EDITORIAL

Suicide rates in the United States continue to rise. Are rates in Brazil underestimated?

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The most recent available data on overall mortality rates in the United States show that suicide was responsible for 44,193 deaths in 2015.[1] For the 2000-2016 period, the age-adjusted suicide rate in the country increased from 10.4 to 13.5 per 100,000 standard population, which represents a 30% increase.[2]

Studies suggest that suicide statistics are unequally distributed around the world. Indeed, in Brazil, suicide rates are low compared to those of most other countries. Dantas et al.[3] showed that the mean suicide mortality rate in Brazil in 2010-2014 was 5.23 per 100,000 population. This finding is of considerable interest, first because it confirms that suicide rates in Brazil are comparatively low, as suggested by historical data. However, it is worth stressing that these might be underestimated; in countries with only reasonably reliable national records, such as Brazil, there are no systematic records of suicide attempts, and even in countries with good vital registration data, suicide can often be mistakenly attributed to accidents or other causes of death. More importantly, however, in their analysis of mortality rate clusters, the authors found a high prevalence of such formations in the Southern Region of Brazil, but neither spatial autocorrelation values nor associations with the analyzed socioeconomic factors.

Seminal studies by pioneers in the study of suicide noted that the environmental risk factors for suicide include seasonality. The article recently published by Bando et al. in *Revista Brasileira de Psiquiatria*[4] is part of a growing body of interest in the role of meteorological factors in suicide. In this study, the authors applied a generalized additive model (GAM) to examine the association between meteorological factors and suicide in São Paulo, Brazil, a city in intertropical latitudes in the Southern Hemisphere. The authors reported that suicide is more frequent in spring and less frequent in the fall, with the highest monthly suicide counts in November (20.5 deaths) and the lowest in April (16.6 deaths). The weather variables used in this study revealed interesting data. Weekly average minimum temperature had the highest association with suicide: total suicide counts increased 2.18% with each 1°C increase in this variable. Suicide counts also increased with irradiation (lag 0 and lag 1) and humidity (lag 3), both overall and for men. On the other hand, suicide risk decreased with insolation (lags 2 to 4). The authors conclude that this pattern of results indicates that an increase in weekly average minimum temperature was acutely associated with suicide mortality in São Paulo. On the other hand, Alves et al.[5] showed that suicide attempts are more frequent during spring and fall in Northeast Brazil. The authors found that the highest frequencies of suicide occurred in January through April, followed by a decline and second rise from September to December; April had the highest number of cases, and July the lowest. Corroborating previous studies, they showed that suicide attempts were more frequent among women and young adults, but deaths were more frequent among men. Although suicide attempts during pregnancy are not very common, in this study, the authors identified a higher frequency of such cases from 2009 to 2010. These findings support the theory that seasonal changes and climate factors, such as ambient temperature, can influence suicidal behavior. However, the authors raised an important point as a limitation: their analyses did not account for the presence of any mental disorders. In fact, classical studies have suggested that affective disorders in general – and bipolar disorders and unipolar depression in particular – may be influenced by seasonality, which could in turn influence suicide risk. Aguglia et al.[6] conducted a 24-month study of 730 patients divided into two subgroups, one for those diagnosed with bipolar disorder and one for those with any other psychiatric diagnosis, seeking to evaluate the influence of photoperiod variation in patients with bipolar disorder. Of particular note, although no significant differences were found for seasonality when compared with the mixed-diagnosis control group, patients with bipolar disorder reported a significantly higher prevalence of hypomanic episodes during spring and summer than the mixed control group. When the authors restricted the analyses to the current affective episode in the bipolar group, they found that patients undergoing a hypomanic episode were more frequently hospitalized during spring and during longer daylight periods than those undergoing

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a major depressive episode, suggesting that hypomanic episodes were more sensitive to photoperiod. Based on this finding and on their focus on seasonal patterns in bipolar disorder, the authors conclude that seasonality and photoperiodicity could be considered clinical parameters for assessing the onset of bipolar disorder only when the disease is considered as single recurrences of affective episodes. However, when the diagnosis of bipolar disorder is considered as a whole, the only clinically significant variable for the onset of an affective episode is greater sunlight exposure.

Certainly, not all cases of suicide can be prevented, but the ability to address suicide makes a difference. Suicide is a public health problem and is a highly complex and multifaceted phenomenon. It is the product of several factors, including meteorological factors, socioeconomic conditions, and mental disorders; therefore, the components that explain its occurrence are difficult to isolate. However, mapping the distribution of suicide cases by municipality could identify areas of high suicide risk, and earlier diagnosis of mental disorders could contribute to detecting suicide risk at the individual level. Increasing our knowledge of the role of specific meteorological conditions in suicidality is another important step in continued efforts to improve the evidence base for suicide prevention.

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Disclosure

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