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Social Iniquity and Mortality Related to Breast and Cervical Cancers: an Integrative Review

Iniquidade Social e Mortalidade por Câncer de Mama e Colo do Útero: Uma Revisão Integrativa

La Desigualdad Social y La Mortalidad por Cáncer de Mama y Cáncer de Cuello Uterino: Una Revisión Integradora

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ABSTRACT

Objective: The leading purpose has been to identify the main publications related to social iniquity and mortality related to breast cancer (BC) and/or cervical cancer (CC), while investigating the type of association between the triggering factor and the case outcome. **Methods:** It is an Integrative Literature Review from the articles searching in the Medline, Lilacs, PubMed and Scielo databases. A total of 3,439 studies were obtained, from which only 85 have met the inclusion criteria. **Results:** The vast majority of the studies have found an association between high socioeconomic status and mortality by BC and also between low socioeconomic status and mortality by CC. The principal indicators used to evaluate these associations were as follows: education, income/poverty and labor market. **Conclusion:** Areas with high social iniquity have higher mortality rates related to CC, while those with higher socioeconomic status exhibit high mortality rates related to BC. These phenomena have several explanations: personal lifestyle, offer and accessibility to screening services and/or treatment, social stratification based on the economic model adopted in the country.

Descriptors: Breast neoplasms, Cervical neoplasms, Mortality, Social iniquity, Socioeconomic factors.

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RESUMO

Objetivo: Identificar as principais publicações relacionadas à iniquidade social e mortalidade por câncer de mama (CAM) e/ou colo do útero (CCU) e investigar o tipo de associação existente entre fator e desfecho. **Método:** Revisão Integrativa de Literatura a partir da busca de artigos nas bases Medline, Lilacs, PubMed e Scielo. Obteve-se 3.439 estudos, destes apenas 85 atendiam aos critérios de inclusão. **Resultados:** A maioria dos estudos encontrou associação entre alto nível socioeconômico e mortalidade CAM e entre baixo nível socioeconômico e mortalidade por CCU. Educação, renda/pobreza e mercado de trabalho foram os principais indicadores utilizados para avaliação dessas associações. **Conclusão:** Áreas com grande desigualdade social apresentam maior mortalidade por CCU enquanto aquelas com melhor nível socioeconômico exibem altas taxas de mortalidade por CAM. Estes fenômenos possuem várias explicações: estilo de vida dos indivíduos, oferta e acessibilidade aos serviços de rastreamento e/ou tratamento, estratificação social baseada no modelo econômico do país.

Descritores: Neoplasias da mama, Neoplasias do colo do útero, Mortalidade, Iniquidade social, Fatores socioeconômicos.

RESUMEN

Objetivo: : Identificar las principales publicaciones relacionadas con la desigualdad social y la mortalidad por cáncer de mama (CAM) y/o el cuello uterino (CCU) e investigan el tipo de asociación entre el factor y el resultado. **Método:** una revisión integradora de la literatura de la búsqueda de artículos en el Medline, Lilacs, PubMed y Scielo. Obtenido 3.439 estudios, de éstos sólo 85 cumplieron con los criterios de inclusión. **Resultados:** La mayoría de los estudios encontraron una asociación entre el nivel socioeconómico alto y el CAM y la mortalidad entre el bajo nivel socioeconómico y la mortalidad por cáncer de cuello uterino. Educación, ingresos/pobreza y el mercado de trabajo fueron los principales indicadores utilizados para evaluar estas asociaciones. **Conclusión:** Las áreas con gran desigualdad social tienen mayores tasas de mortalidad por cáncer de cuello de útero, mientras que aquellos con mayor nivel socioeconómico presentan altas tasas de mortalidad por CAM. Estos fenómenos tienen varias explicaciones: el estilo de vida de los individuos, la oferta y la accesibilidad de los servicios de seguimiento y / o tratamiento, la estratificación social basada en el modelo económico del país.

Descriptores: Neoplasias de la mama, Las neoplasias cervicales, La mortalidad, La desigualdad social, Los factores socioeconómicos.

INTRODUCTION

Demographic growth together with population aging and socioeconomic development, they all have gradually contributed to increasing in cancer incidence and mortality, which is a serious public health problem. Consequently, it has been estimated that by 2030 the worldwide burden will be 21.4 million new cases of cancer and 13.2 million deaths due to this malignant neoplasm. In Brazil, this disease represents the second cause of population mortality, losing only to cardiovascular diseases. Among the most common types that affect the female gender are breast and cervical cancers, respectively occupying the second and third most frequent neoplasms in the world.[1-2]

Incidence and mortality rates for many types of cancer, including breast cancer, are declining in developed countries, for example in the United States of America. On the other hand, an inverse situation occurs in developing countries due to the adoption of unhealthy lifestyles and behaviors. The high mortality by BC in the underdeveloped countries has been justified by access difficulties to prevention services/early detection, cultural barriers and delayed diagnosis. Considering the CC cases, the high disparity in the CC incidence has been rooted to the unequal access to health care that causes either delay or non-adherence to treatment, then generating high mortality rates.[3-5]

Regarding the Brazil, when compared to developed countries, it presents intermediate values of incidence and mortality by BC and CC occurrences. In 2012, the Brazilian mortality rate standardized by the world population for the BC was 12.10 deaths/100 thousand women, with the South and Southeast regions having the highest rates, 13.61 and 13.42/100 thousand women, respectively. Observing the CC, the rate was 4.72 deaths/100 thousand women, with higher rates in the North (10.5/100 thousand) and Northeast (5.81/100 thousand). It should be noted that for CC, rates are considered high when compared to developed countries with well-structured early detection and screening programs.[6-7]

Considering the data above, it has been observed that the incidence and mortality by the two types of neoplasms occur differently among the country regions. In this perspective, there is a need to gain further understanding about the distribution of BC and CC mortality rates among the different social strata. The fundamental objective of this undertaking is establishing effective strategies for screening and early diagnosis. Therefore, the aim of this study was to identify the scientific evidences on social iniquity and mortality from BC and CC, in order to assess the type of association between the triggering factor and the outcome.

METHODS

An Integrative Literature Review was carried out based on the six phases proposed by Souza *et.al.*[8] Initially, the theme was defined as follows: social iniquity and cancer in women, along with the guiding question: What are the scientific evidences on social iniquity and mortality related to BC and CC? In the second phase, we searched from the data bases: Medline, Lilacs, PubMed and Scielo using the following keywords: Breast neoplasms, uterine cervical neoplasms, mortality, social iniquity, social class, poverty, social conditions, socioeconomic factors, which were combined using the Boolean operators 'and' and 'or'. The paper inclusion criteria were as follows: studies on mortality by BC and/or CC; social iniquity and/or related social factors; social iniquity and female mortality. Scientific productions were selected in the form of articles and/or course conclusion work. Taking this search strategy 3,439 papers were obtained,

from which 834 were selected by title, later it was verified that 434 were repeated. The remaining 400 studies were submitted to abstract reading, and then 267 were excluded. A total of 133 studies were fully read, from which 85 were included in this study.

The third phase consisted of the information extraction from the studies, according to the data collection tool proposed by *Madeira*[9]. In the fourth phase each study was analyzed in an organized and critical manner. Due to the authors' use of different indicators that reflect the same reality, it was decided to categorize them by thematic areas, as proposed by Jannuzzi[10] and presented in the column 3 of the Tables 1, 2 and 3. In the fifth stage the results were interpreted and summarized, where the similarities and divergences were verified. Subsequently, a synthesis of the works that are presented and discussed here was composed.

RESULTS

The 85 studies selected for reviewing were organized according to: author(s), study year/period, neoplasms studied, indicator or variable used and type of association found, as shown in the Tables 1, 2 and 3.

As can be verified in the Tables (1, 2 and 3) about 43% (n = 36) of the scientific productions are distributed between 2009 and 2013. Regarding the neoplasm type studied, 46 studies investigated the BC (Table 1), [18] the CC (Table 2) and 21 both of them at the same time (Table 3). The social indicators used by the authors in their research were as follows: education (n = 54)[14, 16, 17, 21, 25-6, 28-9, 31-3, 35-6, 39-44, 46-9, 52-3, 55-64, 66, 68-76, 78, 80, 82, 84-5, 87-8, 91, 94], income and poverty (n = 46)[11-1, 16-24, 27-9, 36-40, 42, 44, 46, 48, 53-4, 65-8, 72-7, 79-80, 83-4, 87, 89, 93-5] , labor market (n= 23)[28-9, 31-2, 36, 39, 44, 48, 50-1, 53, 62-3, 72, 74, 84, 86, 89-92, 94-5], habitation (n = 19)[14, 16-7, 31-2, 36, 40, 44, 48, 53, 68-9, 75-6, 81, 84, 87, 91, 94 31], demographic (n = 15)[12, 14, 17, 31, 34, 41, 45-6, 53, 65, 69, 78, 81, 90-1], race (n = 10)[18, 37, 46-7, 68, 74, 79, 83, 90, 94], infrastructure, (n=7)[12, 14, 17, 53, 69, 76, 87], health (n = 6)[14, 17, 32, 38, 42, 46], life quality (n = 3)[21, 28, 94], cultural (n = 2)[30, 54], environment (n = 2)[31, 53], violence and criminality (n = 1)[31] and one social inclusion and exclusion index (n = 1)[15].

Table 1 – Summary of the breast cancer articles included in the integrative review.

Author	Study Year/ Period	Indicator/ Variable Utilized	Association Type	
			Most Favored Group	Less Favored Group
Ades *et al*.[38]	2008	IRP and IS	+	-
Akinyemiju *et al*.[39]	1992 to 2009	IE, IMT, IRP	-	+
Albano *et al*.[47]	2001	IR and IE	+	-
Bentley *et al*.[48]	1998 to 2000	IRP, IE, IH, IMT	(---)	(---)
Borrell *et al*.[49]	1992 to 2003	IE	+	-
Burnley[50]	1980 to 1986	IMT	+	-
Calle *et al*.[51]	1982 to 1991	IMT	+	-
DeSantis *et al*.[22]	2011	IRP	-	+
Faggiano *et al*.[52]	1981	IE	+	-
Gadeyne *et al*.[26]	1991 to 1995	IE	+	-
Gage and Fouquet[53]	1988 to 1992	ID, IE, IMT, IRP, IH, IA, IIF	+	-

Gerend and Pai[54]	1980 to 2006	IRP, IC	-	+
Geyer[95]	1987 to 1996	IRP, IMT	(---)	(---)
Grubb *et al*.[40]	1999 to 2009	IRP, IE, IH	+	-
Harper *et al*.[11]	1987 to 2005	IRP	+	-
Heck *et al*.[55]	1989 to 1993	IE	+	-
Jaffe *et al*.[56]	1982 to 1993	IE	(---)	(---)
Khang *et al*.[57]	1995 to 2000	IE	+	-
Kim *et al*.[58]	1978 to 1985	IE	+	-
Kinsey *et al*.[59]	1993 to 2001	IE	+	-
Lund and Jacobsen[60]	1970 to 1985	IE	+	-
Martikainen; Valkonen[61]	1971 to 1995	IE	+	-
Menvielle *et al*.[62]	1968 to 1996	IE, IMT	(---)	(---)
Menvielle *et al*.[63]	1975 to 1990	IE, IMT	(---)	(---)
Menvielle *et al*.[43]	1990 to 2000	IE	(---)	(---)
Nishi *et al*.[64]	1958 to 2003	IE	-	+
Pollán *et al*.[65]	1989 to 1998	ID, IRP	+	-
Pudrovska and Anikputa[29]	1950 to 2005	IE, IMT, IRP	-	+
Russell *et al*.[30]	1999 to 2003.	IC	-	+
Salcedo et al.[31]	1994 to 2007	IMT, IE, ID, IH, ICV, IA	+	-
Sarfati *et al*.[66]	1981 to 1999	IE, IRP	-	+
Shai[67]	1979 to 1981	IRP	+	+
Sichieri *et al*.[68]	1985	IE, IR, IRP, IH	(---)	(---)
Silva *et al*.[69]	2000	IH, IE, ID, IIF	+	-
Strand *et al*.[70]	1990	IE	+	-
Strand *et al*.[71]	1990 to 2008	IE	+	-

Tian *et al*.[19]	1984 to 2004	IRP	+	-
Tian *et al*.[20]	1995 to 2005	IRP	-	+
Tian *et al*.[23]	1995 to 2005	IRP	-	+
Tian *et al*.[36]	1995 to 2005	IH, IE, IMT, IRP	-	+
Van Loon et al.[72]	1970	IRP, IMT, IE	(---)	(---)
Vona-Davis; Rose[13]	1986 to 2008	IRP	-	+
Wagener e Schatzkin[73]	1969 to 2007	IRP, IE	-	+
Whitman *et al*.[37]	2005 to 2007	IR, IRP	-	+
Yabroff e Gordis[74]	1991 to 1992	IR, IRP, IE, IMT	-	+
Yao *et al*.[46]	1969 to 1989	IRP, ID, IE, IS, IR	-	+

Association: +: Positive; -: Negative; (---): No association.

IA: Environmental Indicator, IC: Cultural Indicator, ICV: Violence and Criminality Indicator, ID: Demographic Indicator, IE: Educational Indicator, IEX: Social Exclusion Index, IH: Habitation Indicator, IIF: Infrastructure Indicator, IMT: Labor Market Indicator, IQV: Life Quality Indicator, IR: Race Indicator, IRP: Poverty Indicator, IS: Health Indicator.

Source: Elaborated by the author, 2015.

Note: All abbreviations in the "Indicator/Variable Utilized" section were kept as in the work original language.

Table 2 – Summary of the cervical cancer articles included in the integrative review. .

Association: +: Positive; -: Negative; (---): No association.

IA: Environmental Indicator, IC: Cultural Indicator, ICV: Violence and Criminality Indicator, ID: Demographic Indicator, IE: Educational Indicator, IEX: Social Exclusion Index, IH: Habitation Indicator, IIF: Infrastructure Indicator, IMT: Labor Market Indicator, IQV: Life Quality Indicator, IR: Race Indicator, IRP: Poverty

Author	Study Year/ Period	Indicator/ Variable Utilized	Association Type	
			Most Favored Group	Less Favored Group
Antunes; Wunsch--Filho[75]	1980 to 2003	IE, IRP, IH	-	+
Du *et al*.[16]	2000 to 2004	IRP, IE, IH	-	+
Gamarra[14]	1996 to 2006	IRP	+ BC, - CC	- BC, + CC
Gamarra *et al*.[17]	1996 to 2005	IRP, IS, IH, IE, ID, IIF	- after rate correction	+ after rate correction
Kim *et al*.[41]	1996 to 2005	IRP, IS, IH, IE, ID, IIF	- after rate correction	+ after rate correction

Li *et al*.[28]	1998 to 2009	IE, ID	-	+
Martínez and Guevel[42]	1990 to 2007	IRP, IE, IMT, IQV	-	+
McCarthy[18]	1999 to 2006	IRP, IE, IS	-	+
Meira[12]	1995 to 2006	IR, IRP	-	+
Mendonça *et al*.[76]	1999 to 2006	IRP, ID, IIF	-	+
NG *et al.*[77]	2000 to 2008	IH, IE, IRP, IIF	-	+
Palacio-Mejía *et al.*[78]	1971 to 1996	IRP	-	+
Samelson *et al*.[79]	1990 to 2001	ID, IE	-	+
Sánchez-Barriga[32]	1975 to 1984	IRP, IR	-	+
Simard *et al*.[33]	2000 to 2007	IE, IMT, IH, IS	-	+
Singh[34]	1993 to 2007	IE	-	+
Singh *et al*.[80]	1950 to 2008	ID	-	+
Wilson; Fowler[81]	1975 to 2000	IRP, IE	-	+
Wilson; Fowler[81]	1986 to 1987	ID, IRP, IH	(---)	(---)

Indicator, IS: Health Indicator.

Source: Elaborated by the author, 2015.

Note: All abbreviations in the "Indicator/Variable Utilized" section were kept as in the work original language.

Regarding the associations between social iniquity and mortality, a positive association was found in the groups with the highest mortality rate and a negative association in those with the lowest. Considering the BC mortality, 58.2% (n = 39) of the studies found a positive association in the most favored groups[11, 15, 19, 21, 24-7, 31, 38, 40, 45, 47, 49-53, 55, 57-61, 65, 67, 69-71, 82-92], 23.9% (n = 16) in the less favored groups [13, 20, 22-3, 29-30, 36-7, 39, 44, 46, 54, 64, 66, 73-4], 1.5% (n = 1) positive association in both groups[67] and 16.4% (n = 11) had no association found[43, 48, 56, 62-3, 68, 72, 80, 93-5]. The CC results were 2.57% (n = 1) for finding a positive association in the most favored groups [83,] 92.3% (n = 36) to the less favored groups[12, 14-8, 21, 24-5, 27-8, 32-5, 41-2, 44-5, 75-80, 82, 84-5, 87-94] and 5.13% (n = 2) had no association found[81, 86].

Table 3 – Summary of the articles included in the integrative review about breast and cervical cancers.

Studied neoplasm: BC – Breast Cancer; CC – Cervical Cancer.

Association: +: Positive; -: Negative; (---): No association.

Author	Study Year/Period	Indicator/ Variable Utilized	Association Type	
			Most Favored Group	Less Favored Group
Baena *et al.*[21]	2000 to 2004	IE, IRP, IQV	+ BC, - CC	- BC, + CC

Bouchardy *et al*.[82]	1978 to 1982	IE	+ BC, - CC	- BC, + CC
Bray *et al*.[24]	2008 to 2030	IRP	+ BC, - CC	- BC, + CC
Chu *et al*.[83]	1990 to 2000	IR, IRP	+	-
Elstad *et al*.[25]	1971 to 2002	IE	+ BC, - CC	- BC, + CC
Faggiano *et al*.[84]	1966 to 1994	IMT, IE, IH, IRP	+ BC, - CC	- BC, + CC
Fernandez and Borrell[85]	1992 to 1995	IE	+ BC, - CC	- BC, + CC
Krieger *et al*.[27]	1960 to 2006	IRP	+ BC, - CC	- BC, + CC
MacArthur *et al*.[86]	1950 to 1994	IMT	+ BC, (---) CC	- BC, (---) CC
Matos *et al*.[87]	1980 to 1986	IH, IE, IRP, IIF	+ BC, - CC	- BC, + CC
Menvielle *et al*.[88]	1990	IE	+ BC, - CC	- BC, + CC
Middelkoop *et al*.[89]	1982 to 1991	IRP, IMT	+ BC, - CC	- BC, + CC
Müller[15]	1996 to 2005	IEX	+ BC, - CC	- BC, + CC
Najem and Greer[90]	1968 to 1977	IR, ID, IMT	+ BC, - CC	- BC, + CC
Philips Junior *et al*.[44]	2004 to 2008	IH, IE, IRP, IMT	-	+
Polleto and Morini[91]	1977 to 1981	IE, IMT, IH, ID	+ BC, - CC	- BC, + CC
Ribeiro and Nardocci[45]	1998 to 2008	ID	+ BC, - CC	- BC, + CC
Robinson and Walker[92]	1984 to 1995	IMT	+ BC, - CC	- BC, + CC
Smailyte *et al*.[35]	2001 to 2004	IE	(---) BC, - CC	(---) BC, + CC
Smith *et al*.[93]	1987 to 1991	IRP	(---) BC, - CC	(---) BC, + CC
Williams *et al*.[94]	1979 to 1983	IMT, IR, IE, IH, IQV	(---) BC, - CC	(---) BC, + CC

IA: Environmental Indicator, IC: Cultural Indicator, ICV: Violence and Criminality Indicator, ID: Demographic Indicator, IE: Educational Indicator, IEX: Social Exclusion Index, IH: Habitation Indicator, IIF: Infrastructure Indicator, IMT: Labor Market Indicator, IQV: Life Quality Indicator, IR: Race Indicator, IRP: Poverty Indicator, IS: Health Indicator.

Source: Elaborated by the author, 2015.

Note: All abbreviations in the "Indicator/Variable Utilized" section were kept as in the work original language.

DISCUSSION

Both BC and CC are important causes of mortality among the female population. The results of most studies presented in this review demonstrate that BC mortality has been associated with groups of a high socioeconomic level, while CC mortality has been related to groups with lower socioeconomic status.

In the Americas, BC mortality rates from 2000 to 2009 were low in El Salvador and Guatemala, while in Brazil, Canada and in the United States of America intermediate values have been found. For the CC, annual rates are high in El Salvador, Nicaragua and Paraguay, and lower rates were found in Canada, Puerto Rico and the United States of America. The authors point out that in Brazil, the BC death rate is higher than by CC, and also highlighted that the CC disproportionately affects women residing in poorer areas.[96]

In Brazil, the BC showed an increasing trend since 1980 and, at the end of the 1990s, started showing a decrease for women living in the capitals. From 1980 to 2010, the BC mortality rates increased in the Brazilian States with the increase of the positive indicators of socioeconomic level, although started to decrease as the negative indicators began increasing, among them the fertility rate.[97] To Ribeiro *et.al*.[98], this latter indicator is due to greater exposure to risk factors, such as: oral contraceptive use, breastfeeding, overweight and obesity, and family history. Reproductive risk factors for BC are related to hormone effects on the ovaries that begin at puberty, continue with monthly cycles, and end at menopause. After the fifth year using oral contraceptives significantly increases the risk for BC. On the other hand, lactation exerts a protective effect because it promotes the complete differentiation of the mammary cells and by reducing the time of exposure to the action of the sex hormones that decrease due to the amenorrhea produced by breastfeeding. Overweight and obesity increase the level of circulating estrogen since the adipose tissue is the main site of estrogen synthesis in postmenopausal women. However, the practice of physical activity brings several benefits, including serum estrogen reduction and helping in weight control.[99, 100, 101]

When assessing the society and its transformations over the years, it has been verified that women's lifestyle has changed over time and these changes reflect on their lifestyle habits and behaviors. According to Fumis[102] women residing in more developed regions tend to postpone maternity, leaving it to after the age of 30 and using contraceptives. Moreover, heavy involvement with work may not provide sufficient time for physical activities, which prevents them from enjoying the protection benefits provided by these practices. On the other hand, areas of better socioeconomic level have more and more advanced resources for the detection and treatment of cancer, as well as greater and easier access to these health care services, which enable early diagnosis and cure. Barbosa *et al*.[103] observed that living in urban areas is associated with a greater number of mammography exams being made.

Ribeiro *et al*.[98] research suppose that women living in areas of low socioeconomic level tend to seek treatment in hospitals in the major centers and capitals due to the greater availability of resources, which contributes to increased mortality in these areas. It is highlighted that in many cases, the search for treatment may occur at an advanced stage, where there is no longer a chance for the cancer cure. Furthermore, the quality of death records in capitals is more effective, which can increase the number of quantified cases. Despite the improvement of the information systems in the country in recent years, underreporting still occur in the most remote regions.[104]

Regarding the CC mortality, it is verified that there is a decreasing trend over the years. But, the increase in regions with socioeconomic disadvantages is highlighted. In Brazil, the low availability of health care services is associated with regions with worse socioeconomic conditions. The early detection of the CC is performed through the Papanicolaou test. According to the World Health Organization, the coverage of at least 80% of the target population and adequate diagnosis/treatment can guarantee a average reduction of about 60-90% of the incidence of CC. European and American countries that adopted this method had great success in reducing mortality due to this neoplasm.[7]

Notwithstanding the existence of the screening test, it has been observed that it is not equally available in all the country regions. According to Santos *et al*.[105], the regions with worse socioeconomic conditions present poor performance of the agreed indicators for the CC control. Data from Fiocruz[106], on the Health System Performance Evaluation, showed that in 2008 the percentage of women in the group age from 25 to 64 years old that underwent the Papanicolaou test in the last 3 years was 78.4%. The highest percentage was found in the Southeast region and the lowest in the North and Northeast regions.

Thuler *et.al*.[107] studies confirmed that the socioeconomic iniquities existing in Brazil are associated with the diagnosis of the CC at an advanced stage. Regarding this information, black women with low schooling are more likely to be diagnosed for CC advanced-stage. From 1980 to 2010, the CC mortality rates in the country's capitals correlated directly with negative socioeconomic status indicators. It was observed a decrease in mortality in the South and Southeast regions, however, for the North and Northeast regions this fact occurred only within the capitals.[97]

There are regions where treatment is available, but with more concentration in more developed areas, such as capitals, for example. In general, populations of low socioeconomic status tend to live in distant areas, and the difficulty of access to large urban centers means that the assistance is performed in the locality, where the resources are insufficient in most cases.[1, 108]

According to the National Commission on Social Determinants of Health[109], the individual socioeconomic conditions generate socioeconomic stratification of a population, attributing them different social positions, which in turns, define the life and health conditions. According to Barata[110], the way the different groups present themselves in society is related to the patterns of work, consumption, practical activities of daily life, organizational forms or social participation, politics and culture. Thus, some of these relationships are beneficial and maintain health, and others are harmful and

disease producing, giving rise to the health-disease patterns of social classes.

The social position occupied by the individual is reflected in the differential exposure to risks that cause health damage, vulnerability to disease occurrence from exposure to them and social or physical consequences, once the disease is contracted. In this sense, it is important to understand the real factors associated with social iniquity and mortality related to BC and CC in Brazil, since we live in a country where wealth is inadequately distributed, which amplifies iniquities and interferes in the population health state.

In the studies presented by this review, the three most used indicators for assessing the association between social iniquity and mortality related to BC and CC involved the following themes: education, income/poverty, and the labor market. The higher the educational level, the higher the risk of death by BC, while the lower to happening by CC. This fact might be explained by the greater exposure to risk factors.

Low schooling levels can be considered as a barrier to assimilating knowledge about the disease, which may lead people to expose themselves to risk factors because they do not clearly understand how they increase the likelihood of illness. High schooling levels, on the other hand, may provide opportunities in the labor market that demand more time and interfere with the accomplishment of physical activities, postpone maternity and shorten the breastfeeding time, which are protection factors in the case of BC occurrence.

Poverty is associated with low BC screening, greater probability of end-stage diagnosis for this neoplasm, and inadequate treatment provision. Deaths from CC are more common in women living in poor areas. Higher death risk by BC was observed among women that perform skilled occupations, when compared to those who perform activities that are either not valued or are not socially recognized, or even that do not have remuneration, for example, housewives.[86,92]

Most studies that did not find any association between iniquity and the cancers under consideration here were conducted before 1990, and in the past the information underreporting was greater than currently, especially in the most underprivileged areas.

Few studies have involved Brazilian women and mortality by BC, and among those conducted in the country, the majority of them were performed in the São Paulo State. In order to have an overview of the country with regard to social iniquity and mortality related to BC, it is important to know the reality of each State, once in Brazil there are intermediate values of mortality for this cause. The most used indicators in the reviews of this type of cancer were income/poverty and educational, but not all those residing in a favored socioeconomically developed area have a better income and high schooling levels, especially in a State like *São Paulo*, which presents great diversity in the social conditions.

Regarding the CC cases, since there is a nationwide screening program in place, it is unacceptable that mortality is still high, especially in poor areas. Since most of the studies involved an educational indicator and the people behavior reflects the knowledge they acquired throughout their lives, it is emphasized that educational actions and written information for women having low levels of education should have simple language, be clear and prejudice free, especially with regard to their choices, providing a better understanding and approximation of health care services, then achieving equity.

Most studies are ecological, it is emphasized that these do not refer to the analysis of the life and/or health situation at the individual level. However, when it comes to social iniquity, the results found can help understanding the people health problems, since the aggregate studies results are originated from individual groups that experience the same reality daily. It is due to the characteristics that bond them within a common geographic space, as follows: basic sanitation absence, lack or poor quality of public services, long distances traveled to access the health care resources and various other barriers, like the social, economic and health ones.

Social determinants such as income, education, occupation, availability/access to health care services, exposure to diseases and among others; they are all causes of illness and social iniquities in health care.[111] As most determinants and health determinants involve social aspects, the use of social indicators becomes essential for measuring the problems and evaluating health care outcomes. "Measuring iniquities in living and health care conditions is the first step in order to identify health care iniquities... since equity in health care services is vital to regional economic development."[112] Hence, it is necessary to establish very specific indicators

CONCLUSIONS

Areas with high social iniquity have higher mortality by CC, and the areas with higher socioeconomic level have higher mortality by BC. These phenomena have several explanations: personal lifestyle, offer and accessibility to screening services and/or treatment, social stratification based on the economic model adopted in the country. These factors may be appropriate when taking into consideration the analysis of each particular area, in which they are most frequent in order to improve the life quality and the population health.

Assessing the population health conditions requires the use of indicators capable of detecting reality and changes in society over time and space. A good indicator should be available on an easily accessible basis, have a large coverage and periodic updating, and low time investment and resources in obtaining it. The information on the indicators most used in the studies are easily accessible in our country and to obtain them there is no cost whatsoever, since they are made available on national and public sites of the institutions responsible for their collection, consolidation, analysis and dissemination, among which it is possible to mention: I*nstituto Brasileiro de Geografia e Estatística (IBGE)* [Brazilian Institute of Geography and Statistics] and Datasus.

It is emphasized that health care equity is closely related to the adequate provision of health care services and according to the population needs. By knowing the reality of each area, the manager can propose effective and specific strategies to reduce the exposure to modifiable risk factors for BC and CC, especially with regard to the iniquities in the provision of health care services and resources that guarantee the survival, health and well-being of the disadvantaged group and/or population. Additionally, monitoring the indicators updating can provide information that will help to assess the actions implemented in order to modify them, improve them and/or extend them when necessary.

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