Trend analysis of suicide mortality in the population of Teresina-Piauí, 1996-2017

Análisis de tendencias de la mortalidad por suicidio en la población de Teresina-Piauí, 1996-2017

Análise de tendência da mortalidade por suicídio na população de Teresina-Piauí, 1996-2017

ABSTRACT

This study describes the time trend of suicide mortality rates in Teresina, 1996-2017. The data were obtained through SIM and IBGE, available in DATASUS. Suicide mortality rates were calculated according to sex and age groups. For assessing trends, the Prais-Winsten regression model was considered. 1033 deaths were recorded. Mortality rates in the population ranged from 5.19 to 8.94 / 100 thousand inhabitants (men: 7.84 and 14.59 / 100 thousand; women: 2.86 and 3.98 / 100 thousand). For both sexes, there is an increasing trend: male (b = 0.012; p-value = 0.000) and female (0.014; 0.020). For the age groups, the variations were: 10 to 19 years, between 6.71 and 3.96 / 100 thousand; 20 to 39 years, from 4.57 to 11.93 / 100 thousand; 40 to 59 years, between 10.21 and 11.53 / 100 thousand; and over 60 years, between 8.09 and 15.24 / 100 thousand. There is a growing trend in the 20 to 39 age group (0.017; 0.000). In the others, there is stationarity.
DESCRIPTORS: Suicide; Mortality; Epidemiology; Time series studies.

RESUMEN

Este estudio describe la tendencia temporal de las tasas de mortalidad por suicidio en Teresina, 1996-2017. Los datos se obtuvieron a través de SIM e IBGE, disponibles en DATASUS. Las tasas de mortalidad por suicidio se calcularon según el sexo y los grupos de edad. Para evaluar las tendencias, se consideró el modelo de regresión de Prais-Winsten. Se registraron 1033 muertes. Las tasas de mortalidad de la población oscilaron entre 5,19 y 8,94 / 100 mil habitantes (hombres: 7,84 y 14,59 / 100 mil; mujeres: 2,86 y 3,94 / 100 mil). Para ambos sexos, hay una tendencia creciente: hombres (b = 0.012; valor de p = 0.000) y mujeres (0.014; 0.020). Para los grupos de edad, las variaciones fueron: 10 a 19 años, entre 6,71 y 3,96 / 100 mil; 20 a 39 años, de 4.57 a 11.93 / 100 mil; 40 a 59 años, entre 10.21 y 11.53 / 100 mil; y mayores de 60 años, entre 8.09 y 15.24 / 100 mil. Existe una tendencia creciente en el grupo de edad de 20 a 39 años (0,017; 0,000). En los demás, hay estacionariedad.
DESCRIPTORES: Suicidio; Mortalidad; Epidemiología; Estudios de series de tiempo.

RESUMO

O artigo descreve a tendência temporal das taxas de mortalidade por suicídio em Teresina - Piauí, período 1996-2017. Dados obtidos através do SIM e IBGE, disponibilizados no DATASUS. Foram calculadas as taxas de mortalidade por suicídio, segundo sexo e faixas etárias. Para avaliação das tendências, foi considerado o modelo de regressão de Prais-Winsten. Foram registrados 1033 óbitos. As taxas de mortalidade na população variaram entre 5,19 e 8,94/100mil habitantes (homens: 7,84 e 14,59/100mil; mulheres: 2,86 e 3,98/100mil). Para ambos os sexos, há tendência crescente: masculino (b=0,012; p-valor= 0,000) e feminino (0,014; 0,020). Para as faixas etárias, as variações foram: 10 a 19 anos, entre 6,71 e 3,96/100mil; 20 a 39 anos, de 4,57 a 11,93/100mil; 40 a 59 anos, entre 10,21 e 11,53/100mil; e maiores de 60 anos, entre 8,09 e 15,24/100mil. Observa-se tendência crescente na faixa de 20 a 39 anos (0,017; 0,000). Nas demais, há estacionariedade.
DESCRITORES: Suicídio; Mortalidade; Epidemiologia; Estudos de séries temporais.

Elaine Monteiro da Costa
Nurse graduated from the Federal University of Piauí (UFPI). Master in Science and Health (UFPI). Specialist in Health Situation Analysis (UFG), Health Management (UESPI) and in the residency modality by the Multiprofessional Residence in Family Health (UESPI). Currently, she works at the Center for Vigilance of Violence and Accidents of the Directorate of Health Surveillance of the Municipal Health Foundation of Teresina.
ORCID: 0000-0002-1294-8072

Érika Carvalho de Aquino

PhD student and Master in Tropical Medicine and Public Health, in the area of concentration Epidemiology, by the Institute of Tropical Pathology and Public Health at the Federal University of Goiás. Graduated in Dentistry at the Federal University of Goiás. Specialist in Public Health at the Faculty of Public Health at University of São Paulo (FSP/USP) and Specialist in Health Situation Analysis by the Federal University of Goiás.
ORCID: 0000-0002-5659-0308

INTRODUCTION

Suicide is considered one of the most serious public health problems today, attracting the attention of several actors due to its complexity. Because there is no single cause or reason that motivates the suicidal act, the attention, prevention and control of this disease become not easy tasks. [1]

Suicide attempts constitute potentially harmful self-inflicted behavior with a non-fatal outcome. It is estimated that their number is twenty times higher than that of suicides. In addition, previous attempts are an important factor for recurrences that may result in suicide. [2]

Attempts stem from a crisis process, developed gradually. People with this history should be the main target of health network surveillance and prevention actions, seeking to intervene early and effectively. For the planning and execution of actions, there is a need for safe, well-grounded data that support evidence for effective interventions. [3]

A study on factors associated with adult suicide in Brazil, using data from the Mortality Information System from 2010 to 2015, found a rate of 7,5/100 thousand inhabitants, with the risk for males four times greater than for females due to the medium used being more lethal. The greatest risks observed were for elderly people over 70 years old (8,9/100 thousand inhab.), Individuals with 0 to 3 years of study (7,7/100 thousand inhab.) And indigenous race/color (12,4/100 thousand inhab.); hanging was the most used method (4,6/100 thousand inhab.). [4]

Similar research on the characterization of suicide cases in Teresina, capital of Piauí, for the years 2000-2005, found that suicides ranked fourth among deaths from external causes. When describing the mortality rates in Brazil, Northeast and Teresina, period 2000-2004, we observed the averages of 4,5 suicides/100 thousand inhabitants, 2.,4 - 3,1/100 thousand inhabitants and 4,5 - 7,2/100 thousand inhabitants, respectively. [5]

In 2017, the bulletin prepared by the Ministry of Health on the epidemiological situation of attempts and suicides in the country, in the years 2011 to 2016, describes Piauí among the states in which there was a greater increase in mortality rates among women, second only to the Distrito Federal (1,1/100 thousand inhab.), And equaling the states Roraima and Amapá (0,9/100 thousand inhab). [3]

Recognizing suicide as a problem to be faced is essential to direct resources and strategic interventions that aim to preserve and improve people's quality of life. It is important to highlight the relevance of feeding information systems in health to produce consistent information that guide decision-making to face the problem. [3]

Thinking about this perspective of the importance of knowing to intervene, and already identifying suicide as a serious public health problem to be faced, the Ministry of Health published Ordinance No. 1.876, of August 14th, 2006, instituting the National Guidelines for Suicide Prevention. [6] Law 13.819, of April 26th, 2019, was also designated, establishing the National Policy for the Prevention of Self-Mutilation and Suicide, in view of the need to adopt a permanent strategy of the public power for the prevention of these events and for the treatment of conditions to them associated companies. [7]

In order to seek pertinent information on suicide mortality in Teresina-PI, aiming to substantiate and subsidize managers, professionals and services of the intersectoral network for planning evidence-based actions, this study aims to analyze the temporal trend of suicide mortality in Teresina population, according to sex and age groups, from 1996 to 2017.

METHODS

Epidemiological, descriptive and time series study, referring to suicide mortality in Teresina-Piauí, period 1996-2017.

The data were obtained through secondary data from the Mortality Information System (SIM - Sistema de Informação sobre Mortalidade) on the Ministry of Health's Department of Information Information System (DATASUS) portal. Suicide deaths were those registered in the SIM with codes X60 a X84 (Large group: Self-inflicted injuries voluntarily), according to the International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10). Thus, as inclusion criteria, deaths coded as X60 to X84 in the years 1996 to 2017 were considered. Deaths classified by other causes in the period under analysis were excluded.

The resident population in Teresina was obtained from data from the 2010 Demographic Census, carried out by the Brazilian Institute of Geography and Statistics (IBGE); and, for the other years, the projections and estimates available on the website of the Department of Informatics of the Unified Health System (DATASUS) were considered.

The data collected in DATASUS were processed in TABNET, tabulated in the Microsoft Excel program and the statistical analyzes were performed in the STATA program, version 14.0. To assess the trend in suicide mortality, the Prais-Winsten regression model was considered.

RESULTS

In the period from 1996 to 2017, 1033 deaths were registered due to voluntary self-harm (suicides) in residents of Teresina. The suicide mortality rates ranged between 5,19 and 8,94/100 thousand (Table 1).

When analyzing the incidence rates by sex, a variation between 7,84 and 14,59/100 thousand is perceived for the male population from 1996 to 2017. In the female population, the rates varied between 2,86 and 3,98/100 thousand, with a peak of 4,94/100 thousand in 2008 (Table 1).

For the age groups, the following variations are observed: 10 to 19 years old, changed between 6,71 and 3,96/100 thousand (peak of 8,95 in 2004); 20 to 39 years, there was a variation of 4,57 to 11,93/100 thousand (peak of 12,92 in 2016); 40 to 59 years old, varied between 10,21 and 11,53/100 thousand; and for those over 60, the rates ranged between 8,09 and 15,24/100 thousand (peak of 18,53 in 1997) (Table 2).

Table 1. Time series (annual) of the mortality rate (100,000 inhab./year) due to suicide, according to sex. Teresina (PI), 1996 to 2017.

YEAR	DEATHS BY RESIDENCE	RESIDENT POPULATION	SUICIDE RATE	MALE SUICIDE	MALE POPULATION	MALE RATE	FEMALE SUICIDE	FEMALE POPULATION	FEMALE RATE
1996	34	655473	5.19	24	305987	7.84	10	349486	2.86
1997	28	668266	4.19	25	311884	8.02	3	356382	0.84
1998	39	680044	5.73	30	317383	9.45	9	362661	2.48
1999	26	691942	3.76	23	322936	7.12	3	369006	0.81
2000	27	715360	3.77	19	335251	5.67	8	380109	2.10
2001	44	728882	6.04	31	341590	9.08	13	387292	3.36
2002	41	740016	5.54	27	346807	7.79	14	393209	3.56
2003	38	751463	5.06	26	352174	7.38	12	399289	3.01
2004	55	762874	7.21	38	357523	10.63	17	405351	4.19
2005	33	788770	4.18	21	369659	5.68	12	419111	2.86
2006	41	801972	5.11	29	375844	7.72	12	426128	2.82
2007	42	815061	5.15	32	383233	8.35	10	431828	2.32
2008	64	802416	7.98	43	377408	11.39	21	425008	4.94
2009	44	802565	5.48	33	377589	8.74	11	424976	2.59
2010	46	814230	5.65	37	380612	9.72	9	433618	2.08
2011	57	822364	6.93	47	384414	12.23	10	437950	2.28
2012	58	830231	6.99	45	388093	11.60	13	442138	2.94
2013	56	836475	6.69	43	391052	11.00	13	445423	2.92
2014	56	840600	6.66	41	392981	10.43	15	447620	3.35
2015	58	844245	6.87	44	394685	11.15	14	449560	3.11
2016	70	847430	8.26	53	396174	13.38	17	451256	3.77
2017	76	850198	8.94	58	397468	14.59	18	452730	3.98

Source: Ministry of Health, Health Surveillance Secretariat and SUS Informatics Department, Mortality Information System; Brazilian Institute of Geography and Statistics (IBGE), 1996-2017.

Table 2. Time series (annual) of the mortality incidence rate (100.000 inhab./year) due to suicide, according to age group. Teresina (PI), 1996 to 2017.

YEAR OF DEATH	DEATHS 10 TO 19 YEARS	POP	RATE	DEATHS 20 TO 39 YEARS	POP	RATE	DEATHS 40 TO 59 YEARS	POP	RATE	DEATHS 60 YEARS AND +	POP	RATE
1996	11	163854	6.71	10	218581	4.57	10	97919	10.21	3	37104	8.09
1997	3	166990	1.80	11	222981	4.93	7	99841	7.01	7	37781	18.53

1998	5	169933	2.94	21	226912	9.25	6	101602	5.91	7	38445	18.21
1999	4	172906	2.31	11	230882	4.76	8	103379	7.74	2	39119	5.11
2000	2	167622	1.19	12	247267	4.85	5	119707	4.18	8	44436	18.00
2001	6	170791	3.51	25	251941	9.92	11	121970	9.02	2	45276	4.42
2002	6	173400	3.46	19	255790	7.43	9	123833	7.27	7	45968	15.23
2003	4	176081	2.27	20	259747	7.70	10	125748	7.95	4	46679	8.57
2004	16	178754	8.95	18	263691	6.83	14	127658	10.97	7	47388	14.77
2005	4	184822	2.16	21	272643	7.70	5	131991	3.79	3	48996	6.12
2006	8	187917	4.26	17	277204	6.13	11	134201	8.20	5	49816	10.04
2007	4	155585	2.57	23	302570	7.60	9	155721	5.78	6	52807	11.36
2008	11	149210	7.37	29	300247	9.66	17	155334	10.94	7	53073	13.19
2009	5	146263	3.42	23	302238	7.61	11	157333	6.99	5	54349	9.20
2010	2	145167	1.38	35	304962	11.48	6	174428	3.44	3	69122	4.34
2011	5	146618	3.41	32	308009	10.39	13	176169	7.38	7	69813	10.03
2012	3	148020	2.03	34	310956	10.93	11	177854	6.18	10	70481	14.19
2013	4	149133	2.68	29	313295	9.26	15	179192	8.37	8	71011	11.27
2014	7	149869	4.67	35	314840	11.12	9	180075	5.00	5	71361	7.01
2015	3	150519	1.99	34	316205	10.75	15	180856	8.29	6	71671	8.37
2016	2	151086	1.32	41	317398	12.92	15	181538	8.26	12	71941	16.68
2017	6	151580	3.96	38	318434	11.93	21	182131	11.53	11	72176	15.24

Source: Ministry of Health, Health Surveillance Secretariat and SUS Informatics Department, Mortality Information System; Brazilian Institute of Geography and Statistics (IBGE), 1996-2017.

Assessing trends from 1996 to 2017, there is an increasing trend in mortality rates for both sexes: male (b=0,012 and p-value=0,000) and female (b=0,014 and p-value=0,020) (Table 3).

For the age groups, there is a growing trend in the 20 to 39 age group (b= 0,017 and p-value= 0,000). In the other age groups, the trends are stationary: 10 to 19 years old (b= -0,003 and p-value= 0,646); 40 to 59 years (b= 0,001 and p-value= 0,791); 60 years and over (b= -0,0001 and p-value= 0,863) (Table 3).

Table 3. Trend in mortality rates due to intentional self-harm, according to sex and age group. Teresina (PI), 1996 to 2017.

VARIABLES	B	P-VALUE	TENDENCY
SEX			
Male	0,012	0,000	Growing
Female	0,014	0,020	Growing
Total	0,012	0,000	Growing
AGE GROUP			
10 to 19 years	-0,003	0,646	Stationary
20 to 39 years	0,017	0,000	Growing
40 to 59 years	0,001	0,791	Stationary
60 years and more	-0,001	0,863	Stationary

Source: Regression from Prais-Winsten. Statistical significance: p <0,05

DISCUSSION

Suicide is a serious problem that affects society, and it deserves to be highlighted due to the relevant growth presented in recent times. Data from the World Health Organization (WHO) indicate that, per year, suicide is responsible for approximately one million deaths, equivalent to 1,4% of the total deaths in the world.[8] Suicides and attempts involve different age groups and genders, manifesting themselves with different characteristics, which requires specific approaches for each of the events. [1]

There was an increase in suicide mortality rates in Teresina, varying between 5,19 and 8,94/100 thousand between 1996 and 2017, highlighting the continuous growth in the last years, 2014 to 2017 (Figure 1).

Previous studies have already indicated this growth. For the period from

1991 to 20–00, Teresina was found between the capitals, along with Campo Grande and Cuiabá, with a significant increase in suicide rates. The situation showed an increase in the rate, from 1.5 to 3,8/100 thousand, with peaks of 5,2 and 5,7/100 thousand in 1996 and 1998, respectively. [9]

A study carried out from the IML reports in Teresina with the cause of death identified as suicide showed absolute numbers recorded from 2000 to 2005:

in 2000, 32 cases; in 2001, 44; in 2002 and 2003 there were 38, respectively; in 2004, 55; and in 2005, 37. [5]

When investigating the status of suicides by sex, records show that the highest suicide rates are among men and attempts among women. Men die 3 to 4 times more from suicide than women, while women attempt suicide 3 to 4 times more than men. [10]

Analyzing the incidence of suicide in Teresina according to sex, from 1996 to

2017, there is a great disparity between the rates for the male and female populations. Throughout the historical series, rates for men were above the general rates for the population, while the opposite occurred for rates for the female population (Figure 1). In addition, the series points to a growing trend in the number of cases among both men and women (Table 3).

The lower rates among women can be associated with lower rates of alcoholism, greater religiousness and flexibility to social norms, in addition to recognizing risk situations early and seeking help in times of crisis. While among men, they exhibit behavior associated with greater competitiveness, impulsiveness and greater access to weapons and/or more lethal means. [11]

Analyzing the situation of Teresina regarding the age group, it is observed that the rates are relatively higher between the age groups 20 to 39 years, 40 to 59 years and those over 60 years, when compared with the values found for the general population (Figure 2). An increasing trend is observed only for the age group of 20 to 39 years (Table 3). Thus, there is a relevant and serious situation of deaths among the economically active population and, consequently, a strong social and financial impact for the city. Historically, suicide stood out as more frequent among the elderly. However, it has been growing among the youngest, presenting itself as one of the three major causes of death in the age group from 15 to 35 years old. [6]

People over 65 are the population group with the highest suicide rates. The effect of age related to suicide is a growing trend from 45-54 years old, increasing rapidly even in the group of individuals over 75 years old. However, it is necessary to warn about the alarming 10-fold growth in the 15-24 age group in recent years. [12]

As risk factors among young people, there are unemployment, increased competitiveness in the labor market, increased drug use. 8 Other factors are also considered determinants: social isolation, interpersonal conflicts, recent losses of relatives

Figure 1. Time series (annual) of the mortality rate (100.000 inhab./year) due to suicide, according to sex. Teresina (PI), 1996 to 2017.
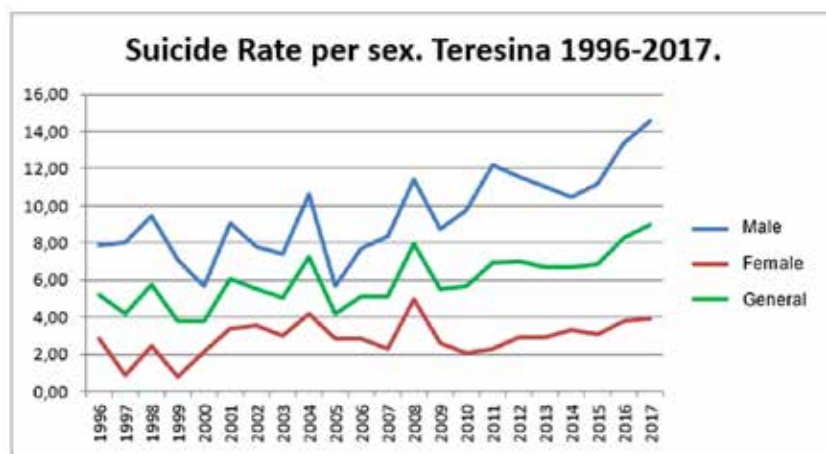
Source: Ministry of Health, Health Surveillance Secretariat and SUS Informatics Department, Mortality Information System; Brazilian Institute of Geography and Statistics (IBGE), 1996-2017.

Figure 2. Time series (annual) of the mortality incidence rate (100.000 inhab./year) due to suicide, according to age group. Teresina (PI), 1996 to 2017.
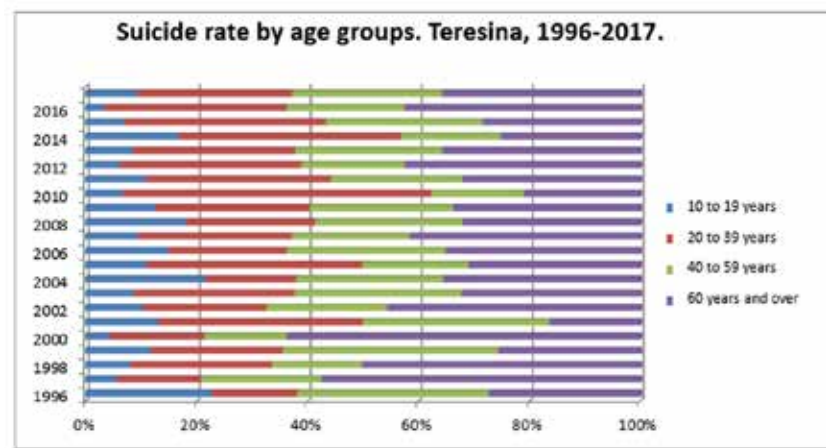
Source: Ministry of Health, Health Surveillance Secretariat and SUS Informatics Department, Mortality Information System; Brazilian Institute of Geography and Statistics (IBGE), 1996-2017.

or friends, discrimination, mental disorders, pain and/or serious injuries. [13]

CONCLUSION

Thus, studies of temporal tendency are shown to be a relevant epidemiological tool, as they allow to know the distribution of events, in addition to assisting in the formulation of explanatory hypotheses and assessing the effectiveness of public policies in the country.[11]

The challenge of preventing deaths through actions aimed at prevention and health promotion, based on the identification of individuals at risk, requires an organized service network to accommodate the demand. [14]

In this perspective, Teresina imple-

The challenge of preventing deaths through actions aimed at prevention and health promotion, based on the identification of individuals at risk

mented the PROVIDA service in 2014. It consists of an outpatient clinic specialized in the treatment of people at imminent risk for suicide. In addition to PROVIDA, the Teresina Mental Health Network also comprises other services: urgent and psychiatric emergency hospitals, Psychosocial Care Centers, specialized outpatient clinics, services offered by philanthropic entities, among others. [15]

It is essential that the municipality constantly monitor the epidemiological situation of the cases and evaluate the intervention policies adopted to monitor the effectiveness of the planned actions, in order to resize professionals and services that can provide the necessary support to the populations identified as at greatest risk. ■

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