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## Original Research

## Trends in termination of pregnancy in Glasgow, Liverpool and Manchester

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## SUMMARY

**Background:** Research published in 2010 showed that premature mortality in Glasgow over the period 2003–2007 was 30% higher than that in Liverpool and Manchester, despite the three cities sharing almost identical levels and patterns of socio-economic deprivation. A number of theories have been proposed to explain this discrepancy, including [in the light of US research linking variations in the termination of pregnancy (ToP) rate to differences in social and health outcomes] the suggestion that variations in current levels of mortality across the cities could be influenced by differences in earlier ToP rates.

**Objectives:** To undertake further analyses of mortality data for Glasgow, Liverpool and Manchester to assess the likelihood of differences in ToP rates influencing rates of excess mortality in Glasgow; to analyse long-term trends in numbers and ToP rates in the three cities (and, for comparison, between Scotland and England); and to investigate potential explanations for any differences in ToP rates.

**Study design and methods:** Mortality analyses were based on the same age-, sex- and deprivation-standardized data that were used in the previous research on the three cities. ToP data (and population denominator data) covering the period 1980–2009 were obtained from Scottish and English national organizations. Historical national ToP data for the years 1969–1979 were obtained from an additional published source. Rates were calculated per female aged 15–44 years and, for analyses of ToP among teenagers, per female aged 15–19 years. Potential explanations for differences in rates were investigated by means of literature searches and discussions with key informants.

**Results:** The ToP rate in Glasgow was lower than the ToP rates in Liverpool and Manchester over the total period analysed (as was the case for Scotland compared with England and Wales), although the gap has narrowed considerably, especially among females aged <20 years. This is due to a greater increase in the ToP rate in Glasgow (and Scotland), attributed, in part, to better access to ToP services. The differences in ToP rates do not appear to have been influenced by women travelling to England from Ireland for access to ToP facilities, nor by Glaswegian women travelling outside Scotland for the same reason. However, 90% of 'excess' deaths that took place in Glasgow compared with Liverpool and Manchester between 2003 and 2007 related to individuals born prior to the 1967 Abortion Act; these excess deaths, therefore, are not influenced by earlier variations in ToP rates.

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*Conclusions:* Differences in ToP rates between the cities are unlikely to impact on variations in later mortality rates. Thus, while the topic of ToP is important, investigation into the reasons behind Glasgow's excess mortality levels should focus on other hypotheses.

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## Introduction

Research published in 2010 showed that premature mortality in Glasgow over the period 2003–2007 was 30% higher than that in Liverpool and Manchester, despite the three cities sharing almost identical levels and patterns of socio-economic deprivation.<sup>1</sup> This prompted considerable discussion<sup>2–7</sup> and the generation of a number of hypotheses to explain this discrepancy.<sup>8,9</sup> Contrary to the authors' initial assumption that all plausible theories have been identified, further hypotheses have subsequently been generated. This paper outlines and examines a hypothesis which suggests that variations in current levels of mortality across the cities could be influenced by differences in earlier rates of termination of pregnancy (ToP). This is in light of US research linking spatial and temporal variations in ToP rates to differences in social and health outcomes. For example, increases in ToP have been associated with reductions in welfare benefits dependency,<sup>10</sup> child poverty<sup>11</sup> and child abuse,<sup>12</sup> while restrictions in access to ToP services have been linked to higher rates of child homicide.<sup>13</sup> More generally, economists have attributed decreases in overall crime rates (including homicide) in America in the 1990s to the legalization of abortion throughout the USA in 1973.<sup>14,15</sup> The 'causal pathways' inferred by these US analyses relate to rates of unwanted pregnancy being much higher in socio-economically deprived areas; it is hypothesized, therefore, that higher ToP rates could reduce the number of people being born in disadvantaged areas, who might otherwise have been more vulnerable to adverse experiences (including involvement in crime). It was suggested to the authors that, in a similar way, the gap in socially patterned premature mortality rates between Glasgow and Liverpool and Manchester may have been influenced by earlier differences in similarly patterned ToP rates.

The American context, with considerable variation in types of access to ToP facilities across US states,<sup>13</sup> is quite different from the UK context. Furthermore, childhood mortality in Glasgow is not significantly higher from that in Liverpool and Manchester,<sup>1</sup> and the causal pathways by which variations in ToP rates could impact on adult mortality are potentially quite different. Nonetheless, this is still an important hypothesis to test. The aims of this study, therefore, were:

1. to undertake further analyses of mortality data for the three cities for the period 2003–2007 to assess the extent to which the above hypothesis was feasible;
2. in light of these results, to analyse long-term trends in numbers and rates of ToP in the three cities (and, for comparison and context, between Scotland and England); and

3. to investigate potential explanations for any differences in ToP rates.

## Methods

Mortality analyses were based on the same age-, sex- and deprivation-standardized data that were used in the previous research on the three cities.<sup>1</sup> ToP data for the period 1980–2009 were obtained from Scottish and English national organizations: ISD Scotland,<sup>a</sup> (English) Department of Health and the Office for National Statistics (ONS). Data for the English cities were collected for slightly different geographical boundaries, reflecting National Health Service (NHS) re-organizations over time: health districts (pre-1983)<sup>b</sup>; district health authorities (1983–1993)<sup>c</sup>; health authorities (1994–2001)<sup>d</sup>; primary care trusts (PCTs) 2002–2005<sup>e</sup>; and restructured PCTs from 2006 onwards.<sup>f</sup> Population data were obtained from the General Register Office for Scotland<sup>g</sup> and ONS. For the English cities, data were available at current local authority level, which does not exactly match all the historical health geographical boundaries listed; however, despite this, and despite various other changes of boundaries over time, the differences are unlikely to impact significantly on the calculated rates.<sup>16</sup> Historical national abortion data for the years 1969–1979 were obtained from an additional published source.<sup>17</sup> Rates were calculated per female aged 15–44 years and, for analyses of ToP among teenagers, per female aged 15–19 years. Potential explanations for differences in rates were identified through a literature search and key informants [e.g. British Pregnancy Advisory Service (BPAS)].

## Results

### Mortality analyses

Table 1 shows the 'excess' number of deaths in Glasgow compared with Liverpool and Manchester in the period

<sup>a</sup> Data provided by ISD Scotland, based on notifications to the Chief Medical Officer.

<sup>b</sup> Liverpool Health District; Manchester North, Central and South Health Districts.

<sup>c</sup> Liverpool District Health Authority; Manchester North, Central and South District Health Authorities.

<sup>d</sup> Liverpool Health Authority; Manchester Health Authority.

<sup>e</sup> North, Central and South Liverpool PCTs; North, Central and South Manchester PCTs.

<sup>f</sup> Liverpool PCT; Manchester PCT.

<sup>g</sup> Now called the National Records of Scotland.

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