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MESTRADO EM SAÚDE PÚBLICA**

**SAIONARA AÇUCENA VIEIRA ALVES**

**AVALIAÇÃO DO IMPACTO DE FATORES SOCIOECONÔMICOS E DA  
PERCEPÇÃO NA PREVENÇÃO DO CÂNCER DE MAMA E CÂNCER DO COLO  
UTERINO**

**CAMPINA GRANDE**

**2018**

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Dissertação apresentada à Universidade Estadual da Paraíba – UEPB em cumprimento aos requisitos necessários para obtenção do título de Mestre em Saúde Pública, Área de Concentração Saúde Pública.

Orientadora: Prof. Dr. Mathias Weller.

CAMPINA GRANDE

2018

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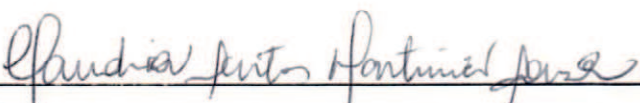
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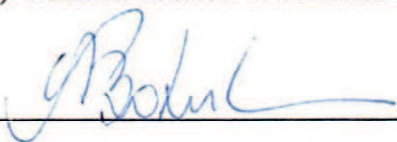
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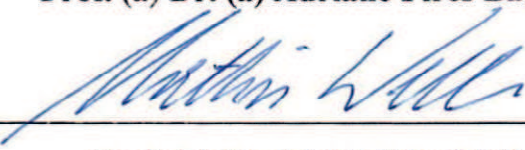
Orientadora: Prof. Dr. Mathias Weller.

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### BANCA EXAMINADORA

**Assinatura:**   
\_\_\_\_\_  
**Prof. (a) Dr. (a) Claudia Santos Martiniano Sousa**

**Assinatura:**   
\_\_\_\_\_  
**Prof. (a) Dr. (a) Adriane Pires Batiston**

**Assinatura:**   
\_\_\_\_\_  
**Prof. (a) Dr. (a) Mathias Weller**

Aos meus pais e aos meus três amores: Ana Beatriz, Maria Alice e Agatha.

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“Um dia você será velho o bastante para voltar a ler contos de fadas”

C. S. Lewis



## RESUMO

**Introdução:** A associação entre conhecimentos sobre fatores de risco, sintomas e percepção do risco com o comportamento de mulheres, indicam que a consciência possui um papel importante na prevenção de câncer. A incidência e a taxa de mortalidade de câncer de mama (CM) e de câncer cervical estão aumentando no Nordeste do Brasil. Não existem estudos Brasileiros sobre o efeito da percepção do risco na realização da mamografia. Existem poucos estudos do Nordeste Brasileiro, sobre os fatores sócio-econômicos que afetam a realização do Exame Clínico da Mama (ECM). Não existem estudos comparativos entre diferentes populações Brasileiras, avaliando o efeito de fatores sócio-econômicos na realização do exame de Papanicolau. **Objetivo:** Avaliar a relação entre fatores socioeconômicos e o comportamento preventivo das mulheres (Mamografia, exame clínico das mamas e Papanicolau). Entender como a auto estimativa do risco percebido das mulheres, em relação ao risco real, afeta o comportamento preventivo. **Métodos:** No presente estudo se entrevistou 396 mulheres no Centro de Saúde Francisco Pinto e no Hospital Municipal Doutor Edgley no município de Campina Grande-PB, aplicando um questionário. Em todos os três estudos foram aplicados modelos de regressão logística para identificar variáveis independentes que afetam o comportamento preventivo das mulheres. **Resultados:** Nos três artigos foram identificadas as principais variáveis sócio-econômicas que afetam o comportamento preventivo das mulheres. Foi investigado como percepção do risco afeta a participação no programa de rastreamento mamográfico, variáveis que afetam a realização do ECM e se comparou a realização do teste Papanicolaou entre mulheres da Paraíba e do Mato Grosso do Sul. Um modelo final de regressão logística indicou que mulheres com baixo nível educacional realizaram o ECM regularmente (anual ou bianual) 8.48 vezes menos em comparação a mulheres com alto nível educacional. Aquelas que não estavam empregadas tinham 2,39 e 1,81 menos chance de realizar o ECM as vezes e regularmente. Além disso, mulheres que usaram ambos os serviços (particular e público) tinham 2,47 e 2,84 mais chances de realizar o ECM as vezes e regularmente comparado com aquelas que utilizaram apenas o serviço público. Mulheres entre 40 e 49 anos de idade com baixa percepção do risco absoluto e baixo nível educacional realizaram rastreio mamográfico regular em torno de 2,65 e 2,72 vezes menos em comparação com aqueles com percepção de alto risco e alto nível educacional. A educação foi a única variável significativa para as mulheres com idade maior ou igual a 50 anos que interferiu na adesão a mamografia. **Conclusão:** Uso exclusivo de serviços de saúde públicos e desemprego foram associados a uma menor adesão ao exame clínico das mamas. A percepção do risco absoluto dependia da história familiar. O efeito da percepção de risco na triagem de mamografia foi dependente do grupo etário. Fatores como histórico familiar e nível educacional influenciaram na adesão ao rastreamento mamográfico. O desemprego estava associado com a menor adesão ao Papanicolau. O baixo nível educacional influenciou na menor adesão em todos os exames (ECM, mamografia e Papanicolau). Futuros programas deveriam focar como público alvo mulheres com baixo nível educacional.

**Palavras-chave:** Neoplasia mamária. Câncer de colo uterino. Percepção. Comportamento preventivo.

## ABSTRACT

**Introduction:** The association between knowledge about risk factors, symptoms and risk perception with the behavior of women, indicates that awareness plays an important role in cancer prevention. The incidence and mortality rate of breast cancer (CM) and cervical cancer are increasing in Northeast Brazil. There are no Brazilian studies on the effect of risk perception on mammography. There are few studies in the Northeast of Brazil about the socioeconomic factors that affect the achievement of the Breast Examination (BCE). There are no comparative studies among different Brazilian populations, evaluating the effect of socioeconomic factors in the Pap test. **Objective:** To evaluate the relationship between socioeconomic factors and women's preventive behavior (Mammography, clinical examination of the breasts and Pap smear). Understanding how self-estimation of women's perceived risk, relative to actual risk, affects preventive behavior. **Methods:** In the present study, 396 women were interviewed at the Francisco Pinto Health Center and at the Municipal Hospital Doctor Edgley in the city of Campina Grande-PB, applying a questionnaire. In all three studies, logistic regression models were applied to identify independent variables that affect women's preventive behavior. **Results:** The three main socioeconomic variables that affect women's preventive behavior were identified in the three articles. It was investigated how risk perception affects participation in the mammographic screening program, variables that affect the performance of ECM, and compared the performance of the Pap smear test among women from Paraíba and Mato Grosso do Sul. A final logistic regression model indicated that women with low educational level performed the ECM regularly (annual or biennial) 8.48 times less compared to women with high educational level. Those who were not employed had 2.39 and 1.81 less chance of performing ECM at regular intervals. In addition, women who used both services (private and public) had 2.47 and 2.84 times more likely to perform ECM on a regular basis than those who only used the public service. Women between 40 and 49 years of age with low perception of absolute risk and low educational level underwent regular mammographic screening around 2.65 and 2.72 times less compared to those with high-risk perception and high educational level. Education was the only significant variable for women aged 50 years or older who interfered with mammography compliance. **Conclusion:** Exclusive use of public health services and unemployment were associated with lower adherence to the clinical examination of the breasts. The perception of absolute risk depended on family history. The effect of risk perception on mammography screening was dependent on the age group. Factors such as family history and educational level influenced the adherence to mammographic screening. Unemployment was associated with decreased adherence to the Pap smear. The low level of education influenced the lower adherence in all the exams (ECM, mammography and Papanicolau). Future programs should focus on targeting women with low educational attainment.

**Keywords:** Breast neoplasm. Cancer of the uterine cervix. Perception. Preventive behavior.

## **LISTA DE SIGLAS**

**BCRAT** – Breast Cancer Risk Assessment Tool

**CAPES** – Coordenação de Aperfeiçoamento de Pessoal de Nível Superior

**CI** – Confidence Intervals

**CM** – Câncer de Mama

**CBE** – Clinical breast examination

**INCA** – Instituto Nacional de Câncer

**MS** – Mammography Screening

**NEGE** – Núcleo de Estudos em Genética e Educação

**OR** – Odds Ratios

**UEPB** – Universidade Estadual da Paraíba

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## 1 APRESENTAÇÃO

Esta dissertação é parte de um conjunto de pesquisas desenvolvidas pelo grupo de pesquisa Epidemiologia e Genética de Câncer da Universidade Estadual da Paraíba (UEPB) com vistas ao desenvolvimento de estudos de fatores socioeconômicos, risco real e percebido sobre Câncer de Mama (CM) e Câncer do Colo do Útero (CCU). Para tal foram realizadas 394 entrevistas com mulheres saudáveis em unidades de saúde da cidade de Campina Grande através de um questionário estruturado em seções sobre fatores socioeconômicos, percepção de risco, fatores de risco, fonte de conhecimento e comportamento preventivo.

Este projeto, trabalhando com conhecimento e consciência sobre CM e fatores de risco, foi iniciado há cerca de dois anos dentro deste grupo de pesquisa pela Mestre em Saúde Pública Ângela Gabrielly Quirino Freitas com o objetivo inicial de entender os fatores socioeconômicos que determinam a aderência das mulheres em programas de prevenção e se os conhecimentos sobre fatores de risco e exames preventivos afetam o comportamento das mulheres. No estudo precedente, foi desenvolvido um formulário o qual foi aplicado em um estudo piloto, e posteriormente aplicado na cidade de Caicó no Rio Grande do Norte incluindo 417 mulheres com idade entre 20 e 86 anos (FREITAS e WELLER, 2016). O projeto anterior indicou que mulheres com renda mais alta e aquelas que tinham parente próximo da família com histórico de câncer realizam com maior frequência a mamografia (Quadro 1). Mulheres em Caicó com baixa renda e sem emprego realizaram o ECM regularmente (seis meses ou um ano) menos frequente que as mulheres com alta renda e emprego (Quadro 1). A realização regular foi também associada com bons conhecimentos dos fatores de risco do CM (Quadro 1). Num outro estudo também baseado nos dados de Caicó, a renda alta e bons conhecimentos dos fatores de risco foram também associados à maior frequência do autoexame da mama (FREITAS e WELLER, 2016).

No estudo presente, buscamos entender como os fatores socioeconômicos e a auto estimativa do risco em relação ao risco real afetam o comportamento preventivo das mulheres. Nos perguntamos se as mulheres que super-estimam o risco ou possuem uma estimativa adequada do risco, realizam a mamografia e o ECM com mais frequência que aquelas mulheres quais sub-estimam o risco de CM. Para tanto foi realizado a adaptação do formulário para os objetivos desta dissertação. Um dos desafios enfrentados para criar esse instrumento de coleta de informação foi compreender o conceito de risco real e percebido e

suas limitações. Dentro das modificações realizadas foram utilizados critérios descritos por Banegas (2012) para a estimação de risco real e percebido.

Durante o trabalho de revisão da literatura conhecemos uma estudiosa sobre o tema, a fisioterapeuta e doutora em Ciências da Saúde Adriane Pires Batiston, ao entrarmos em contato ela prontamente aceitou participar da banca para qualificação deste trabalho e em seguida fechamos uma parceria para realização de um estudo sobre CCU comparando dados de um questionário aplicado em 559 mulheres do Mato Grosso do Sul com os de 334 mulheres de Campina Grande. As adequações que havíamos feito anteriormente foram melhoradas e foram acrescentadas questões que combinassem com as do questionário aplicado nas mulheres do Mato Grosso do Sul. Assim, geramos uma versão final do questionário (Apêndice F), no qual conseguimos coletar informações tanto sobre CM como CCU.

Esta dissertação, portanto, é composta por três artigos científicos que demonstram a associação entre fatores socioeconômicos com o comportamento preventivos das mulheres. Podendo ser visualizado com a utilização de diferentes exames preventivos, tais como, mamografia, ECM e teste de Papanicolau. O efeito da percepção do risco foi muito semelhante no caso da mamografia e do ECM. Por causa disso, as variáveis da percepção do risco foram incluídas exclusivamente no artigo sobre mamografia, mas não no artigo sobre o ECM. Os resultados do presente estudo indicaram uma relação óbvia e positiva entre a história familiar de cancer e a percepção do risco pelas mulheres. Além disso o efeito da percepção do risco à realização da mamografia dependeu da idade: Mulheres na faixa etária entre 40 e 49 que tiveram um estimado alto risco de CM, realizaram a mamografia regular mais frequente comparado com aquelas que tiveram um baixo risco estimado. Para as mulheres acima de 50 anos este efeito não foi significativo e em vez disso o alto nível educacional foi positivamente associado com a realização da mamografia. Outros resultados foram surpreendentes: A sobre- estimação e a estimação acurada do risco foram negativamente associados com a realização regular da mamografia.



## 2 INTRODUÇÃO

A Organização Mundial de Saúde (OMS) considera mais de 20 tipos diferentes de carcinomas mamários, mostrando prevalência a cerca de 80% com origem no epitélio ductal (carcinoma ductal invasivo). Entre os tipos histológicos menos freqüentes encontram-se com 15% o carcinoma lobular invasivo, seguido por tubular, mucinoso, medular, micropapilar e papilar (INCA, 2015; GEYER e CORPA, 2013; INCA, 2004). Os carcinomas de mama apresentam heterogeneidade morfológica, clínica e biológica que geram diferentes prognósticos e diversas respostas terapêuticas (CIRQUEIRA, 2011).

Valendo ressaltar que quando o diagnóstico é tardio, a doença frequentemente é mutilante e agressiva, associado com um pior prognóstico para a paciente. Isso enfatiza a necessidade da disseminação de informações e técnicas para a detecção da doença o mais precoce possível (NAZÁRIO, 2015).

A respeito da incidência e agressividade da doença existem diferenças entre os grupos étnicos: Mulheres de origem Caucasoide são caracterizadas por uma maior incidência que afrodescendentes (DUGNO, 2013). Por outro lado, mulheres que são afrodescendentes apresentam mais frequentemente a forma triplo-negativo (TN) que é mais agressivo em comparação com as formas que expressam os receptores hormonais (CORRÊA, 2010).

De acordo com Instituto Nacional de Câncer (INCA) são observadas diferentes modalidades de tratamento que podem ser subdivididas em terapias locais, abrangendo a cirurgia e radioterapia, e terapias sistêmicas, incluindo a quimioterapia, hormonoterapia e imunoterapia (INCA, 2015).

Em alguns países desenvolvidos a incidência do Câncer de Mama (CM) permanece estável, porém apresenta diminuição dos índices de mortalidade, devido a utilização de métodos eficientes de detecção precoce e a disposição de melhores terapias (MEDEIROS, 2015). Em contraste, nos países em desenvolvimento a incidência e mortalidade por causa de CM estão aumentando.

Para o Brasil quando não considerado o câncer de pele não melanoma, o CM é o primeiro e mais frequente nas mulheres das regiões Sul (74,30/100 mil) e Centro-Oeste (55,87/100 mil), sendo esperados, em 2016, 57.960 novos casos em todo o Brasil (INCA, 2015). Especificamente na região Nordeste nos anos entre 2005 e 2014 a incidência aumentou consideravelmente de 27,0 para 38,74 em cada 100.000 mulheres (INCA, 2005; INCA, 2015).

O maior fator de risco de CM é a idade. Por causa disso o aumento da incidência é parcialmente explicável pelo aumento da expectativa de vida das mulheres no Nordeste

(IGBE, 2014). Mudanças no padrão de vida e alterações nutricionais que foram iniciadas nos grandes centros urbanos e adotadas rapidamente por mulheres de todas as regiões, mesmo aquelas com baixa renda, contribuem adicionalmente ao aumento da incidência (BATISTON, 2011). Entre as mulheres das regiões Norte e Nordeste, ocorreram também mudanças reprodutivas, como baixa paridade, a primeira gestação tardia e curta duração de amamentação, as quais aumentam o risco de CM (ALMEIDA, 2015).

Variações geográficas quanto às taxas de mortalidade também são observadas como a tendência de estabilização na região Sudeste, de declínio na região Sul e aumento nas regiões Norte, Nordeste e Centro-Oeste. Freitas-Junior e colaboradores (2012) estimaram que, no Nordeste, durante o período entre 1994 e 2009, houve um aumento de 5,3% da mortalidade por causa de CM.

O aumento da mortalidade é explicável pelo aumento da incidência no Nordeste em combinação com uma baixa cobertura de mamografia e, adicionalmente, falta de acesso e um déficit na participação em programas de prevenção, associados com a detecção tardia da doença (ANDRADE, 2014; SOARES, 2015; GIRIANELLI, 2014). O aumento da mortalidade por causa de CM não é homogêneo entre as faixas etárias, observando que essa vem aumentando expressivamente em mulheres jovens (MARTINS, 2013).

A literatura demonstra associação do aumento da mortalidade para as regiões mais pobres pelo retardo no diagnóstico e a falta de instituições terapêuticas adequadas. Sendo visualizado concentração de serviços em grandes centros urbanos e falta de organização em municípios afastados. Conseqüentemente as mulheres destas regiões precisam se deslocar para áreas onde os serviços adequados são oferecidos (BARBOSA, 2015; FREITAS e WELLER, 2015). Em outras macrorregiões do país a mortalidade está diminuindo, devido ao melhor acesso aos meios diagnósticos e terapêuticas o que é principalmente efetiva nos estágios iniciais da doença (GIRIANELLI, 2014).

A Organização Mundial de Saúde (OMS) publicou em 2012 num boletim que a consciência é o primeiro passo na batalha contra o câncer de mama (BELLO, 2012). É bem estabelecido na literatura que fatores como educação, renda, status ocupacional, estado civil, idade e outros fatores sócio- econômicos podem influenciar a realização da mamografia e o exame clínico da mama (CHUKMAITOV, 2008; OLUWATOSIN, 2010; PARSA, 2010; GANG, 2013; TILAKI e AULADI, 2015).

### 3 OBJETIVOS

#### 3.1 OBJETIVO GERAL

Avaliar a relação entre fatores socioeconômicos e o comportamento preventivo das mulheres (Mamografia, exame clínico das mamas e Papanicolau). Entender como a auto estimação do risco percebido das mulheres, em relação ao risco real, afeta o comportamento preventivo.

#### 3.2 OBJETIVOS ESPECÍFICOS

- Levantar dados sobre prevenção, a situação sócio-econômica e os conhecimentos das mulheres sobre fatores de risco, sintomas e combate de CM.
- Quantificar o nível de conhecimento sobre possíveis medidas de detecção precoce do CM.
- Avaliar a percepção do risco das mulheres.
- Avaliar o risco real da doença.
- Relacionar o risco percebido e o risco real para entender a auto estimação do risco.
- Comparar variáveis socioeconômicas entre mulheres do Mato Grosso do Sul e Paraíba.

## 4 RESULTADOS

### 4.1 ARTIGO A:

#### **IMPACT OF EDUCATION AND HEALTH TREATMENT OPTIONS ON PERFORMANCE OF CLINICAL BREAST EXAMINATION**

Saionara Açucena Vieira Alves<sup>1</sup>, Adriane Pires Batiston<sup>2</sup>, Mathias Weller<sup>1</sup>

<sup>1</sup>Programa de pós-graduação em Saúde Pública. Universidade Estadual da Paraíba (UEPB).  
Campina Grande- Paraíba, Brasil

<sup>2</sup>Instituto Integrado de Saúde. Universidade Federal de Mato Grosso do Sul (UFMGs).  
Campo Grande- Mato Grosso do Sul, Brasil

Corresponding author

Prof. Dr. Mathias Weller

Post-graduate Program in Public Health.

State University of Paraíba (UEPB)

Integrated Classroom Center.

Rua Domitila Cabral de Castro, third floor – Room 310 University district.

CEP. 58.429-570

Campina Grande. Paraíba. Brazil

Tel.: 0055- 83-9941-8090. E-Mail: [mathiasweller@uepb.edu.br](mailto:mathiasweller@uepb.edu.br)

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There is no conflict of interest

## **Abstract**

*Background:* Brazil has low utilization of mammography screening, and breast cancer patients are frequently less than 50 years old. Clinical breast examination (CBE) could help to improve early detection of breast cancer. The present study addressed socio-demographic variables and their impact on performance of CBE.

*Methods:* We interviewed 396 women in two public health care centers in Campina Grande, Northeast Brazil. Nominal logistic regression was used to estimate odds ratios and to generate a model of independent socio-demographic variables.

*Results:* Of all interviewed women, 323 (81.6%) and 86 (21.7%) cited television and communication with a physician, respectively, as sources of information regarding early detection of breast cancer. Logistic regression modelling indicated that women who had low educational levels, and who exclusively used public health care providers, performed CBE less frequently ( $p = 0.026$ ,  $p = 0.031$ , respectively). Women with low educational level performed CBE 1.96 (OR = 0.510; 95% CI: 0.279 - 0.933) times less often, than did women with high educational levels. Women who received treatment not only by public health care providers had a 2.474 (95% CI:1.087 - 5.628) and 2.84 (95%CI:1.218 - 6.617) increased chance of performing CBE sometimes and regularly, respectively, than did women who received treatment exclusively by public health care providers.

*Conclusions:* Low educational level and exclusive use of public health care providers were associated with a decreased chance of CBE performance. Advertisements for CBE, designed to improve early detection, should focus on women with low educational levels and those who use public health care providers.

**Keywords:** breast cancer; prevention behavior; early detection; clinical breast examination.

## Introduction

Literature regarding the effects of clinical breast examination (CBE) on early detection of breast cancer and reduction of related mortality has returned inconsistent results. Some several well-designed clinical trials showed that CBE gave no reduction in breast cancer mortality (Nelson et al., 2009). Nevertheless, organizational guidelines of the U.S. National Comprehensive Cancer Network (2014) and the American College of Obstetricians and Gynecologists (2011) include CBE in their recommendations. A recent Canadian study suggested that mammography combined with CBE, may be more effective than either screening method alone, and that tumors detected by CBE had more aggressive features (Provencher et al., 2016). As CBE is a low-cost test that can improve early detection of breast cancer, several previous studies have studied socio-economic factors affecting women's participation in CBE screening (Pisani et al., 2006; Dinshaw et al., 2007; Oluwatosin et al., 2010; Parsa et al., 2010; Sankaranarayanan et al., 2011; Frie et al., 2013; Tilaki et al., 2015; Ghahramnian et al., 2016; Lee et al., 2017).

In Brazil, breast cancer incidence rates increased between 2006 and 2016 from 52 to 56 new cases per 100,000 women (INCA, 2006, 2017). The Brazilian ministry of health recommends annual CBE for women aged 40 years or older. The recommended age threshold for biannual mammography screening is 50 years (INCA, 2017). Prospective studies regarding the effectiveness of mammography and CBE in reducing breast cancer mortality in Brazil are lacking. Mammography utilization rates ranging between 25% and 32% were reported for the entire country (Silva et al., 2014; Tomazelli et al., 2017). Recent studies including data from various regions revealed a mean age of breast cancer patients of about 55 years, including about 40.0% of patients that were 50 years old or younger (Carvalho et al., 2014; Andrade et al., 2014; Jerônimo and Weller, 2017). As density of breast tissue is increased at younger ages, the benefit of mammography screening for women aged  $\leq 50$  years is contested (Corbex et al., 2012; Unger-Saldaña, 2014). Low mammography utilization in combination with young age of patients suggests that CBE might help improve early detection of breast tumors in Brazil. Furthermore, as mammography screening is opportunistic, and not based on an organized program with invitation of women, direct recommendation regarding participation in mammography screening may also depend on physicians who perform CBE.

Previous Brazilian studies regarding socio-economic variables that affect CBE performance focused on populations of southern Brazilian regions, including São Paulo and

Rio Grande do Sul (Dias-da-Costa et al., 2007; Amorim et al., 2008; Borges et al., 2016). There are no studies regarding CBE performance in Northeast Brazil. Increasing incidence and mortality rates underscore the need to understand women's motivation to perform CBE. The present study focused on a population in Northeast Brazil and assessed sources and content of information regarding early detection of breast cancer. We studied socio-demographic variables that affected CBE performance in this population, and evaluated how CBE was related to utilization of mammography screening.

## **Methods**

### *Study population and data collection*

The data sampling protocol was reviewed and approved by the Brazilian National Ethics Research Committee (CAAE Plataforma Brasil: 63089416.0.0000.5187). Written informed consent was obtained from each participant of the study. Women were eligible for the study if they were 40 years or older and have not had any type of breast or ovarian cancer. Data sampling was based on interviews of participants by one of the authors. Interviews were performed between March and October 2017. Of each group of related persons, only one woman was interviewed to avoid possible repetitive information from family members. Participating women were directly contacted and interviewed in waiting rooms of the health service center “Dr. Francisco Pinto” and the “Hospital Municipal Dr. Edgley”, both in Campina Grande, Paraíba. There were no differences between women at both health service centers. Situated in the interior, about 120 km west of the state capital João Pessoa on the Atlantic coast, Campina Grande has a population of 385,276 (2010), making it the second largest city in the state of Paraíba (IGBE, 2014).

### *Questionnaire and measures*

Interviews were based on a modified structured questionnaire developed in previous studies (<sup>1</sup>Freitas and Weller, 2016; <sup>2</sup>Freitas and Weller, 2016). The questionnaire was subdivided into the following sections: 1. Socioeconomic characteristics; 2. Reproductive and health characteristics, including information regarding previous biopsies, and breast or ovarian cancer of the participant and first-degree relatives; 3. Performance of CBE and mammography.

Educational levels were defined as follows: Elementary school with duration nine years was defined as “Low”; Middle school with duration of 12 years was defined as “middle”. Higher educational levels were defined as “high”. Income was defined as minimum wage and multiple values of the minimum. In 2017, the minimum wage was R\$937.00/month. In December 2017, this value was equivalent to about US\$290.00/month. The following definitions were applied:  $\leq 1$  x minimum wage for low income;  $> 1$  x minimum wage and  $\leq 2$  x minimum wage for intermediate income;  $> 2$  x minimum wage for high income. Ethnic origin was based on self-reporting by interviewed women.

Women were asked about their actual adherence to recommendations by the public screening program. If asked about CBE performance the following options were distinguished: Never, sometimes, each year and each second year. Participation on CBE screening in each or each second year was defined as regular performance. Participation on mammography screening was defined in the same way.

### *Statistical analysis*

Pearson’s Chi-Square ( $\chi^2$ ) test was applied to compare categorized variables. T-test was applied to compare continuous parametric variables. Results of multinomial logistic regression were presented as adjusted odd ratios (OR), 95% confidence interval (95%CI) and P-value. P values of regression analyses were calculated using likelihood ratio tests (PLRT) for each independent variable. Significant variables of univariate regression analysis were used for regression modeling: Variables with significance level less than 0.2 in the univariate analysis were entered into the model. Then, variables with significance level less than 0.05 were kept in the model. Backward selection was used when significant variables were selected. The final model was tested for fitness using the likelihood ratio test. Statistical analysis was performed using SPSS STATISTICS™ software (SPSS; IBM company; version 24).

### **Results**

Mean age was 54.59 (SD = 11.93) years (Table 1). Of 396 women, 167 (42.2%) were between 40 and 49 years old, and 229 (57.8%) were 50 years and older (Table 1). Two hundred fifty (63.1%) had low educational level. Two hundred eighty-six (72.2%) and 249 (62.9%) were not employed and had a low income, respectively (Table 1). Both public and private health care services were used by 104 (26.3%) women (Table 1).



**Table 1.** Socio- economic variables of women (N= 396).

<b>Age</b>	
Mean (years)	54.59 (SD= 11.93)
	<b>N (%)</b>
40 - 49 years	167 (42.2%)
50 - 59 years	102 (25.8%)
60 - 69 years	69 (17.4%)
≥ 70 years	58 (14.6%)
<b>Education</b>	
Low	250 (63.1%)
Intermediate	114 (28.8%)
High	32 (8.1%)
<b>Occupation status</b>	
Not occupied	286 (72.2%)
Occupied	110 (27.8%)
<b>Income</b>	
Low	249 (62.9%)
Middle	130 (32.8%)
High	17 (4.3%)
<b>Treatment opportunity</b>	
Only public	292 (73.7%)
Not only public	104 (26.3%)

<b>Marital status</b>	
No stable union	152 (38.4%)
Stable union	244 (61.6%)
<b>Ethnic origin</b>	
Mixed ancestry	256 (64.6%)
European ancestry	140 (35.4%)
<b>Family history of cancer</b>	
No	150 (37.9%)
Yes	246 (62.1%)
<b>Family history of breast cancer</b>	
No	328 (82.8%)
Yes	68 (17.2%)

The main source of information regarding early detection of breast cancer was television for 323 (81.6%) of women (Table 2). Two hundred thirty (58.1%) reported having received information in the form of flyers obtained at the health service, whereas 86 (21.7%) obtained information directly from talking with a physician (Table 2). Three hundred sixty-three (91.7%) and 267 (67.4%) cited etiology of disease and prevention as the main content of information received (Table 2). Information regarding mammography was obtained by 350 (88.4%), whereas 137 (34.6%) were informed regarding CBE (Table 2). All women who received information regarding CBE were also informed regarding mammography.

**Table 2.** Women's (N= 396) source and content of information about early detection of breast cancer.

<b>Information by flyers at health service</b>
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Yes	230	58.1%
<b>Media as source of information</b>		
Television	323	81.6%
Radio	39	9.9%
Internet	29	7.3%
Journals	29	7.3%
Books	10	2.5%
<b>Conversation as source of information</b>		
Physician	86	21.7%
Other persons	69	17.4%
Breast cancer patients	14	3.5%
<b>Content of information</b>		
Etiology of disease	363	91.7%
Prevention	267	67.4%
Diagnostics	185	46.7%
How does it develop	172	43.4%
Signs and symptoms	161	40.7%
Risk factors	145	36.6%
CBE performance	137	34.6%
Mammography	350	88.4%

Use of health care provider was associated with income. Of 249 women with low income, 210 (84.34%) exclusively used public health care providers, whereas 39 (15.66%)

used both public and private health care providers ( $p = 0.000$ ). Of 145 women who performed regular CBE, 116 (80.00%) also performed annual or biannual mammography ( $p = 0.000$ ).

Women with low educational level performed regular CBE 10.99 (OR = 0.091; 95% CI: 0.012 -0.702;  $p = 0.003$ ) times less often than did women with high educational level (Table 3). Women who were not employed had a 2.37 (OR = 0.422; 95% CI: 0.201 -0.888) and 2.28 (OR = 0.439; 95% CI: 0.205 -0.942) decreased chance of performing CBE sometimes and regularly, respectively, compared with employed women ( $p = 0.045$ , Table 3). Furthermore, women with low and middle income tended to perform regular CBE less frequently (Table 3). Low- and middle-income women performed regular CBE 2.94 (OR = 0.340; 95% CI: 0.195 -5.538) and 1.36 (OR = 0.733; 95% CI: 0.145 -3.713) times less often, respectively, than did high-income women ( $p = 0.057$ , Table 3). Women who received treatment not only by public health care providers had a 2.7 (95% CI:1.203 -6.042) and 3.05 (95% CI: 1.342 -6.931) increased chance of performing CBE sometimes and regularly, respectively, than did women who used exclusively public health care providers ( $p = 0.013$ , Table 3). Finally, the chance of women without family history of cancer of performing regular CBE was 1.96 (OR = 0.510; 95% CI: 0.279 -0.933) times lower than that of women with family history ( $p = 0.064$ ; Table 3). Family history of breast cancer, by contrast, did not lead to a heterogeneous distribution of data ( $p = 0.662$ , Table 3).

**Table 3.** Odds ratios (OR) and confidence intervals (95%CI) of socio-economic variables on performance of clinical breast examination (CBE) of women (N= 396). Non-performance (N= 64) served as reference group in univariate logistic regression analysis.

	Some times (N= 187)		Regular (N= 145)		P
	OR	95%CI	OR	95%CI	
<b>Age</b>					
40 – 49 years	0.908	0.412 - 1.999	2.393	0.960 - 5.966	0.165
50 – 59 years	1.330	0.542 - 3.267	3.077*	1.114 - 8.497	
60 – 69 years	1.027	0.397 - 2.655	2.364	0.814 – 6.866	
≥ 70 years	Ref.				

<b>Education</b>					
Low	0.176	0.023 - 1.372	0.091*	0.012 - 0.702	0.003
Intermediate	0.275	0.033 - 2.285	0.231	0.028 - 1.897	
High	Ref.				
<b>Occupation status</b>					
Not occupied	0.422*	0.201 - 0.888	0.439*	0.205 - 0.942	0.045
Occupied	Ref.				
<b>Income</b>					
Low	1.038	0.195 - 5.538	0.340	0.720 - 1.621	0.057
Middle	1.600	0.282 - 9.067	0.733	0.145 - 3.713	
High	Ref.				
<b>Treatment opportunity</b>					
Not only public	2.696*	1.203 - 6.042	3.050*	1.342 - 6.931	0.013
Only public	Ref.				
<b>Marital status</b>					
No stable union	0.861	0.485 - 1.528	0.656	0.359 - 1.198	0.314
Stable union	Ref.				
<b>Ethnic origin</b>					
Mixed ancestry	1.544	0.822 - 2.899	1.740	0.910 - 3.324	0.229
European ancestry	Ref.				
<b>Family history of cancer</b>					
No	0.759	0.429 - 1.344	0.510*	0.279 - 0.933	0.064

Yes	Ref.				
<b>Family history of breast cancer</b>					
No	1.131	0.529 – 2.419	0.867	0.402 – 1.872	0.662
Yes	Ref.				

$p \leq 0.050$

In an age-adjusted model of logistic regression, educational level and treatment option remained significant variables ( $p = 0.026$ ;  $0.031$ ), whereas employment status had borderline significance ( $p = 0.066$ , Table 4): Women with low educational level had a 1.96 (OR = 0.510; 95% CI: 0.279 -0.933) lower chance of performing regular CBE, than did women with high educational level (Table 4). Women who used not only public health care providers performed CBE sometimes and regularly 2.474 (95% CI: 1.087 -5.628) and 2.84 (95% CI: 1.218 -6.617) times more often, respectively, than did women who used exclusively public health care providers (Table 4).

**Table 4.** Odds ratios (OR) and confidence intervals (95%CI) in an age-adjusted model of logistic regression. Non-performance of CBE served as reference.

	Some times		Regular		P
	OR	95%CI	OR	95%CI	
<b>Education</b>					
Low	0.215	0.027 - 1.705	0.118*	0.015 - 0.933	0.026
Middle	0.316	0.037 - 2.683	0.263	0.031 - 2.207	
High	Ref.				
<b>Occupation status</b>					
Not occupied	0.419*	0.192 - 0.912	0.554	0.248 - 1.241	0.066
Occupied	Ref.				
<b>Treatment opportunity</b>					

Not only public	2.474*	1.087 - 5.628	2.839*	1.218 - 6.617	0.031
Only public	Ref.				

\* $p \leq 0.050$

## Discussion

Women at public health care centers were characterized by low educational level, low income respectively, low levels of employment. As low-income women's access to journals and books is limited, it was not surprising that the main source of information regarding early detection of breast cancer was television. A further important source of information was flyers in health care centers. Only a few women obtained information regarding early detection of breast cancer directly during conversations with physicians. Compared with information regarding CBE, information regarding mammography was better propagated. The month of October ("Outubro rosa", "pink October) is marked by advertisements that favor mammography screening programs. Television and flyers in public health care centers are the main media of advertisement, possibly explaining why women had more information regarding mammography. This highlights the importance of television as a source of information.

Univariate analysis identified employment status as a significant variable, whereas income and family history of cancer had borderline significance. Women who were not employed had lower odds of performing CBE sometimes or regularly. In an Indian intervention study, employment was positively associated with CBE in univariate analysis, but was not significant on multivariate analysis (Dinshaw, 2007). Other studies from Brazil, India, and Iran failed to show a positive association between employment and CBE performance (Amorim et al., 2008; Frie, 2013; Tilaki et al., 2015). This was in contrast to income, a variable that was decisive in various studies. In agreement with our results, previous Brazilian studies showed that high-income women performed CBE more frequently than did low-income women (Dias-da-Costa, 2007; Amorim et al., 2008; Borges et al., 2016). However, unlike our results, in all three Brazilian studies, income remained a significant variable in multivariate models (Dias-da-Costa, 2007; Amorim et al., 2008; Borges et al., 2016). Similarly, in a Malaysian study, high income was positively associated with CBE performance (Parsa et al., 2010). Other studies, by contrast, associated low income with an increased chance of CBE performance (Pisani et al., 2006; Dinshaw et al., 2007; Frie et al.,

2013). Finally, several studies failed to show an association of income with CBE performance (Oluwatosin et al., 2010; Sankaranarayanan et al., 2011; Tilaki et al., 2015; **Ghahramanian et al., 2016**).

In univariate analysis of data in the present study, women who had a close relative with cancer performed regular CBE about two times more often than did women without a close relative with cancer. This agrees with a recent study from the US that revealed a positive association between CBE performance by Korean women and the presence of a close relative with cancer in their family (Lee et al., 2017). Results of the present study indicated that family history, independent of the type of cancer, can have an impact on women's prevention behaviors. However, if analyses of studies with comparable data were based solely on family history of breast cancer, results would be different: Studies from Brazil, Malaysia, and Iran failed to reveal an increased chance of CBE performance by women with family history of breast cancer (Dias-da-Costa et al., 2007; Parsa et al., 2010; Tilaki et al., 2015). As in the present study, this result may be due to a lower number of women with family history of breast cancer, and could change if all types of cancer were included into the analysis.

Education and treatment opportunity were both variables that contributed significantly to the regression model. Our data suggested that higher educational level was positively associated with CBE performance. This is in agreement with a Brazilian and an Iranian study (Amorim et al., 2008; Borges et al., 2016; **Ghahramanian et al., 2016**). Another Brazilian study, by contrast, revealed no association between education and CBE performance (Dias-da-Costa, 2007). Similarly, previous studies from Malaysia, India, and Iran showed no association between education and CBE performance (Parsa et al., 2010; Sankaranarayana et al., 2011; Tilaki et al., 2015). Additionally, studies from the Philippines, Nigeria, India, and the US gave findings contrary to ours, i.e., that lower educational level increased the chance of CBE performance (Pisani et al., 2006; Dinshaw et al., 2007; Oluwatosin et al., 2010; Frie et al., 2013; Lee et al., 2017). This strong variability may indicate that the impact of education on performance of CBE depends highly on the social context in particular populations.

Despite the significant association between income and treatment opportunity, the latter variable contributed better to heterogeneity of data during regression modeling. Income remained only a significant variable in univariate analysis. Our results suggested that women who used both public and private health care providers had a higher chance of performing CBE sometimes or regularly. This could mean that women in the private sector had more



opportunities to perform CBE. The reason could be that physicians in the private health sector have more often an education favoring performance of CBE. It could also mean that communication varies, and that physicians in private health care settings encourage women more often to perform CBE.

A limitation of this study was that we may only speculate as to the reasons why women who used exclusively public health care providers performed CBE less often compared with women who used attended private clinics. Participants in the study were randomly selected. However, a selection bias that favors a certain socioeconomic background cannot be excluded. Results of our study cannot necessarily be generalized to other regions of the country, particularly as income was a decisive variable in several previous Brazilian studies.

## **Conclusions**

In summary, women in this study obtained clearly less information regarding CBE than they did regarding mammography screening. Less than one quarter of all women reported having received information regarding early detection of breast cancer directly by communication with a physician. Furthermore, low educational level and exclusive use of public health care providers were associated with a decreased chance of CBE performance. As CBE could help to improve early detection of breast cancer, it should be more strongly propagated in public health campaigns. Such governmental health campaigns in favor of CBE should focus on women with low educational levels who use public health care providers. Future studies should clarify why women who use private health providers perform CBE more often. Also helpful would be detailed comparisons between private and public health care services, including communication skills of physicians, education of physicians, and their recommendations for early detection of breast cancer.

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## 4.2 ARTIGO B

**AGE-DEPENDENT IMPACT OF BREAST CANCER RISK PERCEPTION ON  
MAMMOGRAPHY SCREENING BEHAVIOR IN BRAZILIAN WOMEN**

Saionara Açucena Vieira Alves<sup>1</sup> and Mathias Weller<sup>1</sup>

<sup>1</sup>Programa de pós-graduação em Saúde Pública.

Universidade Estadual da Paraíba (UEPB)

Campina Grande-Paraíba, Brasil

Corresponding author

Prof. Dr. Mathias Weller

Programa de pós-graduação em Saúde Pública.

Universidade Estadual da Paraíba (UEPB)

Central Integrada de aulas.

Rua Domitila Cabral de Castro, s/n 3<sup>o</sup> andar – sala 310 Bairro Universitário.

CEP. 58.429-570

Campina Grande. Paraíba. Brasil

Tel.: 0055- 83-9941-8090. E-Mail: [mathiasweller@uepb.edu.br](mailto:mathiasweller@uepb.edu.br)

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There is no conflict of interest

## Abstract

*Background:* Previous studies suggest that education and income affect Brazilian women's breast cancer prevention behavior. The present study focused on the impact of perceived risk on mammography screening behavior.

*Methods:* Information regarding socioeconomic variables and risk perception was obtained by interviewing 396 healthy women aged 40 - 79 years. Logistic regression analysis was applied to determine odds ratios (OR) and confidence intervals (95%CI).

*Results:* Women without family history, aged 40 - 49 years and  $\geq 50$  years, had a 5.777 (95%CI: 2.261- 14.764) and 9.239 (95%CI: 4.028- 21.194), higher chance respectively, of having low perceived absolute risk ( $p = 0.000$ ). Regression modelling revealed that women aged between 40 and 49 years with low perceived absolute risk and low educational level, performed regular mammography screening about 2.7 (OR = 0.377; 95%CI: 0.143-0.989;  $p = 0.037$  and OR = 0.368; 95%CI: 0.100-1.360;  $p = 0.040$ ) times less often, compared to those ones with high risk perception and high educational level. Education was the only significant variable for women aged  $\geq 50$  years ( $p = 0.021$ ): Women aged  $\geq 50$  years with low educational level underwent annual and biannual mammography about 3.5 (OR = 0.289; 95%CI: 0.035- 2.363) and 23.3 (OR = 0.043; 95%CI: 0.004- 0.420) times less often, respectively, than did women with high education level.

*Conclusions:* Perception of absolute risk depended on family history. The effect of risk perception on mammography screening was age group-dependent, particularly for women aged 40 - 49 years, whereas for women aged  $\geq 50$  years, educational level had a more prominent effect.

**Keywords:** breast cancer; risk perception; mammography



## Introduction

Incidence and mortality rates of breast cancer are stable and have even declined in the developed countries of Europe and North America (Torre et al., 2016). By contrast, in developing countries in Asia, Africa and South America, mortality rates are increasing (Torre et al., 2016). In Brazil, the largest Latin American country, the national cancer institute (INCA) predicted 57,960 new breast cancer cases for 2016 (INCA, 2016). In southern regions of Brazil, including urban centers like São Paulo and Rio de Janeiro, breast cancer incidence has remained stable or declined in recent years (INCA, 2005; INCA, 2016). The northeastern region of Brazil, by contrast, has suffered an increase in breast cancer incidence: between 2005 and 2016, the incidence increased from 27.23 to 38.74 new cases per 100,000 women (INCA, 2005; INCA, 2016).

Since 2003, Brazil has a public program for early detection of breast cancer. This is an opportunistic, not an organized screening program, and women are not invited to participate. Furthermore, in Brazil there are conflicting recommendations regarding the age threshold and interval for screening: the ministry of health recommends biannual mammography for women aged 50 to 69 years, whereas the Brazilian Society of Mastology recommends annual mammography screening (MS) starting at 40 years (Urban et al., 2012; INCA, 2016). For healthy women aged 70 or older, regular MS is recommended (Urban et al., 2012; INCA, 2016). Therefore, for individual women, the recommendations regarding starting age and interval of MS depend mainly on the opinion of their respective physicians. In Northeast Brazil, women often present at advanced stages of disease (Stage III and IV). High breast cancer mortality rates were attributed to non-adherence to the MS program (Amorim et al., 2008; Silva et al., 2013; Schneider et al., 2013; Andrade et al., 2014; Borges et al., 2016).

Perception of risk may be a variable that affects women's MS behavior. The literature distinguishes between absolute, comparative, and numeric perceived risk (Graves et al., 2008; Banegas et al., 2012; Walker et al., 2014). Comparative and numeric risk, are generally estimated as the relations between perceived and objective risk. The latter can be measured with various models (Fehniger et al., 2014). Several previous studies focused on breast cancer risk perception of women (Banegas et al., 2012; Fehniger et al., 2014; Kartal et al., 2014; Evans et al., 2016). Other studies focused on possible associations between risk perception and women's MS behaviors (Ceber et al., 2006; Graves et al., 2008; Zhang et al., 2011; Haber et al., 2012; Chung et al., 2013; Walker et al., 2014; Koshraresh et al., 2016).

To the best of our knowledge, there are no Brazilian studies aimed at elucidation of the possible association between risk perception and women's MS behavior. Increasing incidence and mortality rates in Northeast Brazil highlight the importance of identifying variables that affect adherence to the MS program. We asked whether accurate and overestimated risk perception is associated positively with women's participation on the MS program. Risk perception was analyzed in the context of other important socio-demographic variables.

## **Materials and methods**

### *Study population and data collection*

The data sampling protocol was reviewed and approved by the Brazilian National Ethics Research Committee (CAAE Plataforma Brasil: 63089416.0.0000.5187). Written informed consent was obtained from each participant of the study. Women were eligible for the study if they were 40 years or older and had not had any type of breast or ovarian cancer. Data sampling was based on interviews of participants by one of the authors. Interviews were performed between March and October 2017. Of each group of related persons, only one woman was interviewed to avoid possible repetitive information from family members. Participating women were directly contacted and interviewed in waiting rooms of the health service center "Dr. Francisco Pinto" and the "Hospital Municipal Dr. Edgley", both in Campina Grande, Northeast Brazil. There were no differences between women at both health service centers. Situated in the interior, about 120 km west of the state capital João Pessoa on the Atlantic coast, Campina Grande has a population of 385,276 (2010), making it the second largest city in the state of Paraíba (IGBE, 2014).

### *Questionnaire and measures*

Interviews were based on a modified structured questionnaire developed in previous studies (Freitas and Weller, 2016<sup>1</sup>; Freitas and Weller, 2016<sup>2</sup>). The questionnaire was subdivided into the following sections: 1. Socioeconomic characteristics; 2. Reproductive and health characteristics, including information regarding previous biopsies, and breast or ovarian cancer of the participant and first-degree relatives; 3. Adherence to the MS program; 4. Perception of breast cancer risk.

Educational level was defined as follows: 1. Fundamental school with duration of nine years was defined as “Low”; 2. Middle school with duration of 12 years was defined as “middle”. 3. Higher educational levels were defined as “high”. Income was defined as minimum wage and multiple values of the minimum. Ethnic origin was based on self - reporting by interviewed women.

Women were asked about their actual adherence to recommendations by the MS program. If asked about mammography utilization, the following options were distinguished: Never, sometimes, every year, and every two years. Perceived absolute and comparative risk were assessed with the questions “How do you classify your risk of breast cancer?” and “How do you classify your risk of breast cancer compared to other women of your own age?” Absolute and comparative perceived risk, were measured on a seven-point Likert scale that ranged from “very low” to “very high”, and from “much lower” to “much higher”, respectively. Perceived numeric risk was measured on a percentage scale ranging from 0% (“I have no risk at all for developing breast cancer”) to 100% (“I will develop breast cancer either way”).

### *Objective risk and risk perception*

We used the National Cancer Institute’s Breast Cancer Risk Assessment Tool (BCRAT; <https://www.cancer.gov/bcrisktool/>) to calculate participants’ five-year and lifetime risk of developing invasive breast cancer. The tool is based on the Gail model (Gail et al., 1989). Among the BCRAT risk factors, only information regarding atypical hyperplasia was unavailable. The tool also provides data on mean objective risk at particular ages.

According to a previous study (Graves et al., 2008), categories of high and low objective risk were defined as higher *versus* lower and identical to five-year BCRAT objective risk, than mean objective risk at the same age. Perceived absolute and comparative risk were defined as follows: High perceived risk if women responded “a little high”, “high” or “very high” and “a little higher”, “higher” or “very much higher”, respectively; Low perceived risk if women responded “very low”, “low” “a little low” or “intermediate” and “very much lower”, “lower”, “a little lower” or “the same”, respectively. Perceived absolute and comparative risk were categorized as follows (Banegas et al., 2012): *Accurate*, if women with high objective risk had a high perceived risk and if women with low objective risk had a

low perceived risk. *Underestimate*, if women with high objective risk had a low perceived risk. *Overestimate*, if women with low objective risk had a high, perceived risk.

According to previous studies, risk perception was also determined as the difference between perceived numeric risk and five year BCRAT objective risk (Banegas et al., 2012): BCRAT risk scores were multiplied by 10 to subtract objective risk from perceived numeric risk ( $d = \text{Perceived numeric risk} - \text{Objective risk}$ ). Numeric risk comprehension was defined as follows: *Accurate*, if  $d < 10$  and  $d > -10$ ; *Underestimate* if  $d \leq -10$ ; *Overestimate* if  $d \geq 10$ .

### *Statistical analysis*

Pearson's Chi-Square ( $\chi^2$ ) test was applied to compare categorized variables. T-test and ANOVA were applied to compare continuous parametric variables. Results of multinomial logistic regression were presented as adjusted odd ratios (OR), 95% confidence interval (95%CI) and P-value. P values of regression analyses were calculated using likelihood ratio tests (PLRT) for each independent variable. Significant variables of univariate regression analysis were used for regression modeling: Variables with significance level less than 0.2 in the univariate analysis were entered into the model. Then, variables with significance level less than 0.05 were kept in the model. Backward selection was used when significant variables were selected. The final model was tested for fitness using the likelihood ratio test. Statistical analysis was performed using SPSS STATISTICS™ software (SPSS; IBM company; version 24).

### **Results**

Mean age of women ranged from 48.94 (SD= 12.10) to 60.95 (SD= 9.89) years for women who never participated and participated each second year on MS, respectively (Table 1). Of all 108 women who never participated on MS, 75 (69.44%) were between 40 and 49 years old ( $p= 0.000$ ; Table 1). Furthermore, 73 (67.59%) and 70 (70.71%) out of 108 and 99 women, who never performed MS and performed it sometimes, respectively, had a low educational level ( $p= 0.005$ ). Of 168 women who performed MS each year, 41 (24.40%) had a family history, whereas 13 (12.04%) and 10 (10.10%) women with family history performed it never and sometimes, respectively ( $p= 0.008$ ).

**Table 1.** Socioeconomic variables distributed according to mammography participation (N = 396).

	<b>Never</b> <b>(N= 108)</b>		<b>Sometimes</b> <b>(N= 99)</b>		<b>Each year</b> <b>(N= 168)</b>		<b>Each second year</b> <b>(N= 21)</b>		<b>P</b>
<b>Age</b>									
<b>Mean</b>	48.94 (SD= 12.10)		57.74 (SD= 11.90)		55.58 (SD= 10.74)		60.95 (SD= 9.89)		0.000
	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	
40- 49 years	75	69.44%	31	31.31%	57	33.93%	4	19.05%	0.000
50- 59 years	13	12.04%	32	32.32%	51	30.36%	6	28.57%	
60- 69 years	9	8.33%	17	17.17%	38	22.62%	5	23.81%	
≥70 years	11	10.19%	19	19.20%	22	13.09%	6	28.57%	
<b>Education</b>									
Low	73	67.59%	70	70.71%	98	58.34%	9	42.86%	0.005
Middle	29	26.85%	25	25.25%	54	32.14%	6	28.57%	
High	6	5.56%	4	4.04%	16	9.52%	6	28.57%	
<b>Marital status</b>									
No union	40	62.96%	37	37.37%	67	39.88%	8	38.10%	0.963
Stable union	68	37.04%	62	62.63%	101	60.12%	13	61.90%	
<b>Ethnic origin</b>									
Caucasian	72	66.67%	65	65.66%	106	63.10%	13	61.90%	0.923
Not Caucasian	36	33.33%	34	34.34%	62	36.90%	8	38.10%	

<b>Income</b>									
Low	75	69.44%	62	62.63%	103	61.31%	9	42.86%	0.373
Middle	30	27.78%	33	33.33%	57	33.93%	10	47.62%	
High	3	2.78%	4	4.04%	8	4.76%	2	9.52%	
<b>Occupation status</b>									
Occupied	31	28.70%	35	52.70%	36	21.43%	8	38.10%	0.061
Not occupied	77	71.30%	34	47.30%	132	78.57%	13	61.90%	
<b>Family history of breast cancer</b>									
No	95	87.96%	89	89.90%	127	75.60%	17	80.95%	0.008
Yes	13	12.04%	10	10.10%	41	24.40%	4	19.05%	

SD= Standard deviation.

During the interviews, women were also asked about limitations and benefits of MS. When women were asked if MS can prevent breast cancer, 357 (90.15%) responded correctly, that it cannot prevent the disease. Asked about the potential of MS to lower risk of death because of breast cancer, 215 (54.29%) responded that it does not lower risk.

Univariate analysis indicated that participation in MS varied among age groups ( $p = 0.000$ ; Table 2): Women aged 40 to 49 years participated 2.6 times less often every year (OR = 0.380; 95%CI: 0.170- 0.847), and 10.2 times less often every second year (OR = 0.098; 95%CI: 0.024- 0.402), compared with women aged  $\geq 70$  years (Table 2). Women with low and middle educational level participated 8.1 times less often (OR = 0.123; 95%CI:0.330- 0.465) and 4.8 times less often (OR = 0.207; 95%CI: 0.049- 0.867), respectively, in biannual MS, compared with women with high educational level (Table 2).

**Table 2.** Socioeconomic variables, associated with women's (N = 396) adherence to the mammography - screening program. Odds ratio (OR) and confidence intervals (CI) are presented for single variables of women who underwent mammography (N = 288), compared with women who did not (N = 108).

	<b>Sometimes</b>	<b>Each year</b>	<b>Each second year</b>	<b>P</b>

		(N= 99)	(N= 168)	(N= 21)	
	N (%)	OD (CI)	OD (CI)	OD (CI)	
<b>Age</b>					
40- 49 years	167 (42.17)	0.239* (0.102- 0.561)	0.380* (0.170- 0.847)	0.098* (0.024- 0.402)	0.000
50- 59 years	102 (25.76)	1.43 (0.533- 3.810)	1.962 (0.762- 5.051)	0.846 (0.211- 3.389)	
60- 69 years	69 (17.42)	1.094 (0.365- 3.277)	2.111 (0.757- 5.887)	1.019 (0.232- 4.466)	
≥70 years	58 (14.65)	Ref.			
<b>Education</b>					
Low	250 (63.13%)	1.438 (0.389- 5.315)	0.503 (0.188- 1.349)	0.123* (0.330- 0.465)	0.021
Middle	114 (28.79%)	1.293 (0.327- 5.107)	0.698 (0.247- 1.978)	0.207* (0.049- 0.867)	
High	32 (8.08%)	Ref.			
<b>Marital status</b>					
No union	152 (38.38%)	1.015 (0.577- 1.784)	1.128 (0.685- 1.855)	1.046 (0.399- 2.742)	0.963
Stable union	244 (61.62%)	Ref.			
<b>Ethnic origin</b>					
Caucasian	140 (35.35%)	1.046	1.170	1.231	0.923

		(0.588- 1.862)	(0.704- 1.945)	(0.468- 3.238)	
Mixed ethnicity	256 (64.65%)	Ref.			
<b>Income</b>					
Low	249 (62.88%)	0.620 (0.134- 2.876)	0.515 (0.132- 2.006)	0.713 (0.176- 2.885)	0.399
Middle	130 (32.83%)	0.825 (0.171- 3.991)	0.180 (0.026- 1.225)	0.500 (0.073- 3.435)	
High	17 (4.29%)	Ref.			
<b>Occupation status</b>					
Occupied	110 (27.78%)	0.736 (0.410- 1.323)	1.476 (0.846- 2.575)	0.654 (0.247- 1.733)	0.062
Not occupied	286 (72.22%)	Ref.			
<b>Family history of breast cancer</b>					
No	328 (82.83%)	1.218 (0.508- 2.918)	0.424* (0.215- 0.835)	0.582 (0.169- 1.997)	0.008
Yes	68 (17.17%)	Ref.			

\*P ≤ 0.05

Furthermore, women with no family history of breast cancer had a 2.4 (OR = 0.424; 95%CI: 0.215- 0.835) times reduced chance of participation in annual MS compared to women with family history (Table 2). Occupation status had borderline significance ( $p = 0.061$ ), whereas heterogeneous data distribution of marital status, income and ethnic origin were insignificant (Table 2).

Women with low absolute perceived risk had a twofold, (OR = 0.493; 95%CI: 0.243- 1.000) decreased chance of participating annually in an MS program (Table 3). If absolute perceived risk was compared with real risk, obtained from the Gail model of risk estimation,



then accurate perception of risk and even its overestimation, were negatively correlated with participation in MS (Table 3): Values of accurate risk perception and overestimation of numeric and comparative perceived risk, respectively, indicated a negative correlation with participation in MS ( $p = 0.021$ ;  $p = 0.017$ ; Table 3).

**Table 3.** Risk perception (N = 396) and adherence to a mammography - screening program. Data of women who underwent mammography (N = 288) compared to those who never underwent mammography (N = 108) are presented as odds ratios (OR) and confidence intervals (CI). Perception of absolute risk was dependent on family history of breast cancer. OR and CI for low absolute risk perception are shown for women with family history, compared to those ones without it.

		<b>Sometimes (N= 99)</b>	<b>Each year (N= 168)</b>	<b>Each second year (N= 21)</b>	<b>P</b>
		<b>OD (95%CI)</b>	<b>OD (95%CI)</b>	<b>OD (95%CI)</b>	
<b>Absolute perceived risk</b>					
Low	340 (85.86%)	1.250 (0.503- 3.108)	0.493* (0.243- 1.000)	2.500 (0.307- 20.336)	0.020
High	56 (14.14%)	Ref.			
<b>Numeric perceived risk</b>					
Overestimation	225 (56.82%)	0.216* (0.056-0.827)	0.352 (0.097-1.271)	0.117* (0.023-0.603)	0.021
Accurate	140 (35.35%)	0.315 (0.081-1.225)	0.256* (0.069-0.953)	0.128* (0.023-0.700)	
Underestimation	31 (7.83%)	Ref.			
<b>Comparative perceived risk</b>					

Overestimation	39 (9.85%)	0.444 (0.096- 2.057)	0.406 (0.109 -1.516)	0.089 (0.080- 1.029)	0.017
Accurate	317 (80.05%)	0.437 (0.127- 1.503)	0.227* (0.076- 0.678)	0.126* (0.030- 0.524)	
Underestimation	40 (10.10%)	Ref.			
<b>Family history</b>					
		<b>Low absolute perceived risk</b>			
No	328 (82.83%)	7.500 (4.038-13.929)			0.000
Yes	68 (17.17%)	Ref.			

\* $P \leq 0.05$

Among women aged 50 years and older, no age-dependent differences of MS performance were detected ( $p = 0.545$ ). Because participation in MS among women aged 40 to 49 years and women aged  $\geq 50$  showed remarkable differences (Table 2), data were stratified into two groups. Age-dependent stratification revealed that perceived absolute risk and family history had a stronger impact among women who were between 40 and 49 years old (Table 4): In this age group, regular participation in MS was about 2.7-fold (OR = 0.366; 95%CI:0.144- 0.934) and 4.4-fold decreased (OR= 0.228; 95%CI: 0.088- 0.587) for women with low absolute perceived risk and no family history, respectively, when compared to women with high perceived risk and positive family history (Table 4). For women aged  $\geq 50$  years, by contrast, these effects were less prominent and were not significant ( $p = 0.556$ ;  $p = 0.302$ , Table 4).

**Table 4.** Age dependent effect of perceived absolute risk and family history of breast cancer on participation of mammography - screening. Odds ratios (OR) and confidence intervals (CI) are shown for women aged 40 - 49 years (N = 167) and  $\geq 50$  years (N = 229), respectively. In both age groups perception of low absolute risk was dependent on breast cancer family history. Mammography never undertaken, and perception of high absolute risk, served as reference groups.

<b>Mammography screening</b>
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	Never		Sometimes		Each year or second year		P
	N	%	N	%	N	%	
<b>Age group</b>							
40- 49 years	75	69.44%	31	31.31%	61	32.28%	0.000
≥ 50 years	33	30.56%	68	68.69%	128	67.72%	
	<b>N (%)</b>		<b>OD (95%CI)</b>		<b>OD (95%CI)</b>		
	<b>Perceived absolute risk</b>						
40- 49 years	Low	142 (85.03%)	1.731 (0.346- 8.658)		0.366* (0.144- 0.934)		0.027
≥ 50 years	Low	198 (86.46%)	1.202 (0.326- 4.435)		0.745 (0.236- 2.350)		0.556
	High		Ref.				
	<b>Family history of breast cancer</b>						
40- 49 years	No	142 (85.03%)	1.493 (0.292- 7.622)		0.228* (0.088- 0.587)		0.000
≥ 50 years	No	189 (82.53%)	1.667 (0.527- 5.273)		0.872 (0.326- 2.332)		0.302
	Yes		Ref.				
	<b>Low perceived absolute risk</b>						
	<b>Family history of breast cancer</b>						
40- 49 years	No	142 (85.03%)	5.777* (2.261- 14.764)				0.000

≥ 50 years	No	189 (82.53%)	9.239* (4.028- 21.194)	0.000
	Yes		Ref.	

\* $p < 0.05$

Perception of absolute risk was dependent on family history, and this effect was more prominent among women aged  $\geq 50$  years (Table 4): Women aged 40 to 49 years and  $\geq 50$  years with no family history, had a 5.777 (95%CI: 2.261- 14.764) and 9.239 (95%CI: 4.028- 21.194) higher chance, respectively, to have low absolute risk perception when compared to women with family history (Table 4).

Overestimation of numeric risk was associated with having family history of breast cancer: Women without family history, aged 40 to 49 years and  $\geq 50$  years, had a 3.13 (OR = 0.320; 95%CI: 0.122- 0.837;  $p = 0.013$ ) and 11.24 (OR= 0.089; 95%CI:0.012- 0.674;  $p = 0.000$ ) times lower chance, respectively, to overestimate numeric risk compared to women with family history. Furthermore, women aged  $\geq 50$  years, who overestimated comparative risk, had an about 2.9 (OR = 0.347; 95%CI: 0.107- 1.130;  $p = 0.000$ ) times lower chance to have no family history. In the case of women aged 40– 49 years, there was a borderline significant association between comparative risk and family history ( $p = 0.063$ ). Women with accurate (83.83%) comparative risk perception had a 3.639 (95%CI: 0.972-13.626) times higher chance to have no family history, compared with women who underestimated comparative risk.

Regression modeling was performed to identify independent variables. Variables of univariate analysis with  $p < 0.2$  were used for modeling. Women aged 40 - 49 years with low perceived absolute risk underwent regular (annual or biannual) MS 2.7 (OR = 0.377; 95%CI: 0.143-0.989) times less often than did women with high perception of absolute risk (Table 5). In this model, women with low educational level also underwent regular MS 2.7 (OR = 0.368; 95%CI: 0.100-1.360) times less often than did women with high educational level (Table 5). In a second model, perceived absolute risk was substituted with family history of breast cancer ( $p = 0.002$ ): Women without family history underwent regular MS 4.2 (OR = 0.241; 95%CI: 0.091-0.639) times less often than did women with family history. In the second model, education had borderline significance ( $p = 0.061$ ). Women with low educational level

underwent regular MS 2.9 (OR= 0.351; 95%CI:0.090- 1.304) times less often than did women with high educational level.

**Table 5.** Odds ratios (OR) and confidence intervals (CI) in a model of nominal logistic regression, representing women aged 40 - 49 years (N = 167) who underwent mammography (N = 92), compared with women who did not (N = 75).

		<b>Sometimes (N= 31)</b>	<b>Each year or each second year (N= 61)</b>	<b>P</b>
	<b>N (%)</b>	<b>OD (95%CI)</b>	<b>OD (95%CI)</b>	
<b>Education</b>				
Low	87 (52.10%)	2.116 (0.231- 19.365)	0.368 (0.100- 1.360)	0.040
Middle	68 (40.72%)	2.374 (0.246- 22.858)	1.025 (0.276- 3.813)	
High	12 (7.18%)	Ref.		
<b>Perceived absolute risk</b>				
Low	139 (83.23%)	1.782 (0.356- 8.930)	0.377* (0.143- 0.989)	0.037
High	28 (16.77%)	Ref.		

\*p < 0.05;

For women aged  $\geq 50$  years by contrast, family history and perceived absolute risk were not associated with heterogeneous distribution of data ( $p = 0.302$ ;  $p = 0.407$ ). Modeling revealed that, in this age group, education was the only variable that remained significant ( $p = 0.021$ ): Compared to women with high educational level, those with low educational level underwent annual and biannual MS 3.5 (OR = 0.289; 95%CI: 0.035-2.363) and 23.3 (OR = 0.043; 95%CI: 0.004-0.420) times less often, respectively.

## Discussion

To the best of our knowledge, this is the first Brazilian study to analyze women's risk perception and its impact on MS behavior. Perception of low absolute risk was positively associated with non-participation in MS. Similarly, a recent study associated perceived high absolute risk as a predictor of MS participation (Labrie et al., 2017). Our results suggested that most women had an accurate (80.05%) estimation of comparative risk, and an overestimated (56.82%) numeric risk. Accurate and overestimated perceived numeric and comparative risk all tended to be inversely associated with participation in MS. This was surprising, as most previous studies did not reveal any positive or negative association of numeric and comparative risk perception with participation in MS (Graves et al., 2005; Ceber et al. 2006; Walker et al., 2014; Khoshrashev et al. 2016). Labrie et al. (2017) suggested that fear of breast cancer increased the perception of personal risk among women aged 30 - 49 years. A recent study performed in Malta suggested that non-adherence to organized MS programs was associated with fear (Marmarà *et al.*, 2017). Similarly, women in our present study who feared the disease might have tended to overestimate numeric risk, estimate comparative risk mainly accurate and fear could also lead to avoidance of MS. Notably, more than 90% of interviewed women knew that MS cannot prevent breast cancer, however more than a half of all 396 women denied that it can lower the risk of dying from breast cancer. This indicated that most women also did not consider MS to be beneficial.

Brazilian women aged 40 - 49 years are exposed to conflicting public recommendations regarding the benefit of MS. As the ministry of health recommends an age threshold of 50 years, it was not surprising that women aged 40 - 49 generally had a lower participation rates in MS, compared with those of older women. Interestingly, family history of breast cancer and educational level had different effects in both age groups.

Our data suggest that women with lower educational levels tended to undergo MS less often. In recent studies from various countries, high educational level was one of the most important predictors of adherence to MS (Gang et al., 2013; Elias et al., 2017; Narayan et al., 2017; Sandoval et al., 2017). In agreement with our results, several Brazilian studies reported a greater chance of adherence to MS among women with higher educational levels (Schlowitz et al., 2005; Oliveira et al., 2011; Silva et al., 2011; Vieira et al., 2015; Borges et al., 2016; Cavalcante et al., 2017). In a recent study also performed in the Northeast region of Brazil, educational level did not have a significant impact on regular participation; instead, high

income was positively associated with MS participation (Freitas et al., 2016<sup>1</sup>). This could mean that the impact of income and educational levels may vary within Brazil, depending on regional differences. The study of Freitas and colleagues (2016<sup>1</sup>) was performed in a smaller town where differences of income may be more prominent than educational differences. A previous Brazilian study identified also high income as an independent variable of adherence on MS (Amorim et al., 2008). The nationwide adherence study by Narayan and colleagues (2017) in the US, identified both high income and educational level as important predictors of adherence to MS.

Family history was the second important variable in our study. Women without family history had a reduced chance of participation in regular MS. This result agrees with previous Brazilian studies that reported lower participation in MS among women without family history of cancer (Scowitz et al., 2015; Freitas et al., 2016<sup>1</sup>). Similarly, studies from Iran and the US reported a positive association between family history of breast cancer and adherence to MS programs (Haber et al., 2012; Khoshravesh et al., 2016).

Our data suggest that, in both age groups, perception of absolute risk was dependent on family history of breast cancer: In women aged  $\geq 50$  years this effect was more prominent than for women aged 40 - 49 years. In a Turkish study, perception of absolute risk did not depend on family history (Kartal et al., 2014). By contrast, similar to our results, other studies performed in Turkey, Canada and the US revealed a positive association between family history of breast cancer and numeric and comparative risk perception (Haber et al., 2012; Walker et al., 2014; Yueksel et al., 2017). In the present study, during modeling of data, the family history and perception of absolute risk behaved exclusively and interchangeably for women aged 40 - 49 years. Furthermore, only among women aged 40 - 49 years, risk perception and education both contributed independent variables to the regression model. In a second model, regular participation in MS was dependent on family history in women aged 40 - 49 years, whereas education had borderline significance. In the case of women aged  $\geq 50$  years, by contrast, education was the only significant variable that determined prevention behavior. These results suggested that in women aged 40 - 49 years, risk perception and family history had a stronger influence on screening behavior than it did for women aged  $\geq 50$  years. Due to the uncertainty of the possible benefit of MS, the decision of women aged 40 - 49 years to participate may be more strongly influenced by personal risk perception and family history.

Our study had several limitations: Participants were randomly selected. However, a selection bias that favors a certain socioeconomic background and a defined risk perception of breast cancer cannot be excluded. Perceived risk was determined as a categorical, rather than as a continuous variable. This may have obscured the power of the study to detect more detailed associations with MS behavior. Results of our study cannot necessarily be extrapolated to other regions of the country, particularly as income was an important variable in several previous Brazilian studies. For women aged  $\geq 50$  years, only educational level was identified as a variable with heterogeneous distribution. Low resolution of data may have been linked to small sample size. Finally, the study did not elucidate why women with accurate perceived comparative risk and overestimation of numeric risk participated less often in MS, compared with women who underestimated risk.

## **Conclusions**

Educational level and family history, in combination with perception of absolute risk, were the most important variables explaining heterogeneity of women's mammography screening behavior. Educational level and family history, combined with perception of absolute risk, were decisive variables for women aged 40 - 49 years. In the case of women aged  $\geq 50$  years, both perception and family history played an insignificant role, whereas educational level was the only independent variable. Results suggest that public MS programs should have a focus on women with low educational levels. Future studies should elucidate why many women who overestimate risk, or who estimate it accurately, do not participate in MS. Fear could be an important psychological variable that determines both overestimation and avoidance behavior.

It might be desirable for health authorities to provide more detail regarding the benefits and limits of MS. More than a half of women did not understand that MS is capable of reducing the risk of death from breast cancer. Conflicting opinions regarding its benefit are probably confusing women aged 40 - 49 years. Prospective Brazilian studies regarding the benefit of MS are lacking, and it is to date unclear whether MS can decrease mortality rate of breast cancer among women aged 40 - 49 years.

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## 4.3 ARTIGO C

**DIFFERENTIAL IMPACT OF EDUCATION LEVEL, OCCUPATION AND  
MARITAL STATUS ON PERFORMANCE OF THE PAPANICOLAOU TEST  
AMONG WOMEN FROM DISTINCT BRAZILIAN REGIONS**

Saionara Açucena Vieira Alves<sup>1</sup>, Albert Schiavetto de Souza<sup>2</sup>, Mathias Weller<sup>1</sup>, Adriane Pires Batiston<sup>3</sup>

<sup>1</sup>Programa de pós-graduação em Saúde Pública. Universidade Estadual da Paraíba (UEPB). Campina Grande- Paraíba, Brasil

<sup>2</sup>Instituto de Biociências. Universidade Federal de Mato Grosso do Sul (UFMS). Campo Grande- Mato Grosso do Sul, Brasil

<sup>3</sup>Instituto Integrado de Saúde. Universidade Federal de Mato Grosso do Sul (UFMS). Campo Grande- Mato Grosso do Sul, Brasil

Corresponding author

Prof. Dr. Adriane Pires Batiston

Instituto Integrado de Saúde

Avenida Costa e Silva s/n

Bairro Universitário – CEP:79070-900

Campo Grande – MS

Brasil

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There is no conflict of interest

## Abstract

*Background:* In Brazil little is known about underlying causes of differences among populations regarding socio- economic variables that affect women's screening behavior to prevent cervical cancer. Present study aimed on socio- economic variables that affect women's performance of the Papanicolaou test comparing two distinct Brazilian populations.

*Methods:* Data of 599 and 338 women about performance of the Papanicolaou test and socio- economic variables were sampled in Mato Grosso do Sul (MS), in the Central East region and in Paraíba (PB), in the Northeast region of Brazil. To identify independent variables for both groups of data, nominal logistic regression modeling was performed.

*Results:* Of all 599 and 338 interviewed women from MS and PB, 116 (19.37%), respectively 94 (27.81%) had never performed the Papanicolaou test within the last three years ( $p = 0.025$ ). Low educational level was a characteristic of 570 (95.16%) and 203 (60.06%) of women from MS and PB ( $p = 0.000$ ). Women in PB, who had a low educational level and were unemployed had a 2.96 (OR= 0.338; 95%CI:0.121 - 0.939) and 2.40 (OR= 0.416; 95%CI:0.199 - 0.869) times lower chance to have performed the Papanicolaou test  $\geq$  three times, respectively, one time within the last three years ( $p = 0.029$ ;  $p = 0.014$ ). The chance of women in MS who did not live in a stable union to have performed the test  $\geq$  three times was 1.79 (OR= 0.560; 95%CI: 0.348 – 0.901) lower compared to women who lived in a stable union ( $p = 0.039$ ).

*Conclusions:* High educational level and employment, respectively, living in a stable union, were positively associated with performance of the Papanicolaou test among women in PB and MS. Despite of having predominantly a low educational level, women in MS performed the Papanicolaou test more frequently than those ones in PB.

**Key- Words:** Cervical cancer; Prevention behavior; Papanicolaou test

## Introduction

In the year 2012 cervical cancer was diagnosed about 528.000 times among women and contributed to about 266.000 death cases of cancer (Ferlay et al., 2015). It is the fourth most common cancer among women worldwide and about 85.0% of incidence, respectively, 87.0% of all death cases, occur in developing countries (Finocchiaro-Kessler et al., 2016; Franco et al. 2017). In Brazil, the largest Latin American country, for the year 2017 were expected 16.340 new cases of cervical cancer (INCA, 2017). With a mean of 19.49 and 20.72 new cases per 100.000 women, incidence in the Northeast, respectively, Central East region of Brazil was higher compared to 15.85 new cases in the whole country (INCA, 2017). In both regions death rates between 2011 and 2015 were also higher than the average of 5.79 per 100.000 women for the whole country (INCA, 2015): In the Northeast and Central East region of Brazil cervical cancer led to 6.41 and 6.61 death cases per 100.000 women (INCA, 2015).

Since the decade of the 40<sup>th</sup> when first results about smear tests were published, the Papanicolaou test, or Pap smear test, has been established as the gold standard for early detection of cervical cancer (Vilos, 1998). Pap smear tests can help to detect pre- malignant states of cervical cancer, resulting in a higher chance of cure and lower mortality rates (Chang et al., 2017; Finocchiaro-Kessler et al., 2016; Labeit et al., 2013). As performance of this ambulatory low- cost test is simple and fast, it has been recommended for programs of cervical cancer screening in many countries (Fernandes et al. 2009, Soneji,Fukui, 2013; Ricardo-Rodrigues 2015). Several previous studies about adherence on public cervical cancer screening programs focused on socio-economic variables like women's income, education level, health insurance status and also the effect of medical recommendations (Dinshaw et al., 2007; Wang et al., 2010; Parke et al., 2011; McFarland, 2013; Soneji and Fukui, 2013; Kristensson et al., 2014; Menvielle et al., 2014; Roman et al., 2014; Mermedo- Carrasco et al., 2015; Ricardo- Rodrigues et al., 2015; Rifai and Nakamura, 2015; Chang et al., 2016; Farzaneh et al., 2017; Kelly et al., 2017; Salem et al., 2017).

Brazil does not have an organized public program of cervical cancer screening with invitation and instead, women who visit public health service centers are invited opportunistically for screening (Derchain et al., 2016; Franco et al. 2017). The Brazilian ministry of health recommends the Pap smear test for about 55 million women aged between 25 and 64 years (INCA, 2017). Regarding the time interval of screening, two initial annual



tests and after repeated negative results a new test in each third year is recommended (INCA, 2017).

Several previous Brazilian studies focused on public databases without explaining causal factors of differences between distinct populations (Novaes et al., 2006; Correa et al., 2012; Martínez-Mesa et al., 2013; Amorim and Barros, 2014; Filha et al., 2016; Barbosa, 2017). Other studies focused on single local populations of different regions in Brazil (Muller et al., 2008; Fernandes et al., 2009; Albuquerque et al., 2009; Gasperin et al. 2011; Albuquerque et al., 2014; Oliveira et al., 2014). All together, these studies established, that education, occupation status and civil state are important socio- economic variables that affect women's cervical cancer screening behavior. There are no studies that analyzed underlying causal differences between populations regarding the impact of these variables on Pap smear test performance.

High incidence and mortality rates in the Northeast and Central East region underline the need to understand better socio- economic variables that affect women's screening behavior. As the Pap smear test can help to reduce burden of disease it is important to understand reasons of women's screening behavior and their avoidance as a basis for better guidance of public health campaigns. We addressed the question of how variables affect women's Pap smear test performance in two different populations. The study aimed on elucidation of possible differences regarding screening behavior of women and identification of underlying socio- demographic variables in both populations.

## **Materials and Methods**

### *Ethic approval*

Both sampling protocols of this study were reviewed and approved by the Brazilian National Research Ethics Committee (CAAE Plataforma Brasil: 63089416.0.0000.5187 and CEP/UFMS n° 1719). Informed verbal consent was obtained from each participant to participate in the study.

### *Location of the study*

Data of the present transversal study were obtained from Campo Grande, the capital of the state Mato Grosso do Sul (MS) in the Central East region and from Campina Grande, the second largest urban center of the state Paraíba (PB) in the Brazilian Northeast region. The air travel distance between Campo Grande and Campina Grande is 2.496 km (1.551 miles).

Campo Grande (MS) has 786.797 inhabitants and is situated in the inland about 880 km away from the closest point at the Atlantic coast- line (IGBE, 2010). The Human Developmental Index is 0.784, the per head income is R\$1.089,37 (~US\$339,00.-) and Family Health Strategy (“Estratégia de Saúde da Família”), a priority project for the organization of primary health care in Brazil, covers potentially 34.35% of the whole population (Ministério da Saúde, 2017). Campina Grande (PB) has 385.213 inhabitants and is situated in the backland 125 km far away from João Pessoa, the capital of PB at the Atlantic coast. The Human Developmental Index is 0.720 and the per head income is R\$630,03 (~US\$196,00.-). The Family Health Strategy covers potentially 83.47% of the whole population (Ministério da Saúde, 2017).

### *Study population*

Women were eligible for the study if they did not have any type of cervical, ovarian or breast cancer. Women aged 40 and older receive also the official recommendation to participate on the public mammography- screening program (INCA, 2017). Therefore, present study focused exclusively on women aged between 40 and 64 years.

In MS data were obtained from 599 women, who used exclusively public health care providers. Women were identified in registers of 29 Family Health Strategy Units and visited at home for data sampling by one of the authors. Data sampling was performed between January and December 2013. In PB data were obtained from 338 women. Of these 338 women 104 (26.3%) used public and private health care providers. Data were obtained by one of the authors in waiting rooms of two public health care centers. There was no difference between data of women from both health care centers. Data sampling was performed between March and October 2017.

### *Questionnaires and measures*

In both cases, MS and PB, data sampling was performed by interviews. In MS a structured questionnaire was applied. Interviews performed in PB were based on a modified structured questionnaire developed in previous studies (<sup>1</sup>Freitas and Weller, 2016; <sup>2</sup>Freitas and Weller, 2016).

Both questionnaires were subdivided into the following sections: 1. Socio- economic characteristics; 2. Reproductive and health characteristics, including information regarding previous biopsies, breast, ovarian and cervical cancer of the participant and first-degree relatives; 3. Adherence on screening programs including clinical breast examination, mammography and the Pap smear test; 4. Information about the use of health services.

Educational levels were defined as follows: Elementary school with duration nine years was defined as “Low”; Middle school with duration of 12 years was defined as “middle”. Higher educational levels were defined as “high”. Income was only sampled in the case of data from PB, but not in MS. Income was defined as minimum wage and multiple values of the minimum. In 2017, the minimum wage was R\$937.00/month. In December 2017, this value was equivalent to about US\$290.00/month. The following definitions were applied:  $\leq 1$  x minimum wage for low income;  $> 1$  x minimum wage and  $\leq 2$  x minimum wage for intermediate income;  $> 2$  x minimum wage for high income. Ethnic origin was based on self- reporting by interviewed women.

Women were asked about their actual adherence to recommendations by the public screening program. If asked about Pap smear test performance the following options were distinguished: Never, sometimes, each year and each second year. Participation on CBE screening in each or each second year was defined as regular performance. Participation on mammography screening was defined in the same way.

### *Statistical analysis*

Pearson’s Chi-Square ( $\chi^2$ ) test was applied to compare categorized variables. T-test was applied to compare continuous parametric variables. Results of multinomial logistic regression were presented as adjusted odd ratios (OR), 95% confidence interval (95%CI) and P-value. P values of regression analyses were calculated using likelihood ratio tests (PLRT) for each independent variable. Significant variables of univariate regression analysis were used for regression modeling: Variables with significance level less than 0.2 in the univariate analysis were entered into the model. Then, variables with significance level less than 0.05 were kept in the

model. Backward selection was used when significant variables were selected. The final model was tested for fitness using the likelihood ratio test. All statistical analysis was performed using SPSS STATISTICS™ software (SPSS; IBM company; version 24).

## Results

Comparison of data revealed differences between women from MS and PB (Table 1): The mean age of women from PB and MS was 51.08 ( $s = 8.89$ ) and 52.86 years, respectively ( $p = 0.003$ ; Table 1). Of all 599 women from MS, 230 (38.40%) were aged between 40 and 49 years, whereas 167 (49.41%) out of 338 women from PB belonged to this age category ( $p = 0.005$ ; Table 1). High education level, defined as schooling  $> 12$  years, was only found among 30 (8.88%) women from PB, whereas in MS, 570 (95.16%) and 29 (4.84%) women, exclusively had low and intermediate educational levels, respectively ( $p = 0.000$ ; Table 1). A positive occupation status was identified for 137 (22.87%) women from MS and 107 (35.47%) from PB ( $p = 0.002$ ; Table 1). Finally, women from MS performed more often the Pap smear test, if compared to women from PB (Table 1): Information obtained from women in MS revealed that 116 (19.37%) had never performed the Pap smear test, whereas in PB 94 (27.81%) women had never performed it ( $p = 0.025$ ; Table 1). No significant differences were found for marital status and ethnic origin between women from MS and PB ( $p = 0.234$ ;  $p = 0.059$ ; Table 1).

**Table 1.** Socio-economic variables, performance of the Papanicolaou test and their distribution among women from the states of Mato Grosso do Sul (MS) and Paraíba (PB).

	Mato Grosso do Sul (N= 599)		Paraíba (N= 338)		P
<b>Age</b>					
Mean	52.86 ( $s = 8.45$ )		51.08 ( $s = 8.89$ )		0.003
	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>	
40 - 49 years	230	38.40%	167	49.41%	0.005
50 - 59 years	217	36.23%	102	30.18%	

≥ 60 years	152	25.37%	69	20.41%	
<b>Education level</b>					
Low	570	95.16%%	203	60.06%	0.000
Intermediate	29	4.84%%	105	31.06%	
High	0		30	8.88%	
<b>Occupation status</b>					
Employed	137	22.87%	107	35.47%	0.002
Not employed	462	77.13%	231	64.53%	
<b>Stable relationship</b>					
Yes	376	62.77%	221	65.39%	0.234
No	223	37.23%	117	34.61%	
<b>Ethnic origin</b>					
European	236	39.40%	115	34.02%	0.059
Mixed ethnic background	363	60.60%	223	65.98%	
<b>Performance of Papanicolaou test within the last three years</b>					
Never	116	19.37%	94	27.81%	0.025
One time	110	18.36%	58	17.16%	
Two times	130	21.70%	60	17.75%	
≥ three times	243	40.57%	126	37.28%	

As data from MS and PB were different they were analyzed separately to compare them among each other. Age specific differences of Pap smear test performance were found in both groups of women from MS and PB ( $p = 0.001$ ;  $p = 0.000$ ; Table 2): Compared to women

aged between 60 and 69 years, those ones aged from 40 to 49 years, had a 3.438 (95%CI: 1.952 - 6.057) and 3.543 (95%CI:1.658 - 7.627) higher performance rate of the Pap smear test  $\geq$  three times within the last three years (Table 2). Similar, among women from MS and PB, aged from 50 to 59 years, the performance rate of the Pap smear test  $\geq$  three times, was 2.961 (95%CI: 1.685 - 5.202) and 3.556 (95%CI:1.658 - 7.627) higher, if compared to women aged between 60 and 69 years (Table 2). Additionally, the chance of women in MS, aged from 40 to 49 and 50 to 59 years, to have performed the Pap smear test two times within the last three years, were 2.857 (95%CI:1.514 - 5.393) and 2.302 (95%CI:1.215 - 4.363) times higher, if compared to women aged from 60 to 69 years (Table 2).

**Table 2.** The impact of single socio-economic variables on Papanicolaou test performance within the last three years, for women from the Paraíba state (PB; N = 338) and Mato Grosso do Sul state (MS; N = 599), respectively. Data are represented as odds ratios (OR) and confidence intervals (95%CI). Non-performance of Papanicolaou test served as reference.

		One time		Two times		$\geq$ three times		
		OR	95%CI	OR	95%CI	OR	95%CI	P
<b>Age (years)</b>								
40 - 49	<b>MS</b>	1.727	0.905 - 3.296	2.857*	1.514 - 5.393	3.438*	1.952 - 6.057	0.001
50 - 59		1.714	0.907 - 3.242	2.302*	1.215 - 4.363	2.961*	1.685 - 5.202	
40 - 49	<b>PB</b>	5.790*	2.161 - 15.513	1.950	0.896 - 4.248	3.543*	1.709 - 7.346	0.000
50 - 59		2.765	0.935 - 8.138	1.027	0.417 - 2.532	3.556*	1.658 - 7.627	
$\geq 60$		Ref.						
<b>Education level</b>								
Low	<b>MS</b>	1.945	0.474 - 7.978	1.127	0.353 - 3.597	0.892	0.334 - 2.384	0.632
Intermediate		Ref.						
Low	<b>PB</b>	3.088	0.358 - 26.669	0.471	0.141 - 1.573	0.353*	0.131 - 0.949	0.011
Intermediate		6.600	0.730 - 59.679	1.100	0.305 - 3.970	0.724	0.247 - 2.116	

High		Ref.						
<b>Occupation status</b>								
Not employed	<b>MS</b>	1.986*	1.052 - 3.750	1.444	0.813 - 2.566	1.417	0.860 - 2.337	0.196
	<b>PB</b>	0.330*	0.163 - 0.671	0.497	0.243 - 1.016	0.692	0.373 - 1.284	0.014
Employed		Ref.						
<b>Stable relationship</b>								
No	<b>MS</b>	0.891	0.528 - 1.504	0.649	0.390 - 1.081	0.458*	0.290 - 0.723	0.002
	<b>PB</b>	0.587	0.289 - 1.193	0.830	0.423 - 1.626	0.798	0.459 - 1.389	0.522
Yes		Ref.						
<b>Ethnic origin</b>								
European ethnic origin	<b>MS</b>	1.173	0.680 - 2.025	1.692	1.009 - 2.838	1.289	0.811 - 2.049	0.230
	<b>PB</b>	1.421	0.693 - 2.914	1.689	0.838 - 3.402	1.919	1.069 - 3.445	0.161
Mixed origin		Ref.						
<b>Income</b>								
Low	<b>PB</b>	0.537	0.073 - 3.976	0.291	0.051 - 1.663	0.383	0.075 - 1.962	0.626
Middle		0.800	0.103 - 6.191	0.340	0.056 - 2.069	0.573	0.107 - 3.059	
High		Ref.						

\* $p \leq 0.050$

Data of education level and occupation status were heterogeneously distributed for women from PB ( $p = 0.011$ ;  $p = 0.014$ ), but not for those ones from MS (Table 2): Performance of the Pap smear test  $\geq$  three times, was 2.83 (OR = 0.353; 95%CI:0.131 - 0.949) times lower among women with low educational level compared to women with high education level (Table 2). Women who were not occupied performed it once within three years, 3.03 (OR = 0.330; 95%CI:0.163 - 0.671) times less often compared to women who were occupied (Table 2). Marital status, was exclusively a significant variable for data

obtained from women in MS ( $p = 0.002$ ), but not for those ones in PB (Table 2): Women without a stable union performed the Pap smear test  $\geq$  three times within the period of three years, about 2.18 (OR = 0.458; 95%CI:0.290 - 0.723) times less often compared to women who lived in a stable union (Table 2).

In an age adjusted regression model, education level and occupation status remained their heterogeneous distribution among data obtained from women in PB ( $p = 0.029$ ;  $p = 0.014$ ), whereas for women from MS, marital status remained the unique significant variable ( $p = 0.039$ ; Table 3): In this model women from PB, with low educational level and no occupation performed the Pap smear test  $\geq$  three times and once within three years, 2.96 (OR = 0.338; 95%CI:0.121 - 0.939) and 2.40 (OR = 0.416; 95%CI:0.199 - 0.869) times less often, compared to women with high educational level and positive occupation status, respectively (Table 3). The chance of women in MS, who did not live in a stable union, to perform the Pap smear test  $\geq$  three times, was 1.79 (OR = 0.560; 95%CI: 0.348 – 0.901) times lower, if compared to women who lived in a stable union (Table 3).

**Table 3.** Odds ratios (OR) and confidence intervals (95%CI) in age-adjusted models ( $p = 0.000$ ) of logistic regression represented for women from Paraíba state (PB; N = 338) and Mato Grosso do Sul state (MS; N = 599), who performed Papanicolaou test within three years. Non-performance of Papanicolaou test served as reference.

		One time		Two times		$\geq$ three times		
		OR	95%CI	OR	95%CI	OR	95%CI	P
<b>Stable relationship</b>								
No	<b>MS</b>	0.996	0.579 - 1.711	0.786	0.463 – 1.334	0.560*	0.348 – 0.901	0.039
Yes		Ref.						
<b>Education level</b>								
Low	<b>PB</b>	3.554	0.399 - 31.694	0.508	0.150 - 1.727	0.338*	0.121 - 0.939	0.029
Middle		5.311	0.568 - 49.698	1.016	0.274 - 3.770	0.572	0.188 - 1.742	
High		Ref.						



Occupation status								
Not employed	PB	0.416*	0.199 - 0.869	0.583	0.277 - 1.228	0.952	0.497 - 1.823	0.014
Employed		Ref.						

\* $p \leq 0.050$

## Discussion

Results of the present study indicated that high educational level, employment and living in a stable union were independent variables that increased the chance of Pap smear test performance among women in PB, respectively MS. If compared to women from MS, those one in PB had a younger mean age, were more often employed, lived more often in a stable union and had performed less often the Pap smear test during the last three years. The most different variable among both groups of women was education: More than 95% of women in MS were characterized by low educational level and there was nobody in this group with high educational level, whereas in PB about 60.0% and 40.0% of women had a low, respectively, intermediate or high educational level. This indicated that data regarding education, were more homogeneously distributed among women from MS compared to those ones from PB.

In literature education is one of the most often identified independent variables: Many previous studies indicated a positive association of high educational level with performance of Pap smear test (Wang et al., 2010; Park et al., 2011; McFarland, 2013; Soneji and Fukui, 2013; Kristensson et al., 2014; Menvielle et al., 2014; Mermedo- Carrasco et al., 2015; Ricardo- Rodrigues et al., 2015; Chang et al., 2016; Farzaneh et al., 2017; Kelly et al., 2017). Two recent studies from Jordan and Saudi Arabia and a former study from India did not reveal an association between education and Pap smear test performance (Dinshaw et al., 2007; Rifai and Nakamura, 2015; Salem et al., 2017). An increased chance of Pap smear performance for women with higher educational levels was also reported by most authors of Brazilian studies (Novaes et al., 2006; Muller et al., 2008; Albuquerque et al., 2009; Fernandes et al., 2009; Gasperin et al., 2011; Correa et al., 2012; Martínez- Mesa et al., 2013; Oliveira et al., 2014; Filha et al., 2016; Barbosa, 2017). However, a study including 6750 households in the state of São Paulo and a study of 493 women from Piauí revealed that

education was not significantly associated with performance of the Pap smear test (Albuquerque et al., 2014; Amorim and Barros, 2014). In the present study women from PB with low educational level, tended to have performed less often the Pap smear test two or more times during the last three years, if compared to women with high educational level. Paradoxically, in MS much more women had low educational level, but performed Pap smear test more often than in PB. In MS other variables than education determined the frequency of Pap smear test performance. Despite its significant heterogeneous distribution among women from PB, the variable education did not determine absolute frequency of Pap smear test performance of Brazilian women in this study.

Women from PB who were not employed tended to perform the Pap smear test less frequently compared to employed women. This is in agreement with previous studies performed in Botswana, Colombia, India and France, that revealed an increased chance of Pap smear test performance by employed women (Dinshaw et al., 2007; McFarland, 2013; Menvielle et al., 2014; Mermedo- Carrasco et al., 2015; Kelly et al., 2017). A Chinese study in contrast, did not indicate a significant association between women's occupation status and lifetime Pap smear test performance (Wang et al., 2010). Furthermore, in the study from Rifai and Nakamura (2015), performed in Jordan, unemployed women performed lifetime Pap smear test more often than employed women. In Brazil the few studies that included occupation status led to different results: Similar to present results, studies based on data from distinct Brazilian regions and from the state Rio Grande do Norte, Northeast Brazil, revealed that employed women had a higher chance of Pap smear test performance (Novaes et al., 2006; Fernandes et al., 2009). Other previous studies in contrast, performed in the states of Santa Catherina, South region and Pernambuco, Northeast region, did not indicate an effect of occupation status on frequency of Pap smear test performance (Albuquerque et al., 2009; Gasperin et al., 2011).

Present data indicated that women from MS, who lived in a stable union, performed Pap smear test more frequently compared to women who did not live in a stable union. In the case of data from PB the OR's had the same tendency in univariate analysis, but differences remained insignificant. In agreement with results for data from MS, most studies that included civil state as a socio- economic variable, revealed a positive association between living in a stable union and Pap smear test performance (Dinshaw et al., 2007; Wang et al., 2010; Park et al., 2011; McFarland, 2013; Kristensson et al., 2014; Menvielle et al., 2014; Ricardo-Rodrigues et al., 2015) A study from the USA also identified living in a stable union as an

independent variable that increased chance of Arab women to perform Pap smear test (Roman et al., 2014). Recent studies from Saudi Arabia and Iran in contrast, did not indicate an association between civil status and Pap smear test performance (Farzaneh et al., 2017; Salem et al., 2017). Most Brazilian studies that included civil state in their analysis, also indicated that women who live in a stable union had a higher chance to perform Pap smear test compared to women who did not live in a stable union (Novaes et al., 2006; Gasperin et al., 2011; Albuquerque et al., 2009; Albuquerque et al., 2014; Amorim and Barros, 2014; Oliveira et al., 2014; Filha et al., 2016; Barbosa, 2017). Two previous Brazilian studies in contrast, did not indicate an association between civil state and Pap smear test performance (Muller et al., 2008; Fernandes et al., 2009).

Interestingly, in the both unique Brazilian studies that did not reveal any association of education and Pap smear test performance, living in a stable union significantly increased the chance of its performance (Albuquerque et al., 2014; Amorim and Barros, 2014). This is comparable to women from MS of the present study: Neither education nor occupation status affected significantly chance of Pap smear performance, but living in a stable union remained significant. Sexual activity and pregnancies of women, who are married or live in any other kind of stable union, may be accompanied from an early age on, by more visits of gynecologists. This in turn may lead more frequently to recommendation of Pap smear tests by physicians. However, the frequency of women who lived in a stable union was nearly the same in MS and PB. Furthermore, data from MS about occupation status and education were more homogeneously distributed compared to those ones of women from PB. Therefore, the effect of civil state may have become more important for women from MS. For women from PB in contrast, heterogeneously distributed characteristics of education level and occupation status became more prominent than civil state.

This does not explain why women from MS performed more often Pap smear tests than those ones from PB. In the latter group also the frequency of women who had never performed Pap smear tests was obviously higher. Differences of Pap smear test performance two times within three years, of women aged between 40 and 49, respectively, 50 and 59, compared to women aged 60 were more prominent among women from MS than for those ones from PB. In their analysis of data from eight Latin American countries, Soneji and Fukui (2013) showed that women who visited a doctor during last 12 month before the study, performed Pap smear tests more frequently. The same variable was also positively associated with performance of Pap smear tests in previous Brazilian studies (Novaes et al., 2006;

Albuquerque et al., 2009; Martinez- Mesa et al., 2013). Similar, in studies from Denmark and the USA, the contact with health service or general practitioner had an important positive effect on women's frequency of Pap smear test performance (Roman et al., 2014; Kristensson et al., 2014). One hypothesis is that women in MS visited more often public health services and the Pap smear test was for this reason more frequently recommended by physicians. An alternative hypothesis is that compared to PB, more physicians of public health services in MS had the formation to perform the Pap smear test and that it was therefore more often recommended. The fact that in the present study a high percentage of women from MS and PB had performed the Pap smear test within the last three years, more often than recommended ( $\geq$  three times), could mean that their prevention behaviour was mainly influenced by recommendations of medical staff of local health care service centres of the study. It would be interesting in this context to understand more detailed the impact of doctor visits and physicians recommendations, on prevention behavior of women who have distinct educational levels, occupation status and civil state.

An important limitation of the present study was the missing data about doctor visits and gynecological recommendations that can trigger women's prevention behavior. The study did not include data about women's number of children and sexual activity. These are also variables that can affect prevention behavior of cervical cancer. Furthermore, data about income was missing for women in MS. Data were sampled during different time periods. As Brazil is a country that suffered severe economic and demographic changes during the last years, this may have led to a sample bias. Applied questionnaires and sampling methods were not identical for women in MS and PB. This may have caused an additional bias of sampled data.

In summary present data confirmed results of previous studies, as education, occupation status and civil state are well- established important variables regarding women's performance of the Pap smear test. In PB higher educational level and positive occupation status were independent variables. Among women from MS educational characteristics were highly homogenously distributed and civil state was an independent variable. Data indicated that higher educational levels were positively associated with performance of Pap smear test in PB, but as women from MS had on average lower educational levels and performed it more frequently compared to women from PB, the impact of the variable education was not decisive for the absolute frequency of test performance. Future studies should clarify in which

way recommendations of medical staff of public health care centers, affect the decision of women, who have different socio- economic background, to perform the Pap smear test.

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#### 4.4 COMPARAÇÃO DOS RESULTADOS ENTRE ECM E MAMOGRAFIA

Nos três estudos o nível educacional foi uma variável que mostrou distribuição heterógena (Quadro 1): o alto nível educacional foi positivamente associado com a realização regular do ECM, da mamografia e do teste Papanicolau. A variável ocupação foi importante tanto para a realização do ECM como para o exame de Papanicolau. O histórico familiar de câncer foi importante apenas para realização da mamografia. Mulheres com plano de saúde realizaram mais frequentemente o ECM (Quadro 1). Contudo, a percepção do risco absoluto foi uma variável importante no caso da mamografia e no ECM, mas entrou como variável, apenas no artigo B.

Quadro 1: Variáveis identificadas nos modelos de regressão logística do estudo em Caicó (2016) e no estudo presente. Fatores identificados como variáveis independentes são marcados com X.

Variáveis	<sup>3</sup> Estudo de Caicó		Estudo presente		
	ECM	MAM	ECM	MAM	PPN
Alta Renda	X	X			
Histórico familiar		X		<sup>2</sup> X	
Conhecimento- fatores de risco	X				<sup>1</sup> NA
Alto nível educacional			X	X	X
Empregado	X		X		X
Com plano de Saúde			X	<sup>1</sup> NA	<sup>1</sup> NA
Percepção do alto risco absoluto		<sup>1</sup> NA	<sup>2</sup> X	<sup>2</sup> X	<sup>1</sup> NA

\*ECM: Exame Clínico da Mama; MAM: Mamografia; PPN: Papanicolaou. <sup>1</sup>NA: Não analisado; <sup>2</sup>X: Mulheres entre 40 e 49 anos; <sup>3</sup>Estudo de Caicó: Estudo precedente realizado em Caicó no ano 2016.

Os estudos enfatizam o forte impacto da educação no comportamento preventivo das mulheres. Isso pode ter várias causas: mulheres com alto nível educacional geralmente sabem mais sobre sintomas, fatores de risco e prevenção de câncer. Este conhecimento pode gerar uma sensibilização que afeta o comportamento preventivo positivamente. Adicionalmente, pela melhor situação sócio-econômica, elas têm o melhor acesso ao sistema de saúde e

enfrentam menos barreiras de acesso. Barreiras de acesso incluem por exemplo: os custos de transporte a um centro de saúde e também problemas de comunicação médico-paciente.

A decisão de realizar a mamografia é provavelmente mais dependente da decisão autônoma da mulher que a realização do ECM. Em vista disso, podemos explicar o porquê de a variável histórico familiar de câncer afetar a realização da mamografia, porém não interferir no ECM (Quadro 1). O ECM e o teste Papanicolau geralmente são recomendados e realizados por ginecologistas e/ou enfermeiros. Uma variável que faltou na análise foi exatamente esta interação entre médico, enfermeiro e a mulher. Mulheres empregadas e com plano de saúde recebem provavelmente a recomendação do ECM mais frequente que aquelas que usam exclusivamente o sistema público e não trabalham ativamente (Quadro 1).

#### 4.5 DIFERENÇAS ENTRE ESTE ESTUDO E O REALIZADO EM CAICÓ

Quando comparados os resultados deste estudo com o do realizado anteriormente na cidade de Caicó podemos perceber que a variável educação apresenta significância diferente. Esse fato pode ser explicado devido a homogeneidade da amostra no estudo de Caicó que apresentou 155 (81,58%) das mulheres com um baixo nível educacional, enquanto nesse estudo foram apresentados diferentes níveis educacionais. Quando um estudo apresenta variável homogenea outras variáveis apresentam significância e no caso do estudo de Caicó a renda foi significativa. A homogeneidade da amostra quanto ao nível educacional também afeta os resultados do estudo realizado em Mato Grosso do Sul.

Outro ponto que diferenciou os dois estudos foi o conhecimento em relação ao CM que apresentou significância quanto a realização do exame preventivo no estudo de Caicó, porém neste estudo não mostrou o mesmo. Esse fato pode ter duas explicações: 1. As mulheres de Campina Grande têm maior conhecimento sobre o CM; 2. A existência de um viés da pesquisadora durante a coleta. A pesquisa realizada em Caicó foi realizada através de um questionário auto-aplicado e neste estudo a pesquisadora realizou a entrevista. Durante a entrevista a pesquisadora pode ter influenciado a resposta das participantes da pesquisa.

## 5 CONCLUSÕES

Tendo em vista que a incidência da neoplasia mamária está sofrendo um aumento significativo no Brasil com destaque na região nordeste é importante salientar que estudos com intuito de avaliar percepção e conhecimento das mulheres quanto o seu papel no combate ao CM são escassos, porém de extrema necessidade para que esta possa assumir o seu papel de agente principal no seu processo de saúde e doença.

Neste estudo foi possível visualizar que as mulheres tinham mais informações sobre a mamografia do que sobre o exame clínico das mamas. Além disso o baixo nível educacional, utilização exclusiva de serviços de saúde públicos e desemprego estão associados a uma menor adesão ao exame clínico das mamas.

Em relação a mamografia, o nível educacional também afetou a adesão das mulheres e ainda a combinação com história familiar e percepção de risco absoluto ajudam na explicação do comportamento das mulheres. Porém a significância desses fatores é variável de acordo com a faixa etária sendo mostrado nesse estudo que para as mulheres com idade superior a 50 anos somente a o nível educacional mostrou significância.

No tocante a realização do Papanicolau, exame preventivo do CCU, a idade, ocupação, origem étnica e nível educacional interferiram na adesão das mulheres. Tendo em vista que o nível educacional baixo se mostrou como fator que diminui a chance das mulheres realizarem os três exames preventivos avaliados é necessária a concentração de esforços para conscientização dessa população.

Como o exame clínico das mamas, mamografia e Papanicolau são importantes exames na detecção precoce do CM e CCU, deveriam ser mais propagados em campanhas de saúde pública não se restringindo ao mês de incentivo (Janeiro Verde e Outubro Rosa).

Estudos futuros devem demonstrar os aspectos psicológicos que explicam a não adesão para exames preventivos das mulheres que superestimam, ou estimam com precisão, o risco desenvolver o CM. Assim como a diferença na adesão de mulheres que utilizam serviços de saúde público e privado.

Neste estudo a percepção foi uma variável que influenciou na realização de exames preventivos é importante que os próximos estudos busquem elucidar os fatores que influenciam na percepção das mulheres saudáveis e também os motivos que levam mulheres com superestimação do risco de CM a realizarem com menor frequência os exames preventivos.

O conhecimento sobre CM mostrou nível de significância diferente entre as populações de Caicó e deste estudo. Seria interessante a aplicação de questionário padronizado em diferentes centros (urbanos e rurais) para avaliar o nível e a interferência do conhecimento no comportamento preventivo das mulheres.

Outra questão seria replicar um questionário padronizado em diferentes centros para mostrar maior representatividade dentro da região Nordeste, além de evidenciar possíveis características de cada localidade.

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## APÊNDICES



### UNIVERSIDADE ESTADUAL DA PARAÍBA. MESTRADO EM SAÚDE PÚBLICA.

#### APÊNDICE A - Termo de Compromisso Livre e Esclarecido

Pelo presente termo de consentimento livre e esclarecido, eu....., rg:....., estado civil ....., ..... anos, residente no endereço ....., ..... telefone: ....., declaro para os devidos fins, que dou meu consentimento, de livre e espontânea vontade para a participação (a)no projeto **“AVALIAÇÃO DO CONHECIMENTO SOBRE CÂNCER DE MAMA E SOBRE O RISCO REAL E PERCEBIDO DE MULHERES SAUDÁVEIS”**, sob a responsabilidade do pesquisador Prof. Mathias Weller, tendo aalunaSaionara Açucena Vieira Alves como orientanda.

Declaro ser esclarecido e estar de acordo com os seguintes pontos:

- Os dados serão coletados através do preenchimento do questionário;
- A permissão para participação será estritamente voluntária, mesmo depois da minha autorização, tendo liberdade de retirar-se do estudo, antes, durante e depois da finalização de coleta dos dados, caso venha a desejar, sem riscos de qualquer penalização ou de quaisquer prejuízos pessoais ou estudantis;
- Será garantido o anonimato por ocasião da divulgação dos resultados e resguardado o sigilo de dados confidenciais;
- Caso sinta necessidade de contatar os pesquisadores durante e/ou após a coleta de dados, poderei fazê-lo pelo telefone (83)999370212;
- Ao final da pesquisa, se for do meu interesse, terei acesso ao conteúdo da mesma, podendo discutir os dados com o pesquisador.

Desta forma, uma vez tendo lido e entendido tais esclarecimentos e, por estar de pleno acordo com o teor do mesmo, dato e assino este termo de consentimento livre e esclarecido.

Campina Grande, \_\_\_\_\_ de \_\_\_\_\_ de 201\_\_.

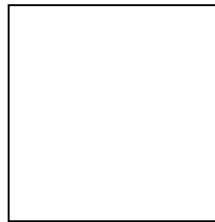
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Responsável

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Pesquisador

Assinatura datiloscopia:





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MESTRADO EM SAÚDE PÚBLICA.**

**APÊNDICE B - TERMO DE COMPROMISSO DO RESPONSÁVEL PELO PROJETO EM  
CUMPRIR OS TERMOS DA RESOLUÇÃO 196/96 DO CNS**

**Pesquisa: AVALIAÇÃO DO CONHECIMENTO SOBRE CÂNCER DE MAMA E  
SOBRE O RISCO REAL E PERCEBIDO DE MULHERES SAUDÁVEIS**

Eu, Mathias Weller, biólogo, professor do departamento de biologia da Universidade Estadual da Paraíba, comprometo-me em cumprir integralmente os itens da Resolução 196/96 do CNS, que dispõe sobre Ética em Pesquisa que envolve Seres Humanos.

Estou ciente das penalidades que poderei sofrer caso infrinja qualquer um dos itens da referida resolução.

Por ser verdade, assino o presente compromisso.

Campina Grande, \_\_\_\_\_ de \_\_\_\_\_ de 201\_\_.

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Prof. Mathias Weller



**UNIVERSIDADE ESTADUAL DA PARAÍBA.**  
**MESTRADO EM SAÚDE PÚBLICA.**

**Apêndice C - DECLARAÇÃO DE PROPRIEDADE DE INFORMAÇÃO**

Declaro para os devidos fins, que os resultados da pesquisa **“AVALIAÇÃO DO CONHECIMENTO SOBRE CÂNCER DE MAMA E SOBRE O RISCO REAL E PERCEBIDO DE MULHERES SAUDÁVEIS”** serão tornados públicos tão logo sejam consistentes, sendo estes favoráveis ou não.

Campina Grande, \_\_\_\_\_ de \_\_\_\_\_ de 201\_\_.

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Prof. Mathias Weller



**UNIVERSIDADE ESTADUAL DA PARAÍBA.  
MESTRADO EM SAÚDE PÚBLICA.**

**APÊNDICE D -TERMO DE AUTORIZAÇÃO INSTITUCIONAL**

**Pesquisa: AVALIAÇÃO DO CONHECIMENTO SOBRE CÂNCER DE MAMA E SOBRE O RISCO REAL E PERCEBIDO DE MULHERES SAUDÁVEIS**

Estamos cientes da intenção da realização do projeto intitulado “**AVALIAÇÃO DO CONHECIMENTO SOBRE CÂNCER DE MAMA E SOBRE O RISCO REAL E PERCEBIDO DE MULHERES SAUDÁVEIS**” desenvolvido pela acadêmica: Saionara Açucena Vieira Alves, aluna do Mestrado em Saúde Pública da Universidade Estadual da Paraíba, sob a orientação do professor Mathias Weller.

Campina Grande, \_\_\_/ \_\_\_/ \_\_\_

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Diretora do Centro de Saúde Francisco Pinto



**UNIVERSIDADE ESTADUAL DA PARAÍBA.  
MESTRADO EM SAÚDE PÚBLICA.**

**APÊNDICE E -TERMO DE AUTORIZAÇÃO INSTITUCIONAL**

**Pesquisa: AVALIAÇÃO DO CONHECIMENTO SOBRE CÂNCER DE MAMA E SOBRE O RISCO REAL E PERCEBIDO DE MULHERES SAUDÁVEIS**

Estamos cientes da intenção da realização do projeto intitulado “**AVALIAÇÃO DO CONHECIMENTO SOBRE CÂNCER DE MAMA E SOBRE O RISCO REAL E PERCEBIDO DE MULHERES SAUDÁVEIS**” desenvolvido pela acadêmica: Saionara Açucena Vieira Alves, aluna do Mestrado em Saúde Pública da Universidade Estadual da Paraíba, sob a orientação do professor Mathias Weller.

Campina Grande, \_\_\_/ \_\_\_/ \_\_\_

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Diretora do Hospital Municipal Doutor Edgley



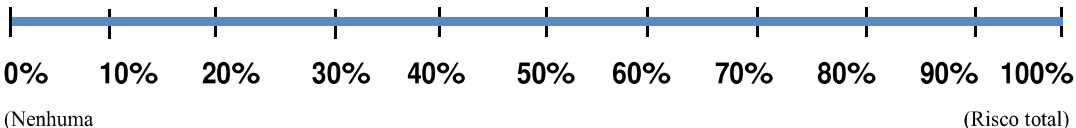
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**APÊNDICE F – INSTRUMENTO PARA COLETA DE DADOS**

**Questionário para coleta de dados**

Nº do questionário: ____		
<b>Seção 1: Perfil sócio demográfico</b>		
1. Utiliza exclusivamente o SUS?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não
2. Idade: _____		
3. Qual sua situação conjugal:	<input type="checkbox"/> Com companheiro	<input type="checkbox"/> Sem companheiro
4. Escolaridade:	<input type="checkbox"/> Ensino Fundamental	<input type="checkbox"/> Ensino médio <input type="checkbox"/> Ensino Superior
5. Ocupação:	<input type="checkbox"/> Trabalha em casa	<input type="checkbox"/> Trabalha fora de casa
6. Cor da pele:	<input type="checkbox"/> Branca	<input type="checkbox"/> Não Branca
7. Renda Familiar:	<input type="checkbox"/> Até 1 salário mínimo	<input type="checkbox"/> De 1 a 2 salários mínimos
	<input type="checkbox"/> De 2 a 3 salários mínimos	<input type="checkbox"/> Mais de 3 salários mínimos
<b>Seção 2: Câncer</b>		
1. Você já teve algum nódulo/tumor na mama?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não <b>(pule para a questão 3)</b>
2. Ele foi?	<input type="checkbox"/> Benigno	<input type="checkbox"/> Maligno <input type="checkbox"/> Não sei
3. Já teve algum tipo de câncer?	<input type="checkbox"/> Sim, qual _____	<input type="checkbox"/> Não
4. Já fez biopsia de mama?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não
<input type="checkbox"/> 5. Qual o resultado? _____		
6. Quantas biopsias você já se submeteu? _____		
7. Realizou algum tratamento com Radioterapia?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não
8. Possui ou possuiu algum parente que teve algum tipo de câncer?		
<input type="checkbox"/> Irmã <input type="checkbox"/> Mãe <input type="checkbox"/> Filha <input type="checkbox"/> Tia <input type="checkbox"/> Avó <input type="checkbox"/> Não <input type="checkbox"/> Outro. Quem? _____		
9. Possui ou possuiu algum parente que teve algum tipo de câncer de mama?		
<input type="checkbox"/> Irmã <input type="checkbox"/> Mãe <input type="checkbox"/> Filha <input type="checkbox"/> Tia <input type="checkbox"/> Avó <input type="checkbox"/> Não <input type="checkbox"/> Outro. Quem? _____		



<b>Seção 3: Risco Percebido</b>	
1. Como você classificaria sua chance de ter câncer de mama?	
<input type="checkbox"/> Muito mais baixo	<input type="checkbox"/> Mais baixo
<input type="checkbox"/> Um pouco mais baixo	<input type="checkbox"/> Média
<input type="checkbox"/> Um pouco mais alto	<input type="checkbox"/> Muito alto
<input type="checkbox"/> Muito mais alto	
2. Como você classifica a sua chance de ter câncer de mama quando comparado a mulheres da sua faixa etária?	
<input type="checkbox"/> Muito mais baixo	<input type="checkbox"/> Mais baixo
<input type="checkbox"/> Um pouco mais baixo	<input type="checkbox"/> Igual
<input type="checkbox"/> Um pouco mais alto	<input type="checkbox"/> Muito alto
<input type="checkbox"/> Muito mais alto	
3. Em uma escala em 0% é não ter nenhuma probabilidade de ter Câncer de Mama e 100% é se você irá desenvolver Câncer de Mama de qualquer forma, qual o valor numérico você atribui essa possibilidade? _____	
4. De 0 a 100% como você classifica o seu risco em ter Câncer de Mama?	
	
<b>Seção 4: Informações sobre história reprodutiva e hormonal</b>	
1. Qual idade da primeira menstruação (pode ser idade aproximada)? _____	
2. Você teve filhos? <input type="checkbox"/> Sim <input type="checkbox"/> Não	
3. Com quantos anos teve o primeiro filho? _____	
4. Por quanto tempo amamentou seu (s) filho (s)? (somatório de todas as gestações)	
<input type="checkbox"/> _____ meses	<input type="checkbox"/> Não sabe informar
5. Ainda menstrua? <input type="checkbox"/> Sim <input type="checkbox"/> Não	
6. Com quantos anos parou de menstruar? _____	
7. Já usou ou está usando hormônios para melhorar os sintomas da menopausa?	
<input type="checkbox"/> Está usando há mais de 5 anos	<input type="checkbox"/> Está usando há menos de 5 anos
<input type="checkbox"/> Parou de usar, mas já usou por mais de 5 anos	<input type="checkbox"/> Parou de usar, mas já usou por menos de 5 anos
<input type="checkbox"/> Não sabe informar	
<b>Seção 5: Informações sobre hábitos de vida</b>	
1. Pratica exercícios físicos? (30 minutos por dia, todos os dias da semana ou de 20 a 60 minutos de exercício intenso por dia, três vezes por semana)	
<input type="checkbox"/> Sim	<input type="checkbox"/> Não
2. Consome bebidas alcoólicas? <input type="checkbox"/> Sim <input type="checkbox"/> Não	
3. Fuma? <input type="checkbox"/> Sim <input type="checkbox"/> Não	
4. Qual seu peso? _____	



4. O autoexame das mamas é importante?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não	<input type="checkbox"/> Não sei
5. Quem realiza o autoexame da mama precisa ter a mama avaliada por um profissional?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não	<input type="checkbox"/> Não sei
6. Quem realiza autoexame da mama precisa fazer mamografia?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não	<input type="checkbox"/> Não sei
7. Você já encontrou alguma alteração enquanto realizava o autoexame da mama?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não	<input type="checkbox"/> Não lembra
8. Quem tem a mama examinada por um profissional da saúde na UBSF precisa fazer mamografia?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não	<input type="checkbox"/> Não sei
9. Em quais posições você realiza o autoexame da mama?			
<input type="checkbox"/> Apenas em pé	<input type="checkbox"/> Apenas deitada		
<input type="checkbox"/> Apenas sentada	<input type="checkbox"/> Deitada e em pé		
<input type="checkbox"/> Outras			
10. Quais os motivos que levam a não realização do auto exame da mama?			
<input type="checkbox"/> Esquecer de realizar	<input type="checkbox"/> Não acredita no exame		
<input type="checkbox"/> Tem medo de encontrar um tumor	<input type="checkbox"/> Não sabe o que deve procurar		
<input type="checkbox"/> Não sabe fazer o exame	<input type="checkbox"/> Nunca ouviu falar no exame		
<input type="checkbox"/> Outros _____			
<b>Seção 8: Mamografia e exame clínico da mama</b>			
1. Com qual frequência você realiza mamografia?			
<input type="checkbox"/> Às vezes	<input type="checkbox"/> A cada 6 meses	<input type="checkbox"/> A cada ano	<input type="checkbox"/> Nunca
<input type="checkbox"/> A cada 5 anos	<input type="checkbox"/> Outros _____	<input type="checkbox"/> A cada 2 anos	
2. Com quantos anos você realizou a primeira mamografia? _____			
3. A mamografia impede o câncer de mama?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não	<input type="checkbox"/> Não sei
4. A mamografia diminui o risco de morrer de câncer de mama?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não	<input type="checkbox"/> Não sei
5. A mamografia ajuda na descoberta precoce do tumor e conservação da mama?	<input type="checkbox"/> Sim	<input type="checkbox"/> Não	<input type="checkbox"/> Não sei
6. Nos últimos 12 meses quantas vezes suas mamas foram examinadas por um profissional de saúde?			
<input type="checkbox"/> Um vez	<input type="checkbox"/> Duas vezes	<input type="checkbox"/> Mais de duas vezes	<input type="checkbox"/> Nenhuma vez
<input type="checkbox"/> Não sei			
7. A partir de qual idade a mulher deve começar a realizar mamografia? _____			
8. Geralmente qual profissional solicita a mamografia?			
<input type="checkbox"/> Enfermeiro	<input type="checkbox"/> Médico		
<input type="checkbox"/> Outro _____			
9. Na última vez que realizou a mamografia, quanto tempo levou entre a solicitação até a			

realização do exame?

- Menos de uma semana                       De uma semana a um mês  
 Mais de um mês                                 Mais de 3 meses  
 Não sabe informar

10. Depois da realização da sua última mamografia, quanto tempo levou para receber o resultado?

- Menos de uma semana                       De uma semana a um mês  
 Mais de um mês                                 Mais de 3 meses  
 Não sabe informar

11. Com o resultado da mamografia em mãos, o que você fez?

- Procurou mostrar ao médico ou enfermeira na ESF  
 Procurou outros profissionais de saúde  
 Não procurou profissionais de saúde  
 Outros \_\_\_\_\_

12. Com exceção da mamografia, você já realizou algum outro tipo de exame de imagem da mama? (Exemplo o ultra-som)

- Sim     Não                       Não lembro

13. Com qual frequência você realiza o exame clínico da mama?                       Nunca

- A cada 6 meses     A cada ano                       A cada 2 anos                       Às vezes

14. Geralmente qual profissional realiza o exame clínico das suas mamas?

- Enfermeiro     Médico  
 Outro \_\_\_\_\_

### Seção 9: Fatores de risco

1. É possível reduzir o risco de câncer de mama através de mudanças no estilo de vida?

- Sim     Não

2. Em sua opinião o câncer de mama tem cura?

- Sim     Não

3. Assinale os fatores de risco, os quais você conhece, que podem contribuir no desenvolvimento do câncer de mama:

- Alto consumo de gordura animal                       Uso excessivo de bebidas alcoólicas  
 Tabagismo excessivo                                       Obesidade  
 Exercícios físicos     História Familiar de câncer de mama  
 Terapia de reposição hormonal                       Dieta rica em frutas e legumes  
 Ganho de peso depois da menopausa                       Última menstruação tardia  
 Curta duração da amamentação (menos de 3 meses)                       Primeira menstruação antes dos 12 anos

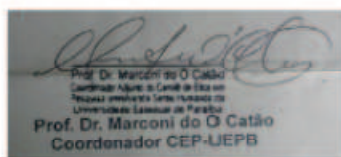
<input type="checkbox"/> Nenhuma ou pouca atividade física	<input type="checkbox"/> Primeira gestação antes dos 20 anos
<input type="checkbox"/> Uso prolongado de anticoncepcionais	<input type="checkbox"/> Exposição prolongada a radiação
<input type="checkbox"/> Primeira gestação após os 35 anos	<input type="checkbox"/> Autocuidado insuficiente
<input type="checkbox"/> Traumas na mama	<input type="checkbox"/> Nuliparidade (nenhum filho)
4. Quais medidas podem diminuir o risco de câncer de mama?	
<input type="checkbox"/> Prática de exercícios físicos	<input type="checkbox"/> Dieta saudável
<input type="checkbox"/> Evitar o consumo excessivo de álcool	<input type="checkbox"/> Amamentação
<input type="checkbox"/> Uso de anticoncepcionais	<input type="checkbox"/> Parar de fumar
<input type="checkbox"/> Manter o peso adequado	<input type="checkbox"/> Beber café
5. Quais as suas fontes de informação sobre fatores de risco de câncer de mama?	
<input type="checkbox"/> Televisão	<input type="checkbox"/> Rádio
<input type="checkbox"/> Livros	<input type="checkbox"/> Folhetos ou revistas impressas
<input type="checkbox"/> Conversa com o médico	<input type="checkbox"/> Conversas com outras pessoas
<input type="checkbox"/> Web (rede mundial de computadores)	<input type="checkbox"/> Nenhuma
<input type="checkbox"/> Conversa com outras pessoas com câncer de mama	
6. Você acha que o câncer de mama tem cura? <input type="checkbox"/> Sim <input type="checkbox"/> Não	
7. Como pode combater o câncer de mama?	
<input type="checkbox"/> Oração	<input type="checkbox"/> Quimioterapia
<input type="checkbox"/> Radioterapia	<input type="checkbox"/> Operação
<input type="checkbox"/> Terapia hormonal	<input type="checkbox"/> Imunoterapia
<input type="checkbox"/> Não sei	
<b>Seção 10: Sintomas</b>	
1. Assinale os sintomas, aos quais você conhece, que podem contribuir no diagnóstico do câncer de mama:	
<input type="checkbox"/> Nódulo único na mama	<input type="checkbox"/> Dor na mama
<input type="checkbox"/> Edema na pele	<input type="checkbox"/> Vermelhidão na pele
<input type="checkbox"/> Inversão do mamilo	<input type="checkbox"/> Secreção saindo dos mamilos
<input type="checkbox"/> Sensação de massa ou bolha na mama	<input type="checkbox"/> Retração da pele do mamilo
<input type="checkbox"/> Sensação de nódulo na axila	<input type="checkbox"/> Feridas na pele da mama ou mamilo
<input type="checkbox"/> Inchaço do braço	<input type="checkbox"/> Descamação do mamilo
2. Quais as suas fontes de informação sobre sintomas de câncer de mama?	
<input type="checkbox"/> Televisão	<input type="checkbox"/> Rádio
<input type="checkbox"/> Livros	<input type="checkbox"/> Folhetos ou revistas impressas
<input type="checkbox"/> Conversa com o médico	<input type="checkbox"/> Conversas com outras pessoas
<input type="checkbox"/> Web (rede mundial de computadores)	<input type="checkbox"/> Nenhuma

<input type="checkbox"/> Conversa com outras pessoas com câncer de mama
3.O que devemos fazer ao encontrarmos sintomas de câncer de mama
<input type="checkbox"/> Se desesperar <span style="margin-left: 200px;"><input type="checkbox"/> Procurar um posto de saúde</span>
<input type="checkbox"/> Colocar gelo na mama <span style="margin-left: 150px;"><input type="checkbox"/> Consulta com médico especializado</span>
<input type="checkbox"/> Esperar alguns meses para que os sintomas desapareçam
<b>Seção 11: Serviços de saúde</b>
1.A senhora está satisfeita com o horário de funcionamento da ESF ou Posto de saúde do seu bairro?
<input type="checkbox"/> Muito satisfeita <span style="margin-left: 100px;"><input type="checkbox"/> Satisfeita</span> <span style="margin-left: 100px;"><input type="checkbox"/> Indiferente</span>
<input type="checkbox"/> Insatisfeita <span style="margin-left: 100px;"><input type="checkbox"/> Muito insatisfeita</span> <span style="margin-left: 100px;"><input type="checkbox"/> Não sabe responder</span>
2.Está satisfeita com a distância da ESF ou posto de saúde em relação a sua casa?
<input type="checkbox"/> Muito satisfeita <span style="margin-left: 100px;"><input type="checkbox"/> Satisfeita</span> <span style="margin-left: 100px;"><input type="checkbox"/> Indiferente</span>
<input type="checkbox"/> Insatisfeita <span style="margin-left: 100px;"><input type="checkbox"/> Muito insatisfeita</span> <span style="margin-left: 100px;"><input type="checkbox"/> Não sabe responder</span>
3.A senhora está satisfeita com o tempo para conseguir agendar uma consulta na ESF ou posto de saúde?
<input type="checkbox"/> Muito satisfeita <span style="margin-left: 100px;"><input type="checkbox"/> Satisfeita</span> <span style="margin-left: 100px;"><input type="checkbox"/> Indiferente</span>
<input type="checkbox"/> Insatisfeita <span style="margin-left: 100px;"><input type="checkbox"/> Muito insatisfeita</span> <span style="margin-left: 100px;"><input type="checkbox"/> Não sabe responder</span>
4.A senhora está satisfeita com os profissionais de saúde em relação à prevenção e diagnóstico de câncer de mama na ESF ou posto de saúde?
<input type="checkbox"/> Muito satisfeita <span style="margin-left: 100px;"><input type="checkbox"/> Satisfeita</span> <span style="margin-left: 100px;"><input type="checkbox"/> Indiferente</span>
<input type="checkbox"/> Insatisfeita <span style="margin-left: 100px;"><input type="checkbox"/> Muito insatisfeita</span> <span style="margin-left: 100px;"><input type="checkbox"/> Não sabe responder</span>
5. Nos últimos três anos quantas vezes você realizou o exame para preventivo para o câncer de colo de útero (Papanicolau)? _____

## ANEXOS

### ANEXO I – Parecer do Comitê de Ética em pesquisa com Seres Humanos – UEPB

UNIVERSIDADE ESTADUAL DA PARAÍBA  
PRÓ-REITORIA DE PÓS-GRADUAÇÃO E PESQUISADOR  
COMITÊ DE ÉTICA EM PESQUISA ENVOLVENDO SERES HUMANOS  
COMISSÃO NACIONAL DE ÉTICA EM PESQUISA ENVOLVENDO SERES HUMANOS  
PLATAFORMA BRASIL



**PARECER DO RELATOR: (08)**

**CAAE PLATAFORMA BRASIL: 63089416.0.0000.5187**

**Data da 1ª relatoria PARECER DO AVALIADOR: 14/12/2016**

**Pesquisador Responsável Orientador: Mathias Weller**

**Pesquisadora Responsável/Orientanda: Saionara Açucena Vieira Alves**

**Situação do parecer: APROVADO.**

**Apresentação do Projeto:** O Projeto é intitulado: Avaliação do conhecimento sobre câncer de mama e sobre o risco real e percebido de mulheres saudáveis, encaminhado ao Comitê de Ética em Pesquisa da Universidade Estadual da Paraíba para Análise e parecer com fins de elaboração da dissertação da Pós-Graduação, Mestrado em Saúde Pública da Universidade Estadual da Paraíba, da mestranda *Saionara Açucena Vieira Alves*. O presente estudo enfoca a avaliação dos conhecimentos sobre o câncer de mama, incluindo os sintomas da doença, fatores de risco e o comportamento de prevenção (mamografia, exame clínico da mama e auto-exame) das mulheres. Além disso, o estudo busca de entender como a auto estimação do risco percebido das mulheres, em relação ao risco real, afeta o comportamento preventivo. A presente pesquisa caracteriza-se como uma análise transversal, com abordagem quantitativa dos dados. Será aplicado um questionário semi- estruturado para o levantamento dos dados de conhecimento e informações sócios- econômicos. O estudo será realizado no Centro de Saúde Doutor Francisco Pinto e no Hospital Municipal Doutor Edgley de Campina Grande-PB. A população do estudo é composta por mulheres com idades igual ou superiores a 40 anos com diferentes níveis sociais. A compreensão da maneira como o conhecimento afeta o comportamento preventivo, pode apoiar o levantamento de medidas adequadas pelo sistema de saúde para esclarecer o risco real e os fatores associados em

campanhas de prevenção como p. Ex. durante ou outubro rosa. A divulgação de conhecimentos sobre fatores de risco não apenas pode melhorar o comportamento preventivo, mas também diretamente apoiar a evitar aqueles fatores de risco que podem ser modificados.

**Objetivo da Pesquisa:** A pesquisa tem como objetivo geral: Avaliar os conhecimentos sobre o câncer de mama, incluindo sintomas e fatores de risco da doença e o comportamento de prevenção (mamografia, exame clínico da mama e auto-exame) das mulheres. Entender como a auto estimação do risco percebido das mulheres, em relação ao risco real, afeta o comportamento preventivo.

**Avaliação dos Riscos e Benefícios:** Conforme a RESOLUÇÃO 466/12, do CNS/MS, toda pesquisa com seres humanos envolve riscos com graus variados. Entretanto, a pesquisa em tela poderá incorrer em riscos mínimos, tais como a emoção e o desconforto em relatar momentos advindos da confirmação de CM em si ou em parentes da família. Ademais, nenhum procedimento na coleta de dados oferecerá risco à dignidade dos pacientes entrevistados. A pesquisa obedecerá aos critérios éticos estabelecidos pela resolução nº 466/2012 do Conselho Nacional de Saúde. Como benefício pode ser elencado a compreensão dos conhecimentos por parte das mulheres sobre fatores de risco, auto estimação do risco e prevenção que possibilita o levantamento de medidas para diminuição de fatores de risco e aumento da participação em programas de prevenção

**Comentários e Considerações sobre a Pesquisa:** O estudo encontra-se com uma fundamentação teórica estruturada atendendo as exigências protocolares do CEP-UEPB mediante a Resolução 466/12 do Conselho Nacional de Saúde/Ministério da Saúde e RESOLUÇÃO/UEPB/CONSEPE/10/2001 que rege e disciplina este CEP.

**Considerações sobre os Termos de apresentação obrigatória:** Os termos encontram-se devidamente anexados.

**Recomendações:** Por tratar-se de Projeto para elaboração de Dissertação de Conclusão da Pós-Graduação em nível de Mestrado, recomendamos sempre que possível, que a mestrando realize o cadastro de pesquisa em seu nome.

**Conclusões ou Pendências e Lista de Inadequações:** O projeto atende as exigências protocolares. Diante do exposto, somos pela aprovação. Salvo melhor juízo.

**Situação do parecer:** APROVADO.