

Knowledge, Attitudes, and Practices of Nurses and Midwives Relating to the Symptoms Suggestive of Breast Cancer in Ouagadougou

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Abstract: Paramedical professionals play an important role in the early diagnosis of breast cancer. We, therefore, conducted a study with the aim of evaluating the knowledge, attitudes, and practices of nurses and midwives of the CSPS of Ouagadougou on the symptoms suggestive of breast cancer. This cross-sectional descriptive study took place in the CSPSs of the city of Ouagadougou health districts from September 03, 2020, to February 03, 2021. The study included 400 nurses and midwives working at the CSPSs of the city of Ouagadougou, present during the interviewers' visit, and who had agreed to participate freely and voluntarily were included in the survey. The subjects were asked to give their opinion, according to a Likert scale, about certain assertions related to symptoms of breast cancer. What would they do in front of "strongly suggestive", "suggestive", "neither suggestive nor suggestive", "non- suggestive" and "not at all suggestive" symptoms of breast cancer? In our sample, there were 217 (54.3%) nurses and 183 (45.7%) midwives. Their level of knowledge was insufficient in 24.5% of cases, average in 46.25% of cases, good in 22.25% of cases, and excellent in 7% of cases. Concerning their attitudes and practices in front of symptoms considered "strongly suggestive", "suggestive", "neither suggestive nor not suggestive", "not suggestive", and "not suggestive at all", the subjects surveyed claimed to refer to a higher level of care in 96.5%, 94%, 83.7%, 62.2% and 51.5% of cases respectively. These differences were significant. Twelve subjects never referred patients, regardless of their judgment on the suggestive or non- suggestive character of the symptoms. Their average knowledge score was 4.7 points out of 10, compared to 5.7 points out of 10 for those who referred according to their judgment ($p = 0.03$). Measures to train and retrain nurses and midwives should make it possible to raise their level of awareness concerning breast cancer in order to ensure promptness and adequacy in the management of suspected cases of breast cancer.

Keywords: Breast Cancer, Symptoms Suggestive, Knowledge, Nurses, Midwives

1. Introduction

One of the problems linked to the high number of cancer deaths in resource-limited countries is late diagnosis [1]. In Africa particularly, many cases of cancer are diagnosed at an advanced stage, whereas they would be easily curable if they were discovered earlier [2].

The causes linked to this delay in diagnosis are multiple [3]. Some are linked to the patient: low socioeconomic status, culture, beliefs, etc. Others are linked to the health care system: limited infrastructure and equipment, outdated and poor maintenance of materials, and quantitative and

qualitative insufficiency of human resources.

According to the organization of the health system of Burkina Faso, the Health and Social Promotion Centers (CSPS) constitute the first level of care. This is the population's first contact with modern health facilities. Nurses and midwives who offer curative and promotional services to the population of their health care coverage area run these centers. They are important players in the health care system because their skills determine the quality of the first aid given to patients as well as their efficient referral to the higher levels of the health system, if necessary [4]. Theoretically, a CSPS includes a dispensary, a Maternal and Child Health Unit (SMI), a maternity ward, and a pharmaceutical depot. If the patient's care cannot be provided by the CSPS, the patient is then referred to a structure that meets the first level reference criteria: a Medical Center with Surgical Unit (CMA) [5].

Breast cancer is a condition that requires specialized care in a duly equipped center. In our practice, the patients themselves discover the breast nodule. This symptom makes it possible to evoke the diagnosis and to indicate additional clinical and paraclinical tests to support this diagnosis. Ignorance and misunderstanding of these suggestive symptoms can be responsible for diagnostic errors likely to delay consultation in a specialized center. Indeed, a study showed that the paramedical staff was responsible for 30% of delayed referrals of cancer patients in Brazzaville, due to the trivialization of the symptoms and the inappropriate referrals of these patients [6]. It could be the same in our country.

Many studies have looked at the knowledge, attitudes, and practices of health workers in peripheral structures on breast cancer in general, but few studies have addressed those relating to the symptoms suggestive of breast cancer at a relatively early stage. Consequently, the behavior of health workers, when confronted with symptoms suggestive of breast cancer, has not been studied. We, therefore, conducted this study with the aim of evaluating the knowledge, attitudes, and practices of nurses and midwives of CSPS of Ouagadougou on the symptoms suggestive of breast cancer.

2. Methodology

2.1. Type of Study

This cross-sectional descriptive study took place in the CSPS under the health districts of the city of Ouagadougou from September 03, 2020, to February 03, 2021.

2.2. Study Framework

The study took place in the Central health region, which is one of the 13 health regions of Burkina Faso. According to the functional organization of Burkina Faso's health system, public health care structures are in the form of a pyramid organized into three levels that provide primary, secondary, and tertiary health care. The first level of the pyramid is made up of sixty-nine (69) health districts and is comprised of two levels. The first level of care is the Health and Social

Promotion Center (CSPSs), the basic structure of the health care within which a minimum package of activities (PMA) defined by the Minister of Health is ensured; the second level of care in the health district is the medical center with a surgical unit (CMA). It serves as a reference center for the CSPSs because it is at this level of the system that a complementary activity package (PCA) is issued. The second level is made up of the Regional Hospital Centers (CHR) nine in all (9). They serve as a reference and resource for CMAs. The third level consists of the University Hospital Centers (CHU) five (5) in all, which represent the highest reference level for specialized care, and serve as a training framework for the different categories of health care personnel and research [4].

Our study took place in the health districts of the city of Ouagadougou, which is the political and administrative capital of Burkina Faso with an area of 25,000 hectares (ha), and a population of 2,744,666 inhabitants (2016 census). In terms of health, the city of Ouagadougou corresponds to the Central Health Region. It has five health districts (Baskuy, Bogodogo, Boulmiougou, Nongr - Masson, and Sig-Noghin), which are under the direction of the DRSC (Regional Health Direction of the Center). There are 4 CHUs, 5 CMAs, 95 CSPSs, 9 isolated dispensaries, an isolated maternity hospital, and 9 garrison infirmaries. Among the 95 CSPS, 03 CSPS come under the DS of Baskuy, 27 for the DS of Bogodogo, 35 for the DS of Boulmiougou, 10 for the DS of Nongr - Masson, and 20 for the DS of Sig - Noghin.

2.3. Study Population

The nurses and midwives of the Central health region constituted our study population. The nursing staff and midwives working in the CSPS of the geographical area of the city of Ouagadougou, present during the visit of the investigators, agreed to participate freely and voluntarily in the survey, were included in the study.

2.4. Sampling

The size of the sample of health workers surveyed was determined using the Schwartz formula $n = (Z\alpha^2 \times pq) / \alpha^2$; with n : sample size; α : being the accepted risk of error (5%); z : the reduced deviation, that is to say, the value which takes into account the accepted risk of error (1.96). Since the number of first line health workers per CSPS is not known, we have agreed to take 50% as the prevalence ($p=50\%$). This gives a minimum size of 384 subjects to survey. We opted for a sample size of 400. The number of CSPs (95), which gave 4.2 health care workers per CSPS, divided this number. By multiplying this number by the number of CSPs in each district, we determined the number of subjects to be surveyed per district: Baskuy (13 subjects), Bogodogo (113 subjects), Boulmiougou (147 subjects), Nongr- Masson (42 subjects), Sig-Noghin (85 subjects).

We established a list of all CSPSs and randomly selected CSPSs to be surveyed in each health district. For districts with no more than 10 CSPSs (Nongr -Masson, and Baskuy),

all CSPSs were selected for the study. In the other districts, we randomly selected half of the total number of CSPSs.

2.5. Conduct of the Investigation

The investigators visited the selected CSPS from 8 a.m. to 12 p.m. Health workers meeting the inclusion criteria were then surveyed from a draw using a standardized interview guide. The CSPS were visited according to the order of randomization until obtaining the number of agents retained by the district.

The variables of the study were:

- 1) the characteristics of the patients (age, sex, training received in oncology, profession, seniority in the profession);
- 2) the level of knowledge of respondents about cancer (definition of cancer, severity, lethality, relationship between early diagnosis and prognosis);
- 3) their beliefs about cancer; their knowledge of symptoms suggestive of breast cancer (breast nodule, unilateral nipple discharge, axillary adenopathy, overall health symptoms).

The subjects were asked to give their opinion about certain assertions related to the variables. Their opinions were reported on a 3-point Likert scale for the 10 knowledge and belief questions about cancer. Responses deemed acceptable were "agree" responses. Responses of "disagree" and "neither agree nor disagree" were considered false. The subjects surveyed were also questioned about their practices successively in front of symptoms that were "strongly suggestive", "suggestive", "neither suggestive nor not suggestive", "not suggestive", and "not suggestive at all" according to their judgment. These practices were categorized into two modalities: "I refer" and "I do not refer" to a higher level of care.

2.6. Analysis

For knowledge questions, correct answers were scored at 1 point and incorrect answers at 0 points for a maximum of 10 possible points. The levels of knowledge were defined as follows: insufficient (< 5 points), average (5 and 6 points), good (7 and 8 points), and excellent (9 and 10 points). The average scores obtained by the respondents were compared according to different parameters using the Student test.

The practices were compared according to the judgment methods: "strongly suggestive" symptoms versus "suggestive" symptoms, "suggestive" symptoms versus "neither suggestive nor non-suggestive", "neither suggestive nor non-suggestive" versus "non-suggestive" symptoms, "non-suggestive" versus "not at all suggestive" symptoms. These comparisons were made using McNemar's test, a comparison of proportions test for matched series. A significant threshold of 0.05 was used for all these analyses.

3. Results

We surveyed 400 subjects who met the inclusion criteria. Nurses (group 1) numbered 217 (54.3%) and midwives (group 2) numbered 183 (45.7%).

The average age of the subjects was 40 years (standard deviation: 7.8 years) with extremes of 21 and 59 years. This average did not differ significantly according to the group: 39.5 years for group 1 and 40.7 years for group 2 ($p = 0.2$). The average seniority and the median seniority in the profession were 12 months with extremes of 1 and 33 months. In group 1, female subjects represented 54.4% against 93.4% in group 2 ($p < 10^{-10}$). Seventy-one percent of the subjects had not benefited from initial training in oncology and 84% had not benefited from continuing education on the subject of cancer since the end of their training course (Table 1).

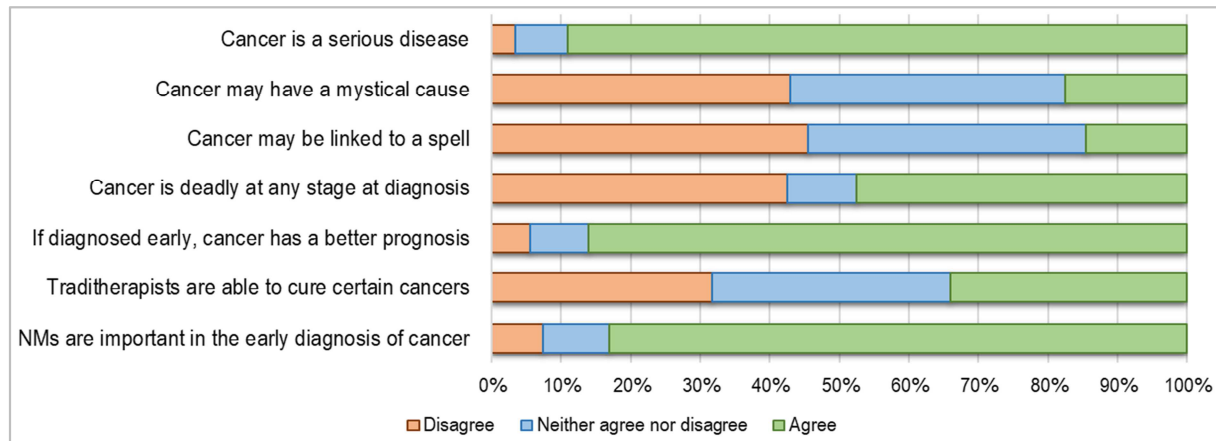
Table 1. Characteristics of the sample.

Features	Number	Percentages
Occupations		
Nurses (Male)	99	24.7
Nurses (Female)	118	29.5
Midwives	177	44.3
Maieuticians	6	1.5
Seniority		
≤ 12 months	222	55.5
> 12 months	178	44.5
Initial training*		
Nope	284	71.0
Yes	116	29.0
Continuing education*		
Nope	336	84.0
Yes	64	16.0

*Training in oncology

Asked about the definition of cancer, 85.5% of the subjects surveyed had recognized the correct definition of cancer, worded as follows: "cancer is an abnormal cell proliferation within normal tissue", 9.5% affirmed that it was any swelling occurring in the body and 5.25% said it was an infectious process. Eighty-nine percent agreed that it is a serious disease, 86% 'agreed' that the prognosis was better if diagnosed at an early stage and 83.5% 'agreed' that nurses and midwives play an important role in the early diagnosis of cancer (Figure 1).

Regarding the suggestive symptoms, 62.25% of respondents recognized the breast nodule as a suggestive symptom of breast cancer, while 37.75% disagreed or had no opinion on the suggestive character of the breast nodule. For axillary adenomegaly, 44% agreed that it was a suggestive symptom of breast cancer. For more than half of the subjects, the overall health symptoms were not symptoms suggestive of breast cancer (figure 2). The level of knowledge of nurses and midwives in our study was insufficient in 24.5% of cases, average in 46.25% of cases, good in 22.25% of cases, and excellent in 7% of cases.



NMs: Nurses and midwives

Figure 1. Beliefs of nurses and midwives on cancer.

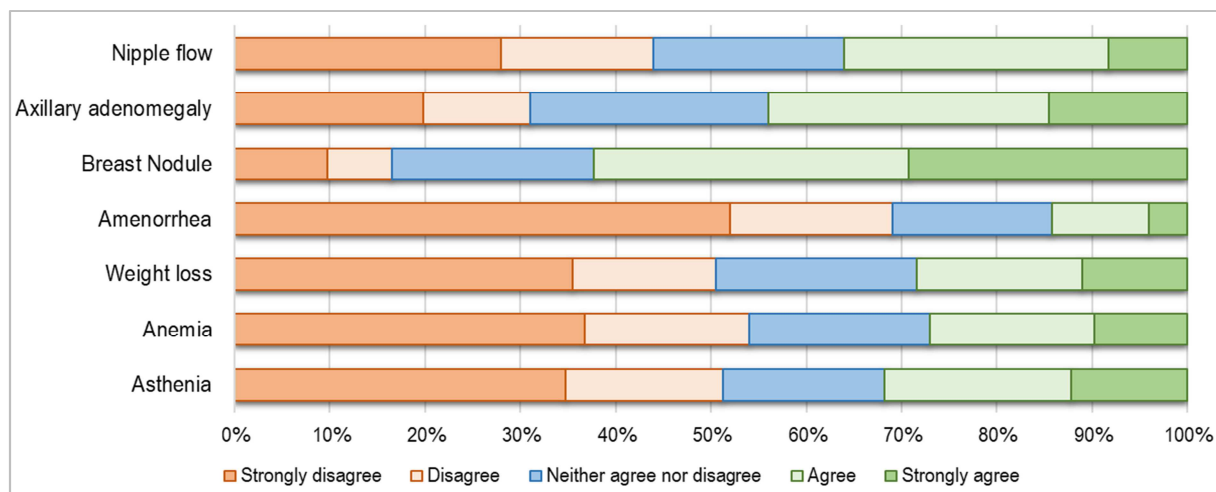


Figure 2. Knowledge of nurses and midwives on cancer symptoms.

The subjects surveyed were asked about their attitudes and practices when faced with different situations in relation to whether or not symptoms were suggestive of breast cancer (according to their judgment). Faced with symptoms deemed "strongly suggestive", 96.5% of the subjects referred to a higher level of care while 3.5% did not refer. Faced with a symptom deemed "suggestive", 94% of the subjects referred. Faced with a symptom for which the subjects had no opinion as to its evocative nature, 83.75% referred. Faced with a symptom deemed "not suggestive", 62.25 referred, and faced with a symptom deemed "not at all suggestive", 51.5% of subjects referred. There was a significant difference in the practice of nurses and midwives when faced with two different judgment methods; "strongly suggestive" symptoms versus "suggestive" symptoms ($p = 0.01$). "Suggestive"

symptoms versus "neither suggestive nor non- suggestive" ($p < 0.0001$). "Neither suggestive nor non- suggestive" versus "non- suggestive" symptoms ($p < 0.001$). "Non- suggestive " symptoms versus "not at all suggestive" symptoms ($p < 0.001$) (Tables 2 to 5).

Twelve subjects never referred regardless of their judgment on the suggestive or non- suggestive character of the symptom. Among these subjects, 16.7% were nurses and 83.3% were midwives ($p = 0.005$). These subjects did not differ from the others according to sex, seniority, and whether they had received initial or continuing training in oncology. Their average knowledge score was 4.7 points out of 10, compared to 5.7 points out of 10 for those who referred according to their judgment ($p = 0.03$).

Table 2. Actions of nurses and midwives according to their judgment on the suggestive character of a symptoms. McNémar test comparing a symptom judged strongly suggestive to a symptom judged suggestive of breast cancer.

Decision		symptom considered suggestive		Total	p-value
		Do not refer	Refer		
Symptom considered strongly suggestive	Do not refer	12 (3.0%)	2 (0.5%)	14 (3.5%)	0.01
	Refer	12 (3.0%)	374 (93.5%)	386 (96.5%)	
Total		24 (6.0%)	376 (94.0%)	400 (100%)	

Table 3. Action of nurses and midwives according to their judgment about the suggestive character of a symptom. McNémar test comparing a symptom deemed suggestive with a symptom deemed neither suggestive nor not suggestive of breast cancer.

	Decision	symptoms judged neither suggestive nor non-suggestive		Total	p-value
		Do not refer	Refer		
symptoms considered suggestive	Do not refer	21 (5.3%)	3 (0.7%)	24 (6.0%)	0.0000
	Refer	44 (11.0%)	332 (83.0%)	376 (94.0%)	
Total		65 (16.3%)	335 (83.7%)	400 (100%)	

Table 4. Actions of nurses and midwives according to their judgment about the suggestive character of a symptom. McNémar test comparing a symptom deemed neither suggestive nor not suggestive with a symptom not suggestive of breast cancer.

	Decision	symptoms judged non-suggestive		Total	p-value
		Do not refer	Refer		
Symptoms judged neither suggestive nor non-suggestive	Do not refer	61 (15.3%)	4 (1.0%)	65 (16.3%)	0.0000
	Refer	90 (22.5%)	245 (61.2%)	335 (83.7%)	
Total		151 (37.8%)	249 (62.2%)	400 (100%)	

Table 5. Action of nurses, midwives and midwives according to their judgment about the suggestive character of a symptom. McNémar's test comparing a symptom deemed not suggestive to a symptom deemed not at all suggestive of breast cancer.

	Decision	Symptoms not considered suggestive at all		Total	p-value
		Do not refer	Refer		
symptoms judged non-suggestive	Do not refer	149 (32.3%)	2 (0.5%)	151 (37.8%)	0.0000
	Refer	45 (11.2%)	204 (51.0%)	249 (62.2%)	
Total		194 (48.5%)	249 (51.5%)	400 (100%)	

4. Discussion

Our study assessed the knowledge of nurses and midwives on the symptoms suggestive of breast cancer in the early stage. It also analyzed their practices when faced with symptoms strongly or not suggestive of breast cancer according to their judgments. This study concerned health workers working in peripheral health facilities in the central health region. According to the organization of the Burkina Faso health system, this is the first level made up of the health and social promotion centers (CSPS), the basic structure of the health system within which a minimum activities package of health care is provided. (PMA) defined by the Minister of Health [4]. According to data from the statistical directory of the Ministry of Health of Burkina Faso [7], the health region of the center had 3695 health workers in 2020. Nurses and midwives represented 59.5 % of health workers, distributed in central (23.9%) and peripheral (35.6%) health facilities.

The vast majority of health workers surveyed (85.3%) recognized that cancer was an anarchic proliferation of cells. Furthermore, they widely recognized that cancer is a serious disease that the prognosis depends on the stage at diagnosis, and that nurses and midwives play an important role in the early diagnosis of cancer. This good knowledge contrasted with the little training in oncology they had received. Indeed, the National School of Public Health, which is the entity responsible for training nurses and midwives, does not provide specific training in oncology.

Our study revealed insufficient and average levels of knowledge on cancer in general and suggestive symptoms of breast cancer in particular. Two-thirds of the subjects 'agreed' and 'strongly agreed' that a breast lump is a suggestive symptom of breast cancer. However, less than half-

considered adenomegaly and unilateral nipple discharge as such. This seems insufficient for health professionals who are at the front line of the chain of care for the health of populations. Indeed, nurses and midwives can play a very important role in the early diagnosis of breast cancer. They have a central and ethical role in education, health promotion, primary prevention and risk factor assessment, disease detection, and culturally appropriate psychosocial care [8]. Fifteen to 30% of the subjects agreed with the suggestive character of the overall health symptoms. These overall health symptoms, often accompanied by symptoms more suggestive of cancer, testify to an advanced nature of the disease [9].

The proportion of subjects who had no opinion in response to questions relating to symptoms suggestive of breast cancer ranged from 17 to 25% while for questions relating to their beliefs about cancer, it ranged from 7 to 40%. Not having an opinion on the questions relating to the suggestive symptoms of breast cancer could be interpreted as a lack of knowledge on this subject. In fact, faced with any hesitation, the subjects preferred not to give an answer that could be wrong. Questions relating to their beliefs about cancer are controversial questions, which may even be in total contradiction with the knowledge accepted by science. Respondents would more often refrain from giving an opinion that could expose beliefs that they prefer not to reveal for various reasons. The "no opinion" item, although not very informative on the knowledge of the subjects, is recommended in the response methods to limit the biases linked to the wording of the questions and the biases linked to the interviewer [10].

Concerning their attitudes and practices in front of symptoms considered "strongly suggestive", "suggestive", "neither suggestive nor not suggestive", "not suggestive", and "not suggestive at all", the subjects surveyed claimed to

refer to a higher level of care in 96.5%, 94%, 83.7%, 62.2%, and 51.5% respectively. These differences were significant, reflecting an overall adequate attitude and practice. In fact, breast cancer is diagnosed in nearly 95% of cancer cases when the patient herself discovers a breast abnormality [11]. This anomaly is most often a nodule that proves to be malignant in nature in more than 50% in our line of work [12]. Faced with a breast nodule, front-line health workers should refer the patient to a higher-level health center because the CSPSs do not have the technical facilities and human resources necessary for the diagnosis and treatment of this condition. The CSPS represents the first level of care or first contact with the population. If the patient cannot be taken care of by the CSPS, the patient is then referred to a structure that meets the first level of reference criteria: the CMA. Nurses and midwives would then contribute to reducing the delay of consultations in specialized centers.

A good practice concerning the suggestive symptoms of breast cancer must go hand in hand with a good knowledge of these suggestive symptoms. The lack of understanding of the suggestive symptoms of breast cancer compromises the early referral of suspected cases even if the health workers admit that in front of any suggestive symptom, a referral immediately is recommended. For example, in our study, 40 to 50% of the subjects stated that they did not refer when faced with symptoms judged not to be suggestive, whereas, in our sample, 40% did not recognize the breast nodule as a symptom suggestive of breast cancer.

In this study, 12 subjects stated that they did not refer regardless of their opinion on the suggestive nature of symptoms. These subjects were mostly midwives, but this is unlikely to be related to their profession. Several studies have shown that midwives have better knowledge of gynecological and breast cancer than other paramedical professionals [13–15]. These 12 subjects had a lower level of knowledge than the others did, a fact probably responsible for their attitude towards the symptoms considered suggestive of breast cancer.

5. Conclusion

This study showed that most of the nurses and midwives of peripheral health structures in the city of Ouagadougou have not received specific training in oncology. Our study revealed also insufficient and average levels of knowledge on cancer in general and suggestive symptoms of breast cancer in particular. Faced with symptoms deemed strongly suggestive and suggestive, almost all nurses and midwives claim to refer patients with highly suggestive to higher-level health centers, but many are unaware of the suggestiveness. The National School of Public Health of Burkina Faso, whose mission is to train and retrain nurses and midwives, should take measures to raise the level of awareness of health care workers in the field of breast cancer, to ensure the promptness and adequate actions in the management of suspected cases of breast cancer.

References

- [1] Ghoncheh M, Pournamdar Z, Salehiniya H. Incidence and Mortality and Epidemiology of Breast Cancer in the World. *Asian Pac J Cancer Prev* 2016; 17: 43-6.
- [2] Toure M, Nguessan E, Bambara AT, Kouassi YKK, Dia JML, Adoubi I. Factors linked to late diagnosis in breast cancer in Sub-Saharan Africa: Case of Côte d'Ivoire. *Gynecol Obstet Fertil* 2013; 41: 696-700.
- [3] Rayne, S., Schnippel, K., Kruger, D., Benn, C. A., & Firnhaber, C. (2019). Delay to diagnosis and breast cancer stage in an urban South African breast clinic. *S Afr Med J*; 109 (3): 159-163.
- [4] Youbare WJ, Teghem J. Analysis of the performance of the health system of burkina faso [Internet]. 2016 [cited 14 Aug 2022]. Available from: <https://hal.archives-ouvertes.fr/hal-01347370>
- [5] Cadot E, Harang M. Health System and Urban Development, Consequences for the Access to Health Care. The Example of Ouagadougou (Burkina Faso). *Espace Popul Soc* 2006: 329-39.
- [6] Gombé Mbalawa C, Diouf D, Nkous Mbon JB, Minga B, Makouanzi Nsimba S, Nsonké Malanda J. Arrival of patients at advanced stage: tempting to identify responsibility. *Bull Cancer*. 2013; 100: 167-72.
- [7] Burkina Faso, Department of Health. Statistical yearbook 2020.pdf [Internet]. [cité 14 août 2022]. Available on: https://www.sante.gov.bf/fileadmin/user_upload/storages/annuaire_statistique_ms_2020_signe.pdf
- [8] Coleman C. Early Detection and Screening for Breast Cancer. *Semin Oncol Nurs* 2017; 33: 141-55.
- [9] Flesch H, Freycon C, Olive F, Lugosi M. Diagnosis of cancer in an internal medicine department. *Rev Med Interne* 2016; 37: A146.
- [10] Farges G. Setting up survey systems: what are the knowledge issues? Paris Letixis Ed 2013; p 105.
- [11] Li Y-L, Qin Y-C, Tang L-Y, Liao Y-H, Zhang W, Xie X-M, et al. Patient and Care Delays of Breast Cancer in China. *Cancer Res Treat* 2019; 51: 1098-106.
- [12] Ouedraogo N-A, Tiemtore BMK, Sawadogo YA, Ouattara B, Lamien PD, Napon M, et al. Radio-Histopathological Aspects of Breast Nodules in a Sub-Saharan African City (Ouagadougou, Burkina Faso). *Open J Med Imaging* 2018; 8: 89-96.
- [13] Duranthon A, Parayre I. The place of the midwife in preventive gynaecological care in rural areas. *Sages-Femmes* 2021; 20: 51-4.
- [14] Ouedraogo N-A, Bambara AT, Awuklu Yvon, Kambou-Tièmtoré BMA, Napon M, et al. Knowledge of health workers on radiological breast cancer screening in Ouagadougou in 2019. *J Afr Imag Méd* 2021; 13 (4): 294-299.
- [15] Mamane A, Bhatti JA, Savès M, Alioum A, Jutand M-A, Hadiza-Jackou D, et al. Knowledge, attitudes, and practice on breast cancer of non MD health professionals in Niamey, Niger, 2010. *J Afr Cancer*. 2012; 4: 156-63.