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Mammography exam and women's health: knowledge and perception of women over 40 years old in the metropolitan region of Belo Horizonte

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ABSTRACT

This article presents a discussion about the knowledge of the female population about breast cancer, the means presented by the Unified Health System (Sistema Único de Saúde – SUS) that contribute to the diagnosis and adherence to the early identification process. It was developed through semi-structured interviews about personal satisfaction with health and its relationship with advancing age, knowledge about breast cancer, risk factors, prevention, and diagnostic imaging. It involved women living in the city of Belo Horizonte, Minas Gerais and the metropolitan region. A total of 441 interviews were carried out in 2018-2019, focusing on women over 40-years-old. The questionnaire was built based on predictive theories of behavior in the health area, involving questions aimed at surveying the factors that lead women to undergo mammography as a method of screening for breast cancer. It started from the hypothesis that professionals of radiological techniques have an important role in encouraging women, providing safety in performing the procedure. General data on the characterization of the women interviewed are presented, as well as the perception of care promoted by public policies for women's health care. The results obtained allowed us to verify the importance of awareness campaigns, the recommendation to them by health professionals to perform the exam, indicating the weight of the emotional aspects in this decision. The performance of techniques professionals is seen as strategic to strengthen the habit in women of performing mammography periodically.

Keywords: **Breast cancer, mamography, SUS.**

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1. INTRODUCTION

The health involves a lot of live aspects as: environment, leisure, work condition, housing, food and income. For women highlight the work discrimination and the housework overload. They live more than man, however, get sicker. Female vulnerability in some diseases is discrimination cases in the society more than biological factors [1]. In this context, it has the breast cancer: about 66.280 new cases are estimated in Brazil for the triennium of 2020-2022, according to National Cancer Institute – INCA [2]. For help in this process, the mammography exam is an important tool for diagnosis and monitoring of the breast cancer. Considering age as a risk factor, the mammography exam is recommended annually after the age of forty [3]. However, it is an exam that can bring discomfort and embarrassment to patients [4].

Inserted in this world preoccupation, this paper aims to screening the women health focusing on the breast cancer and the mammography exam. Early diagnosis brings better treatment conditions, increases the chances of cure and also a better quality of survival. Therefore, tracking campaigns are used in the context of public health promotion policies, seeking to encourage self-care and attention to signs and symptoms [5]. Like any health campaign, its effectiveness depends, to some extent, on the population's awareness and adherence to the proposed screening methods. Thus, for example, mammography is recommended, it is available as a strategic exam, but it is necessary to mobilize women to seek medical care for referral [6].

Therefore, it demands that the population be aware of its aging process and the health care that must be readapted as the new reality presents itself and becomes established. It is assumed that aging is perceived in a personal way, and thus, it is up to the individual to observe health recommendations that are guided by age group [7]. In other words, they call children for childhood vaccination, elderly people for flu vaccination, women for mammograms, men for prostate evaluation. Communication in public health depends on this attention by the population, interest in their health and the search for information. It also depends on the credibility of the public health system, on the establishment of a relationship of safety and care throughout life. That is, a relationship established between the parties, services and population [8].

On the other hand, the effectiveness of an educational health intervention can involve many challenges. This is because awareness based on health benefits is not always enough to mobilize the population. In fact, researchers have proposed a social and cultural view of health-related behaviors, distancing themselves from the exclusively sanitary perspective. Thus, some prediction theories have been used as tools to study the causes that lead a certain population to adopt a behavior related to health [9]. For the present work we used a model integrating the following predictive theories: Health Beliefs Model (HBM), Theory of Planned Behavior (TPB), Theory of Rational Action (TRA) and Theory of Interpersonal Behaviors (TIB). It is based on Godin's propositions (2019) about behaviors in the health area.

First, we sought to delimit the motivations that the female population demonstrates to have to adhere to breast cancer prevention campaigns, through the performance of the mammography exam. The objective is to define, among the motivations, the relevance of the lived experience factor of the procedure itself. Thus, we sought to evaluate the safety and comfort factor as an incentive or not to perform the exam. This is a study aimed, therefore, at professionals of radiological techniques and their possible contribution to the use of mammography as a screening test for breast cancer. This is because the feeling of security and comfort can be directly impacted by the work of professionals, motivating a discussion based on their professional practice.

2. MATERIALS AND METHODS

This is quantitative-qualitative research with the convenience sample consisted of female participants over 40 years of age with cognitive and mental autonomy, who signed the Free and Informed Consent Term (FICT), as recommended by CNS Resolution 466/12 [10]. Was approved by Research Ethic Committee of the Federal University of Minas Gerais (REC-UFMG), Number: 2,248,275, on August 30, 2017, and can be found by CAAE 72762017.0.0000.5149. The action with the community is linked to the extension project "Assistance in radiology: bringing together the experiences of the university, the public hospital and the community" approved in the university extension control system (SIEX-UFMG).

The study was conducted through interviews carried out in an extension action around the Faculty of Medicine, UFMG. They were complemented with interviews carried out in various locations in the metropolitan region of Belo Horizonte, Minas Gerais, conducted between the years 2018-2019. This was a non-probabilistic and non-random sampling, defined by the ease of access and convenience.

The questionnaire that based the interviews was initially composed questions for characterization of the population studied, such as age and education level. Then the questions were defined within the prediction theories for behaviors in the health: Health Beliefs Model (HBM), Theory of Planned Behavior (TPB), Theory of Rational Action (TRA) and Theory of Interpersonal Behaviors (TIB). To understanding the genesis of the behavior studied to prediction theories aim to predict whether a certain behavior will be adopted or not. They allow obtaining information about the reasons for adopting a health-related behavior [9]. In this work, established being possible factors that would be relevant for understanding the genesis of the behavior studied, that is, performing a mammography for early breast cancer screening.

The HBM considers the perception of a threat to health as the most relevant factor for the adoption of a certain behavior. By applying this model in the proposal of this work, an awareness campaign based on the risk of developing breast cancer and the benefit of early diagnosis would be enough to convince the population to undergo a mammography. Thus, it is based on the perception of risk and the feeling of individual vulnerability, involving the conception of risk factors. Within this model, questions regarding the perception of health became relevant, for a relationship with the feeling of vulnerability. In addition, the question addressed about the existence of cancer cases in the family was added to the questionnaire as it contributed to a study of risk perception. Conducting a risk beliefs survey was also considered relevant. Some risk factors may be supported by scientific data and others by empirical knowledge. However, both may have similar weight when deciding whether or not to join the breast cancer prevention campaign.

On the other hand, TRA considers cognitive and emotional responses related to behavior. For example, in relation to performing a mammography, it should be considered whether there will be a benefit in performing the exam (cognitive response) and also whether it will be a pleasant procedure or not (emotional response). According to TRA, the intention is decisive in the adoption of a behavior. In turn, the intention is directly related to the perceived social norms in relation to the

adoption of this behavior. Thus, the role of the subjective norm is also considered, which refers to the importance that the individual attaches to the opinion of people who are significant to him. In this context, questions were proposed, such as: have you ever heard of breast cancer? From who? Where?

In addition, considering the emotional dimension, an unpleasant lived experience when the individual underwent a mammography can be a reason why does not want to repeat it. In this work, this is a key question, since it intends to distinguish this factor from the others, in relation to women's adherence to breast cancer prevention campaigns. It starts from the hypothesis that the professional of radiological techniques has an important role to be considered in the woman's sense of well-being and safety during the procedure. The importance of emphasizing this in relation to the various factors that were studied stems from the fact that it involves a commitment from professionals in relation to the benefits that responsible and attentive performance can bring.

However, TRA only considers the individual's intention in relation to the adoption of a certain behavior, lacking to consider whether there would be practical means for it. Thus, one can imagine the lack of resources to perform a mammography exam as a limit to personal control, for example. Or even, the availability or not of the exam by the SUS. In addition, the trust established between the population and public health services. These variables are present in TPB, which reflects on the perception of an individual's ability to adopt a health behavior: control beliefs.

Finally, considering the TIB, the role of habit is added to the study. Thus, according to the TIB, the intention can be the determining factor in the occasion of the first experiences with a new behavior. However, in the event that this same behavior has been repeated to the point of automation, the habit should be taken as a basis for predicting the adoption or not of the behavior. This is relevant in the case studied, since mammography is proposed as a screening test that must be repeated periodically, as age advances.

The data obtained were considered both in their quantitative and qualitative aspects. In according to Creswell (2010) [11] is a design that allows merging the quantitative and qualitative data collected with a comprehensive analysis of the central problem. This convergent study of the mixed method takes place through the concomitant triangulation [12] of the data collected and theoretical references. The relevant theoretical frameworks are covered for the apprehension of the interfaces between the sociodemographic profile, participants knowledge about the theme that

concerns mammography and breast cancer, in addition the literature review to analyze the proposed results, as presented in Fig. 1. It converges to the central question, focused on the evaluation of the safety perception during mammography examination in the in the population studied. It is considered an opportunity to raise a discussion about the role of radiological technicians in this intricate scenario that involves women's health and diagnostic imaging.

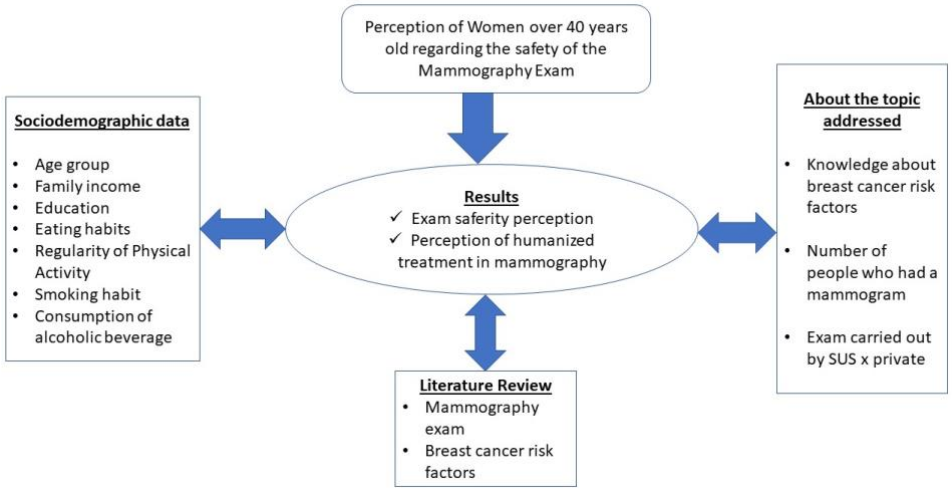

Figure 1: *Theoretical-conceptual framework involving the research methodology.*
Source: Produced by the authors.

3. RESULTS AND DISCUSSION

The method of approaching the women to the interview resulted in a population sample considered strategic for a breast cancer screening campaign, considering the average age (55-year-old). In addition, it is characterized by a population with an income below three minimum wages and limited access to education (Table 1). The participants were within the interest group for breast cancer screening, women over 40 years of age. The data presented being, it was not yet possible to infer a direct relationship between the factors of education and income answered by the participants with the adherence or not to mammography as a method of screening for breast cancer, and further studies are needed in this regard.

The socioeconomic profile of the participants was predominantly within the classification of a population characteristic of Class C. The methodology used in this classification is based on the Brazilian Economic Classification Criterion, called Critério Brasil, of the Brazilian Association of Research Companies (BARC), which analyses, through a points system, the social classification based on the possession of goods and the level of education of the head of the family [13].

Table 1 : Population age and socioeducational profile of the evaluated sample.

VARIABLES	FREQUENCY	%
Age group (years old)		
25-39	1	0,23
40-49	139	31,52
50-59	157	35,61
60-69	103	23,36
70-79	33	7,48
80-89	5	1,13
90-99	1	0,23
unreadable	2	0,45
Total	441	100
Scholling		
Illiterate	8	1,81
Fundamental Education	204	46,26
Medium Education	137	31,07
Higher Education	77	17,46
Posgraduate	7	1,59
Unreadable	8	1,81
Total	441	100
Income (minimium wage)		
≤3	272	61,68
>3	49	11,11
Do not answer	120	27,21
Total	441	100

In order to verify an association between the perception of health status and the search for preventive care, we sought to relate healthy habits and the perception of health. Epidemiological research has identified that individual conditions and lifestyle also influence the likelihood of

developing breast cancer. Risk factors such as age cannot be changed, however behavioral factors such as alcohol consumption, excess body fat and tobacco use can be reduced, as well as regular physical activity and breastfeeding are also ways to protect yourself from breast cancer [14]. In data collected on the IARC (International Agency for Research on Cancer) website, the incidence of women over 40 years of age in Brazil in 2012 had a rate of 144.2 cases per 100,000 inhabitants, with a cumulative risk of 5.8 %. According to the GCO (The Global Cancer Observatory), alcohol consumption becomes a risk between 20 - 60 g/day, and high risk above 60 g/day, the estimated relative proportion of new cancer cases in 2020 attributable to alcohol consumption, in women, by amount of alcohol consumed, it was 50.3% worldwide relative to risk, and 17.4 % high risk for a total n worldwide of 170.000 [15].

In Fig.2, it can be seen that only 2.5 % of respondents said they are satisfied with their health, but do not practice physical activity, smoke and consume alcoholic beverages. Less than 1.0 % of the participants have a practice of physical activity and are satisfied with their health, even with the habit of smoking and drinking alcohol. A considerable part of the participants, 15.23%, said they were satisfied with their health, which can be inferred because they do not smoke or drink alcohol, despite the absence of physical activity. In the best behavioral scenario for cancer risk prevention, only 10.68% of participants who practice physical activity and do not smoke and consume alcohol are satisfied and very satisfied with their health. Thus, it is important to propose the approach that the perception of satisfaction with health is not always linked to the practice of physical activity, or to the habit of drinking and smoking.

Figure 2: *Variable questions about health satisfaction score.*
Source: Produced by the authors with the data collected.

Bezerra *et al.* (2011) conceptualizes health self-assessment as a portrait of the population's health status, whether positive or negative, considering the individual's personal perspective. Thus, it is understood as a subjective construction of the concept of health. In our work, we observed that the population under study does not always associate healthy habits with the perception of health. This can be explained considering the perception of health linked to feelings caused by malaise, pain or discomfort [16]. Thus, in the absence of immediate discomfort, they can express a positive perception of health, although they adopt unhealthy habits, such as smoking and drinking alcohol.

Regarding the motivation to perform cancer prevention tests, a perception of health risk linked to the feeling of discomfort can be dangerous, if we consider that the search for the diagnosis comes after the appearance of symptoms. In this sense, awareness campaigns seem to be relevant for mobilizing the population for breast cancer screening, as they recall the need for preventive care. In fact, around 89.57 % of the women interviewed responded that they had already undergone a breast exam and around 9.52 % responded that they had never had it. Thus, although they are satisfied with their health, most of the women interviewed have already had a mammogram. This can demonstrate that the exam is being seen as proposed in health campaigns, that is, as a preventive, with a focus on early diagnosis.

Considering HBM as a predictive theory, we sought to know women's knowledge about risk factors associated with breast cancer however, 42.63 % of the interviewees said they did not know any. The risk factors that were most associated with breast cancer were heredity (31.0 %), smoking (30.0 %), alcohol consumption (12.0 %), poor diet (12.0 %). In addition, some concerns may be felt regarding the use of contraceptives, use of the drug omeprazole, use of illicit drugs, anguish, stress, race, sedentary lifestyle, obesity, early menarche, hormone replacement, were mentioned as risk factors. Excessive consumption of protein-rich foods, consumption of processed foods, the fact that the woman has not breastfed and trauma to the breast region. Others factors that appeared punctually: the use of deodorant, the habit of sleeping in a bra, carrying a cell phone close to the breasts and the presence of previous nodules. Less than 5.0 % (3.2 %) of respondents associated age with the probability of developing breast cancer. 34.09 % of the women interviewed reported cases of breast cancer in the family, which may be associated with adherence to the mammography exam, according to the model.

Taking into account the TRA and the subjective norms that can lead to adherence to a health behavior, considered being understand how women had contact with information about breast cancer. About the way they learned about the mammography exam, among those who already knew something, the vast majority generically cited the means of communication/media as a source of information; 8.58 % cited doctors; 7.8 % specified the health post as a source of information; 6.0 % mentioned informal conversations with other people; 6.7 % reported conversations with family and friends. A few mentioned their own training in health or work in the health area. In a cross-sectional study carried out by Lopes *et al.* (2015) in the city of Maringá, Paraná, the prevalence was estimated and factors associated with having a mammogram. The importance of the primary health care physician was signaled as a source of information and referral. That the fact that the woman does not have a private health plan was reported as a reduction factor the chances of women having access to a mammogram [17].

Regarding the affective dimension, Table 2 presents answers about the perception of women regarding safety and humane treatment during the mammography exam.

Table 2: Perception about the care provided during the mammography procedure.

Question	Yes	Not	Probably	Blank answer
Did you feel safe during the mammography exam?	319	8	76	39
Do you think it was a humanized service?	318	7	76	39

Most women felt safe when undergoing the mammography exam, reporting satisfaction with the care received. The main complaints reported were related to the technical responsible lack of patience and pain during breast compression. There was no reported concern about exposure to ionizing radiation. The results show that the *HumanizaSUS* policy is present in mammography exam, whose examination is performed with a professional in radiological techniques. *HumanizaSUS* originated in the National Humanization Policy (NHP) in 2003 and translates principles and ways of operating in the set of relationships between all that make up the SUS [18].

Considering the TPB and the perception of control in relation to the health behavior studied, we verified how women have had access to the mammography exam (Figure 2). In addition, for helps to build the perception of control, information was obtained on the level of confidence of the population studied in relation to public health policies.

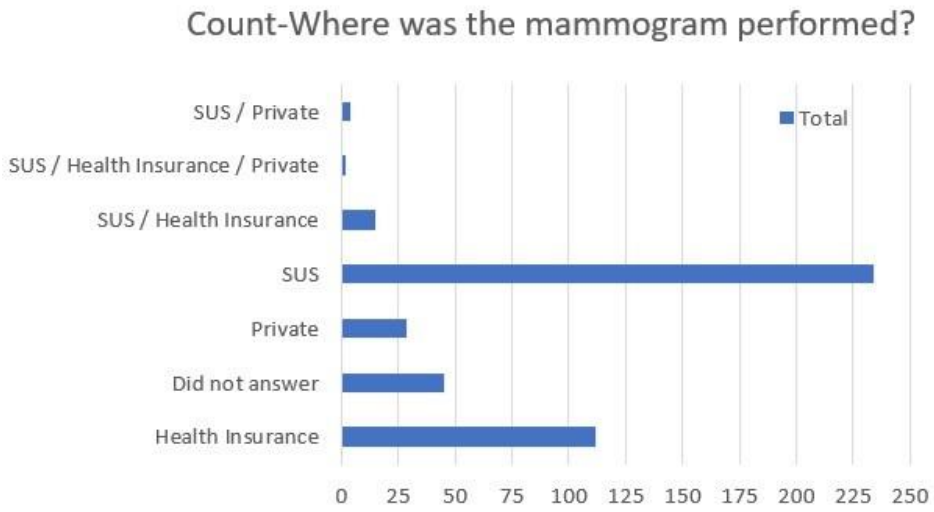

Figure 3: *Data from where mammograms were performed*. Source: Produced by the authors with the data collected.

Of the 441 answers of the interviewees, 234 women was taking mammography by SUS, 112 by health insurance and 29 privates. We can observe that 53.06 % of the participants in the research are attended by the SUS, followed by 25.39 % by health insurance and only 6.57 % by the own resources. Other results are that 15 participants reported using both the SUS and the health insurance for take mammography, 4.0 reported using SUS and Private, and 2.0 reported using SUS, health insurance and private. However, 45 survey participants did not answer this question, representing approximately 10% of the population studied. The absence of an answer to this question can be a negative indicator for the control factor, that is, of how it would be possible to perform the exam, if there was an intention to perform it.

About public policies, pursuant to Art 1 of Law No. 11,664, of April 29, 2008, the SUS must ensure actions related to the prevention, detection, treatment and control of breast cancer. In line with Art 2, item III, of Law No. 11,664, the SUS must also ensure that all women over 40 (forty) years of age undergo a mammogram [19]. In the National Policy for Comprehensive Care for Women's Health (from the Portuguese Política Nacional de Atenção Integral à Saúde da Mulher – PNAISM) and National Plan of Policies for Women (from the Portuguese Plano Nacional de Políticas para as Mulheres – PNPM), is scheduled to reduce morbidity and mortality from cancer in the female population; increase the proportion of women aged between 50 and 69 years who have access to mammography [1, 20]. According to research data, despite the SUS offering programs such as Home Care Service - Best at Home, Health Academy Program, National Tobacco Control Program, among others, these women do not feel welcomed or included in these programs. Of the women interviewed, 41.95 % said that they do not feel cared for by public health policies. Only 18.14 % said yes, they certainly feel supported by public policies. The question was asked: does the municipality care about women's health? To this question, 26.53 % of the women answered yes, for sure; 27.21 % answered no; with the majority answering that probably.

Finally, with regard to habits related to the prevention of breast cancer, 72.27 % of the women who go to the gynecologist, 26.59 % do it annually, and 34.09 % through the SUS. Among the interviewees 94.77 % perform the self-examination, and it is frequently for 27.27 %. It was asked at what age the interviewees had their first mammography. Of those who remembered, 38.41 % had their first mammography before the 40-year-old, which favors the establishment of the habit.

4. CONCLUSION

Among the factors raised for adherence to the behavior studied, that is, mammography for breast cancer screening, it was possible to verify through the interviews those that seem to be more relevant in the context of the population sample studied. It was observed that awareness campaigns mobilize women, even when they do not feel at risk in terms of health, which contradicts what is predicted by the HBM. Efficiency was found in the adherence of SUS breast cancer screening campaigns by study participants. However, there is no well-established relationship of trust between the population and public policies, which may suggest that there is no relational perception of SUS health policies with government support, or that it does not efficiently address the entire scope of SUS. to establish the TPB predictions. On the other hand, considering the TRA and, considering the sources of information on breast cancer cited by the women, the effectiveness of the campaigns can be related to the subjective and social norms in force. This is because the women interviewed mentioned both the performance of doctors and health centers and the media. The social representation of health professionals underpins their recommendations and is recognized by the population. The great exposure of campaigns in the media strengthens the perception of general consensus.

Understanding the important relationship between users of the health system and professionals, returned being to the central focus of this work, the contributions of professionals in radiological techniques to a perception of safety at the time of performing the procedure. As a factor that can contribute to the periodic repetition of the mammography exam, it is related not only to what is predicted by the TRA and emotional responses, but also to the TIB and the importance of health-related habits. Thus, the results obtained point to a strategic role of these professionals, in providing a pleasant and humanized experience. Promoting a peaceful moment, explaining to the patient what is being done in the positioning of the exam, with humanized care, can help spread, among women, that the exam, in addition to being necessary, is also very safe. In this case, there is an important participation of professionals in radiological techniques. The results found in this work can be seen as an ally to awareness campaigns, and thus minimize the negative aspects evidenced, such as the

weakened perception of the user's control in ensuring that the exam can be performed, improving knowledge of the factors of risk to cancer and incorporate them into the population's habits and promote awareness of the safety and importance of mammography exams.

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