Effects of the Global Financial Crisis on Health in High-Income OECD Countries. A Narrative Review

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ABSTRACT

A growing body of evidence documents how economic crises impact aspects of health across countries and over time. We performed a systematic narrative review of the health effects of the latest economic crisis based on studies of high-income countries. Papers published between January 2009 and July 2015 were selected based on review of titles and abstracts, followed by a full text review conducted by two independent reviewers. Ultimately, 122 studies were selected and their findings summarized. The review finds that the 2008 financial crisis had negative effects on mental health, including suicide, and to a varying extent on some non-communicable and communicable diseases and access to care. Although unhealthy behaviours such as hazardous drinking and tobacco use appeared to decline during the crisis, there have been increases in some groups, typically those already at greatest risk. The health impact was greatest in countries that suffered the largest economic impact of the crisis or prolonged austerity. The Great Recessions in high-income countries have had mixed impacts on health. They tend to be worse when economic impacts are more severe, prolonged austerity measures are implemented, and there are pre-existing problems of substance use among vulnerable groups.

INTRODUCTION

The onset of the current global financial crisis is often dated to the collapse of Lehman Brothers, a major global investment bank, in September 2008. Its bankruptcy triggered a significant loss in confidence among investors and, eventually, collapse of stock markets around the world. It resulted in significant declines in global trade, slowing or even reversing economic growth worldwide, increases in public sector debt and, in Greece, Ireland, and Portugal, bailouts by international lenders (the International Monetary Fund, European Central Bank, and European Commission, collectively known as "the Troika")[1]. However, the magnitude of the economic crisis, degree of preparedness, and subsequent policy responses varied among countries. Countries made different political choices in what to cut but, in many, health, education, and social protection suffered most.[2]

There was little, if any, formal attempt at the time to assess the impact of the crisis and associated budget cuts on population health by the institutions involved[3], although some independent research teams sought to investigate using existing secondary data. In part this was because, when the financial crisis arose, recent data on health outcomes were lacking. Thus, the first studies could only anticipate what might happen by studying earlier crises, going as far back as the Great Depression. However, researchers drew different conclusions. A major study on associations between mortality and economic fluctuations throughout the European Union during the period 1970–2007 showed that a one percentage point rise in unemployment leads to increase in suicides and decrease in road traffic deaths among working population, but no significant change in overall mortality[4]. However, other studies suggested a pro-cyclical relationship between economic growth and total mortality[5, 6].

These early studies of previous crises found a great deal of heterogeneity, emphasizing the importance of context. Thus, the rapid increase in mortality seen around 1990 in the former Soviet Union took place in a society where the background mortality attributable to alcohol was extremely high[7]. In contrast, the Great Depression occurred in the midst of an epidemiological transition, with declining deaths from infectious disease and increasing deaths from non-communicable disease, coupled with the effects of imposing and then repealing prohibition[8, 9]. Subsequent research has examined the influence of not only shocks but also resilience[10], showing that the adverse effects of unemployment on suicides can be mitigated by strong social welfare systems, especially those with active labour market policies[4].

It is important to distinguish between physical and mental health. Much attention has been devoted to the link between recession and mental health, particularly depression and suicide risks[11]. Infectious diseases are much more complex, depending on back-

ground risks, such as the pool of injecting drug users, or the presence of disease vectors, such as mosquitos and the effectiveness of control measures in place[12].

Generally, there has tended to be an emphasis on short-term associations, with less attention to long-term effects. Yet it can be expected that these may occur, based on what is known about life-course epidemiology, as well as research on survivors of previous severe shocks such as the Dutch hunger winter in 1944 or the siege of Leningrad[13, 14]. Although these will be more difficult to identify, given smaller effect sizes and greater variability, some evidence of these long-term (sometimes called "scarring") effects can be inferred from studies showing that unemployment is a major risk factor for many chronic conditions, including cardio-vascular diseases, cancers, respiratory disease, and diabetes[15-21].

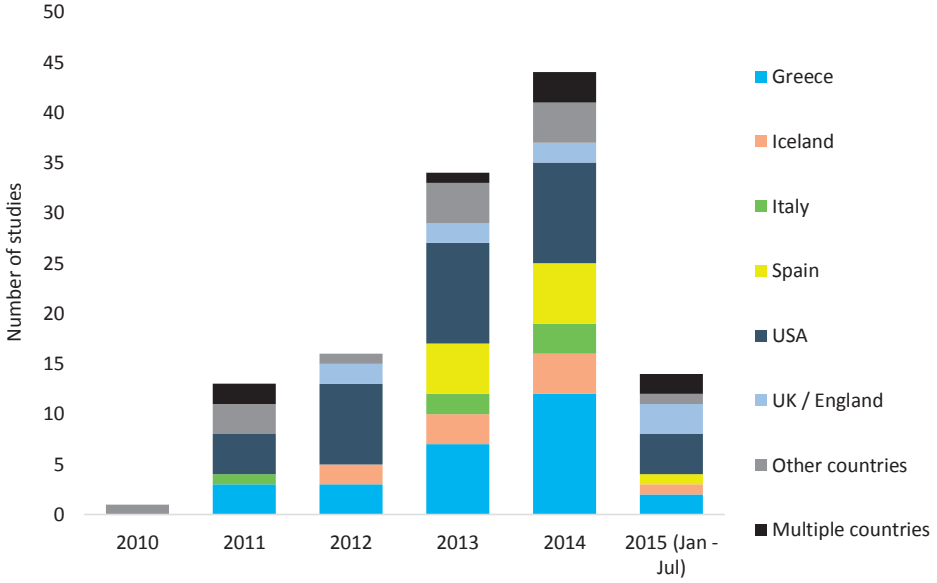
In contrast, recessions tend to reduce exposures to certain risk factors, as people have less disposable income to spend on alcohol and tobacco, and lower affordability of transport may increase cycling or walking[22]. However, much depends on the policy context; for example, when mass unemployment is coupled with easy access to cheap alcohol, there may be large increases in hazardous drinking, as happened during the collapse of the Soviet Union[7], whereas prohibition restricted access to alcohol during the Great Depression, although deaths from cirrhosis rose rapidly when it was repealed, coinciding with economic recovery[8].

Finally, in recent years, concerns have been voiced about the impact of cuts to health budgets, now implemented in several countries, such as the United Kingdom (albeit partially concealed by changing definitions and transfers to the related social care, which has been cut very heavily)[2], Spain[23], and Greece, where a cap on public expenditure on health has been imposed by the Troika[1]. A recent review identified a wide range of responses by European countries to the crisis. While some countries may have managed to improve efficiency without impairing access to services, many experienced a deterioration in access to care[24]. Cuts to services often shifted the financial burden to households, increasing the cost of care, such as for drugs or via co-payments, and reduced provision, such as by closing or reducing operating hours of facilities or by staff lay-offs[23, 25]. Policy makers in countries that implemented the deepest cuts to health or social care, such as the United Kingdom[2], Greece, or Spain, argued that there was no alternative, but largely dismissed evidence of a negative impact on health[23, 26-29].

Researchers had called for active and timely monitoring of the health situation following the financial crisis[3, 4, 30], noting the contrast with the ease of access to timely economic data. In particular, they noted the virtual absence of systems for monitoring the consequences of recession and austerity on vulnerable groups (such as the unemployed, low-income households, children, undocumented migrants, etc.). Yet, despite seeming political indifference, a considerable body of research has now accumulated on the immediate consequences of the economic crisis on health.

Only a few reviews cover the current recession, but they focus on much narrower topics (e.g., child health)[28] or a specific country (e.g., Greece[29], United States[8]). In view of the proliferation of research since the onset of economic crisis, at least in high-income countries (see Figure 1), here we perform a narrative review. A more profound understanding of the effects of the crisis is thus needed, to help countries support those most affected and to be prepared for future recessions, as recommended by the World Health Organization[31, 32]. A review of peer-reviewed literature across a range of health indicators would enable an assessment of the true scale of the crisis's effect on population health, encourage scrutiny of the impact of austerity policies, and provide valuable information for policy makers on the health consequences of budget decisions.

Figure 1. Number of studies included in the narrative review by country and year of publication (n=122)



Note: Other countries: Canada (5), Ireland (3), Australia, Belgium, Japan, Slovenia, South Korea, Sweden (1 each)

METHODS

A narrative review of the literature was carried out to assess and synthesize the evidence from current scientific literature on the impact of the financial crisis on population health in high-income Organisation for Economic Co-operation and Development (OECD) countries (countries listed in Appendix 1). Publications that correspond to predetermined selection criteria were identified and their findings were extracted for analysis, according to the area of impact on health.

Search Strategy

An electronic search of the following electronic databases was undertaken: MEDLINE, EMBASE, and EconLit. The search strategy (Appendix 2) combined three groups of search terms, focusing around the following conceptual areas: (a) financial crisis, (b) health and health care, and (c) high-income OECD countries. Relevant search terms for the financial crisis were identified from a previously published systematic review on economic crisis[12], and these key words (MeSH terms) and free text terms were applied in the current study. The terms were as follows: "austerity," "economic crisis," "fiscal crisis," "financial crisis," "economic recession," "economic depression," "economic insecurity," "debt," "macroeconomic conditions," "unemployment," "GDP," "personnel downsizing," "job loss," "recession," "banking crisis," and "business cycle." For the second concept, the search terms "health" and "health care" were broadly defined to capture all potentially relevant outcomes; however, only papers that examined impact on health alone or together with health care were assessed (papers looking exclusively at impact on health care were excluded). We have included papers that examine access to care through survey data on unmet need, while service utilization indicators were left out of the survey as they were attributed to impact on health care rather than health directly. High-income OECD countries, as defined by the World Bank, were entered as individual search terms. To avoid excluding relevant studies, searches for MEDLINE and EMBASE were performed both using Medical Subject Headings (MeSH) and free text searches. Because of the time lag between the onset of the crisis and collection of health data and the fact that the crisis had only spread to most European countries in 2009, only studies published from January 2009 to July 2015 were included. Only original research papers or correspondence published in peer-reviewed journals in English, which explicitly assess impact of the current crisis on health, were selected. Reference lists of the selected studies were scanned to identify other relevant studies.

Data Extraction and Synthesis

The following information was extracted from the included studies: publication year, authors, title, and journal; study design and setting; country or countries of interest, data time span, health outcome, and main exposure variables; and population characteristics.

For the evidence synthesis, the studies were grouped according to two major categories: (a) consequences for health and (b) consequences for health behaviour. Data from studies with similar outcomes were further grouped into subcategories (by specific health outcome or risk behaviour) and analysed according to these themes.

Similar to other reviews on this topic,[10, 12, 33] we found that definition of the economic crisis, as well as outcome measures, varied widely. In addition, studies included had substantial differences in design, methods, types of data, and setting, so direct comparison of results and effect size between most studies, even within the same thematic

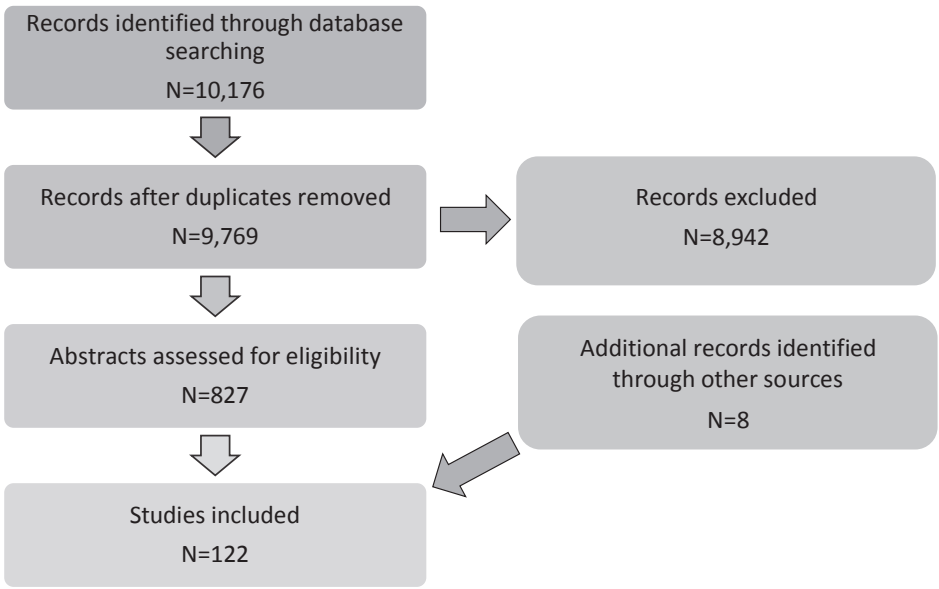
group, is not possible. We therefore report results as overall positive, negative, or an absence of change associated with the economic crisis and report the effect size from individual studies where possible, although we recognize that this cannot be interpreted as an estimate of the actual impact of the crisis.

RESULTS

Figure 2 depicts a flow chart of the review. Of 827 studies initially screened, a total of 122 articles met the inclusion criteria. The data from these articles were extracted and the characteristics evaluated.

The themes of papers were grouped into the categories listed below, based on the main areas of health impact. Some studies found in this review used individual-level data on the economic crisis, such as job loss, financial strain, or deterioration in housing conditions as a proxy for economic crisis. The majority of the studies used ecological, repeated cross-sectional, or aggregate data gathered before and after the crisis, often with an implicit or explicit assumption that a change over this period was associated with the recession or subsequent austerity measures.

Figure 2. Flow diagram of literature review process



Mental Health

Morbidity. Twenty-eight studies focused on mental health, from Australia, Canada, France, Greece, Hungary, Iceland, Ireland, Italy, Slovenia, Spain, Sweden, the United Kingdom, and the United States as well as some multi-country studies. All 28 studies reported worsening in at least one mental health indicator in association with the crisis.

A time series analysis in Italy found an increase in deaths from mental and behavioural disorders, with an additional 0.3 per 100,000 deaths per year attributed to the crisis, amounting to 548 excess deaths (95% CI 347–865) between 2008 and 2010[34]. The collapse of Lehman Brothers in 2008 coincided with an increase in the volume of Internet searches related to psychological distress, identified in Google Trends data (one percentage point in mortgage arrears and foreclosures was associated with a 16% [95% CI 9%–24%] increase in psychological distress queries)[35]. This levelled off after economic stabilization but remained 20% higher than before the Great Recession. Other types of housing insecurity, including moving for cost reasons or rent arrears, were associated with a higher likelihood of anxiety attacks and depressive symptoms, respectively[36]. In the United states, a one percentage point increase in foreclosure rates led to an increase of 0.7 days of poor mental health in the past month[37], while a 10% decrease in housing and non-housing wealth was associated with a small but significant increase in the levels of psychological distress[38]. Another U.S. study showed that loss of wealth led to worsening self-reported mental health but no increase in clinically diagnosed depressive symptoms[39]. A Canadian study found that high social capital moderated the impact of the crisis on mental health: while financial strain led to deterioration in mental health overall, in communities with high compared to low social capital, the effect was milder by a factor of around two for stress (B=.09, p<.001 and B=.17, p<.001, respectively) and depression (B=.03, p=.28 and B=.11, p<.001, respectively)[40]. In England, prevalence of poor mental health increased from 13.7% (95% CI 12.9%–14.5%) in 2008 to 16.4% (95% CI 14.9%–17.9%) in 2009, subsiding again in 2010; although the increases were marked in men, they were not statistically significant in women[41]. However, data from the Iceland Health and Wellbeing Population Survey showed that prevalence of high stress levels increased after economic collapse in women (OR 1.37, 95% CI 1.16–1.61) rather than in men (OR 1.13, 95% CI 0.92–1.39)[42]. Similarly, a study from the United States found that females were more likely to be diagnosed with anxiety after the recession than before (12% and 10% respectively), while the prevalence of depression among women fell after the crisis; for men, outcomes did not change significantly[43]. A study of mental distress among women in Stockholm found an increase between 2006 and 2010, particularly among economically inactive women, a group that experienced tightening of benefit eligibility criteria[44].

A number of studies focused on specific mental health conditions such as mood disorders (e.g., depression, anxiety). A multi-country study using longitudinal data from

health and retirement surveys in the United States and 13 EU countries found that job loss among 50- to 64-year-olds, particularly when due to firm closure, was associated with an increase in a depressive symptoms score by 28% (95% CI 8.6%–47.8%) in the United States and by 7.5% (95% CI 1.3%–13.7%) in Europe[45]. One-month prevalence of major depressive episode increased from 3.3% in 2008 to 8.2% in 2011 in Greece ($p<0.0001$),[46] with subsequent studies in Greece reaching broadly similar conclusions[47, 48], as was also the case in Australia[49], England[50], Spain[51], and the United States[52]. A study from Ireland followed up the cohort of "Celtic Tiger" patients (admitted with first-episode depression in the context of: (a) job loss or job insecurity plus (b) personal debt exceeding annual net income as a consequence of economic recession and non-Celtic Tiger controls (first-episode depressed patients not meeting criteria above) over 2 years, and found that patients with severe depression attributed to the economic recession had higher suicide risks but otherwise more favorable outcomes than the control group[53]. Protective factors against depression included interpersonal and institutional trust[54].

In most studies that stratified subjects by economic status, unemployed people or those experiencing job loss displayed higher risks of worsening mental health than those in employment. However, some studies looked at those employed in particular sectors. Worsening mental health was found in bank employees in Iceland, there was a reduction in sleep duration among railway workers in Greece[55], and increased inpatient and outpatient visits and consumption psychotropic medication were found among manufacturing workers in the United States[56]. A multi-country study examining depressive symptoms among workers affected by organizational downsizing in France, Hungary, Sweden, and the United Kingdom found that, after adjusting for country-specific effects, chaotic layoff processes increased the likelihood of depressive symptoms 2.5 times ($p<0.001$), while fair and unbiased downsizing processes were strongly associated with lower likelihood of depression[57]. A study from Alberta, Canada, showed an increase of 49% ($p=0.03$) in major depressive disorders (but no change in social phobia, panic, or generalized anxiety disorder) among the employed population[58], while an increase in depressive symptoms of a similar level (47%) was reported among employees in Slovenia[59].

The financial crisis has been linked to worsening of mental health in several vulnerable groups, such as migrants. In Spain, the prevalence of poor mental health increased among male migrants who lost their job (OR 3.6, 95% CI 1.6–8.0) or experienced declines in income (OR 2.8, 95% CI 1.1–7.0)[60], findings confirmed by another study[61].

Suicides. A rise in suicides was among the most immediate concerns identified by those researching the health effects of the recession[62]. We identified 27 papers on suicide or suicidal ideation, from Greece, Italy, South Korea, Spain, and the United Kingdom. Some quantify the impact of the crisis in absolute numbers of excess deaths associated

with the recession or subsequent austerity, based on pre-crisis trends. Thus, Reeves and colleagues estimate that between 2007 and 2011, there have been at least 10,000 economic suicides—those in excess of the expected number—in the United States, Canada, and European Union[63]. Studies from individual countries support these findings: 1,001 excess deaths from suicide were in the United Kingdom[64], 680 in Spain[65], and 4,750 in the United States[66] between 2008 and 2010. Another study estimated that eviction or foreclosure accounted for an annual average of 1,079 suicides in the United States between 2005 and 2010[67]. Moreover, broader analyses that included suicide attempts estimated that there were 4,989 excess suicide attempts in Spain[68] and 290 excess suicides and attempted suicides in Italy[34] over the same period, as well as reversal in declining trend in suicide-related behaviour among 12- to 17-year-olds in Canada[69] and a significant increase in suicide planning over the past 12 months in Spain in 2011–2012 compared to 2001–2002[70].

The longstanding downward trend in suicide trends in EU member states reversed after 2007[1]. The suicide rate in Greece increased by 56% between 2007 and 2011[71, 72] and by 35% between 2010 and 2012 from 3.4 to 4.6 per 100,000 population, affecting both males and females of working age ($p<0.01$)[72]; both studies link the increase to the rise in unemployment. The rise in suicides[73-77] and suicide attempts[78, 79] in Greece after 2010 was also confirmed in a number of other studies. A monthly trend analysis of suicide mortality in Greece over 30 years attributes abrupt increase in monthly suicides in June 2011 to adoption by the government of series of austerity measures[80]. In Italy, a 1% rise in regional unemployment levels between 2000 and 2010 was associated with an increase in the suicide rate by 0.1 per 100,000 population ($p=0.05$)[81].A study from Ireland reports successive annual 10% increases in suicides among men in 2008 and 2009.[82] In Belgium, patients attending primary care physicians who had lost their jobs during the crisis reported higher levels of suicidal thoughts compared to those still employed (OR 8.8, 95% CI 2.0–39.3)[83].

One study from England used coroners' records to examine socioeconomic characteristics of victims of suicide in 2010–2011, finding 38 out of 286 (13%) were partially and 11 (4%) entirely related to financial or employment difficulties[84]. The key features of those suicides linked to the recession were that most people were employed and few ever had a contact with psychiatric services.

However, a study from South Korea found that increases in the rate of suicides during the recession were higher among unemployed rather than employed groups, although the contribution of those in employment, in absolute numbers, was larger[85].

Most studies linked increases in suicides to higher unemployment levels, although mortgage foreclosure/eviction, falls in gross domestic product, and introduction of austerity measures were also used in some as explanatory variables. One study from England argued that associations between suicide rates and unemployment were spuri-

ous[86] but another study found a clear association among men[64], estimating that a 10% increase in the number of unemployed men was associated with a 1.4% (0.5% to 2.3%) increase in male suicides and that about 40% of the increase in suicides among men during the 2008–2010 recession could be attributed to rising unemployment.

Mortality Trends

Overall mortality rates have declined continuously in European countries, showing no deviations from long-term trends in the first years of the crisis[87]. Data from Greece, the worst affected country, also show no overall change in mortality, except for an increase in infant deaths[88, 89]. Nor was there an overall change in Spain[90] or Italy[91]. This was because the increases in suicides (discussed above) were compensated for by decreases in deaths from road traffic accidents, particularly in countries where the initial rate was relatively high[62].

Self-Reported Health

The impact on self-rated health varied across different settings and/or population groups. In Iceland, where the government rejected bank bailouts and austerity measures, self-rated health did not change significantly between 2007 and 2009, although income inequalities in health have widened among males after the crisis[92]. In contrast, in Greece, where the government was required to adopt deep austerity measures, the prevalence of good self-rated health declined from 71.0% in 2006 to 68.8% in 2011 ($p<0.05$)[93], while the prevalence of poor self-rated health increased correspondingly[26, 94]. In Poland (least affected among EU countries by the crisis) and Ireland, the prevalence of poor self-rated health continued to decline after the crisis[93], and in Spain there was no statistical association between respondents reporting being affected by the economic crisis or job loss in the past 6 months and health-related quality of life[95]. An American survey conducted during the recession found that workers with insecure employment were more likely to report poor self-rated health than those with secure jobs[96]. A study using Google Trends found a significant increase in certain health queries during the recession, amounting to more than 200 million excess searches, including stomach ulcer and headache symptoms, hernia, chest pain, and arrhythmia[97].

Non-Communicable Disease

Three of the five papers examining non-communicable diseases focused on the incidence of cardiovascular disorders. A spike in emergency room visits with cardiac problems was seen in a week at the peak of economic meltdown in 2008 in Iceland (RR 1.26, 95% CI 1.07–1.49)[98] and an increase in the prevalence of hypertension in males between 2007 and 2009[99] was noted in Iceland. In Greece, incident acute myocardial infarction was higher during the crisis (RR 1.40, 95% CI 1.29–1.51)[100]. In the United

States, workers employed in plants with high levels of layoffs were at higher risk of developing hypertension and diabetes compared to their counterparts in more stable employment situations[101]. An increase in cardiovascular and respiratory problems was seen in the United Kingdom when unemployment rose by 3 percentage points in 2008–2009[102]. Other studies from Greece found an increase in the incidence of central serous chorioretinopathy, a rare eye condition thought to be exacerbated by stress,[103] and ear, nose, and throat conditions such as vertigo and tinnitus,[104] which the authors suggested may be linked to stress.

Communicable Disease

The impact of economic recession on infectious disease control varied depending on the context. For instance, tuberculosis case detection in Ireland fell while remaining stable in Portugal[105]; these differences have been attributed to patterns of public health spending, which was reduced in Ireland but was protected initially in Portugal. In the United States, reported tuberculosis incidence declined sharply during the recession, with nearly 1,000 fewer cases than expected in 2009 ($p<0.001$). This was attributed to decreased immigration and delayed access to diagnosis[106].104 In Osaka City, Japan, the incidence of tuberculosis among the non-homeless population was higher in 2009 than 2008, but fewer cases were found among homeless persons[107]. Greece has experienced several problems, including an increase in HIV infections (from 10 cases in 2008 to 400 cases in 2012), reappearance of malaria for the first time in 40 years[27, 108], and a resurgence in tuberculosis[27]. These developments have been linked to austerity measures, including cuts to prevention and control programs, such as needle exchange and mosquito spraying. Other outbreaks of communicable diseases, such as tick-borne encephalitis[109], candida infection[110], and West Nile virus[108], have been linked to deterioration in the economic situation in parts of Europe.

Occupational Health

In Iceland, sickness absence increased between 2010 and 2013; at the same time, the proportion of workers reporting going to work while sick increased and was higher in workplaces that experienced downsizing[111]. The number of occupational injuries fell in Spain, reversing an earlier increasing trend, by 12% in 2008 and further 18% in 2009, with the reduction being particularly sharp in the construction and industrial manufacturing sectors[112]. These changes were associated with reductions in industrial activity. A study from Ireland found that the construction sector accounted for only 3% of patients seeking treatment for trauma in 2009 compared to 27% in 2006[113]. Reported incidence rates of non-traumatic musculoskeletal disorders reduced in Canada by 16% in 2008–2009.[114]

Child Health

Only six papers focused on the impact of the crisis on children as a distinct population group. The number of births has fallen dramatically during the recession in Greece[115] and Italy[116] (15% and 7.4% between 2008 and 2012, respectively), while Greece has seen an increase in infant deaths in 2011 and 2012[27]. A survey from Catalonia, Spain, reported a reduction in junk food consumption between 2010 and 2012 compared to 2006, but at the same time there was an increase in obesity from 18.4% (95% CI 16.5%–20.4%) to 26.9% (24.6%–29.2%); health-related quality of life in children under 15 years old has improved, with the exception of children whose mothers had only completed primary education, who achieved lower scores than in 2006[28]. A study from the United States found that children who had gap in health insurance coverage during the recession were at higher risk of having poorly controlled asthma (80.6%, 95% CI 73.7%–87.8% compared to 68.0%, 95% CI 65.5%–70.5% in a no-gap group).[117] A multi-centre analysis in Seattle found an increase in the rate of abusive head trauma among children under 5 during the recession compared with the 4-year period before it.[118]

Unmet Need/Access to Care

Unmet need has progressively increased in Greece between 2008 and 2012[26, 27]. A survey of patients with chronic conditions at primary care facilities showed that 63% experienced economic barriers in accessing care in 2013[119]. A study from the United States found that job loss during the recession increased the probability of unmet need by 4% in families with higher income, and by more than 6% for families with lower income ($p<0.001$)[120]. Another American study found that levels of foregone medical, dental, mental health care, and prescribed medications increased in working-age adults with all levels of education and all ethnic backgrounds during the recession[121]. Moreover, half of the respondents from a nationally representative survey of more than 70,000 patients with chronic illness in the United States reported that problems for paying for necessary medication became worse in 2008 than before the economic recession[122], while 13% of patients with prescriptions reported skipping doses or cutting pills for cost reasons[123]. However, one study from the United States found a decline in unmet medical need in both insured (from 6.2% to 4.5%) and uninsured (from 17.5% to 16.6%) between 2007 and 2010, although the smaller decrease among the uninsured indicates that the gap between the two groups widened during the recession[124]. A study in Spain found reduced rates of unmet need in migrants and existing residents between in 2006 and 2012, with significant differences between the groups[125].

Health Behaviours and Lifestyle

A total of 22 studies were devoted to health-related behaviours and lifestyle, including alcohol and tobacco consumption, diet and exercise, or a combination. Unemployment and financial strain showed associations with several unhealthy behaviours, such as alcohol consumption, smoking, and drug use[126, 127].

Alcohol. Most studies on alcohol consumption were from the United States, where self-reported consumption decreased from 52.0% in 2006–2007 to 51.6% in 2008–2009, corresponding to 880,000 fewer drinkers across the United States; however, there was an increase in binge drinking from 4.8% to 5.1% ($p<0.01$) corresponding to 770,000 more bingers[128]. Two other American studies found a negative association between unemployment and alcohol consumption[129, 130]. However, a study focusing on heavy drinkers in the United States confirmed an increase in their number during the recession, while finding that the quantity of alcohol they consumed decreased by 5%[131]. Rent and mortgage arrears or eviction were associated with more negative drinking consequences, including alcohol dependence[132], while health problems experienced during the recession were associated with greater frequency of drinking, drinking to intoxication, binge drinking, and problem-related drinking[133]. Problematic drinking during the recession was more pronounced in males than in females[134] and among Black rather than White ethnic groups[135]. In addition, a 5% rise in unemployment was associated with a 15% increase in the number of Internet searches related to the topic[136]. A study from England showed a significant decrease in frequent drinking in 2008–2009 compared to 2006–2009, but the overall decrease masks adverse changes in high-risk groups (current drinkers, the unemployed, etc.), among whom binge drinking increased in 2009–2010 compared to 2004–2008 (OR 1.64, 95% CI 1.22–2.19)[137]. Reductions in alcohol consumption were also noted in another population survey in Iceland[138].

Smoking/Tobacco Use. Evidence of decreases in tobacco use during the economic crisis was reported in Iceland (from 17.4% to 14.8% in males and from 20.0% to 17.5% in females between 2007 and 2009 respectively, $p<0.01$)[138, 139] and in Greece (from 43.1% in 2006 to 38.1% in 2011, $p<0.05$, for both sexes)[140], but smoking increased in Italy (from 22.0% in 2008 to 25.4% in 2009, $p<0.01$)[141]. An American study showed that being unemployed was a significant predictor of smoking in the recession (AOR 1.80, 95% CI 1.24–1.61 in 2010), whereas this was not a significant risk factor before the recession (AOR 1.26, 95% CI 0.82–1.95 in 2008)[142].

Diet and Body Mass Index. A study from Iceland found mixed effects; while consumption of soft drinks and fast food decreased, so did consumption of fruit and vegetables[138]. Job loss was associated with less weight gain compared to maintaining employment in Iceland, particularly in females[143], during the recession. In the United States, one study found no substantial change in diet or food-related behaviour[144], while another

suggested that changes in food intake and purchasing behaviour preceded the recession[145]. England saw a substantial increase in the number of food banks, across the country, with the rate of food parcels being distributed more than tripling from 0.6 in 2010 to 2.2 in 2013 per 100 population[146].

Exercise. An American study found that every percentage point decrease in employment was associated with 5–6 minutes less physical activity at a population level[147]; comparisons of surveys in 2005 and 2011 found that financial strain was associated with lower frequency of vigorous exercise or participation in active sports at both time points, but the magnitude of the effect increased after recession in those whose exercise levels before the recession were high[127].

DISCUSSION

This narrative review examined the available evidence of the effects of the 2008 global financial crisis on health and health behaviours in high-income OECD countries. The most widely studied and consistent adverse impacts of the crisis were in mental health (including a rise in depression and suicides) and access to care. The impact on other health indicators varied according to the national context, including the depth of the economic crisis, policy responses, and which population groups were studied. Some positive effects were noted in relation to health behaviours, including lower overall alcohol consumption and improved diet. Overall mortality was largely unaffected as the increase in suicides was compensated for by a decline in injuries, especially those that were traffic-related. These findings are consistent with previous systematic reviews.[12, 28, 29]

The majority of the studies located in this narrative review studied the effects of the economic crisis in the United States, Greece, Spain, Iceland, the United Kingdom, Italy, Canada, Ireland, or a combination of countries. Studies confined to individual countries were undertaken in 14 of the 31 high-income OECD countries. Beyond data availability, this reflects the political attention that the crisis has attracted domestically or internationally. Thus, there are many studies from Greece, but none exclusively of Portugal, even though the crisis had a large impact on economies in both countries[1]. In addition, and following from what Stuckler and colleagues have recently confirmed[148], the literature reviewed in this article is mostly conducted in disciplinary silos, with few studies drawing on multiple disciplines.

The narrative review identified many studies relating to the impact of the crisis on mental health. In the early stages of the crisis, a number of mental health experts, including those in the World Health Organization, warned about the need for measures to

protect mental health. However, in Greece, mental health provision experienced some of the largest cuts, of more than 50%[149].

The effects of the financial crisis and subsequent austerity on infectious diseases varied. While rates of HIV and tuberculosis incidence increased in Greece, particularly among injecting drug users, in Spain rates have remained stable, while in the United States and Japan the reported incidence of tuberculosis has decreased since the onset of the financial crisis[106, 107]. However, there are concerns that these decreases may represent ascertainment bias, as fewer people access diagnostic services. Thus, in the United States and in Greece[27], the recession was associated with an increase in the number of uninsured, mostly through loss of employment[150-152].

Although unhealthy behaviours such as smoking and alcohol use seem to have decreased in the population as a whole during the recession, people in lower socio-economic groups may have engaged more in unhealthy behaviours[139]. These findings suggest that the recession may have disproportionally affected the poor and vulnerable. In addition, this narrative review concluded that pre-crisis behaviours are strong predictors of behaviour after the crisis[127, 143, 144]. This emphasizes the need for effective public health measures behaviour during both good and bad economic times, especially regulatory and fiscal measures[130]. It is also important to direct public health efforts toward mitigating the negative effects on health behaviour by targeting the most vulnerable populations, such as the unemployed and those in lower socioeconomic groups[139, 153].

Heterogeneity of studies is an inevitable limitation of a study as broad as this. We present the results according to coherent unifying themes, allowing us to cover this large volume of studies.

The majority of the studies included in this review were published in 2013 and 2014, although we only have seven months of publications from 2015. The gradual increase in the number of publications on the topic reflects the time lag between the onset of the crisis and the implementation of austerity measures, and the availability of data on health.

Observational studies such as those reviewed are subject to potential confounding and bias. Most studies of individuals used self-reported outcome data, subject to recall and reporting biases. Despite these limitations, it is important to note that the available evidence is largely consistent in showing that the 2008 global financial crisis has had an adverse impact on certain aspects of population health in many high-income OECD countries. This has been particularly great in countries that suffered the largest economic crises (e.g., Greece, Spain) or prolonged austerity (United Kingdom). Health policies aimed at ensuring access to health care, as well as employment protection policies, can help to mitigate the impact of economic crisis on health and should play a key role in creating resilience to economic shocks.

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CHAPTER 4. SUPPLEMENTARY DATA

Appendix 1. List of OECD Countries Included in the Narrative Review

Australia
Austria
Belgium
Canada
Chile
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Iceland
Ireland
Israel
Italy
Japan
South Korea
Luxembourg
Netherlands
New Zealand
Norway
Poland
Portugal
Slovakia
Slovenia
Spain
Sweden
Switzerland
United Kingdom
United States

Appendix 2: Search strategies

Database: Embase Classic+Embase
Search Strategy:

- -

1 (((economic or financ* or macroeconomic or fiscal or banking) adj4 (cris#s or recession or depression or condition* or insecurity)) or GDP or unemployment or recession or business cycle or debt or job loss or personnel downsizing or austerity).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
2 exp economic recession/
3 1 or 2
4 (health or health?care).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
5 exp health care/
6 exp health/ or exp health care disparity/ or exp "health care cost"/ or exp health care delivery/ or exp public health/ or exp health care access/ or exp health care availability/ or exp health status/
7 4 or 5 or 6
8 (Australia or Australian or Austria or Austrian or Belgium or Belgian or Canada or Canadian or Chile or Chilean or Czech Republic or Czech or Denmark or Danish or Estonia or Estonian or Finland or Finnish or France or French or Germany or German or Greece or Greek or Iceland or Icelandic or Ireland or Irish or Israel or Israeli or Italy or Italian or Japan or Japanese or Korea or Korean or Luxembourg or Luxembourgian or Netherlands or Dutch or New Zealand or New Zealandian or Norway or Norwegian or Poland or Polish or Portugal or Portuguese or Slovakia or Slovak or Slovenia or Slovenian or Spain or Spanish or Sweden or Swedish or Switzerland or Swiss or United Kingdom or Britain or English or British or United States or American).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
9 Australia/
10 Austria/
11 Belgium/
12 Canada/
13 Chile/
14 Czech Republic/
15 Denmark/

16 Estonia/
17 Finland/
18 France/
19 Germany/
20 Greece/
21 Iceland/
22 Ireland/
23 Israel/
24 Italy/
25 Japan/
26 Korea/ or South Korea/
27 Luxembourg/
28 Netherlands/
29 New Zealand/
30 Norway/
31 Poland/
32 Portugal/
33 Slovakia/
34 Slovenia/
35 Spain/
36 Sweden/
37 Switzerland/
38 United Kingdom/
39 United States/
40 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39
41 OECD.mp.
42 high income countr*.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
43 41 or 42
44 40 or 43
45 3 and 7 and 44
46 limit 45 to (english language and yr="2009 -Current")

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Database: Ovid MEDLINE(R)
Search Strategy:
- -
1 (((economic or financ* or macroeconomic or fiscal or banking) adj4 (cris#s or recession or depression or condition* or insecurity)) or GDP or unemployment or recession or business cycle or debt or job loss or personnel downsizing or austerity).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
2 exp Economic Recession/
3 1 or 2
4 (health or health?care).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
5 exp "Delivery of Health Care"/
6 exp Health/ or exp Health Status/ or exp Public Health/ or exp "Quality of Health Care"/ or exp Quality Indicators, Health Care/ or exp Health Services Accessibility/ or exp Health Resources/ or exp Health Services/
7 4 or 5 or 6
8 (Australia or Australian or Austria or Austrian or Belgium or Belgian or Canada or Canadian or Chile or Chilean or Czech Republic or Czech or Denmark or Danish or Estonia or Estonian or Finland or Finnish or France or French or Germany or German or Greece or Greek or Iceland or Icelandic or Ireland or Irish or Israel or Israeli or Italy or Italian or Japan or Japanese or Korea or Korean or Luxembourg or Luxembourgian or Netherlands or Dutch or New Zealand or New Zealandian or Norway or Norwegian or Poland or Polish or Portugal or Portuguese or Slovakia or Slovak or Slovenia or Slovenian or Spain or Spanish or Sweden or Swedish or Switzerland or Swiss or United Kingdom or Britain or English or British or United States or American).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
9 Australia/
10 Austria/
11 Belgium/
12 Canada/
13 Chile/
14 Czech Republic/
15 Denmark/

16 Estonia/
17 Finland/
18 France/
19 Germany/
20 Greece/
21 Iceland/
22 Ireland/
23 Israel/
24 Italy/
25 Japan/
26 Korea/ or "Republic of Korea"/
27 Luxembourg/
28 Netherlands/
29 New Zealand/
30 Norway/
31 Poland/
32 Portugal/
33 Slovakia/
34 Slovenia/
35 Spain/
36 Sweden/
37 Switzerland/
38 Great Britain/
39 United States/
40 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39
41 OECD.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
42 high income countr*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]
43 41 or 42
44 40 or 43
45 3 and 7 and 44
46 limit 45 to (english language and yr="2009 -Current")

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Database: Econlit
Search Strategy:
- -
1 (((economic or financ* or macroeconomic or fiscal or banking) adj4 (cris#s or recession or depression or condition* or insecurity)) or GDP or unemployment or recession or business cycle or debt or job loss or personnel downsizing or austerity).mp. [mp=heading words, abstract, title, country as subject]
2 [economic recession/]
3 1 or 2
4 (health or health?care).mp. [mp=heading words, abstract, title, country as subject]
5 [health/]
6 [health care/]
7 4 or 5 or 6
8 (Australia or Australian or Austria or Austrian or Belgium or Belgian or Canada or Canadian or Chile or Chilean or Czech Republic or Czech or Denmark or Danish or Estonia or Estonian or Finland or Finnish or France or French or Germany or German or Greece or Greek or Iceland or Icelandic or Ireland or Irish or Israel or Israeli or Italy or Italian or Japan or Japanese or Korea or Korean or Luxembourg or Luxembourgian or Netherlands or Dutch or New Zealand or New Zealandian or Norway or Norwegian or Poland or Polish or Portugal or Portuguese or Slovakia or Slovak or Slovenia or Slovenian or Spain or Spanish or Sweden or Swedish or Switzerland or Swiss or United Kingdom or Britain or English or British or United States or American).mp. [mp=heading words, abstract, title, country as subject]
9 [Australia/]
10 [Austria/]
11 [Belgium/]
12 [Canada/]
13 [Chile/]
14 [Czech Republic/]
15 [Denmark/]
16 [Estonia/]
17 [Finland/]
18 [France/]
19 [Germany/]
20 [Greece/]
21 [Iceland/]
22 [Ireland/]

23 [Israel/]
24 [Italy/]
25 [Japan/]
26 [Korea/ or South Korea/]
27 [Netherlands/]
28 [New Zealand/]
29 [Norway/]
30 [Poland/]
31 [Portugal/]
32 [Slovakia/]
33 [Slovenia/]
34 [Spain/]
35 [Sweden/]
36 [Switzerland/]
37 [United Kingdom/]
38 [United States/]
39 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38
40 OECD.mp.
41 high income countr*.mp.
42 40 or 41
43 39 or 42
44 3 and 7 and 43
45 limit 44 to (english language and yr="2009-Current") [Limit not valid; records were retained]

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