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Pancreatic cancer mortality trends and correlation with human development index (HDI) in Brazil over 40 years

Diego Rodrigues Mendonça e **SILVA**[1,2], Max Moura de **OLIVEIRA**[3], Gisele Aparecida **FERNANDES**[4] and Maria Paula **CURADO**[1,2,4]

[1] Universidade de São Paulo, Faculdade de Saúde Pública, Programa de Pós-Graduação em Epidemiologia, São Paulo, SP, Brasil. [2] A.C.Camargo Câncer Center, Registro Hospitalar de Câncer, São Paulo, SP, Brasil. [3] Universidade Federal de Goiás, Instituto de Patologia Tropical e Saúde Pública, Departamento de Saúde Coletiva, Goiânia, GO, Brasil. [4] A.C.Camargo Câncer Center, Grupo de Epidemiologia e Estatística do Câncer, São Paulo, SP, Brasil.

ABSTRACT – Background – Pancreatic cancer mortality is greater in countries with a high Human Development Index (HDI). This study analyzed pancreatic cancer mortality rates trends, and their correlation with HDI in Brazil over 40 years. **Methods –** Data on pancreatic cancer mortality in Brazil between 1979 and 2019 were obtained from the Mortality Information System (SIM). Age-standardized mortality rates (ASMR) and Annual Average Percent Change (AAPC) were calculated. Pearson's correlation test was applied to compare mortality rates and HDI for three periods: 1986–1995 was correlated with HDI of 1991, 1996–2005 with HDI of 2000, and 2006–2015 with HDI of 2010; and to the correlation of AAPC versus the percentage change in HDI from 1991 to 2010. **Results –** A total of 209,425 deaths from pancreatic cancer were reported in Brazil, with an annual increase of 1.5% in men and 1.9% in women. There was an upward trend for mortality in most Brazilian states, with the highest trends observed in the North and Northeast states. A positive correlation between pancreatic mortality and HDI was observed over the three decades ($r>0.80$, $P<0.05$) and also between AAPC and HDI improvement by sex ($r=0.75$ for men and $r=0.78$ for women, $P<0.05$). **Conclusion –** There was an upward trend in pancreatic cancer mortality in Brazil for both sexes, but rates among women were higher. Mortality trends were higher in states with a higher percentage improvement in HDI, such as the North and Northeast states.

Keywords – Mortality; pancreatic neoplasms; socioeconomic factors; epidemiology.

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Corresponding author: Diego Rodrigues Mendonça e Silva.
E-mail: diego.rmesilva@gmail.com

INTRODUCTION

Pancreatic cancer is one of the most lethal malignancies, ranking 11th in number of cases and 7th in cancer-related deaths[1-3]. An estimated 466,000 deaths from pancreatic cancer were recorded in 2020[1-2], more than half (55.8%) of which occurred in developed countries[4]. Projections for 2018–2040 predict an overall +79.9% increase (345,181) in these deaths, with greater rises in Africa (+114.8%) and Latin America and the Caribbean (+101.0%), and lower increases in Europe (+31.6%)[5]. It is expected to surpass breast cancer as the third-leading cause of death by 2025 in European countries[6].

In high/very high Human Development Index (HDI) countries, the age-standardized incidence rate is 7.2 per 100,000 population and mortality rate is 6.7/100,000, while in low/medium HDI regions this incidence falls to 1.6/100,000 and mortality to 1.5/100,000 among men. Among women, the incidence rate is 5.0/100,000 and mortality is 4.6/100,000 in high/very high HDI regions. In low/medium HDI regions, both incidence and mortality rates are 1.0/100,000[1]. Thus, mortality rates are 4 to 5-fold higher in high HDI countries, where studies report a correlation between high mortality rates from pancreatic cancer and high/very high HDI areas, whereas lower rates are found in low/medium HDI regions[7,8-10].

In Brazil, between 1980–2013, pancreatic cancer mortality showed an increasing trend of 0.75% per year for men and 0.91% for women[11], with increasing trends also observed between 2010–2019 in both sexes[12]. This pattern reflects global trends, with increases of 0.55% to 4.20% in men and 0.78% to 5.83% in women worldwide[13]. Bigoni et al. showed that mortality trends of pancreatic cancer were rising throughout Brazil, except in the Southeast region, which showed a decline among women. Moreover, regional disparities in pancreatic cancer mortality trends are likely due to improvements in diagnosis and the quality of the information provided by death certificates[14]. Projections for 2029 predict increasing trends and inequalities in pancreatic cancer mortality by Brazilian region and sex[7].

Pancreatic cancer is closely associated with the level of industrialization in societies, where by most deaths caused by this cancer have been reported in developed countries[1,3]. The prognosis of the disease has remained largely unchanged over the last two decades[15]. Non-modifiable risk factors of pancreatic cancer include age, gender, ethnicity, ABO blood group, diabetes mellitus, family history, and genetic susceptibility, while modifiable risk factors include smoking, alcohol consumption, dietary factors, pancreatitis, infection and socioeconomic status and health insurance[3,16]. Disparities in pancreatic cancer mortality rates and increases in many countries can be attributed to risk factors such as lifestyle (smoking, alcohol consumption, physical inactivity, prevalence of obesity), socioeconomic status and health insurance[13, 15-17].

Some studies show increased mortality in high-income countries where HDI is generally rising. However, for Brazil, there is a lack of studies investigating the correlations of mortality rates and trends in pancreatic cancer with HDI. This study analyzed pancreatic cancer mortality rates and trends, and their correlation with increase in the HDI for different Brazilian states over a 40-year period.

METHODS

Data on pancreatic cancer mortality in Brazil between 1979 and 2019, were obtained from the Mortality Information System (SIM)[18]; death certificates were coded using ICD 9th revision (ICD-9) number 157 for the period 1979–1995 and C25 for 1996–2019[19] (ICD-10). Population data were obtained from the Brazilian Institute of Geography and Statistics (IBGE) available on DATASUS[20], with deaths and population data extracted by year, according to five-year age groups, sex and Brazilian state.

All results were described by Brazilian state according to five geographical regions: North [six states: Acre (AC); Amazonas (AM); Para (PA); Rondonia (RO); Roraima (RR); Tocantins (TO)], Northeast [10 states: Alagoas (AL); Amapa (AP); Bahia (BA); Ceara (CE); Maranhao (MA); Paraiba (PB); Pernambuco (PE); Sergipe (SE)], Central-West [four states, Distrito Federal (DF); Goias (GO); Mato Grosso (MT); Mato Grosso do Sul (MS)]; Southeast [four states; Espirito Santo (ES); Minas Gerais (MG); Rio de Janeiro (RJ); Sao Paulo (SP)] and South [three states, Parana (PR); Rio Grande do Sul (RS); Santa Catarina (SC)].

HDI by Brazilian state was drawn from the United Nations Development Program (UNDP)[21] for the years 1991, 2000 and 2010. Changes in HDI between 1991 and 2010 were calculated as percentage difference.

Crude and age-standardized mortality rates were calculated by sex for each Brazilian state and for Brazil as a whole. The age-standardized rates were calculated using the direct method and the world standard population of Segi modified by Doll (1966). Mortality rates were also calculated for three decades (1986–1995, 1996–2005 and 2006–2015). Annual mortality rates were smoothed using a 3-year average for every ten-year period from 1979–2019. Age-specific mortality rates were determined for the five geographical regions (North, Northeast, Central-west, Southeast and South) and for Brazil as a whole[20].

The annual average percent change (AAPC) was estimated for mortality rates, except for females in the two states of Acre and Tocantins (North region), for which mortality data collection started only from 1989 onwards, precluding calculation of trends. AAPC was determined by applying a linear regression model using the Joinpoint Regression Program, version 4.9.0.0, March 2021[22].

Pearson's correlation test was applied to compare pancreatic cancer mortality and HDI in a two-step process. In the first step, the correlation between age-standardized pancreatic mortality rates and HDI was determined for the three 10-year periods: 1986–1995 was correlated with the HDI of 1991; 1996–2005 with HDI of 2000; and 2006–2015 with HDI of 2010. In the second step, the percentage change in HDI between 1991 and 2010 was correlated with mortality trends by Brazilian state. Pearson's correlation test was applied using STATA version 15 (College Station, Texas, USA, 2017) software, with a *P*-value <0.05 considered significant. A map of the Brazilian states was plotted, with mortality rates expressed in tertiles by period, using Tabwin software.

RESULTS

In Brazil, over the period from 1979 to 2019, a total of 209,425 deaths from pancreatic cancer were reported, comprising 106,825 in men and 102,600 in women. Age-standardized mortality rates in men ranged from 2.9 in 1979 to 6.1/100,000 in 2019, with an annual increase of 1.5% (95%CI 1.3;1.6), while ASMR in women ranged from 2.1 in 1979 to 4.7/100,000 in 2019, with an annual increase of 1.9% (95%CI 1.7;2.0) (TABLE 1; Supplementary TABLE 1). The highest mortality rates were observed in the states of the South, Southeast and Central-West, ranging from 4.8 to 9.1/100,000 for men and 4.0 to 7.2 for women in 2019, while rates in the North and Northeast ranged from 2.4 to 7.4 for men and 1.9 to 6.1/100,000 for women (TABLE 1, FIGURE 1). Age-specific mortality rates were higher in the 65–69 age group and, geographically, the highest ASMR were observed in the South, and the lowest rates in the North and Northeast (FIGURE 2).

Pancreatic cancer mortality trends (AAPC) showed an upward trend in most Brazilian states, with higher increases in the North (Roraima, 5.4% per year) and Northeast (Piaui, 5.9%), while annual increases in the South ranged from 0.7% to 1.5%, in the Southeast from 0.5% to 2.5%, and in the Central-West from 1.6% to 4.1% for men.

A positive correlation (r>0.80, *P*<0.05) was observed between mortality rate and HDI over the three decades, where mortality rates were greatest in the states with the highest HDI in 2010 (FIGURE 3, TABLE 1).

The HDI increased unequally in Brazilian states from 1991 to 2010, ranging from 54% to 89% in the North, 50% to 79% in the Northeast, 33% to 53% in the Southeast and South, and from 38% to 48% in North and Northeast states (TABLE 1).

A positive correlation was found between trends for pancreatic cancer mortality in states with highest increase in HDI (r=0.75 men, *P*<0.05; r=0.78 women, *P*<0.05). The greatest increase in HDI occurred in the Northeast -Maranhao state, where a 79% rise in HDI was associated with a 5.3% (95%CI 4.4;6.1) annual increase in cancer mortality. Piaui state had a 78% increase in HDI, associated with an annual increase in the cancer of 5.9% (95%CI 5.2;6.5) (FIGURE 4, TABLE 1).

TABLE 1. Age-standardized mortality rates (ASMR) for pancreatic cancer, Human Development Index and average annual percentage change (AAPC) in Brazil by state, from 1979 to 2019.

State	HDI			Percentage increase in HDI 1991-2010	Male						Female					
					ASMR per 100,000 population					AAPC (95%CI) 1979-2019	ASMR per 100,000 population					AAPC (95%CI) 1979-2019
	1991	2000	2010		1986-1995	1996-2005	2006-2015	1979	2019		1986-1995	1996-2005	2006-2015	1979	2019	
Brazil	0.493	0.612	0.727	47%	3.4	3.7	4.3	2.9	6.1	1.5 (1.3;1.6)	2.5	2.9	3.4	2.1	4.7	1.9 (1.7;2.0)
North																
Acre (AC)	0.402	0.517	0.663	65%	1.8	0.9	2.9	1.2	4.5	2.4 (0.7;4.1)	1.0	2.0	1.5	-	3.7	*
Amazonas (AM)	0.430	0.515	0.674	57%	1.5	2.4	3.3	1.1	4.7	4.4 (4.0;4.7)	1.3	1.5	3.0	0.6	3.3	4.3 (3.7;5.0)
Para (PA)	0.413	0.518	0.646	56%	1.6	1.5	2.0	1.0	2.9	1.3 (0.8;1.9)	1.5	1.2	1.7	0.8	3.2	1.4 (0.8;1.9)
Rondonia (RO)	0.407	0.537	0.690	70%	1.8	2.6	2.9	3.0	5.6	3.9 (2.7;5.1)	1.9	2.2	2.4	0.1	6.1	1.7 (1.0;2.4)
Roraima (RR)	0.459	0.598	0.707	54%	1.8	3.5	2.9	0.1	7.4	5.4 (2.8;8.0)	1.8	1.3	3.9	0.1	3.8	4.5 (2.4;6.7)
Tocantins (TO)	0.369	0.525	0.699	89%	0.7	1.5	3.0	-	4.2	*	0.6	1.6	2.5	-	3.4	*
Northeast																
Alagoas (AL)	0.370	0.471	0.631	71%	1.0	1.2	2.5	1.1	2.8	3.4 (2.8;4.1)	0.9	1.2	1.8	0.5	3.5	3.5 (3.0;4.0)
Amapa (AP)	0.472	0.577	0.708	50%	3.2	3.2	2.6	2.2	2.4	0.4 (-0.6;1.4)	3.3	1.4	2.4	3.4	1.9	0.9 (-0.9;2.8)
Bahia (BA)	0.386	0.512	0.660	71%	1.5	1.6	2.7	1.3	4.6	2.7 (2.2;3.2)	1.1	1.4	2.2	0.7	3.4	3.2 (2.8;3.6)
Ceara (CE)	0.405	0.541	0.682	68%	1.0	2.0	3.0	1.1	4.6	4.4 (3.9;4.9)	0.8	1.5	2.6	0.6	3.4	4.6 (4.0;5.1)
Maranhao (MA)	0.357	0.476	0.639	79%	0.6	0.9	1.9	0.4	2.4	5.3 (4.4;6.1)	0.5	0.7	1.8	0.1	2.3	5.4 (4.6;6.2)
Paraiba (PB)	0.382	0.506	0.658	72%	1.3	1.2	3.0	0.5	4.2	3.6 (2.7;4.5)	0.7	1.0	2.2	0.4	3.2	4.4 (3.2;5.6)
Pernambuco (PE)	0.440	0.544	0.673	53%	1.9	2.5	3.4	1.7	5.1	2.6 (2.2;2.9)	1.6	2.3	3.0	1.0	3.6	3.3 (3.0;3.5)
Piaui (PI)	0.362	0.484	0.646	78%	0.8	1.4	2.4	0.1	3.1	5.9 (5.2;6.5)	0.6	1.2	2.0	0.2	3.5	5.8 (5.3;6.3)
Rio Grande do Norte (RN)	0.428	0.552	0.684	60%	2.0	1.9	3.3	3.9	4.6	3.3 (2.7;3.9)	1.6	1.6	2.6	0.5	5.1	3.5 (2.9;4.2)
Sergipe (SE)	0.408	0.518	0.665	63%	0.9	1.6	2.6	1.0	5.1	4.8 (3.7;5.9)	1.3	1.8	2.6	0.9	3.7	4.4 (3.8;5.0)
Central-West																
Federal District (DF)	0.616	0.725	0.824	34%	6.0	5.5	5.1	4.1	9.1	0.3 (-0.1;0.7)	4.3	4.5	4.3	4.6	5.5	0.5 (0.1;1.0)
Goias (GO)	0.487	0.615	0.735	51%	2.4	2.9	3.9	1.3	5.7	2.4 (2.1;2.8)	1.8	2.6	2.8	2.0	4.3	2.9 (2.6;3.3)
Mato Grosso (MT)	0.449	0.601	0.725	61%	1.8	3.1	3.5	0.8	4.8	4.1 (3.6;4.6)	1.5	2.2	2.8	0.1	4.0	5.5 (3.9;7.1)
Mato Grosso do Sul (MS)	0.488	0.613	0.729	49%	3.5	3.7	4.7	3.4	5.9	1.6 (1.2;1.9)	2.2	2.9	3.4	2.4	4.5	2.3 (1.9;2.7)
Southeast																
Espirito Santo (ES)	0.505	0.640	0.740	47%	3.0	3.3	4.3	2.9	6.4	1.8 (1.4;2.3)	2.3	2.5	3.2	2.1	4.7	2.2 (1.8;2.6)
Minas Gerais (MG)	0.478	0.624	0.731	53%	3.0	3.2	3.6	2.6	5.0	1.4 (1.2;1.7)	2.1	2.5	2.9	1.9	4.1	1.7 (1.6;1.9)
Rio de Janeiro (RJ)	0.573	0.664	0.761	33%	4.4	4.4	4.7	4.8	6.7	0.5 (0.3;0.7)	3.3	3.3	3.7	2.8	4.7	1.1 (0.9;1.3)
Sao Paulo (SP)	0.578	0.702	0.783	35%	3.3	4.1	5.4	2.4	7.7	2.5 (2.4;2.7)	3.4	4.0	4.1	3.3	5.7	1.3 (1.1;1.5)
South																
Parana (PR)	0.507	0.650	0.749	48%	4.5	5.0	5.7	3.6	7.9	1.2 (1.0;1.4)	3.2	3.7	4.3	2.5	5.6	1.6 (1.4;1.7)
Rio Grande do Sul (RS)	0.542	0.664	0.746	38%	6.7	6.3	7.0	6.0	9.0	0.7 (0.5;0.9)	4.5	4.8	5.3	3.5	7.2	1.3 (1.1;1.5)
Santa Catarina (SC)	0.543	0.674	0.774	43%	4.6	5.2	5.6	2.9	8.1	1.5 (1.2;1.7)	2.8	3.8	4.3	2.0	6.1	2.5 (2.2;2.8)

ASMR: age-standardized mortality rates; HDI: Human Development Index; CI: confidence interval; AAPC in bold = $P<0.05$.*Acre (North) yielded insufficient data for females, while Tocantins (North) lacked data for both sexes.

SUPPLEMENTARY TABLE 1. Number of deaths and age-standardized mortality rates (ASMR) by sex in Brazil for 1979–2019.

Year	Male		Female	
	Deaths	ASMR	Deaths	ASMR
1979	996	2.9	779	2.1
1980	1,062	3.1	833	2.2
1981	1,021	2.9	818	2.1
1982	1,119	3.0	900	2.2
1983	1,198	3.1	873	2.0
1984	1,300	3.3	903	2.0
1985	1,270	3.1	1,028	2.2
1986	1,415	3.4	1,106	2.3
1987	1,404	3.3	1,131	2.3
1988	1,453	3.3	1,191	2.3
1989	1,475	3.2	1,258	2.4
1990	1,571	3.4	1,314	2.4
1991	1,595	3.3	1,311	2.3
1992	1,712	3.4	1,406	2.4
1993	1,718	3.5	1,537	2.7
1994	1,758	3.5	1,594	2.7
1995	1,845	3.6	1,677	2.8
1996	1,956	3.5	1,658	2.5
1997	1,913	3.4	1,861	2.7
1998	2,039	3.6	1,883	2.8
1999	2,215	3.8	2,027	2.9
2000	2,237	3.5	2,168	2.7
2001	2,301	3.5	2,334	2.9
2002	2,469	3.7	2,411	2.9
2003	2,460	3.7	2,431	2.9
2004	2,712	4.0	2,813	3.3
2005	2,858	4.1	2,871	3.3
2006	3,015	4.3	2,996	3.4
2007	3,224	3.9	3,252	3.1
2008	3,358	4.0	3,404	3.2
2009	3,446	4.0	3,539	3.2
2010	3,670	4.0	3,768	3.2
2011	3,802	4.1	3,923	3.3
2012	4,017	4.3	4,206	3.5
2013	4,373	4.7	4,335	3.6
2014	4,475	4.8	4,415	3.6
2015	4,653	4.9	4,808	3.9
2016	5,004	5.3	4,907	4.0
2017	5,316	5.6	5,438	4.4
2018	5,496	5.7	5,600	4.5
2019	5,904	6.1	5,893	4.7

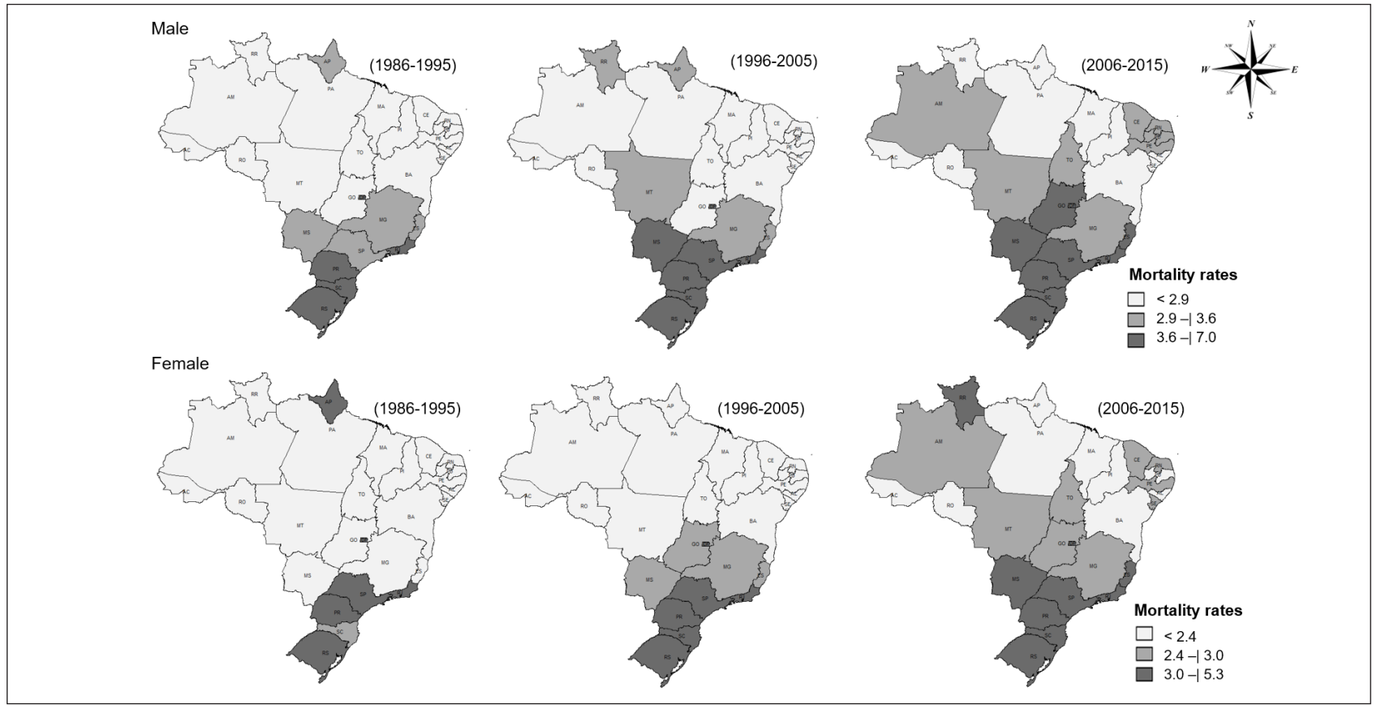

FIGURE 1. Age-standardized mortality rates per 100,000 population for pancreatic cancer over three decades (1986–1995, 1996–2005, 2006–2015) by sex and tertile for Brazil states.

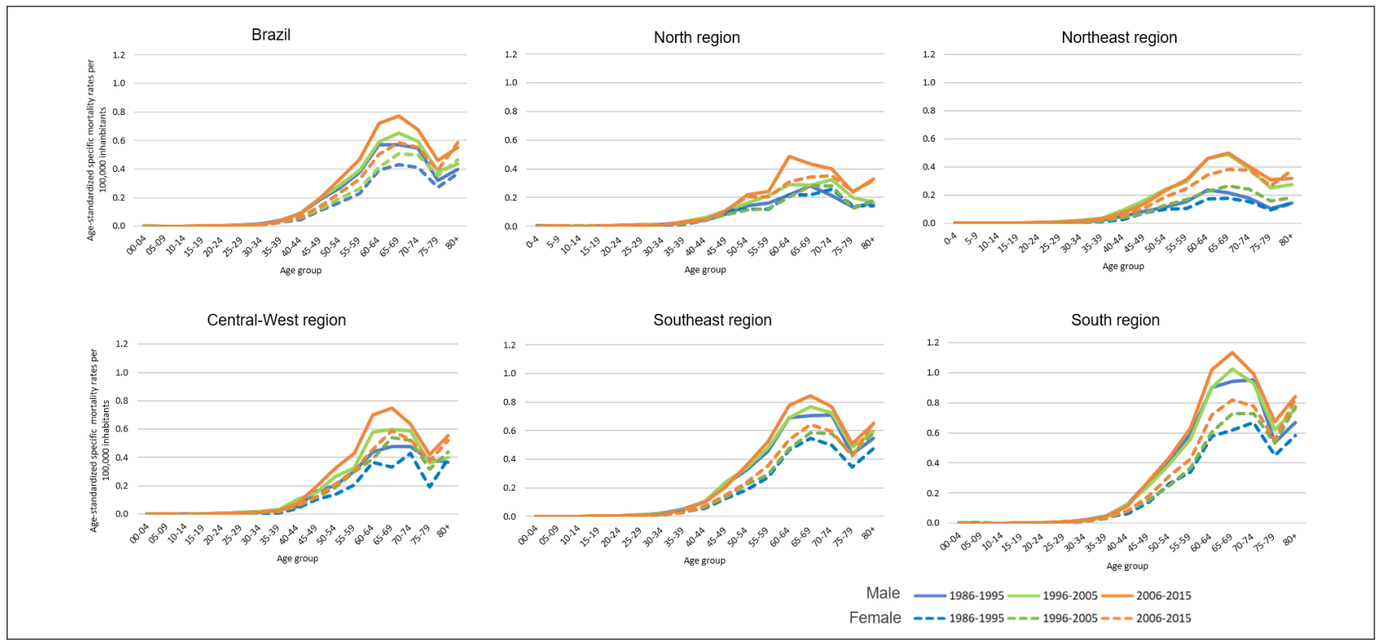

FIGURE 2. Age-standardized mortality rates for pancreatic cancer by age group, sex and geographical region of Brazil over three decades.

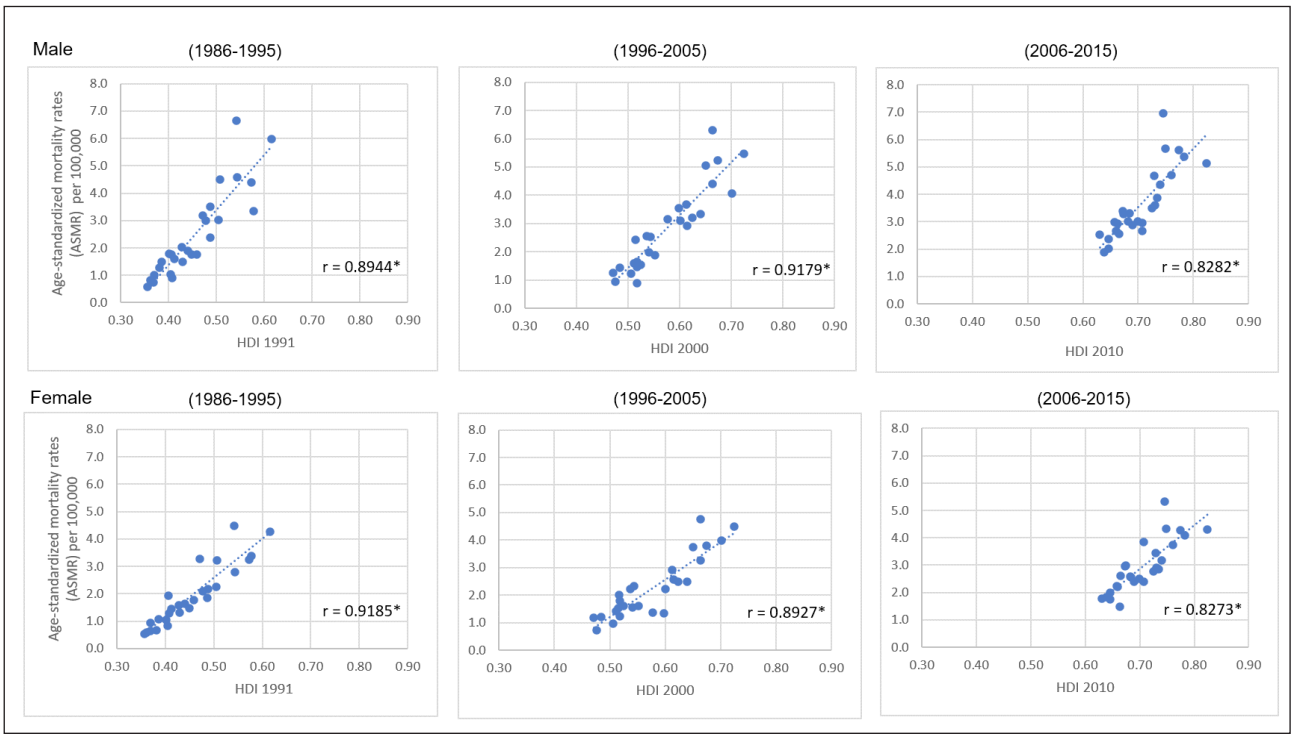

FIGURE 3. Correlation between average age-standardized mortality rates over three decades and Human Development Index (HDI, 1991, 2000 and 2010) by sex, in Brazil. **P*-value <0.05.

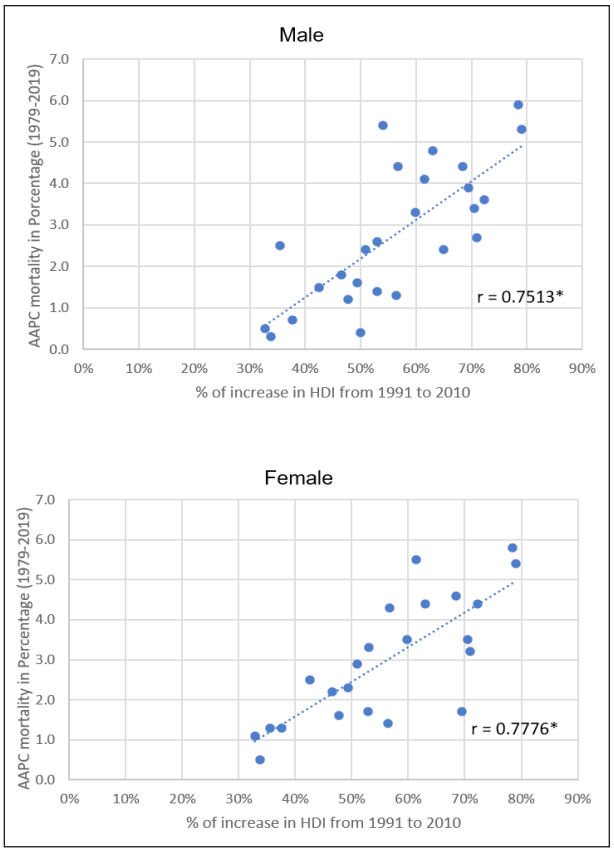

FIGURE 4. Correlation between average annual percentage change (AAPC) for pancreatic cancer mortality and percentage increase in HDI from 1991 to 2010 in Brazil. **P*-value <0.05.

DISCUSSION

The results showed an overall increase in pancreatic cancer mortality trends in Brazil. The South, Southeast and Central-West states showed high mortality rates, ranging from 4.0 to 9.1/100,000 in both sexes, with a level similar to and higher than that observed in developed countries such as New Zealand (5.9/100,000), the United Kingdom (5.9/100,000) and Iceland (5.8/100,000). In contrast, mortality rates in North and Northeast states were lower, with levels similar to other low-to-middle-income countries, such as El Salvador (3.2/100,000) and Indonesia (2.1/100,000)[2].

Regarding sex, there is a generalized trend of increasing in pancreatic cancer mortality among men, as observed in Russia, Spain and Germany, where a downward trend has also been observed among women[7,15]. This pattern contrasts with the present study, which found increased mortality among Brazilian women. Overall, there was an increase in mortality trends in both sexes for the country as a whole, but this proved higher among women. This pattern follows the global trend of a greater rise in females, with increases ranging from 0.78 to 5.83% versus 0.55 to 4.20% in men. The most evident increase among

women can be attributed to their higher prevalence of obesity and a more pronounced increase in the metabolic syndrome with population aging related to menopause and sex hormones[13].

In Brazil, the North and Northeast states showed the highest mortality trends for pancreatic cancer, which may be related to the improvement in the quality of deaths notification[14], in addition to the increase in HDI and greater access to diagnostic services, due to the incorporation of nuclear magnetic resonance (NMR) technology promoting an increase in the diagnosis of this cancer. Despite regional disparities between diagnosis and access to cancer treatment in Brazil, in 2008, there was an average of 0.38/100,000 NMR devices per inhabitant in Brazil, with 0.15/100,000 in the Northeast region, 0.24/100,000 in the North, 0.40/100,000 in the Central-West, 0.45/100,000 in the South and 0.54/100,000 in the Southeast region. In 2019, these rates rose to 0.82/100,000 in the North and Northeast, 1.52/100,000 in the Southeast, 1.58/100,000 in the Central-West, and 1.60/100,000 in the South region in 2019, however regional disparities remained[23]. States in the South and Southeast are better equipped for diagnosis and treatment than states in the North and Northeast, due to comparatively greater provision of healthcare facilities[7,14,24].

The increase observed in mortality for pancreatic cancer may be associated with urbanization and socioeconomic development as a result of lifestyle changes. This study found a positive correlation consistent with previous studies of higher pancreatic cancer mortality rates for both sexes in higher HDI regions[1,8-9]. In addition, pancreatic cancer is an aggressive malignant neoplasm that is also associated with aging. Some studies have proposed preventive interventions targeting at reducing modifiable risk factors, including smoking, alcohol consumption and obesity, as a strategy to reduce incidence and decrease mortality in the future[1,3,7,15,25]. In Brazil, the prevalence of smoking declined from 35% in 1990 to 11.3% in 2017[26]. However, the consumption of alcoholic beverages has increased from 15.6% (2006) to 18.8% (2019) in men and from 7.7% to 13.3% among women, in the Central-West, Southeast and South regions[27]. The prevalence of overweight increased from 43.2% in 2006 to 55.4% in 2019, the highest being observed in the North, Northeast and Central-West states. Obesity increased from 11.6% (2006) to 20.3% (2019) across all regions, with a higher increase occurring among women (from 11.8% to 21.0%) than men (from 11.4% to 19.5%)[28,29]. The prevalence of diabetes in Brazil decreased by 30% in men and 26% in women between 1990 and 2017[30]. Although there is no clear explanation for the increasing trend and observed differences in pancreatic cancer mortality in Brazil, as well as in different regions of the world, this variation can be attributed to lifestyle exposure to known or suspected risk factors pancreatic cancer-related, as well as access of diagnostic tools[14-15,25,27-32].

This study has some limitations. One of them is typical of ecological studies, precluding the inferring of causality at an individual level. Another is the lack of information on histological type in the mortality database, making it impossible to stratify into histological types. In spite of, this study allowed population-based inferences regarding pancreatic cancer mortality in Brazil by state, enabling correlations between mortality rates and improvement in HDI to be determined.

Pancreatic cancer mortality trends have been increasing in Brazil over the last 40 years in both sexes, however, are higher among women. Mortality trends were higher in the North and Northeast states, but the rates remain highest in the states of the South, Southeast and Central-West regions, where HDI has also been highest. Given the rising HDI in Brazil, and literature reports showing an increase in prevalence of pancreatic cancer risk factors in the country, changes in lifestyle for healthier habits remain the best way to prevent this neoplasm.

Authors' contribution

Silva DRM contributed to conceptualization and design, data curation, analysis, interpretation of the data, writing, review and editing of the manuscript. Oliveira MM contributed to analysis, interpretation of the data, and drafting of the manuscript. Fernandes GA critically reviewed and edited the manuscript. Curado MP contributed to study conceptualization and supervision, and writing, review and editing of the manuscript. All authors approved the final version of the manuscript to be published.

Orcid

Diego R. Mendonça e Silva: 0000-0001-8469-8415.
Max Moura de Oliveira: 0000-0002-0804-5145.
Gisele A. Fernandes: 0000-0002-5978-3279.
Maria Paula Curado: 0000-0001-8172-2483.

Silva DRM, Oliveira MM, Fernandes GA, Curado MP. Tendências de mortalidade por câncer de pâncreas correlacionadas com o índice de desenvolvimento humano (IDH) no Brasil em 40 anos. Arq Gastroenterol. 2023;60(1):30-8.

RESUMO – Contexto – A mortalidade por câncer de pâncreas é maior em países com alto Índice de Desenvolvimento Humano (IDH). Este estudo analisou as taxas e tendências de mortalidade por câncer de pâncreas e correlacionou-as com o IDH no Brasil no período de 40 anos. **Métodos –** Os dados sobre mortalidade por câncer de pâncreas no Brasil, entre 1979 e 2019, foram extraídos do Sistema de Informações sobre Mortalidade (SIM). As taxas de mortalidade padronizadas por idade e variação percentual média anual (AAPC) foram calculadas. O teste de correlação de Pearson foi aplicado para comparar as taxas de mortalidade e IDH em três períodos: 1986–1995 foi correlacionado com o IDH de 1991, 1996–2005 com IDH 2000 e 2006–2015 com IDH 2010; e a correlação da AAPC versus o percentual de variação do IDH de 1991 a 2010. **Resultados –** Foram notificados 209.425 óbitos por câncer de pâncreas no Brasil no período de 1979 a 2019, com aumento de 1,5% ao ano em homens e de 1,9% em mulheres. Houve tendência de aumento da mortalidade na maioria dos estados brasileiros, com maiores tendências nos estados das regiões Norte e Nordeste. Foi observada uma correlação positiva na mortalidade por câncer de pâncreas e o IDH ao longo de três décadas (r>0,80, *P*<0,05); também, entre o AAPC e o incremento do IHD entre 1991 e 2010 (r=0,75 para homens e r=0,78 para mulheres, *P*<0,05). **Conclusão –** Houve tendência crescente da mortalidade por câncer de pâncreas no Brasil, em ambos os sexos, porém maior entre as mulheres. As tendências de mortalidade foram maiores nos estados com maior percentual de incremento do IDH, como estados das regiões Norte e Nordeste.

Palavras-chave – Mortalidade; neoplasias pancreáticas; fatores socioeconômicos; epidemiologia.

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