Mortality In Reproductive Age (15-49 Years): Sex, Race And Gender Relations

Mortalidade Na Idade Reprodutiva (15-49 Anos): Relações De Sexo, Raça E Gênero

Mortalidad En Edad Reproductiva (15-49 Años): Relaciones De Sexo, Raza Y Género

RESUMO

Objetivo: Analisar as características dos óbitos de pessoas de 15 a 49 anos em Ribeirão Preto, São Paulo, em 2019, comparando mortes de mulheres em idade fértil e homens. Método: estudo observacional transversal que abrangeu todas as declarações de óbito de residentes no município. Resultados: Foram registrados 441 óbitos na faixa etária analisada, sendo 303 masculinos e 138 femininos. A maioria dos óbitos em pessoas de pele branca (72,3%), não casadas (77,1%) e residentes da zona norte (42,9%), com 69,8% dos registros realizados em serviços de saúde. As principais causas de morte entre mulheres foram neoplasias (23,9%), doenças do aparelho circulatório (21,7%) e doenças respiratórias (13%). Entre os homens, destacaram-se causas externas (35%) e doenças circulatórias (13,9%). Conclusão: a população masculina apresentou maior perda de anos potenciais de vida. As diferenças de mortalidade podem ser atribuídas a fatores biológicos e sociais, ressaltando a necessidade de mudanças culturais relacionadas ao gênero.
DESCRITORES: Saúde da Mulher, Mortalidade, Estudos de Gênero, Epidemiologia.

ABSTRACT

Objective: To analyze the characteristics of deaths of people aged 15 to 49 in Ribeirão Preto, São Paulo, in 2019, comparing deaths of women of childbearing age and men. Method: Cross-sectional observational study that covered all death certificates of residents in the municipality. Results: A total of 441 deaths were recorded in the age group analyzed, 303 males and 138 females. Most deaths were among white-skinned people (72.3%), unmarried (77.1%) and residents of the northern zone (42.9%), with 69.8% of the records made in health services. The main causes of death among women were neoplasms (23.9%), diseases of the circulatory system (21.7%) and respiratory diseases (13%). Among men, external causes (35%) and circulatory diseases (13.9%) stood out. Conclusion: the male population presented a greater loss of potential years of life. Mortality differences can be attributed to both biological and social factors, highlighting the need for gender-related cultural changes.
DESCRIPTORS: Women's Health, Mortality, Gender Studies, Epidemiology.

RESUMEN

Objetivo: Analizar las características de las muertes de personas de 15 a 49 años en Ribeirão Preto, São Paulo, en 2019, comparando las muertes de mujeres en edad fértil y hombres. Método: estudio observacional transversal que abarcó todas las declaraciones de defunción de residentes en el municipio. Resultados: Se registraron 441 muertes en el grupo de edad analizado, de las cuales 303 fueron masculinas y 138 femeninas. La mayoría de las muertes correspondieron a personas de piel blanca (72,3%), no casadas (77,1%) y residentes de la zona norte (42,9%), con el 69,8% de los registros realizados en servicios de salud. Las principales causas de muerte entre las mujeres fueron neoplasias (23,9%), enfermedades del aparato circulatorio (21,7%) y enfermedades respiratorias (13%). Entre los hombres, destacaron las causas externas (35%) y enfermedades circulatorias (13,9%). Conclusión: la población masculina presentó una mayor pérdida de años potenciales de vida. Las diferencias en la mortalidad pueden atribuirse a factores biológicos y sociales, destacando la necesidad de cambios culturales relacionados con el género.
DESCRIPTORES: Salud de la Mujer, Mortalidad, Estudios de Género, Epidemiología.

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Work extracted from the Doctoral Thesis entitled **"Mortality of women of reproductive age associated with COVID-19 according to skin color: a Brazilian population-based study"** presented to the Postgraduate Program of the Department of Gynecology of the Escola Paulista de Medicina of the Federal University of São Paulo

INTRODUCTION

Health and illness are expressions of the complex interaction of people's bodies with social and ecological forces and contexts. [1,2] Closing the life cycle, death results from a multifactorial process not restricted to biomedical conditions. From this perspective, the sex of bodies and the gender of people influence the health-disease process and contribute to mortality patterns. Not only because biological sex is associated with certain biomedical conditions and gender with certain patterns of behavior and risk exposure, but also because sex and gender can influence access to health services and other determinants of the health-disease process. [3] Likewise, the color-race-ethnicity complex constitutes a fundamental determinant of people's health-disease process. [4]

In this context, death that occurs before the age of 70 is considered premature and largely preventable. [5] A subset of premature mortality, that which occurs between the ages of 15 and 49, is especially relevant because it is during this period that most people reach their maximum economic and social productivity. In women, this age range coincides with the reproductive age, and mortality at this age can be presented as mortality related to pregnancy, childbirth and puerperium. In any case, the death of individuals in this age range causes significant disruption to families and communities, constituting a true social tragedy. [6]

Estimates from the United Nations (UN) suggest that between 2015 and 2019 there were approximately 40 million deaths of people aged 15 to 49 worldwide, of which 16 million were female and 24 million were male. These deaths correspond to 11.8% of all female deaths and 16.1% of all male deaths in this period. [7]

These years, especially 2019, are of fundamental importance for characterizing the morbidity and mortality patterns that existed before the COVID-19 pandemic, which proved to be a major modifier of morbidity and mortality patterns from 2020 onwards.

In Brazil, in 2019, 214,504 deaths of people between 15 and 49 years of age were recorded, of which 62,554 were women (29.2%) and 151,925 were men (70.8%). [8]

Taking a Brazilian municipality as a data source and considering possible aspects of sex/gender and race, the present study sought to carry out a comparative analysis of the mortality patterns of people aged 15 to 49, according to sex.

METHOD

This is an observational, cross-sectional study in which deaths of people aged 15 to 49 years were identified and classified, collected through death certificates from the registry offices of the municipality of Ribeirão Preto for the year 2019.

The municipality of Ribeirão Preto is located in the interior of the state of São Paulo, Brazil. In 2019, according to estimates from the Brazilian Institute of Geography and Statistics, it had 698,259 inhabitants. It belongs to the Regional Health Departments (DRS) XIII, composed of 26 municipalities, with Ribeirão Preto as the headquarters and reference in tertiary and quaternary health care. [9,10]

The municipality of Ribeirão Preto or-

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ganizes health care in districts; according to the 2010 census, the district or central zone had 18,599 inhabitants, the north zone had 205,185 people, the south: 58,363, the east: 129,934, the west: 180,780 inhabitants and Bomfim Paulista, 11,812 thousand inhabitants. [11] For the year 2019, for the age group of 15 to 49 years in Ribeirão Preto it was estimated that there were 183,870 men and 187,914 women. [12]

Data were collected from all death certificates (DC) of people who resided and died in the municipality of Ribeirão Preto/SP in 2019, from 02/01/2021 to 10/31/2021, of both sexes. The classification of fertile age of women from 15 to 49 years old was used, following the theoretical framework of the World Health Organization (WHO). [13]

Deaths in Brazil are certified by doctors through a DO, issued in triplicate, and in addition to its legal functions, it also aims to provide statistical data on mortality. It is divided into 9 blocks: registry office, identification, residence, occurrence, fetal death or death under one year old, conditions and causes of death, doctor, external causes and location without a doctor. And within each block there is a set of gaps to be filled. [14]

When filling out the "basic causes of death", it is defined as the one that triggered the other pathogenic factors that led to death, and in line "a" the reason that led to the person's death is entered. Next to it is the time between the onset of the disease and death, and the chapter of the International Classification of Diseases (ICD-10) to which it belongs. [14]

After completing the DO, the registry office registers and delivers to the family a copy of the Death Certificate, a less detailed document that presents, among other data, race, sex, age, marital status, burial data and the causes of death. This document is essential for the Civil Registry and is not replaced by the DC.

Through death certificates, data related to the person were obtained, such as: place of birth, sex, race/color, date of birth, marital status, profession and residential address. Data related to death were collected, including: date of death, time of death, causes of death, place of occurrence (residence, health service, public road) and whether or not the death was due to unnatural causes, if so, the following were filled in as causes: suicide, homicide, accident. These data were analyzed and grouped according to the basic causes of death of ICD-10.

It is important to emphasize that the color variable was recorded according to the perception of the doctor who certified the death. In this study, we considered as non-white those classified as black, brown and yellow and the others as white, since in the sample there was one death of a 43-year-old woman of color called yellow, two not classified and none considered indigenous.

External causes are defined as intentional or unintentional deaths resulting from domestic accidents, work accidents, drowning, traffic accidents, homicides, and self-inflicted injuries that culminate in suicide. In this study, they were classified as: accidents, homicides, suicide and others. A search was conducted in the Google database, seeking additional information on female homicides and their possible public characterization as femicide.

The data were entered into the REDCAP® program, imported into Excel®, and analyzed in the PSPPIRE® statistical program. Simple frequencies and proportions were calculated. For the age variable, the mean, standard deviation, 95% confidence interval and median were calculated. Tests were performed to evaluate the distribution of the age variable, dividing the Skewness and Kurtosis parameters by their respective standard errors. Due to the non-normality of the variable, the Kruskal-Wallis test was performed. To evaluate categorical variables associated with unnatural mortality, the odds ratio was used.

This study is part of the thematic project "Studies on mortality in the city of Ribeirão Preto". The Project was submitted and approved by the Research Ethics Committee of the Health Center of the Faculty of Medicine of Ribeirão Preto, University of São Paulo (Opinion: 4,543,831). Data collection from death certificates was performed with the authorization of the judge overseeing the district of Ribeirão Preto.

RESULTS

In 2019, there were 4,394 deaths in Ribeirão Preto, resulting in an overall mortality rate of 6.25/1,000 inhabitants. Of these, 2,318 (52%) were men and 2,076 (48%) were women. In the 15-49 age group, 138 female deaths were recorded (3.1% of all female deaths) and 303 male deaths (6.8% of all male deaths). The mortality rate in this age group was 0.73/1,000 for women and 1.64/1,000 for men.

Mortality increased with age in both sexes, being mainly concentrated between the ages of 40 and 49. Regarding the characteristics of the deaths, the majority of individuals were white (72.3%), without a partner (77.1%), residents of the North Zone (42.9%) and died in health services (69.8%). Natural causes accounted for 73.2% of deaths, while unnatural causes accounted for 28.8%, with accidents predominating, followed by homicides and suicides.

The women who died were mostly white (73.2%), without a partner (76.1%), residents of the North Zone (39.9%) and died in health services (85.5%). Among men, the proportions were similar: white (71.9%), without a partner (77.6%), residents of the North Zone (44.2%) and deaths in health services (62.7%).

Graph 1 shows the distribution of causes of death according to the chapters of ICD-10. For females, the most frequent causes of death were neoplasms (23.9%), diseases of the circulatory system (21.7%), and diseases of the respiratory system (13%).

In 2019, two maternal deaths occurred in Ribeirão Preto (0.2% of female deaths), however only one had this record originally in the DC; the other maternal death was identified as "undetermined cause" and was later reclassified by the Maternal Death Committee of the municipality. Of the external causes in the female population, one case of femicide was recognized. For males, the main causes of death were external causes (35%), diseases of the circulatory system (13.9%) and neoplasms (13.5%).

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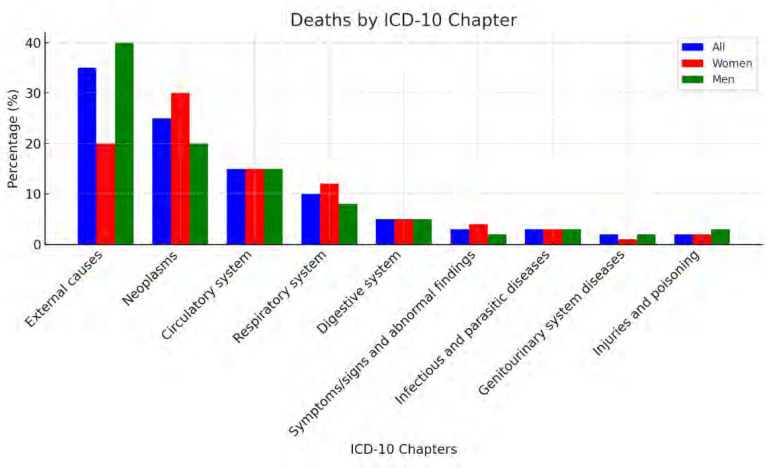
Graph 1: Distribution of causes of death according to ICD-10 chapters. Ribeirão Preto-SP, 2019



Factors associated with death from external causes were assessed considering the relative risk with a 95% confidence interval (95%CI). A significant association was observed between this type of death, male gender and unmarried individuals.

Table 01 shows that the odds ratio of a male person dying from external causes is almost four times higher than that of a female person (OR 3.68; 95%CI 2.14–6.31) in the age group analyzed. When considering the intersection of race/color and sex, with the white female population as a reference, the relative risk of a white male person dying is 3.29 times higher (95%CI 1.77–6.11) and in the case of a black/brown male person it is 4.04 times higher (95%CI 2.12–7.69).

Table 1: Factors associated with mortality from unnatural causes of people aged 15 to 49 in Ribeirão Preto (2019)

	Unnatural Mortality		Prevalence Ratio (95% CI)	Unnatural Mortality Fraction
	Yes	No		
All	118	323		323
Gender				
Female	*13*	*125*	*1,00*	*9,42%*
Male	*105*	*198*	*3,68 (2,14 - 6,31)*	*34,65%*
Color				
White	*81*	*238*	*1,00*	*25,39%*
Black and others	*37*	*85*	*1,19 (0,86 - 1,66)*	*30,33%*
Gender-Color Intersection				
Female-White	*10*	*91*	*1,00*	*9,90%*
Female-Non-White	*3*	*34*	*0,82 (0,24 - 2,81)*	*8,11%*
Male-White	*71*	*147*	*3,29 (1,77 - 6,11)*	*32,57%*
Male-Non-White	*34*	*51*	*4,04 (2,12 - 7,69)*	*40,00%*
Marital Status				
Married	*17*	*84*	*1,00*	*16,83%*
Not married	*239*	*101*	*4,18 (2,69 - 6,48)*	*70,29%*
Gender-Marital Status Intersection				
Female-Married	*1*	*32*	*1,0*	*3,03%*
Female-Not-Married	*12*	*93*	*3,77 (0,51 - 27,93)*	*11,43%*
Male-Married	*16*	*52*	*7,76 (1,08 - 56,07)*	*23,53%*
Maale-Not-Married	*89*	*146*	*12,5 (1,8 - 86,71)*	*37,87%*

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Zone				
North	50	139	0,88 (0,33 - 2,34)	26,46%
East	19	58	0,82 (0,3 - 2,29)	24,68%
West	30	93	0,81 (0,3 - 2,2)	24,39%
South	12	23	1,14 (0,4 - 3,27)	34,29%
Center	3	7	1,00	30,00%
Bonfim Paulista	4	3	1,43 (0,4 - 5,12)	57,14%

The average age at death was 37.61 years, with a median of 40 years and a standard deviation of ±8.9 years. For females, the average and median ages were higher than for males. The female population showed a lower loss of potential years of life, as shown in Table 2.

Table 2: Characteristics of the average age at death of people in Ribeirão Preto (2019)

	N	Mean	Inf. Lim. 95% CI	Sup. Lim 95% CI	Standard Deviation	Mean	Kruskal Wallis (p)	Loss of Potential Life Years
All	441	37,61	36,78	38,44	8,90	40	--	32,39
Gender								
Female	138	38,54	37,11	39,97	8,47	41	0,164	31,46
Male	303	37,19	36,16	38,22	9,07	39		32,81
Color								
White	319	37,7	36,73	38,67	8,85	40	0,753	32,3
Not White	122	37,39	35,77	39,01	9,05	39,5		32,61
Gender-color Intersection								
Female-White	101	37,5	35,73	39,27	8,96	40	0,02	32,55
Female-Black	37	41,5	39,5	43,54	6,13	44		28,49
Male-White	218	37,8	36,6	38,98	8,82	40		32,18
Male-Black	85	35,6	33,54	37,66	9,54	37		34,41
Marital Status								
Married	101	41,46	40,23	42,69	6,25	43	<0,000	28,54
Not Married	340	36,47	35,48	37,46	9,25	38		33,53
Zone								
North	189	37,69	36,39	38,99	9,03	40	0,578	32,31
East	77	37,65	35,52	39,78	9,40	40		32,35
West	123	37,6	36,03	39,17	8,82	39		32,4
South	35	36,00	33,15	38,85	8,29	37		34
Centro	10	41,40	36,35	46,45	7,06	43		28,6
Bonfim Paulista	7	38,14	32,05	44,23	6,59	37		31,86
Death by natural causes								
Yes	118	39,9	38,52	41,28	7,56	41	<0,000	30,1
No	323	31,36	30,34	32,34	9,31	30		38,64

DISCUSSION

The findings of this study suggest that a substantial portion of excess mortality among people aged 15 to 49 is largely determined by social factors and contexts, especially gender dynamics. Higher mortality rates were observed among males in this age group, mainly due to external causes, which are largely related to greater violence, impulsivity and high-risk behaviors.

The earliest deaths were among males and black or mixed-race people, due to unnatural causes. In Brazil, black men have a higher mortality rate than white men, in all age groups, except for those under one year old, with external causes being one of the main causes of death in this population. [15]

The homicide rate for black men in

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Brazil in 2019 was 37.8 per 100,000 inhabitants, while the homicide rate for white men was 15.7 per 100,000 inhabitants. [15] A similar mortality profile was found in a Scottish study, which analyzed the deaths of men aged 15 to 44, in which external causes were the leading cause of death. Among these, drug-related deaths ranked first overall for this group, and were also responsible for the largest cause of death related to social inequalities. [16]

Regarding women, the data analyzed indicate that the main cause of death was neoplasms, followed by heart and respiratory diseases. These findings are consistent with a study that investigated the deaths of women of childbearing age in the United States between 1999 and 2019. In this study, neoplasms and cardiovascular diseases were identified as the second and third causes of death, respectively, behind unintentional accidents. In addition, it was observed that most deaths of women of childbearing age occur after the age of 40, corroborating the results of this study. [17]

In this study, deaths from external causes accounted for 9.4% of female deaths, one of which was characterized as feminicide. Femicide is the highest degree of violence against women. According to the WHO, one in three women has suffered physical or sexual violence within their homes and with an intimate partner as the aggressor. [18,19]

Brazil has one of the highest rates of femicide in the world, with an increase of 31.46% between 1980 and 2019. In reality, this number may be higher due to evidence of underreporting of violence against women in health services and inadequate death registration. Many of these deaths, often classified as external causes, are not investigated properly, which compromises their inclusion in statistics on deaths related to sex and gender. [20]

Premature mortality related to gender dynamics could be classified into direct, indirect and non-gender-related mortality. Thus, maternal mortality, femicide or even selective abortions of female fetuses (not observed in our sample and more common in Southeast Asia) [21] would be deaths of women directly related to gender.

On the other hand, excess male premature mortality related to external causes and possibly some aspects of lifestyle could be classified as premature mortality indirectly related to gender.

The North Zone of Ribeirão Preto, where most deaths of both sexes originated, is the most populated region, with the largest number of households in precarious settlements (5,539), associated with the high rate of heads of household with little formal education. This district also houses the majority of deaths of black and brown people, deaths from external causes and deaths that occurred on public roads. [22]

Regarding marital status, a systematic review that analyzed 1,888,752 deaths identified that unmarried individuals are more likely to die from all causes, cancer, and cardiovascular diseases, regardless of gender. However, the association between not being married and all-cause mortality was more pronounced among men. These findings are in line with the results of this study. [23]

One limitation of this analysis concerns the data source, which classifies biological sex rather than gender. The data were collected under the assumption of a high correlation between the two, which prevents the consideration of essential aspects of identity and sexual orientation. In addition, manual completion of death certificates often results in incomplete and sometimes illegible data. Another difficulty is that some variables depend on the subjective interpretation of the physician, such as the individual's skin color, which is recorded according to the declarant's perception.

Data collected in Ribeirão Preto indicate higher mortality rates among white individuals. However, in the same year, the composition of the Brazilian population was 46.8% mixed race, 42.7% white, 9.4% black and 1.1% Asian, according to information from the Brazilian Institute of Geography and Statistics (IBGE) 9. These findings are consistent with another study that also observed a predominance of deaths among white individuals, but highlighted that most deaths of black people were associated with violent acts 24. It is also not possible to eliminate a bias in the classification of the race-color variable, carried out by the professional who completed the DC, which could be associated with a tendency for the population to become whiter in terms of documents.

Among the strengths of the study, it can be highlighted that data collection was carried out exhaustively in all registry offices in the municipality, seeking to collect all deaths of residents of Ribeirão Preto, SP, in 2019.

CONCLUSION

Based on the results, it was possible to observe a significant difference in male and female mortality patterns among people aged 15 to 49. While the current social, political and cultural system still favors a pattern of male hegemony, on the other hand, this same system promotes a pattern of attitudes, behaviors and lifestyles that increase risk and contribute to higher mortality rates among this group.

Building a fairer and healthier world requires changes in the way in which the sociocultural formation of boys and girls occurs. Gender justice, in addition to being a social issue, is also a health issue. The process of eliminating injustices based on gender, race and social class is complex, but it also contributes to achieving a higher and more sustainable level of health for all.

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