Suicide in Portugal: Spatial determinants in a context of economic crisis

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ABSTRACT

This study compares the existing statistical association between suicide mortality and the characteristics of places of residence (municipalities), before and during the current economic crisis, in Portugal. We found that (1) the traditional culture-based North/South pattern of suicidal behaviour has faded away, while the socioeconomic urban/rural divide has become more pronounced; (2) suicide is associated with higher levels of rurality and material deprivation; and (3) recent shifts in suicidal trends may result from the current period of crisis. Strategies targeting rural areas combined with public policies that address area deprivation may have important implications for tackling suicide.

1. Introduction

Mental health is an essential and indivisible part of general health and well-being of the individual (Patel et al., 2010). Nonetheless, mental illnesses are currently a leading cause of disability and of higher rates of morbidity and mortality worldwide, with suicide mortality as one of the ten leading causes of death (WHO, 2011).

Typically, males have higher rates of death by suicide than females (Canetto and Sakinofsky, 1998; Kposowa and McElvain, 2006). This gender disparity in Europe is explained by theories related to the male role and men's behaviour (Möller-Leimkühler, 2003). In particular, the culturally-mediated social construction of men's role in society which imputes to them, for instance, the role of economic provider, leads to higher levels of occupational stress and pressure to be successful economically (Kposowa and McElvain, 2006; Qin et al., 2000). Moreover, Reeves et al. (2015, p. 408) found that "rises in male unemployment have contributed to the recent recession-related increases in suicide rates in Europe, although the association varies across European nations".

Social, psychological, cultural and other factors can lead a person to suicidal behaviour (Patel et al., 2010; WHO, 2014). In recent decades empirical evidence has shown that acts of suicide can be influenced by place of residence, independently or beyond individual characteristics. Contextual factors (socio-environmental characteristics of places of residence) have positive or negative impacts on the mental health of individuals (Diez Roux and Mair, 2010; Evans, 2003; Ruth et al., 2014; WHO, 2008), and may influence the incidence of death by suicide (Agerbo et al., 2007; Chang et al., 2011; Derek Cheung et al., 2014; Phillips, 2014).

Several authors have demonstrated that suicide mortality is influenced by contextual factors related to: (1) the socio-economic characteristics, such as poverty (Ferretti and Coluccia, 2009; Murali, 2004), deprivation (Burrows et al., 2011, 2010; Kim et al., 2010; Murali, 2004; Rezaeian et al., 2007; Stark et al., 2007), income and socioeconomic status (Agerbo et al., 2007; Andrés and Halicioglu, 2010; Ceccherini-Nelli and Priebe, 2011; Chang et al., 2011; Derek Cheung et al., 2014; Milner et al., 2012), employment/unemployment (Agerbo et al., 2007; Andrés and Halicioglu, 2010; Barr et al., 2012; Ceccherini-Nelli and Priebe, 2011); and (2) the characteristics of the built environment, such as density (Chang et al., 2011; Stark et al., 2007; Wang et al., 2013), urban/rural typology (Jagodic et al., 2012; Kim et al., 2010; Middleton et al., 2006; Page et al., 2007; Razvodovsky and Stickley, 2009) access to facilities and services (Cheung et al., 2012; Desai et al., 2005) and mobility (Haynie et al., 2006; Potter et al., 2001).

In a context of crisis and austerity these associations tend to

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worsen (WHO, 2011). Financial and economic crises can foster an unequal distribution of power, status, and resources impacting people's freedom to participate in decisions that affect their lives (Stuckler et al., 2009; Veenhoven and Hagenaars, 1989), contributing to an increase of socio-material vulnerability and inequity. In several countries scientific evidence suggests a link between the increased suicide mortality and the phenomena of economic and financial crisis (Barr et al., 2012; Baumbach and Gulis, 2014; Chang et al., 2013, 2009; Hintikka et al., 1999; Karanikolos et al., 2013; Kentikelenis et al., 2014; Reeves et al., 2012; Stuckler et al., 2011). Most of these studies also identified an association between suicide mortality and unemployment. Nevertheless, the majority of the research concludes that the amplitude and sensitivity to the 'crisis effect' vary across countries (Chang et al., 2013; Fountoulakis et al., 2014; Karanikolos et al., 2013; Laanani et al., 2014).

Since the advent of the financial crisis in 2008, Portugal has requested international support and has been identified as the third European country asking for such assistance. This was not the first time. The presence of the International Monetary Fund (IMF) in Portugal in 1977, 1983 and 2011 brought several austerity policies (Augusto, 2014; Baumbach and Gulis, 2014; Carneiro et al., 2014; Karanikolos et al., 2013; Laanani et al., 2014) and consequent cuts in spending on health care and social support schemes (Barros, 2012; Eurofound, 2013; Sakellarides et al., 2014). Apart from the growth of unemployment and emigration, austerity has contributed to a decrease in patient transportation support and an increase of user charges that directly affect access to services (Eurofound, 2013; Sakellarides et al., 2014).

Traditionally, Portugal is one of the countries with the lowest suicide rate in Europe (Gusmão and Quintão, 2013). However, according to Fountoulakis et al. (2014, p. 3), it is the only "country that did not witness a clear reduction in the suicide rate during 2000–2011".

Based on the literature review, there are no studies linking the economic crisis with suicide mortality in Portugal at the local level and regarding how places of residence influence suicidal behaviour. Recently, three studies have investigated the impact of the economic crisis, through the analysis of unemployment rate and suicide mortality in several countries as a whole, including Portugal (Baumbach and Gulis, 2014; Fountoulakis et al., 2014; Karanikolos et al., 2013). All of them found an association between suicide mortality and unemployment, though it was weak or insignificant. Some of them examined other economic indices such as GDP per capita and National Growth rate, however no direct association between them and suicide was found.

The aim of the present study is to verify whether there is a statistical association between the increase in suicide mortality and the characteristics of places of residence at local level (municipalities), before and during the present economic crisis. For this purpose we will: (1) describe the evolution of geographical patterns of suicide mortality in Portugal (mainland) in the last twenty years; (2) analyse whether men and women have the same geographical pattern of suicide mortality; and (3) analyse the statistical association between suicide mortality risk and health determinants (material deprivation and rurality), before (1999–2003) and during (2008–2012) an economic crisis.

2. Materials and methods

2.1. Design and sources of information

This study follows an ecological design. The Portuguese National Statistics Institute was the source of data in respect of mortality, population and socioeconomic conditions.
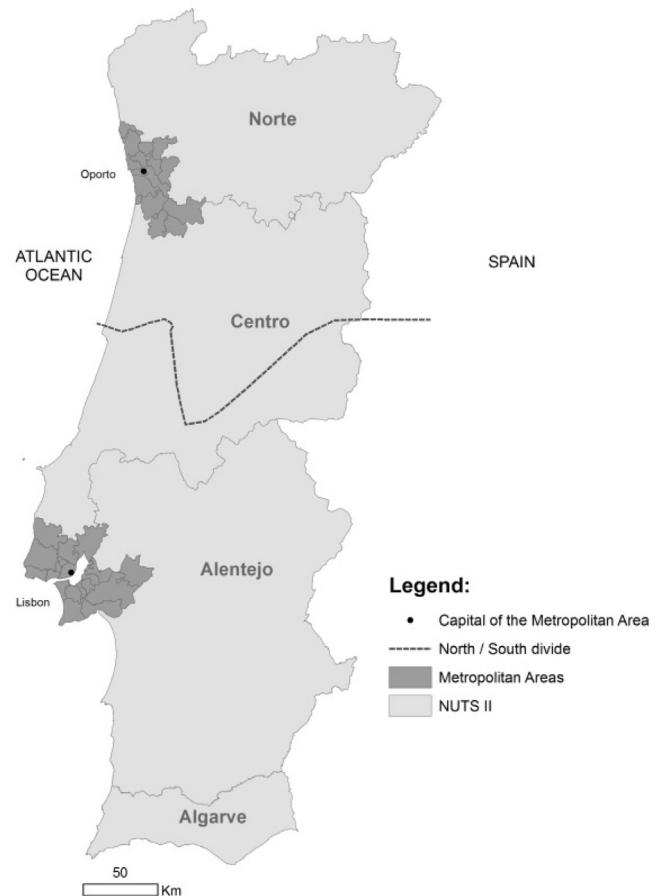
Fig. 1. Mainland Portugal: NUTS II and metropolitan areas and the North/South divide. The figure shows the administrative borders of mainland Portugal, namely the NUTS II level and the Metropolitan Areas. The Lisbon NUTS II has the same limit than Lisbon Metropolitan Area (MA). Oporto is the capital of Oporto MA and Lisbon is the capital of Lisbon MA. The North/South divide is based on the work of Orlando Ribeiro (1998. *Portugal. O Mediterrâneo e o Atlântico*, Livraria Sá da Costa Editora, 7th edition [1st edition: 1945]).

In order to identify trends from the last twenty years, three five-year periods around census data have been analysed: 1989–1993, 1999–2003 and 2008–2012. The last coincides with the crisis period.

The units of analysis were identified as the municipalities of Portugal mainland (i.e. hence excluding the islands of Madeira and the Azores) (Fig. 1). Municipalities, which correspond to small geographic units, have more internal homogeneity than larger areas and their aggregate socioeconomic characteristics are thus more likely to reflect the nature of the social environment where people live (Chang et al., 2011). Mainland Portugal had 275 municipalities in the first period and 278 in the last two periods (three new municipalities were disaggregated from the previous ones). Due to data confidentiality, mortality has been grouped into 200 aggregated municipalities for the first period and 202 for the last two periods.

2.2. Indicators

The mortality data by suicide and intentional self-harm (ICD-9[1]: E950–E959; ICD-10: X60–X84) have been disaggregated by age groups (10–14; 15–49; 50–69; ≥ 70), gender (total, male, female), and area of residence ($N=200/202$), in order to comply with data

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[1] International Classification of Diseases – Version 9.