

## **Analysis of the use of formal healthcare and its associated factors in Morocco: the case of women with breast cancer**

### **Analyse du recours aux soins de santé formels et de ses facteurs associés au Maroc : cas des femmes atteintes du cancer de sein**

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### **Abstract**

Health economics is devoted to the in-depth study of the behavior of agents involved in the health sector. It examines various issues, including the determinants of demand for healthcare and the use of formal healthcare. Indeed, the no-use of healthcare services for breast cancer is a significant public health issue. Cancer does, in fact, rank among the top causes of death for women globally.

The factors influencing women's use of breast cancer screening are examined in this study. It is a quantitative descriptive study at the first level. A questionnaire with 60 participants was used to gather data. Software called Jamovi was used to process and analyze the data.

The results of the study show that there is a significant association between women's willingness to undergo an examination and the following factors: age and the presence of a history of breast cancer (P-value = 0.02). In addition, the association was highly significant between the dependent variable and level of education ( $p < 0.001$ ). Other variables, such as the woman's knowledge level and occupation, were significantly associated with the study phenomenon. The P-values recorded for these relationships are 0.03 and 0.04, respectively.

Non-use of traditional care remains a health problem that requires further exploration to understand this phenomenon.

**Keywords:** Breast cancer; Determinants, non-use of care, Formal healthcare, Health economics

**JEL:** C51, J12, I11, I13, I19

**Paper type:** Empirical Research

### **Résumé**

L'économie de la santé se consacre à l'étude approfondie des comportements des agents intervenant dans le domaine de santé. En effet, cette discipline examine diverses problématiques, parmi lesquelles l'analyse des déterminants de la demande en soins ainsi que le recours aux soins de santé formels.

En effet, le non recours aux soins de santé formels relatifs au cancer du sein représente un défi majeur de la santé publique. En effet, le cancer tend à en être l'une des causes de mortalité les plus importantes chez les femmes au monde.

Ce travail vise à étudier les facteurs influençant le non recours des femmes au dépistage du cancer du sein au niveaux de la ville de Tiznit. Il s'agit d'une étude descriptive quantitative premier niveau visant à décrire les facteurs influençant le non recours au dépistage du cancer de sein.

La collecte des données a été faite via un questionnaire auprès d'un groupe constitué de 60 participantes. Le traitement et l'analyse des données est faite sous l'assistance du logiciel Jamovi.

Les résultats de l'étude montrent qu'il existe une association significative entre l'acceptation des femmes à pratiquer un examen et l'âge et la présence des antécédents du cancer de sein (P-value=0.02). En outre ; l'association est très hautement significative entre la variable dépendante et le niveau d'instruction ( $p < 0.001$ ). D'autres variables comme le niveau de connaissance de la femme et sa profession sont associées significativement avec le phénomène d'étude. La P-value enregistrée pour ces relations sont respectivement 0.03 et 0.04.

En effet, le non recours aux soins traditionnels reste un problème de santé qui nécessite plus d'exploration pour comprendre ce phénomène.

**Mots clés :** Cancer du sein ; Déterminants, Economie de santé, non recours aux soins, soins de santé formel

**JEL:** C51, J12, I11, I13, I19

**Type du papier :** Recherche empirique

## 1. Introduction

The development of any economy depends on many factors but remains closely linked to health capital. In this respect, health economics is devoted to the in-depth study of agents' behaviors in the health sector. It examines various issues, including the determinants of demand for healthcare and the use of formal healthcare services.

Indeed, the no-use of healthcare services for breast cancer is a formidable public health challenge on a global scale. It is responsible for high mortality rates and, perhaps more critically, imposes exorbitant financial burdens and immense economic losses through premature deaths and lost years of productivity.

As reported by the World Health Organization (WHO), cancer ranks as the second leading cause of mortality worldwide, accounting for 8.8 million deaths in 2015. Nearly one in six deaths globally can be attributed to cancer. Among women, breast cancer emerges as the most prevalent malignancy, predominantly affecting those between the ages of 50 and 70. Its incidence among women under the age of 35 varies significantly, ranging from 2% to 24%. Numerous studies have highlighted that breast cancer in younger women exhibits distinct epidemiological, diagnostic, and prognostic characteristics. Notably, genetic predispositions and a generally poorer local prognosis compared to postmenopausal cases have been documented in the literature (Boufettal, 2011).

In 2020, the WHO reported over 2.3 million new cases of breast cancer and 685,000 associated deaths worldwide. By the end of that year, 7.8 million women had been diagnosed with breast cancer in the preceding five years, solidifying its position as the most common cancer globally. This pervasive health issue affects women in every nation and across all age groups from puberty onward, with incidence rates increasing steadily with age.

In France, data from the French Public Health Agency reveals that nearly one in eight women will develop breast cancer throughout her lifetime. On average, approximately 54,000 individuals are diagnosed annually. According to the French National Cancer Institute, the estimated number of new cases in 2018 was 58,459, with nearly 80% of breast cancers occurring after the age of 50. The average age at diagnosis is approximately 63 years.

In Morocco, cancer incidence is estimated at 50,000 to 55,000 new cases per year, with breast cancer accounting for 20% of these cases (Abouselham, 2019). Projections from the Greater Casablanca Cancer Registry reported 10,414 new cases of breast cancer in 2019. This figure is anticipated to rise to 16,018 by 2030, compared to 5,465 cases recorded in 2004. Women aged between 45 and 49 are the most affected by this type of cancer (El Haïti, 2022).

Breast cancer is the most frequently diagnosed cancer for both sexes, accounting for 19.2% of all cancers, followed by lung cancer (12.3%) and colorectal cancer (7.8%) [1]. It represents 20% of all cancer cases across both sexes and 35.8% of cases in women. Notably, 99.1% of those diagnosed with breast cancer are women.

It is crucial to emphasize that the early detection of breast cancer can markedly enhance the likelihood of successful treatment and significantly improve long-term outcomes. Breast cancer screening plays a pivotal role in identifying the disease at an early stage, often before the appearance of symptoms, thereby facilitating timely intervention and increasing the probability of a cure. Commonly employed screening techniques include mammography, clinical breast examinations, and breast self-examinations. Women are encouraged to consult healthcare professionals to determine screening guidelines tailored to their age and individual risk factors. The identification of cases through cancer screening represents a complex public health initiative. Achieving program stability and realizing its intended impact may require several decades of consistent effort, as evidenced by the breast and cervical cancer screening program in Morocco.

Screening aims to identify individuals within an ostensibly healthy population who may be at risk of developing the disease, enabling them to undergo further diagnostic evaluations to confirm the presence of cancer. Randomized controlled trials have demonstrated that regular breast cancer screening can reduce mortality associated with the disease by 10–30%. The anticipated benefits of such programs include reduced mortality and morbidity, alongside potential improvements in life expectancy and overall quality of life (Ouedraogo, 2013).

Morocco stands as one of the pioneering low- and middle-income nations to adopt a population-based approach to breast cancer screening. In 2010, the Ministry of Health, in partnership with the Lalla Salma Foundation for Cancer Prevention and Treatment, the United Nations Population Fund, and the World Health Organization, launched a national cancer screening program. Since its establishment, approximately 600,000 women have been screened for breast cancer. Participation rates in the early detection initiative are 12.5% overall, with rural areas achieving a higher rate of 18.2%, compared to 9.9% in urban regions (MSPS, 2021).

Clinical breast examination (CBE) has demonstrated significant potential in reducing the incidence of advanced breast cancer among screened populations, as confirmed by randomized controlled trials. While its direct effect on mortality reduction has yet to be definitively proven, the World Health Organization regards CBE as a viable and promising alternative to mammography, particularly in resource-constrained environments.

Morocco's national breast cancer screening protocol prioritizes CBE as the recommended detection method. Research indicates that barriers to screening, particularly over the preceding two years, are often linked to socioeconomic challenges such as low income, limited educational attainment, and other contributing factors (Devaue et al., 2015).

Breast cancer screening programs have been implemented across all regions and provinces of Morocco. Initially targeting women aged 45 to 69 in 2015, the target age range was expanded to include women aged 40 to 69 in 2016. During this period, the number of women screened nationally increased from 1.1 million in 2015 to 1.6 million in 2016. Each year, the program sets a screening target (percentage of the eligible female population) for each province and region. In 2015, these annual targets ranged from 30% to 50% of the eligible population, while in 2016, they varied between 11.4% and 50% (Morocco's Breast and Cervical Cancer Screening Programme).

Data from the Sous Massa (SM) region reveals significant participation in early breast cancer detection efforts. In rural areas, 30,354 women underwent screening for the first time, compared to 27,359 in urban areas. Similarly, in the town of Tiznit, early detection efforts at primary healthcare facilities showed greater participation among rural women (5,263) than urban women (3,580). Of the women screened, 119 urban and 124 rural individuals were referred to the CRSR l'Urbain, with a total of 243 referrals overall (MSPS, 2021).

The under-utilisation of formal healthcare represents a major public health challenge that can be explained by several factors (Collet, 2006; El Fathaoui et al., 2023; Ezzrari et al., 2022). Understanding this phenomenon requires further exploration and detailed analysis.

This study aims to examine the factors contributing to the non-use of formal healthcare services, with a particular focus on breast cancer screening. The research is structured into three sections: the first outlines the methodological tools employed and the fieldwork conducted, while the third and final section provides a comprehensive discussion of the main findings.

## **2. Review of the literature**

### **2.1. Conceptual review**

#### **2.1.1. Health services**

According to the World Health Organization (WHO), health services are defined as “activities aimed at improving health.” These services encompass various aspects, including disease

prevention, diagnosis, treatment, rehabilitation, health promotion, and managing health risks (WHO, 2008).

A health service comprises the entirety of strategies and organizational frameworks implemented by states, regions, or communities to ensure the continuity and quality of medical care. It encompasses all institutions, organizations, and resources operating within the health sector, providing both formal care (such as that delivered by physicians, hospitals, maternity wards, and pharmacies) and informal care (including services offered by traditional healers and community health workers). Furthermore, it integrates other essential components, such as scientific research and public health initiatives. An efficient health system is thus built upon a diverse array of elements contributing to the preservation and enhancement of human health.

Davis et al. (2021) defines health services as “a complex set of systems, actors, resources, processes, and activities aimed at promoting, maintaining, or restoring the health of individuals and communities.” They also highlight that these services are typically organized and funded by governments, non-governmental organizations, private enterprises, and health insurance systems.

### **2.1.2. Use of healthcare services**

The World Health Organization (WHO) defines healthcare service utilization as “the ability of individuals to access necessary health services promptly, equitably, affordably, and in a culturally acceptable way for them” (WHO, 2008).

Healthcare utilization reflects the willingness of an individual or a population group to improve their health status or to seek medical services. This demand may be explicitly expressed or remain implicit. Effective access to care is conditioned by an individual's perception of their health status and medical needs, which explains why curative care is generally prioritized, whereas preventive measures are sought less frequently. In most cases, an individual will seek healthcare services only when they perceive a genuine need.

### **2.1.3. Breast cancer screening**

Breast cancer is a pathology that often progresses slowly, highlighting the importance of curbing its advancement through early detection. Such detection enables the disease to be identified at an initial stage, thus offering a more favorable prognosis and an improved quality of life for patients. It is based on three fundamental pillars: mammography, clinical breast examination performed by a healthcare professional, and self-breast examination conducted by women themselves (Aghzadi, 2013).

The primary objective of screening is to reduce breast cancer mortality by enabling diagnosis at a stage when the disease remains asymptomatic, thus allowing for earlier, less invasive, and more effective treatment (Akbani, et al., 2014).

Screening, as a public health intervention falling within the scope of secondary prevention, facilitates the detection of the disease before clinical symptoms appear, thereby enabling a more effective and less aggressive therapeutic approach. However, it also presents certain limitations: it may lead to the identification of cancers that would never have progressed to a symptomatic stage during the patient's lifetime, a phenomenon known as overdiagnosis. Furthermore, false-positive results can induce significant anxiety, and each mammography procedure exposes patients to a low dose of ionizing radiation (Akbani, et al., 2014).

Breast cancer screening involves identifying precursor signs and symptoms of the disease to enable diagnosis before it reaches an advanced stage. This allows for a lighter and more effective treatment. Studies have shown that implementing an early detection program over several years could reduce mortality rates associated with this condition by 25% (Ministry of Health, 2011).

In the United States, physicians have developed a clinical surveillance technique based on visual breast examination and palpation of suspected nodules. This approach aims to facilitate medical diagnosis before the disease progresses to advanced stages. Another systematized screening method is self-palpation. As for mammography, although it continues to evolve, it remains primarily a diagnostic tool.

## **2.2. Theoretical and empirical review**

Arrow's work in 1963 played a pivotal role in the emergence of health economics during the 1960s. By focusing on the specificities of the medical care market, he conducted an in-depth analysis of the nature of healthcare demand, the motivations of practitioners, the inherent uncertainty of healthcare products, the conditions of supply, and the mechanisms of price determination. As such, Arrow is now recognized as one of the pioneering figures in this field (Ezzrari et al., 2022).

### **2.2.1. Theoretical review**

According to the neoclassical theory of healthcare demand, patients are regarded as consumers of health goods and services provided by medical institutions. From this perspective, patients aim to maximize their utility by making rational decisions, while being constrained by the cost of healthcare services and their available income.

Theoretical models of healthcare demand can be categorized into two distinct approaches: the cost-based approach, primarily developed by Phelps and Newhouse (1974), and the capital-based approach, pioneered by Grossman in 1972. The latter is grounded in the concepts of health capital and investment in health.

- ***The cost approach model***

Phelps and Newhouse (1974) developed a model illustrating the behavior of a patient seeking to maximize their utility while adhering to budgetary constraints. Given that healthcare expenses are unpredictable, insurance covers these costs. The patient determines the optimal quantity of care by equating the marginal value of care with its marginal cost.

Within this framework, the demand for care is more sensitive to costs covered and not covered by insurance. This implies that if patients spend less money, the demand for care increases, thereby raising the issue of overconsumption in the case of free healthcare.

Although the model by Phelps and Newhouse is realistic, it has a limitation in assuming that patients can choose medical care in the same way as consumer goods. This assumption has been criticized, particularly due to the presence of a third-party payer in the healthcare market, which significantly influences this choice (Thomas, 2001).

- ***The capital approach model***

According to Grossman, the capital-based approach is a theoretical framework that analyzes how individuals invest in their health by balancing costs and long-term benefits. This approach emphasizes the idea that health represents a form of capital that can be invested to generate economic and social returns, such as improved quality of life, increased productivity, and reduced healthcare costs. It is grounded in the economic theory of human capital investment, which posits that education, training, and health are productive investments capable of yielding economic returns.

Grossman (1972) argues that individuals can also invest in their health capital by seeking preventive medical care, such as regular check-ups and vaccinations, as well as by addressing health issues promptly before they become more severe and costly to treat. From this perspective, health is viewed as an economic good that can be bought and sold in a market.

The capital-based approach to health is valuable for understanding how individuals make health-related decisions and how public policies can be designed to improve population health.

For instance, by recognizing health as a form of capital, health policies can be crafted to encourage individuals to invest in their own health capital, such as by offering financial incentives for adopting healthy behaviors or pursuing preventive medical treatments.

### **2.2.2. Empirical review**

The determinants of healthcare utilization refer to factors that can positively or negatively influence the use of healthcare services. The literature categorizes these factors into several groups: economic factors, socio-demographic and cultural factors, as well as factors related to health status and the supply of care (Youness et al., 2018).

According to Dowie (1975), individual behaviors and characteristics can influence the rate of depreciation of health capital. Cropper (1977) argues that individuals with a high risk of illness tend to have a desired level of health capital that is higher than average.

Dardanoni and Wagstaff (1987) demonstrated that individuals with risk aversion tend to reduce their consumption of healthcare. These individuals are viewed as investors who must choose between different lifestyles. Cropper (1981) also considers the impact of environmental factors, such as pollution, on the depreciation of health capital, while Muurinen (1982) incorporates sociocultural characteristics, such as education, into the model.

However, various factors influence access to and participation in breast cancer screening. Socioeconomic and sociodemographic disparities play a decisive role. Access to healthcare and medical consultations remains a significant barrier, particularly for women with limited financial resources. Financial constraints, education levels, health insurance coverage, and geographical distance from healthcare centers are all factors affecting screening frequency (Duport et al., (2008).

Furthermore, low participation in screening is often linked to disadvantaged socioeconomic status as well as living conditions. Women from low-income households undergo mammograms less frequently, which may delay diagnosis and impact treatment outcomes (Akuoko et al., 2017).

Additionally, ethnic minorities face greater difficulties in accessing screening services due to language barriers, cultural beliefs, and a certain mistrust of the healthcare system (Tsoka-Gwegwenia et al., 2017).

Finally, the influence of education level is also observed. Less educated women are more likely never to have undergone a mammogram, whereas those with a high school diploma are more inclined to get screened than those holding higher education degrees. Other social determinants, such as marital status, play a role: married women appear more aware of screening programs than single women, possibly due to an increased sense of responsibility for their health and family well-being (Igiraneza et al., 2021).

In summary, social, economic, and cultural factors exert a major influence on adherence to breast cancer screening programs, underscoring the necessity of enhanced awareness strategies and improved accessibility for effective prevention of this pathology.

## **3. Research methodology**

This quantitative descriptive study aims to investigate the factors influencing women's non-utilization of early breast cancer screening in the city of Tiznit.

For the sample selection, we employed an accidental sampling method, a non-random approach in which women were chosen upon their arrival at healthcare establishments in Tiznit. The sample comprised 60 women who were interviewed between 23 January 2023 and 10 June 2023.

To facilitate data collection, a questionnaire was developed using Sphinx software to explore the factors affecting the non-utilization of formal healthcare services for breast cancer. We

designed the questionnaire ourselves, drawing on theoretical and empirical research. It consists of 24 questions divided into 4 blocks. The first block is devoted to the personal characteristics of the women surveyed, and the second is devoted to identifying economic factors. The third is devoted to determining socio-demographic and cultural factors. Finally, the last section explores factors relating to the provision of healthcare and the state of health of the study participants. The questionnaire was validated by a pre-test carried out on a sample of 5 women. Data collection commenced with a pre-test of the questionnaire, involving 10 women, followed by the full administration of the questionnaire to 60 women. The collected data were processed and analyzed using Jamovi software.

In adherence to ethical research principles, confidentiality and anonymity were strictly upheld, with these guidelines clearly outlined in both the introduction to the questionnaire and the interview guide. An important ethical consideration in this study was ensuring the right to self-determination, with women being fully informed of their rights to either participate or decline participation in the study.

## **4. Results**

### **4.1. Descriptive statistics**

The study population consisted of women diagnosed with breast cancer. A total of 60 questionnaires were administered, all of which were completed and analyzed, resulting in a 100% response rate.

The findings revealed that 42.6% of the participants were in the 26-36 age group, 29.5% were aged 36-45, 19.67% were in the 45-54 age group, and 6.55% were in the 54-63 age group. The majority of women in the study were married (74%), followed by widowed (13%), single (8%), and divorced (5%) individuals.

Regarding the distribution of women by health insurance type, the results indicated that 37.7% had an AMO card, 16.3% were covered by CNOPS, 14.7% had CNSS insurance, and 31.1% had no health insurance.

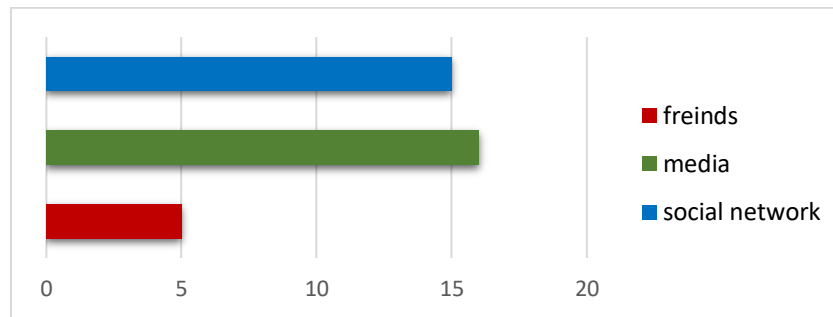
A significant majority of the women (92%) resided in urban areas, while 8% lived in rural areas. Additionally, 88.33% of participants lived within 2 to 15 km from the health center, while 5% lived between 15 and 28 km and 28 and 41 km, and only 1.66% lived between 41 and 54 km.

In terms of educational attainment, 21 women were literate, 18 had a primary education, 14 had a secondary education, and 8 had completed university studies. As for their husbands' educational levels, most had completed secondary education (44.2%), followed by primary education (16.3%), university education (14.7%), and literacy (13.1%).

The study also revealed that 82% of participants were housewives, while 18% were engaged in other occupations. Regarding their husbands' professions, 21.3% were manual workers, 18.03% were public servants, 8.19% were salaried employees, and 37.7% had other occupations.

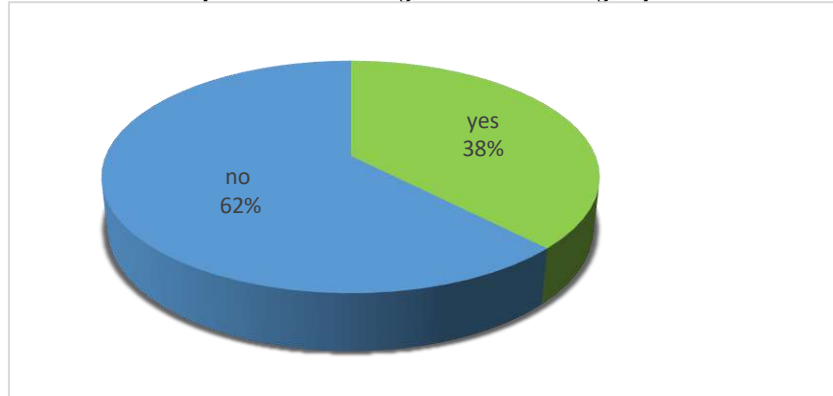
The results further indicated that 62% of the women did not know about breast cancer screening, while 38% were aware of it (figure 1). Most women learned about breast cancer screening through television, while the rest were informed via social networks and friends (figure 2). A significant majority of women (91%) reported that breast cancer is a source of anxiety (figure 3).

**Figure 1: Breakdown of women by source of information about breast cancer**



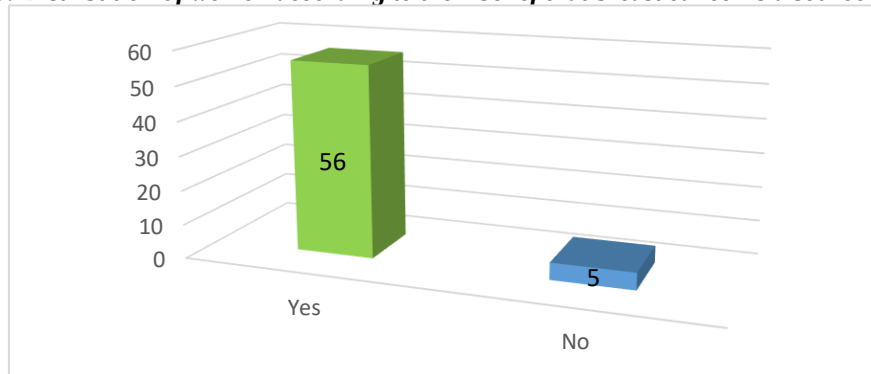
Source: compiled by us

**Figure 2: Distribution of women according to their knowledge of breast cancer screening**



Source: compiled by us

**Figure 3: Distribution of women according to their belief that breast cancer is a source of anxiety**



Source: compiled by us

#### 4.2. Inferential statistics

The results of our study reveal a significant association between the dependent variable (the use of breast cancer screening) and several explanatory factors, specifically age and the presence of a breast cancer history, both with a p-value of 0.02. Additionally, a highly significant association was found between the dependent variable and the level of education ( $p < 0.001$ ). The findings further indicate a significant relationship between the study's focus and the following factors: the level of knowledge regarding self-examination and the woman's occupation, with p-values of 0.03 and 0.04, respectively.

Conversely, no significant association was observed with variables such as marital status, place of residence, health insurance, income relative to the minimum wage, means of transportation, or the husband's profession. The recorded p-values for these factors were 0.60, 0.06, 0.19, 0.44, 0.44, and 0.27, respectively.

**Table 1: Factors associated with non-use of breast cancer care**

| Study variables                           | Modalities of the variables | Recours aux soins formels n% |           | P-value            |
|-------------------------------------------|-----------------------------|------------------------------|-----------|--------------------|
|                                           |                             | NO                           | YES       |                    |
| Statut                                    | Single                      | 0 (0%)                       | 5 (8.8%)  | <b>0.60</b>        |
|                                           | Married                     | 07 (87%)                     | 38 (71%)  |                    |
|                                           | Widowed                     | 1 (12.5)                     | 7 (13.3)  |                    |
|                                           | Divorced                    | 0 (0.0)                      | 3 (4.9)   |                    |
| Area of residence                         | Urban                       | 6(75.3)                      | 50(94.2)  | <b>0.06</b>        |
|                                           | Rural                       | 2(25.3)                      | 3(5.3)    |                    |
| Health Insurance                          | AMO                         | 1(12.5)                      | 14 (28.3) | <b>0.70</b>        |
|                                           | CNOPS                       | 2 (25)                       | 9(17)     |                    |
|                                           | CNSS                        | 2(25)                        | 16 (30)   |                    |
|                                           | SANS                        | 3(37.5)                      | 10(18)    |                    |
| Pathological history                      | No                          | 7 (87.5)                     | 36 (67.9) | <b>0.02*</b>       |
|                                           | Yes                         | 1(12.5)                      | 17(32.1)  |                    |
| Level of education                        | Analphabetic                | 8 (100.0)                    | 13 (24.5) | <b>&lt;0.001**</b> |
|                                           | Primary                     | 0 (0.0)                      | 18 (34.0) |                    |
|                                           | Secondary                   | 0 (0.0)                      | 14 (26.4) |                    |
|                                           | University                  | 0 (0.0)                      | 8 (15.1)  |                    |
| Profession                                | Housewife                   | 8 (88)                       | 42 (68)   | <b>0.04 *</b>      |
|                                           | Other                       | 0 (0.0)                      | 11 (18.3) |                    |
| Husband's occupation                      | Employee                    | 0 (0.0)                      | 6 (9.4)   | <b>0.27</b>        |
|                                           | Civil servant               | 0(0.0)                       | 11 (20.8) |                    |
|                                           | Worker                      | 3(37.5)                      | 9 (17)    |                    |
|                                           | Other                       | 5(65.5)                      | 18 (34)   |                    |
| Income in relation to minimum wage (SMIG) | Equal                       | 2 (25.0)                     | 26 (49.9) | <b>0.19</b>        |
|                                           | Less                        | 5 (62.5)                     | 16 (30.2) |                    |
|                                           | More                        | 1 (12.5)                     | 11 (20.8) |                    |
| Way of transport                          | On foot                     | 0 (0.0)                      | 4 (7.5)   | <b>0.44</b>        |
|                                           | Public transport            | 7 (87.5)                     | 53(66.0)  |                    |
|                                           | Car                         | 1 (12.5)                     | 14 (26.4) |                    |
| Knowledge about breast cancer screening   | No                          | 4(50.0)                      | 19(35.8)  | <b>0.44</b>        |
|                                           | Yes                         | 4(50.0)                      | 34(64.2)  |                    |
| Knowledge of self-palpation               | No                          | 8 (5.38)                     | 33 (62.3) | <b>0.03*</b>       |
|                                           | yes                         | 0 (0.0)                      | 20 (37.4) |                    |
| Cancer as a source of anxiety             | No                          | 1(12.5)                      | 4(7.5)    | <b>0.51</b>        |
|                                           | Yes                         | 7(87.5)                      | 49(92.5)  |                    |
| Distance in KM                            | 0-5                         | 2 (25.0)                     | 33 (62.3) | <b>0.09</b>        |
|                                           | 6-10                        | 4 (50.0)                     | 13 (24.9) |                    |
|                                           | 11-20                       | 2 (25.0)                     | 7 (13.2)  |                    |
| Age                                       | 26-36                       | 0(0.0)                       | 20(37.7)  | <b>0.02 *</b>      |
|                                           | 36-45                       | 4(50)                        | 13(24.5)  |                    |
|                                           | 45-54                       | 1(12.5)                      | 14(26.5)  |                    |
|                                           | 54 -60                      | 3(37.5)                      | 5(9.4)    |                    |
|                                           | Plus 60                     | 0(0.0)                       | 1(1.9)    |                    |

Source: compiled by us

## 5. Discussion

This section is dedicated to a discussion of the study's results, framed within the research question and the theoretical framework concerning the factors influencing the utilization of breast cancer screening by women attending urban health centers in the province of Tiznit. The findings suggest that various factors can significantly affect the use of formal healthcare services.

Concerning health insurance, the majority of participants (37.7%) had AMO health insurance, with 8.33% having previously undergone breast cancer screening. Pierre Céléstin (2021)

highlights that socio-demographic factors, including social category and health insurance, have a considerable impact on the use of healthcare services.

In terms of age distribution, the results revealed that women in the 26-36 age group constituted nearly half of the study population, accounting for 42.6%. Notably, women aged 20-29 were the most likely to perform breast self-examination. The association between age and breast self-examination was found to be statistically significant ( $p$ -value = 0.02). These findings align with Pierre Célésstin's study (2021), which indicated that age and marital status play a significant role in the practice of breast self-examination.

The study's results revealed that the majority of women in the study population were married (73.7%), with 18.33% having undergone breast cancer screening, while 8.19% were single. Pierre Célésstin (2021) asserts in his study that marital status positively influences self-examination practices and the use of formal healthcare services. Furthermore, breast cancer screening is more prevalent among married women than unmarried women, possibly due to their heightened sense of responsibility to maintain good health for the sake of their children and families. Teychene (2018) also notes that single women are significantly more likely to have never undergone a mammogram compared to married women.

The study further indicates that the majority of participants were literate, with 31.41% of them reporting no history of breast cancer screening. Martin (2016) suggests in their research that education level produces somewhat surprising outcomes; women with a high school diploma are more likely to have had a mammogram than those with a higher level of education. The results of this study demonstrate a strong association between education level and breast cancer screening ( $p$ -value < 0.001).

Regarding income, the study reveals that the majority of respondents (45.9%) reported earning the minimum wage (SMIG), of which 15% had undergone breast cancer screening. Additionally, 35% of participants had an income below the SMIG, with 5% of these women seeking formal healthcare. Mergier (2001) found that women with limited incomes, specifically those earning less than 500 euros, were twice as likely to have never undergone screening. Furthermore, the most financially vulnerable women were significantly more likely to have never had a mammogram (11.60%). Morse et al. (2017) also state that women with low incomes are less likely to undergo regular mammograms, which can lead to later diagnoses and poorer outcomes. Thus, income level has a considerable impact on screening uptake, although our results differ in this regard ( $p$ -value = 0.19).

In terms of knowledge and education level, 62% of the women surveyed were unaware of cancer screening. Moreover, for half of the women, the primary source of information was the media. The findings of our study affirm that these variables have a positive and significant impact on healthcare utilization ( $p$ -value < 0.001). This aligns with the results of previous studies (Hoali, 2022). For example, a study conducted in Egypt revealed that women had limited knowledge about health and breast cancer screening, and they also faced challenges accessing healthcare facilities and understanding breast cancer-related information (Bray et al., 2018).

## 6. Conclusion

Breast cancer remains a significant public health issue, necessitating further investigation and in-depth analysis. This study aims to examine the various factors influencing the non-utilization of breast cancer screening, an essential component of early detection and improved outcomes. This descriptive quantitative study utilized a questionnaire to collect data from a sample of 60 participants. The collected data were processed and analyzed using Jamovi software, allowing for a detailed examination of the relationships between different factors and the likelihood of undergoing breast cancer screening.

The study's results reveal that there is a significant association between women's willingness to undergo breast cancer screening and several key factors, including age and the presence of a family history of breast cancer (P-value = 0.02). Additionally, a highly significant relationship was found between the dependent variable (screening participation) and the level of education ( $p < 0.001$ ). These findings suggest that women with higher levels of education are more likely to engage in breast cancer screening, which highlights the importance of educational initiatives in increasing screening uptake.

Furthermore, the study found that a woman's level of knowledge regarding breast cancer and her occupation was also significantly associated with screening participation, with recorded P-values of 0.03 and 0.04, respectively. These results underscore the crucial role of awareness and professional environment in influencing health behaviors.

In conclusion, the non-use of breast cancer screening is influenced by a range of economic, socio-demographic, and cultural factors. These factors include, but are not limited to, income level, educational background, access to healthcare facilities, and the social context in which individuals live. Understanding the complexities behind these barriers is essential for improving screening participation rates.

Like any research, this work presents certain limitations, both theoretical and empirical. The theoretical limitations primarily pertain to the conceptual framework employed. As for the methodological limitations, they are associated with the empirical approach adopted, particularly concerning the data collection tool, the validation of the questionnaire, and the sample size. Highlighting these limitations opens the way for proposing new research avenues to refine and enrich the study.

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