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Figure 1: **Potential years of life lost and rates of suicide and undetermined mortality, 1981–98**
Data are potential years of life lost per 100 000 people before age 65 years and suicide and undetermined mortality rates per 100 000 people aged 15 years or older.

National suicide rates as an indicator of the effect of suicide on premature mortality

David Gunnell, Nicos Middleton

The health strategies of many nations include targets to reduce suicide rates. In several countries, because suicide rates are rising in young men but falling or unchanging in most other groups, achievement of target reductions might mask rises in potential years of life lost (PYLL). Analysis of routine mortality and census data for England and Wales, UK, shows that although age-standardised suicide rates fell by 18% (95% CI 15–21) between 1981 and 1998, the PYLL before age 65 years increased by 5% (4–6). National suicide reduction targets should focus on PYLL and overall suicide rates.

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Suicide is one of the main causes of premature mortality in industrialised countries. For this reason, and because trends in suicide are thought to reflect changing patterns of population mental health, the health improvement strategies of many nations now include suicide reduction targets.[1] Targets are generally based on reduction of age-standardised overall (all-age, male and female) population suicide rates.[2] An important limitation of such targets is that during the past 50 years, reductions in suicide rates in many countries have been driven by substantial decreases in suicide rates of men older than 50 years and women of all ages. These favourable trends have masked a concurrent rise in young male, and in some countries young female, suicide.[3] Measures of potential years of life lost (PYLL) provide a better approach to quantify the effect of premature mortality for health outcomes with high prevalence in young people. We have investigated the implications of using these two alternative approaches to monitoring suicide trends in England and Wales of the past two decades.

We used population and mortality data for England and Wales, UK, produced by the Office of National Statistics to calculate suicide rates, standardised by age (5-year age bands) and sex, between 1981 and 1998 for people aged 15 years and older using the European standard population. We defined suicide as deaths coded E950–E959 and E980–E989, excluding E988.8 (accelerated registrations, most of which are homicides), using the *International Classification of Diseases*, ninth revision. We calculated PYLL before age 65 years using the exact age at death of all suicides occurring between 1981 and 1998. This method assumes

Figure 2: **Trends in age-standardised suicide rates, 1981–98**

that if the person had not died from suicide they would have survived to the age of 65 years. To control for changes in the population age-structure we calculated age-standardised PYLL per 100 000 people using the European standard population.

Between 1981 and 1998 suicide rates in men and women aged 15 years and older fell by 18% (95% CI 15–21) from 14·8 to 12·1 per 100 000 people per year. During the same period the PYLL before age 65 years increased by 5% (4–6) from 308·6 to 324·7 per 100 000 people per year (figure 1). In a sensitivity analysis we assessed the effect on PYLL and suicide trends of excluding undetermined deaths (ie, restricting the analysis to suicides only [*International Classification of Disease* codes E950–E959]) and changing the age cut-off point for our estimation of PYLL to 75 years. If undetermined deaths were excluded, the rate standardised by age and sex fell by 25% (22–28) from 11·4 to 8·6 per 100 000 people, but the PYLL before age 65 years fell by only 5% (4–6). When we used the age of 75 years as the base to calculate PYLL, the change in PYLL is somewhat reduced: PYLL fell by 1% (0–2) from 415·6 to 411·9 per 100 000. This reduction was much smaller than the fall in suicide rates.

This divergence between trends in PYLL and suicide rates is because suicide rates increased in men aged 15–44 years, but decreased in those aged 45 years and older and in women in both age-groups (figure 2). During this period suicide rates were around three-fold to four-fold greater in men than in women and about half of all suicides were in men aged 15–44 years.

In England and Wales, favourable trends in overall suicide rates have masked an increase in PYLL from this cause. This masking has occurred because the standardised suicide rate is created by pooling different age-specific and sex-specific rates into a single summary measure, thereby ignoring the differing trends within specific population groups. This finding suggests that nations with similar patterns of suicide to those seen in England and Wales such as Australia and the USA,[3] might also have reductions in overall suicide rates yet deteriorating rates in young people. Such deteriorations are especially important if they signify a decline in young people's mental health.

The main disadvantage of focusing only on PYLL is that such an approach diverts attention away from the health needs of elderly people and could be seen as discrimination on the basis of age. Since suicide rates are rising in young men in Britain,[4] and young men and women in other countries,[3] we recommend that national reduction targets focus on both PYLL and overall suicide rates and that health strategies and research focus on those groups where patterns show deterioration.

Contributors

David Gunnell had the original idea. Nicos Middleton undertook data extraction and analyses. David Gunnell wrote the first draft of the report. Both authors contributed to the final draft.

Conflict of interest statement

None declared.

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