The public health implications of the cost-of-living crisis: outlining mechanisms and modelling consequences

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Summary

The UK, and other high-income countries, are experiencing substantial increases in living costs. Several overlapping and intersecting economic crises threaten physical and mental health in the immediate and longer term. Policy responses may buffer against the worst effects (e.g. welfare support) or further undermine health (e.g. austerity). We explore fundamental causes underpinning the cost-of-living crisis, examine potential pathways by which the crisis could impact population health and use a case study to model potential impacts of one aspect of the crisis on a specific health outcome. Our modelling illustrates how policy approaches can substantially protect health and avoid exacerbating health inequalities. Targeting support at vulnerable households is likely to protect health most effectively. The current crisis is likely to be the first of many in era of political and climate uncertainty. More refined integrated economic and health modelling has the potential to inform policy integration, or 'health in all policies'.

Keywords: Cost of living; Health policy; Inequalities; Mental health; Energy crisis

Introduction

The United Kingdom is facing a series of interlinked crises. Public services have been weakened by a decade of austerity, with local government, social security benefits, and the National Health Service particularly affected. Earlier life expectancy gains slowed dramatically and, for some groups, reversed.[1] The UK suffered greatly during the pandemic, with death rates higher than many comparable countries.[2,3] Then, despite being much less dependent on Russian gas than its European neighbours, it faced unprecedented price rises from early 2022: a consequence of an economy profoundly dependent on fossil fuels, sustained under-investment in renewables, reduced gas storage, and failure to regulate the energy market. Reopening the economy in the wake of COVID-19 disruption also contributed to inflation.[4] Add in supply chain disruption (with food especially affected),[5] and the country faces a perfect storm.

In any crisis it is important to understand the risks ahead. While much attention has focused on risks to the economy, it is as important to consider the health implications of both the current cost-of-living crisis (defined as the fall in real disposable incomes (that is, adjusted for inflation and after taxes and benefits) that the UK has experienced since late 2021'),[6] in its various manifestations, and the policy responses.

In early 2020, recognising that, appropriately, responses to the COVID-19 pandemic would focus on interrupting transmission of infection, we set out a conceptual framework for visualising what the complex interplay of effects of policy responses might mean for health.[7] Had it been acted upon, it might have mitigated some of the consequences of the restrictions imposed in the first pandemic wave. We and others have also made the case for the population health opportunities available from building back better, fairer, and differently, after the initial waves have passed.[8,9] In this essay, we extend these approaches to the cost-of-living crisis. Although our focus is on the UK, we hope our thinking is translatable to other settings.

Fig. 1 illustrates the key elements of the cost-of-living crisis and the potential pathways linking it to health. There are several factors driving this crisis. The most immediate trigger is high inflation, partially a consequence of trade disruption associated with the conflict in Ukraine, superimposed on the impact of Brexit and associated fall in the value of the pound, which is leading to a rise in the costs of energy, food, and other essential resources for life.[10] However, many UK households were experiencing financial hardship before this crisis and now risk being pushed into poverty. The UK has seen stagnant growth in real wages since the

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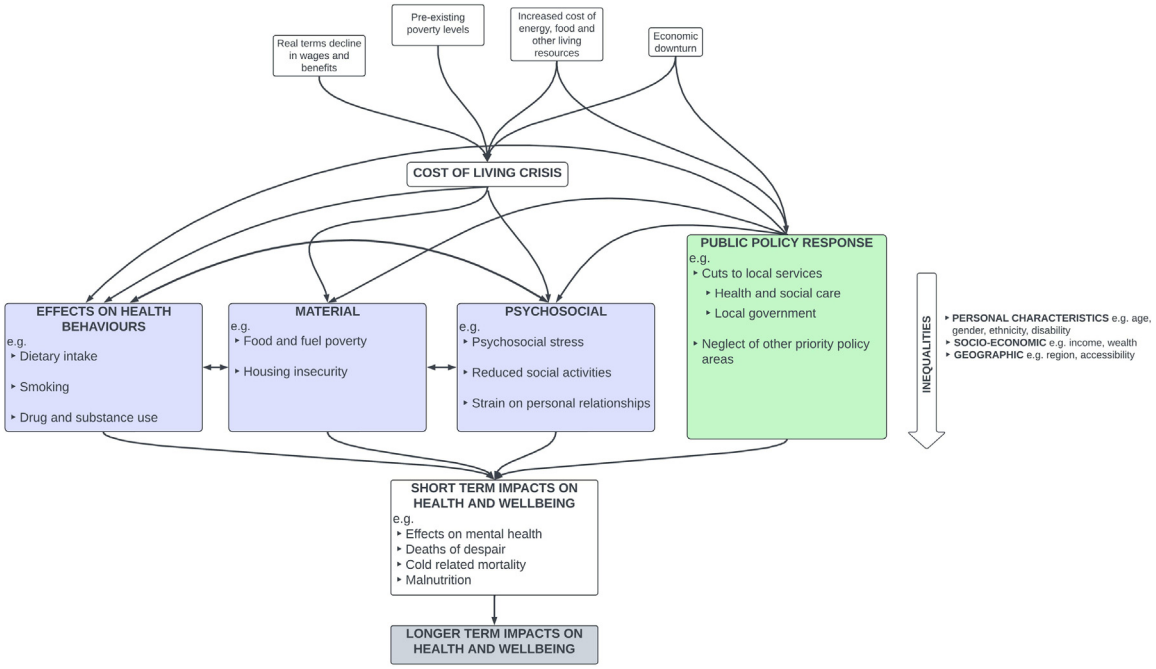

Fig. 1: **Potential pathways between the cost-of-living crisis and health outcomes**.

2008 economic crisis, a sustained reduction in access to many social security benefits whose real value has also been cut, and a global pandemic which saw a doubling in the number of recipients of Universal Credit (the main working-age welfare programme).[11] It was also hit especially hard by the economic after-effects of the COVID-19 pandemic, as the only industrialised country in which labour market participation has not recovered.[12] It now faces a looming economic recession and potential job losses. These problems are linked; businesses are at risk from rising costs and higher prices potentially leading to job losses, which reduces demand, threatening those businesses that initially survived.

Such events might have health consequences in the short and long-term. Given the urgency of the current situation and the challenges of predicting long-term health impacts, we focus here on the short-term, as we ask what can be done to prevent or mitigate the immediate consequences of the crisis. However, we note that policy responses must simultaneously be cognisant of long-term impacts and consider ways that future crises might be averted (or lessened) to mitigate population health harms. To conclude the article, we introduce a case study to illustrate the problems we face: the current threat to mental health posed by escalating home energy costs.

Material pathways

The link between income and health is well-established and acts through several mechanisms. Money buys health-sustaining goods, such as healthy food, and allows people to actively participate in social networks and wider society, for example through access to social and educational activities. It impacts not only individuals and but also households, as people living together share financial resources. Thus, the loss of one income in a household, or a fall in real-terms income as well as escalating costs of everyday commodities as a consequence of inflation may leave everyone with a choice of 'heat or eat', with parents, and especially single mothers, making sacrifices to enable children to eat.[13]

Crucially, the crisis occurs at a time when many people are already more vulnerable. The Trussell Trust reported an 81% increase in use of food banks during the pandemic,[14] with a steep increase in those unable to obtain healthy or nutritious food.[15] As in the pandemic, the cumulative impact of various exposures will be unevenly experienced, with those of low-income, women,[16] unemployed people,[17] and ethnic minority groups most affected.[18,19]

Even with proposed government intervention, rising energy costs will increase fuel poverty. The UK is particularly vulnerable to cold and wet periods and has long experienced substantially higher winter mortality than many other countries, with much of the housing stock poorly insulated.[20] Rural and island areas have especially high heating and transport costs, which could lead to cold homes and reduced access to jobs, services, and amenities. Many private landlords catering for lower-income households use pre-payment gas and electricity meters, which will mean people having to cut themselves

off at times of greatest need. Finally, people with disabilities, who may have lower mobility and be more likely to be restricted to home, are disproportionately affected by increased energy costs, with some (e.g., those on dialysis)) depending on energy-intensive equipment.[21,22]

Housing insecurity is another important risk. Income reductions may make existing housing unaffordable, or may require deep cuts in other spending, creating high levels of stress. In the 12 months up to September 2022, private rental prices paid by tenants in the UK rose by 3.6%[23] and the Joseph Rowntree Foundation predicts that Mortgage rate increases to 5.5% could result in an extra 120,000 households living in poverty.[24] Families who lose their home can get cut off from social support networks and be more likely to end up in homes unsuitable to their needs, in poor condition (e.g., inadequate thermal comfort or ventilation), and overcrowded. In the extreme case, homelessness is associated with substantially increased mortality and other poor health outcomes.[25–28]

We have now entered another period of economic recession as people and businesses face higher costs and must consume less, reducing aggregate demand in the economy and triggering job losses. There are likely to be some positive health impacts of economic recession in the short term, such as reduced overall alcohol consumption due to reduced affordability (although some groups may engage in more hazardous drinking),[29] and reduced air pollution and transport-related injuries.[30,31] However, the effect of profound and sustained reductions in income, as well as the deterioration of social supports and welfare benefits,[32] is likely overall to be pernicious to health.

Psychosocial pathways

Money does not just enable people to meet material needs for a healthy life; it alleviates worry, especially in those who otherwise have precarious lives.[33,34] Poor mental health is therefore a direct and immediate consequence of poverty.[35] As well as impacts on physical health,[36] employment has important effects on mental health too, separate from the effects of low income.[37]

It is not just the experience of income or employment that matters. Anticipation of a shock is also harmful, especially where there is a sense of lack of control. For example, mortgage or rental arrears are associated with increased consultations for depression.[38] The sense of desperation can lead to 'self-medicating' with alcohol, drugs, or hazardous behaviours such as gambling, which leads to further material loss and other health risks. This problem is compounded and can lead to despair when social ties are weakened (e.g., by the undermining of social support structures), when employment is insecure or uncertain, and when people lack a sense of purpose.[39–42] This goes some way to explaining a rise in 'diseases of despair' (including deaths related to drugs, alcohol, and suicide) seen in recent years.[43,44] These effects are experienced unequally, with certain groups e.g. those growing up with poorer life opportunities at greatest risk. Ill-health compounds problems of low income leading to debt, debt leads to despair, despair leads to risk-taking behaviour.[45,46]

Public policy response pathway

The challenges the UK faces require a concerted whole-of-government response. Yet the prospects seem bleak. Markets responded with volatility to the now infamous 'mini-budget' sending the pound to its lowest ever value against the dollar and sparking financial and political upheaval that lead to Liz Truss serving the shortest ever term as UK Prime Minister and an approximately £300 billion fall in the value of the UK stocks and bonds market. Her successor, Rishi Sunak, appointed Jeremy Hunt as Chancellor with his updated fiscal plan including a return to austerity policies in coming years – a concern given over 300,000 excess deaths have been attributed to that approach following the 2008 recession.[47]

This political context creates immense uncertainty for everyone. Of particular concern, many of the institutions that might offer support are themselves threatened. Third sector and public sector organisations are facing increased costs, not least for energy, accompanied by pressure on funding. Schools, already struggling with the effects of the pandemic, face the unsustainable combination of an unfunded pay settlement and rising energy costs.[48] Food banks, community centres, libraries and museums (some of which act as 'warm havens' for people struggling with energy bills) are all threatened, risking safety nets that protect against the consequences of poverty.[49] In the medium and long-term, the combination of very high government spending and tax cuts threaten confidence in the UK economy, already seen in the falling value of the pound.

Finally, the government must not neglect other existential priorities, most notably the climate emergency.[8] Urgent and drastic action, and government investment, is needed if catastrophic climate change is to be avoided.[50] Already we are seeing the diverse impacts of climate change on human health through rising incidence of extreme weather (increasing the risk of drowning, injury, heat-related illness, and spread of water-borne disease),[51] increased population displacement, food insecurity, and undernutrition.[52,53] However, many solutions to these joint crises are, or can be, complementary (e.g. ensuring greater energy efficiency and insulation of homes yields improvements not only in energy use[54] but also in health outcomes such as fewer respiratory conditions,[55] reduced hospital admissions[56] and improved self-rated health).[57]

Case study: the rising cost of domestic energy

One example of the inflationary costs currently being experienced is energy. Since 2019, UK domestic energy costs have been subject to a price cap, which set an

Box 1.
Mental health consequences of different energy price policies.

	Population	Baseline Poverty[c] '000s (%) [95%CI]	Additional Poverty[c] '000s (% point change) [95%CI]	Baseline Common Mental Disorders '000s (%) [95%CI]	Additional/fewer Common Mental Disorders '000s (% of population) [95%CI]	Relative change Common Mental Disorders compared to baseline (%) [95%CI]
Scenario 1: Energy price cap rise[a] No policy response	All	13,322 [13,120, 13,524] (20.3%) [20.0%, 20.6%]	4745 [4615, 4875] (7.2%) [7.0%, 7.4%]	14,077 [13,871, 14,283] (21.4%) [21.1%, 21.7%]	584 [537, 631] (0.9%) [0.8%, 1.0%]	4.1% [3.9%, 4.3%]
	Elderly	2223 [2140, 2306] (18.6%) [17.9%, 19.3%]	1148 [1085, 1211] (9.6%) [9.1%, 10.1%]	1526 [1455, 1597] (12.8%) [12.2%, 13.4%]	31 [21, 41] (0.3%) [0.2%, 0.4%]	2.0% [1.7%, 2.3%]
	Working age	7165 [7015, 7315] (18.0%) [17.6%, 18.4%]	2421 [2328, 2514] (6.1%) [5.9%, 6.3%]	8531 [8371, 8691] (21.4%) [21.0%, 21.8%]	109 [89, 1429] (0.3%) [0.2%, 0.4%]	1.3% [1.2%, 1.4%]
	Children	3934 [3830, 4038] (28.4%) [27.6%, 29.2%]	1176 [1112, 1240] (8.5%) [8.0%, 9.0%]	4020 [3915, 4125] (29.0%) [28.2%, 29.8%]	443 [402, 484] (3.2%) [2.9%, 3.5%]	11.0% [10.5%, 11.5%]
Scenario 2: Energy price cap rise[a] + Targeted support[b]	All	13,322 [13,120, 13,524] (20.3%) [20.0%, 20.6%]	2839 [2737, 3941] (4.3%) [4.2%, 4.5%]	14,077 [13,871, 14,283] (21.4%) [21.1%, 21.7%]	362 [326, 198] (0.6%) [0.5%, 0.7%]	2.6% [2.5%, 2.7%]
	Elderly	2223 [2140, 2306] (18.6%) [17.9%, 19.3%]	574 [528, 620] (4.8%) [4.4%, 5.2%]	1526 [1455, 1597] (12.8%) [12.2%, 13.4%]	15 [6, 24] (0.1%) [0.0%, 0.2%]	1.0% [0.8%, 1.2%]
	Working age	7165 [7015, 7315] (18.0%) [17.6%, 18.4%]	1528 [1453, 1603] (3.8%) [3.6%, 4.0%]	8531 [8371, 8691] (21.4%) [21.0%, 21.8%]	69 [54, 84] (0.2%) [0.2%, 0.2%]	0.8% [0.7%, 0.9%]
	Children	3934 [3830, 4038] (28.4%) [27.6%, 29.2%]	736 [684, 788] (5.3%) [4.9%, 5.7%]	4020 [3915, 4125] (29.0%) [28.2%, 29.8%]	278 [246, 310] (2.0%) [1.8%, 2.2%]	6.9% [6.5%, 7.3%]
Scenario 3: Energy price cap rise[a] + Targeted support[b] + £2500 maximum price guarantee[d]	All	13,322 [13,120, 13,524] (20.3%) [20.0%, 20.6%]	584 [537, 632] (0.9%) [0.8%, 1.0%]	14,077 [13,871, 14,283] (21.4%) [21.1%, 21.7%]	92 [70–114] (0.1%) [0.1%, 0.1%]	0.7% [0.6%, 0.8%]
	Elderly	2223 [2140, 2306] (18.6%) [17.9%, 19.3%]	−22 [-31, −13] (−0.2%) [-0.3%, −0.1%]	1526 [1455, 1597] (12.8%) [12.2%, 13.4%]	−1 [-1, −1] (0.0%)	0.0% [0%, 0%]
	Working age	7165 [7015, 7315] (18.0%) [17.6%, 18.4%]	409 [370, 448] (1.0%) [0.9%, 1.1%)	8531 [8371, 8691] (21.4%) [21.0%, 21.8%]	18 [18, 18] (0.0%)	0.2% [0.2%, 0.2%]
	Children	3934 [3830, 4038] (28.4%) [27.6%, 29.2%]	197 [170, 224] (1.4%) [1.21%, 1.59%]	4020 [3915, 4125] (29.0%) [28.2%, 29.8%]	74 [57, 91] (0.5%) [0.4%, 0.6%]	1.8% [1.6%, 2.0%]

Notes: Population size is constant across scenarios: total = 65.6 m; elderly = 11.9 m; working age adults = 39.8 m; children = 13.9 m.[59] Baseline scenario uses domestic energy costs in February 2022 before energy price cap increases.[60] [a]Energy price cap rise of £693 (54%) on 1st April 2022 and a further £1573 (80%) on 1st October.[61] [b]Planned targeted support outlined by UK Government prior to the 8th September 2022: a universal £400 cost-of-living payment, a £650 cost-of-living payment to those on means-tested benefits, a £300 addition to the pensioner winter fuel payment, and a £150 disability cost-of-living payment.[62] [c]Poverty defined as a level of equivalised household disposable income after housing costs below 60% of the median equivalised household disposable income after housing costs in the UK in the baseline scenario. [d]£2500 price guarantee ceiling announced 8th September 2022.[63]

Box 1.

Mental health consequences of different energy price policies (Continued).

We estimated the potential health implications of different energy price policies by bringing together epidemiological data from the literature and existing health surveys with estimates of the impact of policies on poverty that were produced using an existing economic microsimulation model. These estimates were conducted purely to illustrate the potential scale of health impacts that might occur, even when focusing on a single aspect of the policy response. Overall impacts of the cost-of-living crisis are not considered.

Using UKMOD,[64] an existing open-source static tax-benefit microsimulation model, we estimated the number of additional individuals experiencing poverty under three possible scenarios.

1. The projected energy price cap rise with no policy response
2. As Scenario 1 plus targeted support announced prior to 05/09/2022
3. As Scenario 2 plus £2500 'energy price guarantee' announced 08/09/2022

We identified population prevalence estimates of common mental disorders (CMDs) for under 18s, 18–64 year olds and over 65s from wave 9 of Understanding Society (also known as the UK Household Longitudinal Study), a representative UK panel study, collected in 2018–19.[65] CMDs were selected as a worked example to demonstrate the potential impact of the cost-of-living crisis, as they are group of conditions which impose a substantial burden on population health, are affected by poverty levels, and for which reliable population prevalence estimates were available. We also identified published effect estimates of experiencing poverty on the likelihood of developing CMD in adults (odds ratio of experiencing CMDs is 1.2 in adults experiencing poverty, compared to prevalence of population not in poverty)[35] and children (odds ratio of experiencing CMDs is 2.3 in children experiencing poverty, compared to prevalence of population not in poverty).[66] Finally, using these effect sizes, we estimated the new population prevalence of CMD in each policy scenario for working age adults, children and the elderly, based on the expected proportion of each population subgroup newly below the poverty threshold who would develop the condition of interest.

The modelling assumes a typical level of energy expenditure for three defined household 'types' (low-use, medium-use, and high-use) based on size/structure, and also assumes fixed demand for domestic energy. We acknowledge that some households with additional needs (e.g., those with poorer insulation, or those with disabilities) are likely to have considerably higher costs, which we are unable to incorporate into our modelling. A potential limitation of our approach is that effect estimates for the impact of poverty on mental health are derived from data on income changes from any source/cause, rather than specifically inflation-induced income changes. As UKMOD is a static tax-benefit model we also do not model any subsequent behavioural changes or changes to employment status, which are likely to in turn have their own impact on population mental health. See appendix for further methodological details.

absolute upper-limit to the price-per-unit of energy that suppliers can charge and was intended to prevent energy bills being unaffordable.[58] However, consecutive increases have seen the price cap more than double between September 2021 and August 2022. In Box 1, we present the results of a relatively simple modelling exercise to illustrate how rising energy costs (comprising just one aspect of the inflationary costs being experienced) could translate to impacts on mental health. We are conscious that more refined policy models are needed to inform policymaking decisions, and these should ideally include broader health, health service and economic impacts. For further details on the methodology regarding the case study please refer to the supplementary appendix.

Our modelling suggests that, without appropriate policy responses, the planned rises in the energy cap would take 4.8 million more people into poverty (a 7.2 percentage point increase). This could translate to almost 110,000 additional working age adults, around 30,000 additional elderly people, and over 440,000 additional children suffering common mental disorders (CMDs).

We estimate that the UK Government's targeted policy responses to these energy price hikes could mitigate some of the effects, but still takes 2.8 m people into poverty. Consequently, compared with pre-crisis times, the current energy price rise alone puts 362,000 more people at risk of CMDs. Modelling the proposed £2500 limit to the energy price cap (for a 'standard' household) announced as the 'energy price guarantee' by the Truss government would take 584,000 people into poverty. Although this is far fewer than with no protective policy measures, it still resulted in over 90,000 additional people in the UK experiencing CMDs.

Our modelling focuses *solely* on the short-term effect of changes to the energy price cap and associated policy responses, and as such cannot take into account other cost-of-living changes or inflationary pressures occurring simultaneously in the UK, so the benefit of mitigation by current policy responses is likely to be overly optimistic. The current government is anticipated to announce widespread tax rises and cuts to public spending as a cornerstone of its economic policy. The negative health consequences of such measures in the midst of an economic recession have been comprehensively documented.[47,67,68]

This modelling exercise demonstrates the importance of policies that can shield the most vulnerable from the potential harms of the cost-of-living crisis, and the potential health benefits of doing so. While this component of the cost-of-living crisis has attracted most attention from policymakers, other increasing costs (e.g. food, housing) have not generated comparable policy responses (although some recent progress has been made in Scotland, with the announcement of a planned rent freeze from Scottish Government[69]). Similar adverse health impacts can be anticipated – however, more refined models are needed to explore potential policy options more robustly and are now under development.[70]

Conclusion

The cost-of-living crisis brings considerable risk for population health and health inequalities. This crisis is driven by interlinked challenges, including real-terms wage and benefits reductions, inflation, Brexit, the COVID-19 pandemic, and international conflict. Material pathways and psychosocial pathways are likely to result in immediate impacts on mental health, as well as potentially triggering 'deaths of despair'. These effects disproportionately affect some population subgroups more than others. Furthermore, although we have deliberately focussed on short-term impacts on health, the impact of exposure to stressors experienced in this crisis may have far reaching impacts across the life course of the population. These adverse health consequences could be made even worse if there is erosion of real-terms funding for social security, public or third sector services.

Contributors

SVK, PB, RT and DK developed the idea for the manuscript. All authors contributed to the structure of the paper. PB drafted the manuscript and RT conducted the modelling analyses. All authors critically revised the manuscript for content and approved the final version.

Declaration of interests

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Appendix A. Supplementary data

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