

Short Report

Mortality due to mental and behavioral disorders associated with the Great Recession (2008–10) in Italy: a time trend analysis

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We estimated the proportion of deaths due to mental and behavioral disorders attributable to the Great Recession (2008–10) in Italy. Data on standardized death rates due to mental and behavioral disorders per 100 000 from 2000 to 2010 were provided by the Italian Health for All database. There were an additional 0.303 per 100 000 deaths per year (95% CI: 0.192, 0.478; $P=0.001$) because of the crisis. Each annual decrease of €1000 in gross domestic product per capita was associated with an increase of 0.126 per 100 000 (95% CI: 0.046, 0.205; $P=0.004$) deaths; every annual 1% increase in unemployment corresponded to an increase of 0.074 per 100 000 (95% CI: 0.032, 0.117; $P=0.002$) deaths.

Introduction

A number of have shown that the Great Recession contributed to the rise of suicides¹ and mental health problems² in Europe. In a recent research report, we showed that Italy, one of the worst affected economies in Europe, experienced a sharp rise in suicides and suicide attempts due to economic reasons in the years following the onset of the downturn (2008–2010).³ Despite such evidence, to date, no study has investigated the consequences of the financial downturn on mortality due to mental health problems. In this short article, we first estimate the proportion of total deaths due to mental and behavioral disorders attributable to the Great Recession. Then, we examine the short-term associations between changes in gross domestic product (GDP) per capita and unemployment, and changes in mortality due to mental and behavioral disorders in correspondence with the onset of the crisis in Italy.

Methods

Data on standardized death rates (SDRs) due to mental and behavioral disorders per 100 000 deaths from 2000 to 2010 were procured from the Italian Health for All database. These causes of death were classified according to the International Classification of Diseases (ICD-9 from 2000 to 2002, and ICD-10 from 2003 to 2010)⁴ and included all sub-classifications from codes F00–F99 of the ICD-10 (e.g. from organic to unspecified mental disorders). Data were unavailable for the years 2004 and 2005. Annual data on GDP per capita and unemployment rate for all Italian regions between 2000 and 2010 were obtained from the Italian Institute of National Statistics.⁵ To calculate the number of deaths due to mental and behavioral disorders that were more than the historical trends (attributable to the crisis), we first estimated the counterfactual rate, or the rate that would have been had trends seen in pre-crisis years continued to decline at the same rate. To differentiate from

the past trend, we inserted dummy variable into the time series regression model for the crisis years (2008–10) adjusted for region specific time trends. Subsequently, we assessed the associations of changes in GDP per capita and unemployment with changes in mortality due to mental and behavioral disorders, stratified by regions using linear regression models corrected for fixed effects (a set of 20 region-level dummy variables).⁶ These conservative models study within-region annual variations in unemployment and suicides over time, and adjust for regional characteristics that could potentially confound study results. Robust standard errors clustered by region to adjust for the non-independence of time series data were used in all models.⁷ Regressions were analyzed using Stata version 12.0.

Results

SDR due to mental and behavioral disorders per 100 000 deaths was decreasing at a rate of -0.018 per 100 000 deaths before the economic crisis (2000–07). At the onset of the crisis, however, this downward trend was replaced by a rapid upward trend during the recession years (2008–10), during which there was a reduction in GDP per capita (figure 1a) and an increase in unemployment (figure 1b). Using a time trend model that included a dummy variable for the crisis years, we estimated that there were an additional 0.303 per 100 000 deaths per year (95% CI: 0.192, 0.478; $P=0.001$) due to the crisis. Considering that, according to the Bureau of Census, the population size of Italy in 2009 was 60.3 million, we calculated that this acceleration corresponded to approximately 548 deaths due to mental and behavioral disorders (95% CI 347.3, 864.7) attributable to the financial downturn.

To determine the specific effects of income and unemployment in the years of the crisis, we assessed the short-term effect of annual changes in GDP per capita and unemployment rates on mortality due to mental and behavioral disorders. Each annual decrease of

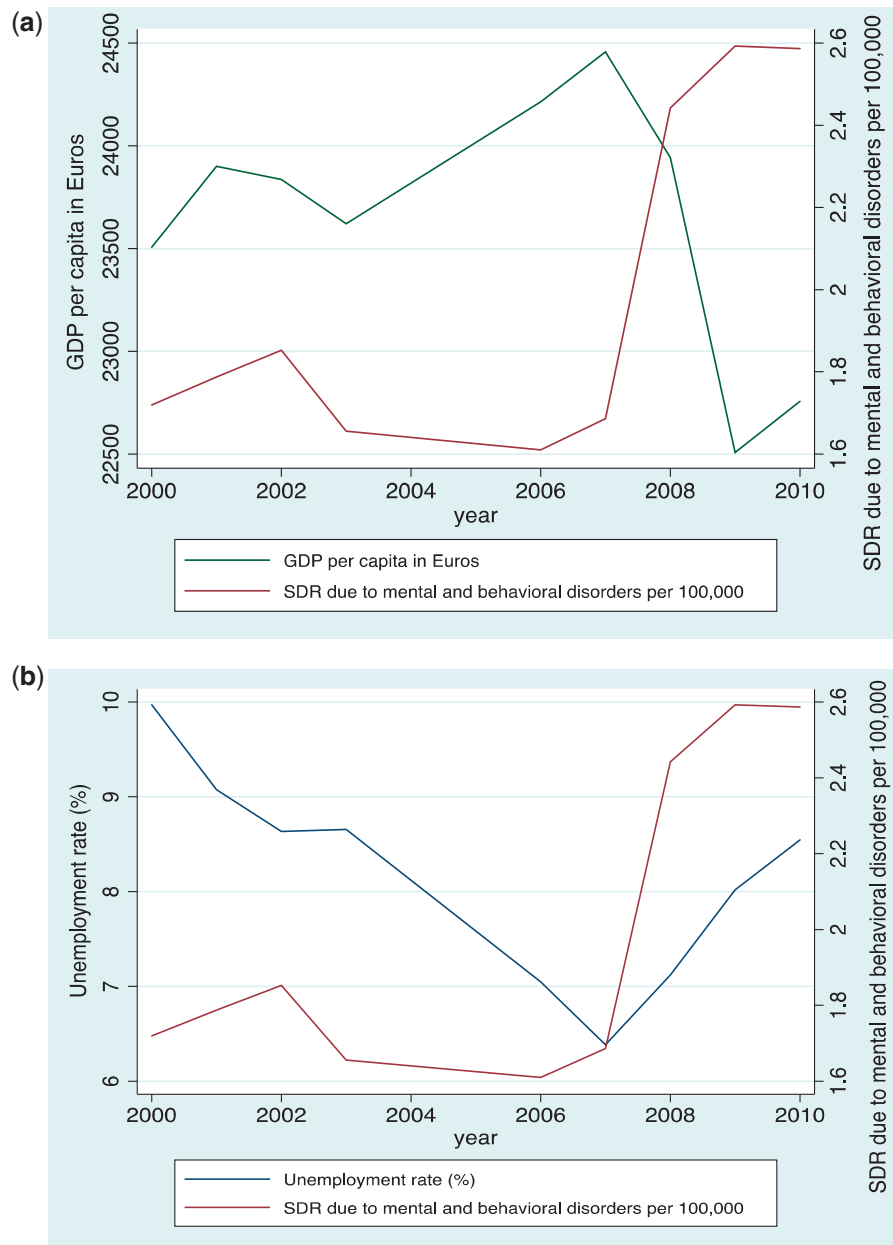


Figure 1 Trends in SDRs due to mental and behavioral disorders per 100 000 deaths, GDP per capita and unemployment rate (%) in 20 Italian regions (2000–10)

€1000 in GDP per capita was associated with an increase of 0.126 per 100 000 (95% CI: 0.046, 0.205; $P=0.004$) deaths. Given that the Italian GDP per capita between 2007 and 2010 decreased from €24 456 to €22 756, our model indicates that income losses during the recession are associated with a 0.2% increase in deaths due to mental and behavioral disorders, corresponding to approximately 123 deaths. Therefore, income loss could account for approximately 22.4% of the additional deaths during this period. Between 2000 and 2010, for every annual 1% increase in unemployment there was a corresponding increase of 0.074 per 100 000 (95% CI: 0.032, 0.117; $P=0.002$) deaths due to mental and behavioral disorders. As the number of unemployed people in Italy increased from 6.38% in 2007 to 8.54% in 2010, we estimated that the rise of unemployment during the first 3 years of the crisis is associated with a 0.15 per 100 000 deaths increase of SDR due to mental disorders. This corresponds to approximately 90 deaths and means that the rise of unemployment accounted for approximately 16.4% of all additional deaths caused by the crisis.

Discussion

This study provides novel findings on the adverse effects of the Great Recession (2008–10), and the contribution of income and job losses in the rise of mortality due to mental and behavioral disorders. Analogous to suicide rates, which were falling in Italy before the economic crisis and reversed at the beginning of the downturn, deaths due to mental and behavioral disorders rapidly increased in 2008 after a downward trend in the preceding years. Income and job losses from 2007 to 2010 accounted for approximately 22.4% and 16.4%, respectively, of the excess deaths due to mental and behavioral disorders caused by the crisis.

These results must be interpreted with caution. First, data on mortality due to mental disorders may be affected by inconsistencies in the classification and interpretation of the circumstance of events, thereby introducing potential biases to the analyses. Although these sources of bias should be taken into account, they may not necessarily affect comparison of fluctuations of deaths due to mental

disorders over time within regions. Another potential limitation is the lack of information on alternative mechanisms to income and job losses, by which the Great Recession may have affected mental health. In effect, although our results show that income and job losses explained about 38.8% of deaths due to mental and behavioral disorders during the crisis years, there may be other putative factors (e.g. foreclosures, job insecurity) that could explain these deaths. It is important to note that the outcome measure included deaths due to dementia, a disease that predominantly affects the elderly population. A plausible explanation for these findings is that the crisis may have affected caregivers, especially those providing care to people with late-stage dementia. A recent report showed that approximately 23% of caregivers performing key activities of daily living (e.g. bathing, incontinence dressing, feeding) reported a decline in the quality of care provided to their care recipients because of the crisis. The lowest income caregivers were twice as likely as those in richer households to report a worsening of the quality of care.⁸

Although recessions may promote benefits for health,⁹ including more leisure time and fewer traffic accidents, our study showed that the financial crisis had negative effects on mental health. In line with evidence showing that strong social protections can decouple the link between crisis and suicides,¹⁰ results suggest the need for urgent interventions, not only for those who have lost incomes and jobs because of the recession, but also for populations at risk of mental health problems.

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Conflicts of interest: None declared.

Key points

- There were 548 deaths due to mental and behavioral disorders attributable to the financial downturn in Italy.
- Income and job losses from 2007 to 2010 accounted for approximately 22.4% and 16.4%, respectively, of the additional deaths due to mental and behavioral disorders caused by the crisis.

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