognition are the model for interacting factors influencing the frequency of late diagnosis of breast cancer. These three factors should be considered in mitigation strategies for late breast cancer screening. A constructive dialogue between traditional and modern medicine would enable traditional practitioners to be trained in the recognition of breast cancer warning signs and the prompt referral of patients to appropriate health centers for treatment. It would also be interesting to bring together all the actors involved in the journey of women with cancer to facilitate diagnosis and strengthen their skills.

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