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Social inequalities in male cancer in a metropolis in the Southeast region of Brazil

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ABSTRACT

OBJECTIVE: To analyze inequalities in incidence, mortality, and estimated survival for neoplasms in men according to social vulnerability.

METHODS: Analysis of cases and deaths of all neoplasms and the five most common in men aged 30 years or older in the city of Campinas (SP), between 2010 and 2014, using data from the Population-Based Cancer Registry (RCBP) and the Mortality Information System (SIM). The areas of residence were grouped into five social vulnerability strata (SVS) using São Paulo Social Vulnerability Index. For each SVS, age-standardized incidence and mortality rates were calculated. A five-year survival proxy was calculated by complementing the ratio of the mortality rate to the incidence rate. Inequalities between strata were measured by the ratios between rates, the relative inequality index (RII) and the angular inequality index (AII).

RESULTS: RII revealed that the incidence of all neoplasms (0.66, 95%CI 0.62–0.69) and colorectal and lung cancers were lower among the most socially vulnerable, who presented a higher incidence of stomach and oral cavity cancer. Mortality rates for stomach, oral cavity, prostate and all types of cancer were higher in the most vulnerable segments, with no differences in mortality for colorectal and lung cancer. Survival was lower in the most social vulnerable stratum for all types of cancer studied. AII showed excess cases in the least vulnerable and deaths in the most vulnerable. Social inequalities were different depending on the tumor location and the indicator analyzed.

CONCLUSION: There is a trend of reversal of inequalities between incidence-mortality and incidence-survival, and the most social vulnerable segment presents lower survival rates for the types of cancer, pointing to the existence of inequality in access to early diagnosis and effective and timely treatment.

DESCRIPTORS: Men. Neoplasms, epidemiology. Survival. Mortality. Health Status Disparities. Socioeconomic Factors.

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INTRODUCTION

Neoplasms are one of the main causes of morbidity and mortality worldwide and the first cause of premature death in most developed countries[1]. In Brazil, prostate cancer is the most frequent in men, followed by colorectal, lung, stomach, and oral cavity cancer. In terms of mortality, the main causes of death from cancer in men are, in descending order, lung, prostate, colorectal, and stomach cancer[2].

Socioeconomic differences are found in incidence, mortality and survival for cancer between countries and between social strata within countries, resulting from different exposures to risk factors and unequal access to health services[1,3].

The direction and magnitude of social inequalities in incidence and mortality from neoplasms differ according to the tumor location[4–7], and have changed over time in several countries[8,9].

With regard to prostate cancer, in some countries there is no evidence of inequalities in incidence and mortality[6,7]. In others countries, such as Costa Rica, the highest incidence and mortality rates are observed in the best socioeconomic level stratum[10,11]. There are countries where inequality is reversed and the incidence and mortality are higher in worst economic level strata[5,6]. Regarding stomach and oral cavity cancer, studies in general indicate that, in most countries, both incidence and mortality rates are higher in the most socially vulnerable segments[6–8,12,13].

In the past, in Western European countries and in the United States, higher incidence and mortality rates for lung and colorectal cancer were observed in the population with better socioeconomic status; in recent decades, however, this situation has been reversed and the highest incidences are observed in the worst socioeconomic condition strata[6–9,14].

Research shows the increase in survival rates that have occurred in recent decades for various types of cancer, but inequalities persist between countries and between social segments and, in some cases, there is an increase in inequality, unfavorable for the population with lower socioeconomic status[15–18].

In Brazil, there are few studies that analyze social inequalities in cancer, which are almost always focused on mortality or on a specific type of cancer. Studies that analyze inequalities in incidence, mortality, and estimated survival for a set of neoplasms are rare worldwide. Aiming to contribute to a better understanding of this topic, this study aims to analyze inequalities, according to social vulnerability, in incidence, mortality, and estimated survival for all malignant neoplasms and the five most common types in men in a large municipality in the Southeast region of Brazil.

METHODS

This is an ecological study on incidence, mortality, and survival for all neoplasms and the five most common types of cancer in men. The study was carried out in the city of Campinas, with information about cases and deaths from 2010 to 2014. Campinas is a metropolis in the Southeast region of Brazil, located 99 km north of the capital of the state of São Paulo, with a population of 1,213,792 inhabitants in the year 2020. In 2018, it was the 14th most populous city and the 11th largest economy in the country[19].

Information about cancer cases was obtained from the Population-Based Cancer Registry (RCBP), and about deaths from the Mortality Information System (SIM), both made available by the Municipal Health Secretariat of Campinas. The neoplasms studied were: prostate (C61), colorectal (C18_20), lung (C33_34), stomach (C16), oral cavity (C00_14), and the total number of neoplasms, excluding those of non-melanoma skin (C00_97, excluding C44).

Population data were obtained from population estimates of the areas covered by the basic health units (UBS), provided by the Municipal Health Secretariat of Campinas, and made from data from the demographic census of the Brazilian Institute of Geography and Statistics (IBGE) from 2010[20].

For the construction of the strata according to the social vulnerability of the area of residence, the 2010 São Paulo Social Vulnerability Index (IPVS-2010) was used, prepared by the State Data Analysis System Foundation (Seade) of the state of São Paulo, which is an institution of national reference in performing and disseminating analysis and socioeconomic and demographic statistics[21]. This index is available for all census tracts in the municipalities of São Paulo and has been used in research on social inequalities.

IPVS is composed of socioeconomic and demographic variables. The index classifies the sectors into seven groups according to the vulnerability level, classifying IPVS 1 as the least socially vulnerable and IPVS 6 and IPVS 7 as the most vulnerable for the urban and rural areas, respectively. The social vulnerability strata (SVS) for this study were constructed from the coverage areas of the municipality's UBS, which received a score according to the proportion of sectors classified in each IPVS level. The areas were ordered from lowest to highest score, and grouped into population quintiles, generating five SVSs, with SVS 1 being the least socially vulnerable and SVS 5 the most vulnerable, with approximately 20% population in each SVS (Figure 1).

Mean incidence and mortality rates were calculated for the period from 2010 to 2014 per 100,000 men aged 30 years or older for each type of cancer, for all neoplasms, and for each SVS. The choice of age group for the study was made according to the types of cancer studied, which are rare in men under 30 years old. Rates were age-standardized, at five-year intervals, by the direct method, using the 1960 world population as standard, modified by Doll et al. in 1966[22].

To measure the inequalities between the extreme strata, the ratios between the rates (RR) of SVS 5 in relation to SVS 1 and respective 95% confidence intervals (95%CI)[22] were estimated.

The survival estimate was calculated by adding the ratio of the mortality rate to the incidence rate (MIR – mortality-to-incidence ratio), a validated method that has been used by several authors as a survival proxy[23–25], and shown values similar to those obtained with measured survival[26,27]. The validity of using this estimate depends on the quality of mortality information and the stability of incidence and survival rates.

To measure inequalities in incidence and mortality for all neoplasms and the five types of cancer studied, the relative inequality index (RII) and the angular inequality index (AII)[28] were calculated.

To calculate AII and RII values, one used RIIGEN, module of Stata 15.0 StataCorp LLC), to generate a rank variable considering all socioeconomic strata, ordered from the lowest to the highest social vulnerability level and classified with a score from 0 to 1 based on the accumulated relative population position. After analyzing the linearity between the health indicators of each stratum (dependent variable) and the rank (independent variable), Poisson regression was performed to estimate RII value, which shows the relative difference between the strata and makes it possible, from linear regression, to estimate AII value, which measures the absolute difference of the analyzed indicators from the highest to the lowest social vulnerability level [28].

RII values greater than 1 indicate a greater risk for more social vulnerable segments, and values lower than 1 indicate greater risk for reduced vulnerability segments. AII values can be negative or positive, where the positive ones indicate excess occurrences (per 100 thousand inhabitants) in the most socially vulnerable stratum, and the negative ones indicate excess occurrences in the least vulnerable.

Statistical analyzes were performed using Microsoft Excel 2016® and Stata 15.0 software (StataCorp LLC, College Station, USA). The figure of the areas according to social vulnerability was made using TabWin software, version 4.1.5.

The research project that resulted in this article was approved by the Ethics Committee of the School of Medical Sciences of the University of Campinas (Unicamp) under the Certificate of Presentation for Ethical Appreciation (CAAE) No. 09217719.9.0000.5404.

RESULTS

Age-adjusted rates, presented in Table 1, reveal that incidence of colorectal cancer and all neoplasms decreases with increased social vulnerability, while the reverse occurs with incidence of stomach cancer. In relation to the other locations studied, the differences between the strata are not statistically significant. Mortality rates show a clear growth level with increased social vulnerability for stomach cancer and a trend towards higher rates in the most vulnerable strata for oral cavity and prostate cancer, in addition to higher values for colorectal cancer in the least vulnerable segment (Table 1).

Table 2 shows that the highest five-year survival percentages are observed for prostate cancer, followed by oral cavity and colorectal neoplasms, and that the lowest survival is observed for lung cancer, followed by stomach cancer. It is also observed that survival for all types of cancer studied tends to decrease with increased social vulnerability.

Table 1. Standardized rates of malignant neoplasm incidence and mortality, in men aged 30 years or older, according to social vulnerability strata. Campinas, 2010–2014.

Primary tumor location	Social vulnerability strata									
	SVS 1 (least vulnerable)		SVS 2		SVS 3		SVS 4		SVS 5 (most vulnerable)	
	Incidence									
	n	IR (95%CI)	n	IR (95%CI)	n	IR (95%CI)	n	IR (95%CI)	n	IR (95%CI)
All neoplasms[b]	2,080	744.3 (711.5–777.4)	2,484	689.0 (661.3–716.6)	1,726	647.8 (617.0–678.6)	1,267	553.3 (522.1–584.6)	680	537.6 (495.1–580.1)
Prostate	619	225.9 (207.7–244.2)	761	210.5 (195.2–225.7)	546	211.2 (193.4–229.0)	431	201.4 (182.13–220.7)	244	223.2 (194.6–251.7)
Colorectal	276	99.0 (87.0–110.9)	311	87.9 (77.9–97.9)	196	73.7 (63.3–84.1)	113	47.7 (38.7–56.7)	51	36.8 (26.1–47.4)
Lung	135	47.1 (39.0–55.2)	197	52.6 (45.0–60.1)	105	40.4 (32.6–48.2)	98	44.6 (35.6–53.5)	47	39.2 (27.6–50.8)
Stomach	90	29.9 (23.5–36.3)	146	38.2 (31.8–44.5)	106	40.5 (32.8–48.3)	98	43.1 (34.4–51.8)	62	51.2 (37.9–64.5)
Oral cavity	93	34.3 (32.2–36.4)	115	33.7 (27.5–39.9)	118	44.0 (36.0–51.9)	107	44.4 (35.8–53.1)	66	43.6 (32.4–54.7)
	Mortality									
	n	MR (95%CI)	n	MR (95%CI)	n	MR (95%CI)	n	MR (95%CI)	n	MR (95%CI)
All neoplasms[b]	699	233.9 (216.0–251.8)	975	258.5 (241.9–275.1)	754	285.9 (265.3–306.4)	611	269.1 (247.4–291.0)	343	272.9 (242.6–303.2)
Prostate	85	25.3 (19.7–30.9)	102	23.6 (22.6–24.6)	63	24.2 (23.0–25.4)	63	30.1 (28.7–31.6)	39	38.5 (36.0–41.0)
Colorectal	81	27.2 (25.6–28.8)	123	33.0 (27.0–39.0)	83	31.2 (24.5–38.0)	50	22.4 (16.1–28.7)	24	18.9 (11.1–26.7)
Lung	96	32.7 (26.0–39.4)	153	40.4 (33.8–47.0)	93	35.3 (28.1–42.6)	91	41.3 (32.6–49.9)	42	36.1 (24.8–47.3)
Stomach	56	17.4 (12.7–22.1)	87	21.8 (17.1–26.5)	72	27.8 (21.4–34.3)	72	32.2 (24.6–39.8)	49	39.7 (28.1–51.3)
Oral cavity	26	9.2 (5.6–12.8)	46	13.3 (9.4–17.2)	51	19.1 (13.8–24.4)	42	17.8 (12.3–23.3)	28	19.2 (11.7–26.8)

[a] Rates standardized per world population in 1960, modified by Doll et al. in 1966
[b] Non-melanoma skin neoplasms and in situ tumors excluded

The assessment of the magnitude of inequalities in incidence and mortality using RR between the extreme strata (SVS 5 and SVS 1) and RII reveals similar results, with some differences regarding statistical significance. Incidence of total neoplasms and colorectal cancer, according to the two measures, and lung cancer, according to RII, are significantly lower among the most vulnerable. There is a higher incidence of stomach cancer, according to both indicators, and oral cavity cancer, according to RII, in men from the most socially vulnerable stratum. For prostate cancer, no inequality in incidence was detected by the two indicators.

Regarding mortality, the rates for stomach and oral cavity cancer in the most socially vulnerable stratum are more than double those observed in the least vulnerable. Deaths from prostate cancer and the total number of neoplasms are also higher among more socially vulnerable men. For lung and colorectal cancer, the inequalities detected in mortality did not reach statistical significance in the indicators evaluated (Table 3).

For the total number of neoplasms and for the types of cancer studied, the five-year survival estimate proxy was lower for men in the most socially vulnerable stratum compared to the least vulnerable; the smallest difference observed was six percentage

Table 2. Five-year survival estimate for the total number of neoplasms and for the five types of cancer studied, according to social vulnerability strata. Campinas, 2010–2014.

Primary tumor location	Social vulnerability strata				
	SVS 1 (least vulnerable)	SVS 2	SVS 3	SVS 4	SVS 5 (most vulnerable)
All neoplasms[b]	0.69	0.63	0.53	0.51	0.49
Prostate	0.89	0.89	0.89	0.85	0.83
Colorectal	0.73	0.64	0.57	0.53	0.50
Lung	0.31	0.23	0.13	0.07	0.08
Stomach	0.42	0.43	0.31	0.25	0.23
Oral cavity	0.73	0.61	0.57	0.60	0.56

[a] Estimated by complementing the ratio of the mortality rate to the incidence rate.
[b] Non-melanoma skin neoplasms and in situ tumors excluded.

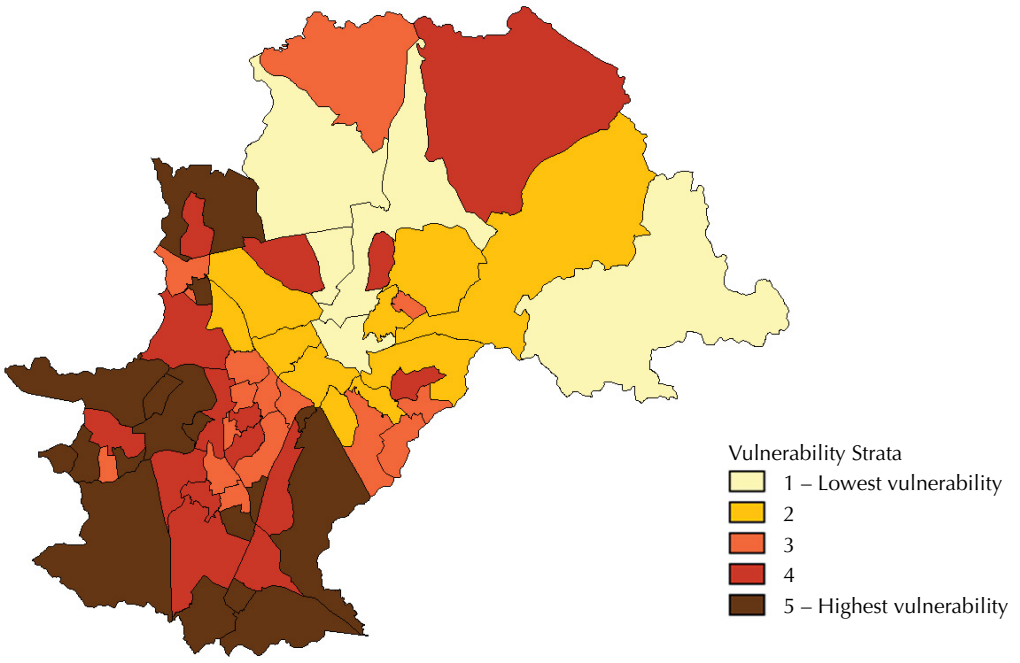

Figure 1. Areas covered by basic health units in Campinas, according to social vulnerability strata.

Table 3. Inequalities in cancer incidence, mortality, and estimated survival rate in men aged 30 years and older. Campinas, 2010–2014.

Primary location	Incidence		Mortality		Difference in SVS1-SVS5 survival %
	RR SVS5/SVS1	RII	RR SVS5/SVS1	RII	
All neoplasms[a]	**0.72 (0.71–0.74)**[b]	**0.66 (0.62–0.69)**[c]	**1.17 (1.02–1.34)**	**1.19 (1.05–1.34)**	20
Prostate	0.99 (0.85–1.15)	0.96 (0.82–1.11)	**1.33 (1.00–1.79)**	**1.73 (1.16–2.59)**	6
Colorectal	**0.37 (0.29–0.48)**	**0.32** (0.23–0.43)	0.72 (0.46–1.11)	0.64 (0.39–1.07)	23
Lung	0.83 (0.60–1.16)	**0.78 (0.64–0.95)**	1.10 (0.75–1.62)	1.12 (0.86–1.46)	23
Stomach	**1.71 (1.18–2.49)**	**1.78 (1.54–2.06)**	**2.28 (1.44–3.63)**	**2.71 (2.52–2.91)**	20
Oral cavity	1.27 (0.90–1.79)	**1.44 (1.25–1.67)**	**2.08 (1.13–3.86)**	**2.22 (1.58–3.13)**	17

[a] Non-melanoma skin neoplasms (C44) and in situ tumors excluded.
[b] 95%CI.
[c] $p < 0.05$.

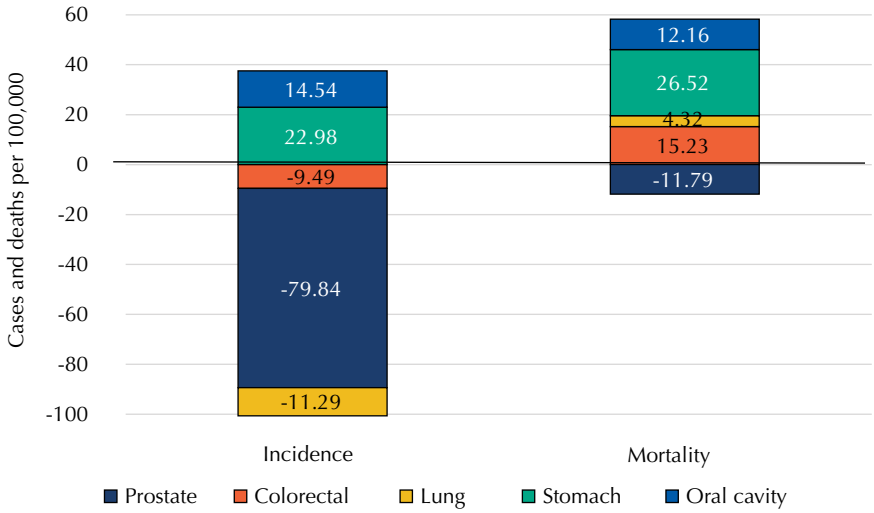

Figure 2. Angular inequality index in incidence and mortality, according to types of cancer. Campinas, 2010–2014.

points for prostate cancer, and the greatest one was 23 percentage points for colorectal cancer (Table 3). While 73% men with colorectal cancer from the least vulnerable stratum survive five years after diagnosis, only 50% survive if they belong to the most social vulnerable segment.

Figure 2 shows the excess incidence of cancer, mainly due to colorectal cancer, and lung and prostate cancer in the least socially vulnerable segment compared to the most vulnerable. Regarding mortality, the situation is reversed and excess mortality from cancer is observed in the most socially vulnerable stratum, except for the colorectal cancer (Figure 2).

DISCUSSION

The results of this study show, in Campinas' male population, social inequalities of different magnitudes and directions depending on the type of neoplasm and the measure used, whether incidence, mortality, or survival. Men from the most socially vulnerable stratum

had higher incidence rates of stomach cancer and lower rates of colorectal cancer and total neoplasms, compared to the least socially vulnerable segment, according to the ratios between SVS 5 rates and SVS 1 rates.

RII analysis also detects a higher incidence of lung cancer in the least vulnerable segment and oral cavity cancer in the most vulnerable ones. The situation was reversed in relation to mortality, in which men in situations of greater social vulnerability had higher mortality rates for all neoplasms and for prostate, stomach, and oral cavity cancer, and no differences for colorectal and lung neoplasms, considering both RR and RII. The proxy used to estimate survival was lower in men with greater social vulnerability for all neoplasms and for the five types of cancer analyzed.

Regarding prostate cancer, the lack of social inequality in incidence verified in this study is similar to the results found in studies carried out in Canada[6] and Germany[7]. However, research carried out in the United States and South Korea detected a higher incidence of prostate cancer among men of lower socioeconomic status[5,6]. Many cases of prostate carcinoma are detected only by screening through the measurement of prostate-specific antigen (PSA) and the inequalities in access to the screening program can explain partially the inequalities found in the incidence[1,3,12]. Other factors related to lifestyle, such as obesity, smoking, alcohol consumption, and physical inactivity have not been proven to be risk factors for this type of cancer[12]. Higher mortality from prostate cancer in the greatest social vulnerability segment found in this study is similar to the results of research carried out in South Korea[5].

Studies carried out in Norway, France, Spain, and Colombia did not find social inequalities in mortality from prostate cancer[8,29–31], and analysis carried out in Costa Rica showed higher mortality in men with better socioeconomic status[11]. Lower survival of men with prostate cancer belonging to the most socially vulnerable stratum, as found in this study, was also reported in surveys carried out in Colombia and Germany[32,33]. Inequalities found in mortality and survival in Campinas indicate diagnosis in advanced stages and delay in starting treatment[1,13].

With regard to colorectal cancer, men from the lowest socially vulnerable stratum had a higher incidence rate than those from the most vulnerable stratum, as observed in research conducted in Costa Rica[10]. This pattern of inequality was found in European countries until 1990, but it was reversed at the beginning of the twenty-first century and the highest incidence rates began to occur in individuals of lower socioeconomic status[14,34,35], a pattern that persists in these countries[6,7] to date. The differences in incidence found in Campinas and Costa Rica in relation to the results of research conducted in developed countries may be due to inequalities in access to diagnosis and changes in exposure to risk factors, many of them related to lifestyle, which, at first, affect the population with better socioeconomic status the most[14,34].

In this study, no differences were detected in mortality from colorectal cancer between socially vulnerable strata, results similar to those found in analyzes carried out in France[29], Colombia[4] and Spain[31]. Unlike these results, a study carried out in Costa Rica found higher mortality from colorectal cancer in men of better socioeconomic status and the opposite was found in research conducted in South Korea, where the mortality rate was higher in men of lower socioeconomic status[5,11]. The lowest five-year survival estimate in men from the most socially vulnerable stratum was found in Campinas, Germany[33], and the United States[36]. The absence of inequality in mortality from colorectal cancer found in this study, despite the higher incidence in men from the least socially vulnerable stratum, and the lower survival rate in the most vulnerable segment, indicate difficulties in accessing early diagnosis and delay in starting and quality of colorectal cancer treatment with regard to the population in a situation of greater social vulnerability[1,14,37].

Higher incidence and mortality rates for stomach cancer in the most socially vulnerable segment observed in this study are generally reported in other studies[5–8]. Higher incidence of this cancer in strata with the worst socioeconomic status is probably due to infection by Helicobacter pylori (H. pylori), which is the main risk factor and is related to poorer living conditions and lack of basic sanitation. The lowest five-year survival estimate for men with stomach cancer in situations of greatest social vulnerability in relation to those in the least vulnerable stratum was also verified in research conducted in Colombia and Germany[32,33].

Higher incidence of oral cavity cancer, according to RII, found in this study in men in situations of greatest social vulnerability, was also detected in studies carried out in the United States and Germany and also reported in other studies[6,7,12]. Research conducted in the city of São Paulo that analyzed inequalities in incidence and mortality from oral cavity cancer in the period from 2008 to 2013 did not detect inequalities in incidence, but higher mortality rates in districts with low Human Development Index (HDI)[38] . Higher incidence of oral cavity cancer in more socially vulnerable men may be related to higher prevalence of smoking, alcohol abuse, and human papillomavirus (HPV) infection in men of lower socioeconomic status[14,39,40]. Higher mortality and lower survival estimate in men from the most socially vulnerable stratum found in Campinas has also been reported in other studies[11,12,32,33].

The absence of inequality in incidence of lung cancer found in this study is different from the results of other studies carried out in the United States[6], Canada[6] and Germany[7], where results showed a higher incidence in men from lower socioeconomic strata. With regard to mortality, analyzes carried out in Colombia[30], France[29] and Norway[8] detected higher mortality in men with the lowest socioeconomic status. These differences in the results found in Campinas are due to changes in the prevalence of smoking over time, which in the past was more common in better socioeconomic status segments and is currently more prevalent in more socially vulnerable segments[14].

The social inequalities observed in incidence of neoplasms differ according to the type of cancer, countries, and the periods analyzed. Higher incidences of stomach and oral cavity cancer have been observed over time in lower socioeconomic status segments in most countries studied[6–8]. However, the finding in Campinas – higher incidence of colorectal and lung cancers in the least socially vulnerable stratum – is similar to the situation observed in the past in other countries[8,9] and may indicate that the trend in Brazil is that these neoplasms will affect the poorest population segments more intensively, as already seen in the United States, Canada, and in some European countries[6–9].

Differences in incidence result from the degree of exposure to risk factors, some of which are related to production processes, advances in industrialization, and type of consumption and lifestyle, such as inadequate diet, physical inactivity, obesity, smoking, and excessive alcohol consumption[39,40]. In addition to environmental and genetic factors, incidence of some cancers is related to the prevalence of infectious agents, such as H. pylori in stomach cancer (except cardia), and HPV in oropharyngeal cancer[39–41].

Access to diagnosis influences incidence rates in a strong manner, due to the coverage of health services, also made possible by screening programs. Lifestyle-related risk factors are modifiable over time, and the advancement of knowledge of these factors and adoption of healthier lifestyles tend to reach social strata with better education and income levels first[37].

In this study, none of the types of cancer studied had a significantly higher mortality rate in the best socioeconomic status segment, and the survival estimate, for all of them, was lower among the most socially vulnerable. These results point to inequalities in access to diagnosis in the early stages of the disease, delay in starting treatment, and lower adherence to and quality of treatments for strata with worse socioeconomic status[14–17].

In recent decades in Brazil, the Ministry of Health has developed programs and actions for cancer control, ranging from health promotion, prevention, and early diagnosis to the expansion of treatment centers[42].

Since the 2000s, monitoring of risk factors for chronic diseases – such as smoking, alcohol consumption, obesity, physical inactivity and dietary patterns – has been carried out periodically[43]. Research conducted in state capitals show a trend towards a reduction in smoking[44], stability in alcohol consumption[45], and an increase in overweight and obesity in the population aged 18 years and over[46]. Changes in prevalence of the population behaviors and health conditions influence changes in incidence of neoplasms in different social groups. In addition to the programs and actions to combat non-communicable chronic diseases, the Ministry of Health launched, in 2008, the National Policy for Comprehensive Attention to Men's Health, with a specific focus on the male population health [47].

One of the limitations of this study is that the socially vulnerable strata were constructed from information on the area of residence and not from individual information. Another limitation is that the five-year survival estimate was not directly measured, but estimated by complementing the ratio of mortality to incidence, which, however, has been considered an adequate proxy of five-year survival[24,25]. The quality of mortality information and the instability of incidence and mortality rates for some types of cancer have been the main arguments of authors who criticize the use of this ratio as a survival proxy[48]. Due to dependence on the information quality, it is recommended that the analyzes should be carried out with information from the same location or from the same data source, as performed in this study[49].

The study results show the importance of considering social inequalities in incidence, mortality, and survival rates, as the direction and magnitude of inequalities differ. Results, by revealing the loss in mortality and in the estimated survival of the most socially vulnerable segments – which are those that depend on the public health sector performance –, emphasize the need for advances by the Unified Health System (SUS) in the implementation of actions of promotion, prevention, early detection, and access to quality treatment in a timely manner. These advances may lead to a reduction in mortality rates due to neoplasms and an increase in survival, especially in the poorest segments, reducing the prevailing inequity.

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