

Social determinants of health related to adherence to mammography screening

Levantamento de determinantes sociais de saúde relacionados à adesão ao exame mamográfico
Levantamiento de determinantes sociales de salud relacionados a la adhesión al examen mamográfico

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ABSTRACT

Objective: To identify proximal, intermediary and individual social determinants related to mammography adherence, according to the Social Determinants of Health model proposed by Dahlgren and Whitehead. **Method:** Correlational cross-sectional study, carried out with a sociodemographic and clinical data questionnaire and the Champion's Health Belief Model Scale, translated and adapted for use in Brazil. Data analyzed by multiple linear regression, from the domains scale, and sociodemographic and clinical variables were used as predictors. **Results:** The age group of 60-64 years (55.0%) was highlighted, 22 (55.0%) women had a stable partner; and 14 (65.0%) completed higher education. The domain with the greatest influence on adherence to mammography was perceived barriers. **Conclusion:** The social determinants of health are directly related to the levels of adherence to the exam among women, as well as the perceived benefits, susceptibilities and barriers.

Descriptors: Mammography; Social Determinants of Health; Health Promotion; Screening Programs; Breast Cancer.

RESUMO

Objetivo: identificar determinantes sociais proximais, intermediários e distais relacionados à adesão à mamografia, segundo o modelo de determinantes sociais de saúde, proposto por Dahlgren e Whitehead. **Método:** estudo transversal correlacional, realizado com a aplicação de um questionário de dados sociodemográficos e clínicos e da Champion's Health Belief Model Scale, traduzida e adaptada para o uso no Brasil. Dados analisados por regressão linear múltipla, a partir dos domínios da escala, e usadas, como preditores, as variáveis sociodemográficas e clínicas. **Resultados:** destacou-se a faixa etária de 60-64 anos (55,0%), 22 (55,0%) mulheres possuíam companheiro fixo; e 14 (65,0%) concluíram o ensino superior. O domínio com maior influência na adesão à mamografia foi barreiras percebidas. **Conclusão:** os determinantes sociais de saúde têm relação direta com os níveis de adesão ao exame entre as mulheres, bem como com os benefícios, as susceptibilidades e as barreiras percebidas.

Descritores: Mamografia; Determinantes Sociais da Saúde; Promoção da Saúde; Programas de Rastreamento; Neoplasias da Mama.

RESUMEN

Objetivo: identificar determinantes sociales proximales, intermediarios y distales relacionados a la adhesión a la mamografía, según el modelo de determinantes sociales de salud, propuesto por Dahlgren y Whitehead. **Método:** estudio transversal correlacionado, realizado con la aplicación de un cuestionario de datos socio demográficos y clínicos y de Champion's Health Belief Model Scale, traducida y adaptada para el uso en Brasil. Datos analizados por regresión lineal múltipla, a partir de los dominios de la escala, y usadas, como predictores, las variables socio demográficas y clínicas. **Resultados:** Se destacó el grupo de edad de 60-64 años (55,0%), 22 (55,0%) mujeres poseían pareja estable; y 14 (65,0%) concluyeron la enseñanza superior. El dominio con mayor influencia en la adhesión a la mamografía fue barreras notadas. **Conclusión:** Los determinantes sociales de salud tiene relación directa con los niveles de adhesión examen entre las mujeres, así como con los beneficios, las susceptibilidades y las barreras notadas.

Descriptor: Mamografía; Determinantes Sociales de Salud; Promoción de la Salud; Programas de Rastreo; Neoplasias de Mama.

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INTRODUCTION

Brazil has seen transformations, reflecting the social, economic and cultural history in the composition of the various regions, states and municipalities, in a scenario of inequalities that spans centuries and persists to the present day. From this perspective, the twentieth century is of particular importance, since it is influenced by the growth of the international market, in which capitalist forms of production, labor and consumption are installed; based on these dynamics, the process of industrialization and urbanization develops more rapidly, triggering intense and contrasting changes in the evolution of the population's health conditions, as well as in the emergence of health inequalities⁽¹⁾.

Awareness of health inequalities allows possible mechanisms related to the health-disease process and identifying opportunities to be established for preventive interventions with high potential for effectiveness⁽²⁾. Inequalities in the occurrence of cancer are relevant and should be of concern to epidemiologists at this historical moment, since this disease is a public health problem, the discrepancies of which tend to increase due to the current globalization process⁽³⁾.

Breast cancer is a type of neoplasia that presents risk factors directly associated with the biological and behavioral characteristics of individuals, as well as the social, environmental, political and economic conditions that surround them⁽⁴⁾. Adherence to methods of early detection of this disease, such as mammography, is also related to multiple social, economic and cultural factors; to those related to health systems, services and professionals; and to those concerning the disease, the fear of diagnosis and the person's own beliefs⁽⁴⁾. Thus, these aspects may have a positive or negative influence on adherence to the diagnostic examination.

There is considerable interest among researchers in the area into clarifying the reasons for adherence and noncompliance with mammography⁽⁵⁾, because it is a proven strategy to reduce breast cancer morbidity and mortality⁽⁶⁾. In recognition of this, the present study aimed to identify the proximal, intermediary and individual social determinants related to adhesion to mammography in the light of the Social Determinants of Health (SDH) model, proposed by Dahlgren and Whitehead⁽⁷⁾.

METHOD

Ethical aspects

This study was approved by the Ethics Committee of the Federal University of Ceará, via *Plataforma Brasil*. The norms and guidelines of research with human beings were respected, in accordance with Resolution 466/12 of the National Health Council.

Study design, location and period

A cross-sectional study was carried out during December 2015, in a Catholic community in the city of Fortaleza-CE, Brazil. The study has a socially active approach, in which a link is made between spirituality and various social issues.

Population or sample (inclusion and exclusion criteria)

The sample comprised 40 women belonging to this community; the parameter was the mammographic screening recommendation protocol in Brazil⁽⁸⁾; inclusion criteria were: women between 50 and 69 years of age; without mammograms in the previous 24 months; and with no personal or family history of breast or ovarian cancer. Exclusion criteria were: women diagnosed with breast or ovarian cancer; or with a confirmed diagnosis of cognitive impairment that prevented responding to the interview.

Study protocol

Data collection was performed via two instruments applied in a directed interview. The first was a questionnaire, which was previously tested, containing the SDH, elaborated by the author herself, according to the assumptions of Dahlgren and Whitehead⁽⁷⁾. For the present study, individual determinants considered were: age; race; early menarche; late menopause; and family or personal history of cancer. The proximal determinants were: marital status, number of children and use of hormone replacement therapy (components of people's lifestyle). The intermediate determinants were: occupation and income (component of living and working conditions), educational level (component of education) and origin (housing component). The demographic and socioeconomic variables collected followed the classification of the National Association of Research Companies⁽⁹⁾.

The second instrument applied was the Champion's Health Belief Model Scale (CHBMS) developed by Victoria Champion⁽¹⁰⁾ that has been translated and adapted to Portuguese⁽¹¹⁾. This was used to evaluate adhesion to the mammographic examination and likewise has been used in various studies focused on behavior in breast cancer screening. The scale consists of an 18-item Likert-type instrument, useful for identifying factors that are associated with women's beliefs about breast cancer screening behavior, in order to verify the perceived susceptibility, benefits, and barriers in relation to mammography.

Results and statistics analysis

The data were organized and analyzed statistically with the software SPSS version 21.0, considering the absolute and relative frequency. Descriptive statistics were used to analyze SDH and means of the domains of adherence to mammographic examination. The *t*-test and analysis of variance (ANOVA) were conducted to assess the level of adhesion to mammography, according to the SDH. Multiple regression analysis was used to test which variables had significant effects on mammography adherence. The level of statistical significance was set at 5%.

RESULTS

The women's age ranged from 57 to 69 years, with a predominance between 60 and 64 years (55%). It is underscored that five (12.5%) women were under 60 years of age. Regarding marital status, 22 (55%) were married or in a stable union, 9 (22.5%) were single and 9 (22.5%) were widows, as shown in Table 1.

Table 1 – Sociodemographic and economic characteristics of the study participants, Fortaleza, Ceará, Brazil, December, 2015

Sample characteristics (N = 40)	n	%	Mean ± SD	Min/Max
Age group (yrs)			63.25 ± 3.76	57/69
55-59	5	12.5		
60-64	22	55.0		
65-69	13	32.5		
Marital status				
Single	9	22.5		
Married/stable union	22	55.0		
Widow	9	22.5		
Education (years of schooling)			14.92 ± 2.07	13/17
≤ 14	26	65.0		
≥ 15	14	35.0		
Job status				
Employed	10	25.0		
Unemployed/retired	30	75.0		
Race				
White	35	87.5		
Brown	5	12.5		
Family income (MS*)			6,187.50 ± 4,172.07	1,000.00/ 15,000.00
Até 3	10	25.0		
4-6	5	12.5		
> 6	25	62.5		
Origin				
Capital	35	87.5		
Interior	5	12.5		

Note: * MS- minimum salary (R\$ 788.00)

Educational level was presented in terms of years of schooling; A total of 26 (65%) presented up to 14 years of study and 14 (35%) reported 15 years or more.

Regarding their work status; 10 (25%) reported that they were employed and 30 (75%) were unemployed or retired.

Regarding religion, all the women interviewed considered themselves to be Catholic. When questioned about race, 35 (87.5%) declared themselves white and 5 (12.5%) brown, there were no black, yellow or indigenous individuals.

Regarding family income, 25 (62.5%) women reported having an income higher than 6 minimum wages, 5 (12.5%) received between 3 and 5 minimum wages, and 10 (25%), an income less than or equal to 3 minimum wages.

Regarding the clinical data, according to Table 2, a family history of cancer was reported by 32 (80%), comprising: breast cancer 10 (25%); prostate 5 (12.5%); stomach 5 (12.5%); uterine 4 (10%); intestine 4 (10%); and lung 4 (10%). Regarding a personal history of cancer, 4 (10%) women had already been diagnosed and treated for intestinal cancer.

Regarding risk factors for the development of breast cancer, 32 (80%) women reported presenting some factor; among

Table 2 – Characterization of the clinical data for the women, Fortaleza, Ceará, Brazil, December, 2015

Sample characteristics (N = 40)	n	%
Chronic disease		
Yes	18	45.0
No	22	55.0
SAH	18	45.0
DM	9	22.5
Family history		
Yes	32	80.0
No	8	20.0
Breast cancer	10	25.0
Prostate cancer	5	12.5
Stomach cancer	5	12.5
Uterine cancer	4	10.0
Intestinal cancer	4	10.0
Lung cancer	4	10.0
Personal history		
Yes	4	10.0
No	36	90.0
Intestinal cancer	4	10.0
Risk factor		
Yes	32	80.0
No	8	20.0
Early menarche	4	10.0
Late menopause	4	10.0
HRT	23	57.5
Nulliparous	9	22.5

Note: SAH- Systemic Arterial Hypertension; DM- Diabetes Mellitus; HRT- Hormonal Replacement Therapy.

these, 23 (57.5%) had hormone replacement therapy and 9 (22.5%) were nulliparous.

Study participants were evaluated for mammography adherence using the CHBMS instrument. The domains of the instrument were associated with SDH, as described in Table 3.

When comparing the levels of adherence with SDH of the women, it was verified that the total average adhesion was proportionally greater with increase in age; the highest seen in the age of 65 to 69 year-old group (47.6). When analyzed by means of domains, we draw attention to the benefits domain, with large differences between levels when compared to the other two domains.

Regarding the individual determinants of family history, personal history, early menarche and late menopause presented a statistically significant relation, mainly in relation to the perceived barriers.

When the scores related to marital status and number of children were analyzed, there was a considerable difference between the values of single women (19.3) and married/stable union (64.2) and those who had between one and two children, demonstrating a greater adherence to the examination by those who had a partner and with greater perceived susceptibility.

Table 3 – Association of the Social Determinants of Health with the domains of adherence among the study participants, Fortaleza, Ceará, Brazil, December, 2015

Social Determinants of Health		Domains			Mean
		Domain 1 Benefits (min./max.)	Domain 2 Susceptibility (min./max.)	Domain 3 Barriers (min./max.)	
Individual					
Age	55-59	12.5/33.3	12.5/14.3	12.5/16.1	21.2
	60-64	30.0/48.0	42.5/47.3	32.5/41.9	45.3
	65-69	37.5/62.5	32.5/37.1	32.5/41.9	47.6
	p value	0.64	0.03	0.01	
Race	White	52.0/60.0	62.5/83.3	10.0/74.3	76.5
	Brown	12.5/33.3	12.5/16.7	10.5/16.1	71.0
	p value	0.09	0.06	0.43	
Family history of cancer	Yes	32.5/61.9	12.5/84.4	12.5/87.5	77.9
	No	20.0/38.1	20.0/22.9	20.0/22.9	27.9
	p value	0.01	0.02	0.05	
Personal history of cancer	Yes	10.0	10.0/11.4	10.0/11.4	10.9
	No	81.0/90.0	12.5/86.1	12.5/86.1	87.4
	p value	0.06	0.23	0.04	
Early menarche	Yes	10.0/16.0	12.4/87.5	12.5/86.1	36.5
	No	81.0/90.0	12.5/86.1	12.5/86.1	87.4
	p value	0.06	0.23	0.04	
Late menopause	Yes	10.0	10.0/11.4	13.9/79.2	33.5
	No	81.0/90.0	12.5/86.1	12.5/86.1	87.4
	p value	0.06	0.23	0.04	
Proximal					
Marital status	Single	10.0/19.0	22.5/25.7	10.0/13.3	19.3
	Married/stable union	20.0/38.1	42.5/77.3	12.5/77.3	64.2
	Widow	22.5/42.9	22.5/25.7	22.5/28.1	32.2
	p value	0.27	0.03	0.94	
Number of children	None	10.0/44.4	22.5/25.7	12.5/87.5	52.5
	1-2	52.0/60.0	62.5/83.3	10.0/74.3	76.5
	≥ 3	20.0/38.1	20.0/22.9	20.0/22.9	27.9
		0.27	0.03	0.94	
Intermediary					
Education (years)	≤ 14	42.0/65.0	65.0/74.3	12.5/80.8	73.3
	≥ 15	19.0/28.6	12.5/64.3	12.5/64.3	72.3
	p value	0.04	0.03	0.02	
Work status	Employed	25.0/62.9	12.5/50.0	25.5/28.6	70.2
	Unemployed/retired	52.0/70.0	62.5/83.3	74.0/24.4	77.1
	p value	0.81	0.09	0.07	
Procedência	Capital	10.0/19.0	22.5/25.7	25.5/28.6	23.8
	Interior	52.0/60.0	62.5/83.3	10.0/74.3	75.1
	p value	0.69	0.40	0.44	
Income (minimum salaries)	Até 3	12.5/20.0	25.0/55.6	10.0/68.0	47.8
	4-6	12.5/33.3	12.5/22.7	12.5/15.6	23.8
	> 6	50.0/80.0	42.5/77.3	42.5/68.0	75.1
	p value	0.02	0.12	0.06	

In relation to the scores in the categories of education, occupation, origin and income, similar values of adherence were observed. Education presented a significant correlation ($p = 0.02$) between the levels of adherence and income with

total scores ranging from 23.8 to 75.1, with higher adherence in the group with an income greater than six salaries.

For the remaining determinants and domains, no statistically significant association was observed.

DISCUSSION

Research on SDH and its relationship with factors associated with breast cancer detection methods are well known among the scientific community⁽¹²⁾. However, the present study reports a new aspect in the fact that it has raised several aspects of SDH and their relation to mammography adherence via CHBMS, a scale used on world-wide basis, but which until now was not available for use in Brazil. This data contributes significantly to the change in perspectives in the assessment of adherence and its relation to SDH.

Social and economic characteristics determine unequal living and working conditions, influencing people's behavior and lifestyles. The conjunctures of the social context give rise to inequalities in exposure and vulnerability that affect an individual's health and are risk factors for diseases, in addition to influencing the practice of undergoing diagnostic exams.

The means of the highest scores were related to the perceived barriers domain and individual health determinants. Researches point out that the determinants of social health range from those considered individual, inherent to the person and not modifiable, such as age, genetic factors and sex, to a macro level, including cultural, environmental and economic factors that dominate the population as a whole. However some of these are evidently important and act in an interconnected manner, such that they have an influence when combined with other factors and thereby determine the health behavior of the populations⁽¹³⁻¹⁴⁾.

In this study, as mentioned, women were predominantly mothers of one or two children, elderly, aged 60 to 64 years, white, had low schooling, were married and had no job. This profile is similar to that of women targeted for mammographic screening as frequently reported in the literature⁽¹⁵⁾.

The age factor has been identified as a determinant in adherence to the methods of early detection of breast cancer. In the present study, the increase in adherence was proportional to the increase in age, a finding also reported in the literature⁽¹⁶⁾. On the other hand, a review study that analyzed 110 publications on the subject showed that younger women have been more adept at methods of early breast cancer detection when compared to their older counterparts⁽¹⁵⁾. International experience has indicated that the age factor is proportionally significant regarding adherence to mammography⁽¹²⁾.

According to the social determinants of health model, individual determinants exert influence on their potential and health conditions⁽¹⁷⁾. From this perspective, it was verified that experience with the disease, whether by a relative or personally, presented statistical significance. Population-based research involving women aged 40 to 69 years showed that the presence of a relative or friend with breast cancer increases the intention to have a mammographic examination⁽¹⁸⁾. In agreement with the result obtained, another study revealed that personal experience of cancer increases the level of adherence to screening for the disease⁽¹⁹⁾.

Although early menarche and late menopause are consecrated in the scientific literature as a risk factors for breast cancer⁽²⁰⁾, studies have shown that these factors are not only predictors of

the disease but are directly related to the practice of methods that enable early detection of the disease^(14,21). In the present study, women who had early menarche or late menopause presented more perceived barriers to mammography. This result is supported by research which reported that an early age of menarche and late age of menopause, nulliparity, and late age of first pregnancy are associated with increased perceived barriers to breast cancer diagnostic methods⁽²²⁾.

People can modify their behavior and lifestyles, consequently they are considered to be proximal determinants⁽⁷⁾. In this study, these determinants were obtained by the marital status and number of children, in which it was observed that married women or in stable union and with one or two children had greater perceived susceptibility. Corroborating this finding, researchers studying the predictive factors of perceived barriers to mammography among Korean women reported that the number of children and marital status statistically affects the domains of adherence to mammography, with perceived susceptibility being higher in married women with one to three children⁽²³⁾.

Regarding schooling and income, intermediate social determinants of health, considered in this research, significant values were observed in the three domains of the scale in association with schooling, with the perceived barriers being most representative. Studies have identified a significant association between the level of schooling and health knowledge to adherence to early detection methods for breast cancer^(20,24); However, on the contrary to the study, research developed with 776 women with the objective of identifying factors that influence the practice of mammography based on CHBMS, identified that the level of education and knowledge about breast cancer have no significant relation with adherence and have no statistically significant association with any range domain⁽²⁵⁾.

It was observed that, as the income increases, the level of perceived benefits of the mammographic examination intensifies. The study revealed the same correlation between the perceived benefits domain and the woman's income, however with statistical significance in the three domains of the scale⁽²⁶⁾.

Although without considerable association, the fact of residing in the interior of the state contributes, albeit subtly, to less adherence to the mammographic examination. Research has shown that the origin of the woman and the domains of CHBMS are associated⁽²⁷⁾.

Study limitations

The reduced sample size, the cross-sectional design and the place of study are important limitations, since they do not allow a general view of the adherence of women to the mammographic examination.

Contribution to Nursing, health or public policy

Despite the limitations of the study and, therefore, the impossibility of generalization of all results, the findings of this research contribute to an understanding of individual aspects often not perceived or inferred as important by health professionals.

It is essential that nursing professionals know the factors related to mammographic adherence so that effective interventions can be planned and executed through their needs in a

targeted manner, while providing all the factors that may contribute to the quality of life of women in this context.

CONCLUSION

In this study, the SDH related to better adherence to mammographic examination among women were: age (older), schooling (higher educational level), marital status (married), income (high economic level) and number of children (1 or

2) as well as a family and personal history of breast cancer in addition to early menarche and late menopause.

The application of CHBMS identified the level of adhesion to the mammography of women according to the benefits, the susceptibility and the perceived barriers, which, in most cases was high.

It is suggested that further research is undertaken to cover a greater number of SDH, as well as populations of women in other contexts to obtain even more consistent data.

REFERENCES

- Alves MGD. The promotion of health and the integrated prevention of risk factors for cardiovascular diseases: until when will be "mopping up the ice"? *Ciênc Saúde Colet* [Internet]. 2012[cited 2017 Jan 09];17(1):20-2. Available from: <http://www.scielosp.org/pdf/csc/v17n1/a04v17n1.pdf>
- Vieira IHI, Casado L, Bergmann A, Thuler LCS. Prevalência de fatores associados ao câncer entre alunos de graduação nas áreas da saúde e ciências biológicas. *Rev Bras Cancerol* [Internet]. 2010 [cited 2017 Jan 09];56(2):243-9. Available from: http://www.inca.gov.br/rbc/n_56/v02/pdf/10_artigo_prevalencia_fatores_associados.pdf
- Ribeiro ADA, Nardocci AC. Desigualdades socioeconômicas na incidência e mortalidade por câncer: revisão de estudos ecológicos, 1998-2008. *Saúde Soc* [Internet]. 2013[cited 2017 Jan 09];22(3):878-91. Available from: <http://observatorio.fm.usp.br/handle/OPI/6025>
- Brasil. Instituto Nacional do Câncer. Diretrizes para a detecção precoce do câncer de mama no Brasil. Rio de Janeiro: INCA; 2015.
- Matos JC, Pelloso SM, Carvalho MDB. Fatores associados à realização da prevenção secundária do câncer de mama no Município de Maringá, Paraná, Brasil. *Cad Saúde Pública* [Internet]. 2011[cited 2017 Jan 09];27(5):888-98. Available from: <http://www.scielo.br/pdf/csp/v27n5/07.pdf>
- Borges ZDS, Wehrmeister FC, Gomes AP, Gonçalves H. Clinical breast examination and mammography: inequalities in Southern and Northeast Brazilian regions. *Rev Bras Epidemiol* [Internet]. 2016[cited 2017 Jan 09];19(1), 1-13. Available from: http://www.scielosp.org/pdf/rbepid/v19n1/en_1980-5497-rbepid-19-01-00001.pdf
- Dahlgren G, Whitehead M. Policies and strategies to promote social equity in health. Stockholm: Institute for future studies; 1991.
- Brasil. Ministério da Saúde. Instituto Nacional do Câncer. Secretaria de Ciência, Tecnologia e Insumos Estratégicos. Diretrizes para detecção precoce do câncer de mama. Brasília: INCA; 2015.
- Associação Brasileira de Empresas de Pesquisa. Critério de classificação econômica Brasil. 2008.
- Champion VL. Revised susceptibility, benefits, and barriers scale for mammography screening. *Res Nurs Health* [Internet]. 1999[cited 2017 Jan 09];22(4):341-8. Available from: [http://onlinelibrary.wiley.com/doi/10.1002/\(SICI\)1098-240X\(199908\)22:4%3C341::AID-NUR8%3E3.0.CO;2-P/epdf](http://onlinelibrary.wiley.com/doi/10.1002/(SICI)1098-240X(199908)22:4%3C341::AID-NUR8%3E3.0.CO;2-P/epdf)
- Moreira CB. Tradução e adaptação transcultural da *Champion's Health Belief Model Scale* para a língua portuguesa do Brasil [dissertação]. Programa de Pós-graduação em Enfermagem, Universidade Federal do Ceará; 2016.
- Shiryazdi SM, Kholasehzadeh G, Neamatzadeh H, Kargar S. Health beliefs and breast cancer screening behaviors among Iranian female health workers. *APJCP* [Internet]. 2013[cited 2017 Jan 09];15(22):9817-22. Available from: <http://europepmc.org/abstract/med/25520111>
- Martins JD, Andrade JOM, Freitas VS, Araújo TM. Determinantes sociais de saúde e a ocorrência de câncer oral: uma revisão sistemática de literatura. *Rev Salud Pública* [Internet]. 2014[cited 2017 Jan 09];16(5):786-98. Available from: <http://www.scielo.org.co/pdf/rsap/v16n5/v16n5a13.pdf>
- Rocha RS, Pinheiro LP, Oriá MOB, Ximenes LB, Pinheiro AKB, PS Aquino. Social determinants of health and quality of life of caregivers of children with cancer. *Rev Gaúcha Enferm* [Internet]. 2016[cited 2017 Jan 09];37(3):e57954. Available from: http://www.scielo.br/pdf/rge/v37n3/en_0102-6933-rge-1983-144720160357954.pdf
- Lourenço TS, Mauad EC, Vieira RADC. Barriers in the breast cancer screening and the role of nursing: an integrative review. *Rev Bras Enferm* [Internet]. 2013[cited 2017 Jan 09];66(4):585-91. Available from: <http://www.scielo.br/pdf/reben/v66n4/v66n4a18.pdf>
- Lopes TCR, Gravena AAF, Agnolo CMD, Rocha-Brischiliari SC, Demitto MO, Carvalho MDB, et al. Prevalência e fatores associados à realização de mamografia e exame citopatológico. *Rev Bras Prom Saúde* [Internet]. 2015[cited 2017 Jan 09];28(3):402-10. Available from: http://www.inca.gov.br/rbc/n_56/v02/pdf/10_artigo_prevalencia_fatores_associados.pdf
- Garnelo L, Lucas ACDS, Parente RCP, Rocha ESC, Gonçalves MJF. Organization of health care for chronic conditions by family health teams in the Amazon. *Saúde Debate* [Internet]. 2014[cited 2017 Jan 09];38(SPE), 158-72. Available from: <http://www.scielo.br/pdf/sdeb/v38nspe/0103-1104-sdeb-38-spe-0158.pdf>

18. Schneider IJC, Giehl MWC, Boing AF, d'Orsi E. Mammogram screening for breast cancer and associated factors in the South of Brazil: a based-population survey. *Cad Saúde Pública* [Internet]. 2014[cited 2017 Jan 09];30(9):1987-97. Available from: <http://www.scielosp.org/pdf/csp/v30n9/0102-311X-csp-30-9-1987.pdf>
19. Barreto ASB, Mendes MFM, Thuler LCS. Evaluation of a strategy adopted to expand adherence to breast cancer screening in Brazilian Northeast. *Rev Bras Ginecol Obstet* [Internet]. 2012[cited 2017 Jan 09];34(1):86-91. Available from: <http://www.scielo.br/pdf/rbgo/v34n2/a08v34n2>
20. Ohl ICB, Ohl RIB, Chavaglia SRR, Goldman RE. Public actions for control of breast cancer in Brazil: integrative review. *Rev Bras Enferm* [Internet]. 2016[cited 2017 Jan 09];69(4):793-803. Available from: http://www.scielo.br/pdf/reben/v69n4/en_0034-7167-reben-69-04-0793.pdf
21. Passos JG, Souza SRP. Analysis of mortality breast cancer in the state of São Paulo from 1999 to 2012 period. *Sci Health* [Internet]. 2015[cited 2017 Jan 09];6(2):100-8. Available from: http://arquivos.cruzeirosuleducacional.edu.br/principal/new/revista_sciencinhealth/17_mai_ago_2015/Science_06_02_100-108.pdf
22. Sharkawy ATE, Hassan MS, El-Sattar A. Effect of nursing educational guidelines on women's awareness, health practices and beliefs regarding prevention and early detection of breast and cervical cancer. *Life Sci J* [Internet]. 2014[cited 2017 Jan 09];11(6):707-24. Available from: http://www.lifesciencesite.com/lj/life1106/108_25574life110614_707_724.pdf
23. Morowatisharifabad MA, Zeidabadinezhad M, Karimizarchi M. Study of mammography practice and its barriers among close relatives of breast cancer patients in Sirjan. *Toloo-e-behdasht* [Internet]. 2015[cited 2017 Jan 09];13(6):127-37. Available from: http://tbj.ssu.ac.ir/browse.php?a_id=1380&slc_lang=en&sid=1&printcase=1&hbnr=1&hmb=1
24. Assis CF, Mamede M. Mammography and its challenges: socio-educational factors associated to late diagnosis of breast cancer. *Ini Cien Cesumar* [Internet]. 2016[cited 2017 Jan 09];18(1):63-72. Available from: <http://dx.doi.org/10.17765/1518-1243.2016v18n1p63-72>
25. Wang WL, Hsu SD, Wang JH, Huang LC, Hsu WL. Survey of breast cancer mammography screening behaviors in Eastern Taiwan based on a health belief model. *Kaohsiung J Med Sci* [Internet]. 2014[cited 2017 Jan 09];30(8):422-7. Available from: <http://www.sciencedirect.com/science/article/pii/S1607551X14001041>
26. Fouladi N, Pourfarzi F, Mazaheri E, Asl HA, Rezaei M, Amani F, et al. Beliefs and behaviors of breast cancer screening in women referring to health care centers in northwest Iran according to the champion health belief model scale. *APJCP* [Internet]. 2013[cited 2017 Jan 09];14(11):6857-62. Available from: http://www.koreascience.or.kr/article/ArticleFullRecord.jsp?cn=POCPA9_2013_v14n11_6857
27. Dunder PE, Ozyurt BC, Erdurak K. Sociodemographic determinants of nonattendance in a Population-Based Mammography Screening Program in the city of Manisa, Turkey. *Sci World J* [Internet]. 2012[cited 2017 Jan 09];2012(1):1-15. Available from: <https://www.hindawi.com/journals/tswj/2012/816903/abs/>