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Original Research

History, politics and vulnerability: explaining excess mortality in Scotland and Glasgow

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ABSTRACT

Objectives: High levels of excess mortality (i.e. that not explained by deprivation) have been observed for Scotland compared with England & Wales, and especially for Glasgow in comparison with similar post-industrial cities such as Liverpool and Manchester. Many potential explanations have been suggested. Based on an assessment of these, the aim was to develop an understanding of the most likely underlying causes.

Note that this paper distils a larger research report, with the aim of reaching wider audiences beyond Scotland, as the important lessons learnt are relevant to other populations.

Study design: Review and dialectical synthesis of evidence.

Methods: Forty hypotheses were examined, including those identified from a systematic review. The relevance of each was assessed by means of Bradford Hill's criteria for causality alongside—for hypotheses deemed causally linked to mortality—comparisons of exposures between Glasgow and Liverpool/Manchester, and between Scotland and the rest of Great Britain. Where gaps in the evidence base were identified, new research was undertaken. Causal chains of relevant hypotheses were created, each tested in terms of its ability to explain the many different aspects of excess mortality. The models were further tested with key informants from public health and other disciplines.

Results: In Glasgow's case, the city was made more vulnerable to important socioeconomic (deprivation, deindustrialisation) and political (detrimental economic and social policies) exposures, resulting in worse outcomes. This vulnerability was generated by a series of historical factors, processes and decisions: the lagged effects of historical overcrowding; post-war regional policy including the socially selective relocation of population to outside the city; more detrimental processes of urban change which impacted on living conditions; and differences in local government responses to UK government policy in the 1980s which both impacted in negative terms in Glasgow and also conferred protective effects on comparator cities. Further resulting protective factors were identified (e.g. greater 'social capital' in Liverpool) which placed Glasgow at a further relative disadvantage. Other contributory factors were highlighted, including the inadequate measurement of deprivation.

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A similar 'explanatory model' resulted for Scotland as a whole. This included: the components of the Glasgow model, given their impact on nationally measured outcomes; inadequate measurement of deprivation; the lagged effects of deprivation (in particular higher levels of overcrowding historically); and additional key vulnerabilities.

Conclusions: The work has helped to further understanding of the underlying causes of Glasgow's and Scotland's high levels of excess mortality. The implications for policy include the need to address three issues simultaneously: to protect against key exposures (e.g. poverty) which impact detrimentally across all parts of the UK; to address the existing consequences of Glasgow's and Scotland's vulnerability; and to mitigate against the effects of future vulnerabilities which are likely to emerge from policy responses to contemporary problems which fail sufficiently to consider and to prevent long-term, unintended social consequences.

Introduction

The higher mortality in Scotland,[1–3] and especially in its largest city, Glasgow,[4–7] are well documented. Much of this is explained by recent experiences of deindustrialisation, deprivation and poverty, the latter being root causes of poor health in all societies, not just Scotland.[4,8–12] However, in addition, high levels of excess mortality—that is, higher mortality over and above that explained by differences in socioeconomic deprivation—have been observed for Scotland compared with England & Wales,[13–17] as well as for Glasgow compared with similar post-industrial UK cities such as Liverpool, Manchester and Belfast.[18,19]

The scale of this excess is considerable. It accounts for approximately 5000 additional deaths per year in Scotland[17] and makes a substantial contribution to the other principal mortality 'phenomena' associated with Scotland in recent times: the lowest, and most slowly improving, life expectancy in Western Europe; the widest mortality inequalities in Western Europe; and the persistently high rates of mortality among those of younger working ages.[1,3,20–22] After adjustment for differences in deprivation, premature mortality (<65 years) in Scotland is 20% higher than in England & Wales (10% higher for deaths at all ages);[17] similarly, the excess for Glasgow compared with Liverpool, Manchester and Belfast has been shown to be approximately 30% for premature mortality, and around 15% for deaths at all ages.[18,19]

The excess has been observed in all parts of Scotland compared with the rest of Great Britain but is greatest in and around Glasgow and the post-industrial West Central Scotland (WCS) conurbation. Importantly, the size of the excess is increasing over time: in 1981, after adjustment for differences in area-based deprivation, all-cause mortality in Scotland was approximately 4% higher than in England & Wales. Three decades later, the excess had more than doubled to 10% (20% for deaths under 65 years of age)—this is shown in Fig. 1. There is clear evidence of a similar widening of the excess observed in Glasgow compared with Liverpool and Manchester since the mid to late 1970s.[18] The excess is seen among males and females, all adult age groups (but highest among those of working age) and across all social classes (although for premature mortality, it is more pronounced in comparisons of the poorest populations). It is observed for a broad range of causes of death (for example, see Fig. 2, showing the excess in Glasgow compared with Liverpool and Manchester for seven causes of death), although with important distinctions between excess premature mortality (particularly influenced by higher rates of death from alcohol, drugs and suicide) and excess mortality at all ages (driven particularly by higher numbers of deaths from cancer, heart disease and stroke). Given the relationship between socioeconomic factors and health behaviours, the excess persists even after statistical adjustment for differences in behaviours such as smoking, physical activity, diet and so forth.[13,16–18,23–25]

Many potential explanations have been proposed.[26] The aim of the work reported here was to identify, by means of an in-depth assessment of all the available evidence relating to these explanations, the most likely causes of Scotland's and Glasgow's high levels of excess mortality. This is of potential relevance to many other countries, regions and cities where high levels of mortality have been observed.

Methods

Forty potential explanations for Scottish excess mortality were examined (Table 1). These were identified, first, by means of a systematic review of (a) all proposed explanations for Scottish excess mortality and (b) all proposed explanations for higher mortality between otherwise comparable high-income populations outside Scotland.[26] The results of the review were cross-checked with a list, compiled by the authors over several years, of the many explanations for Scottish excess mortality which have been proposed, including those made via books,[27] peer-reviewed journals,[28–33] official government reports,[34,35] invited commentaries,[36] personal communications and in discussion at numerous events where evidence of Scottish excess mortality has been presented or discussed by the authors. As Table 1 shows, the hypotheses cover a great many, varied, topics including differences in climate (e.g. vitamin D deficiency, higher rainfall), various