

of SMR. For example, there were 84 suicides yielding an SMR of 13.6, signifying that suicide was 13.6 times more common among the cohort of patients with anorexia nervosa than generally expected. Similarly, the SMR for deaths due to respiratory disease was 11.5. But the SMR for anorexia nervosa as a cause of death was said to be 650.0 and it is this figure which leads the authors to conclude the death rate in their sample was astonishingly high.

So it would be if it had clinical and statistical validity. The authors' errors arise from estimating the SMR for a subgroup ($n=39$) of the original cohort using the fraction:

$$\frac{\text{observed number of deaths}}{\text{number of expected deaths}}$$

The numerator is given as 39 patients in whom anorexia nervosa was the main cause of death on the death certificate. It is the denominator which is elusive in its estimated value. It is given as 0.1 but the authors' own data suggest this is an approximation for 0.06, a very low figure which results in an inflated value for the SMR (650) in this ambiguous subgroup of anorexia nervosa. We suggest that when an underlying cause of death (e.g. suicide, respiratory infection) was not identified, the certifier of the death entered anorexia nervosa on recognising a cachectic state, especially as malnutrition does not feature in the list of 'underlying' causes.

These objections do not apply to the first calculation of the SMR in the full cohort of patients with anorexia nervosa whose value was found to be 6.2, by no means an astonishing death rate.

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Authors' reply: Professor Russell and Dr Ward raise the issue of the suspected erroneously inflated value for SMR (650) for the subgroup of women in whom anorexia nervosa was stated as the underlying cause of death on the death certificate in our paper.¹ The expected number of deaths for this subgroup was indeed 0.06 (denominator) as they point out and it was presented with its one decimal approximation (0.1). Russell & Ward further suggest that the certifiers of the death would be prone to enter anorexia nervosa on the death certificate when a specific underlying cause of death could not be identified but a cachectic state was evident. We agree that this could be true, but we do not believe that such 'misclassification' would be problematic if those women had an active anorexia nervosa at the time of death. On the contrary, it would be worrisome if women with other diagnoses that lead to cachectic states (other than anorexia nervosa) were misclassified as anorexia nervosa on death certificates, but our inclusion criteria were specifically selected in order to reduce this possibility. In addition, we believe that the estimation of the SMR value for this specific subgroup of patients does not confer more information than what common sense dictates, namely that those with a lifetime diagnosis of anorexia have a much higher risk of dying from it.

Overall, women with anorexia nervosa in our cohort had a sixfold increased mortality compared with the general population.

This excess mortality in anorexia nervosa is two to three times higher when compared with the excess mortality observed in mental disorders in general² and more specifically in schizophrenia,³ bipolar and unipolar disorder.⁴ Moreover, we would like to point out that we were most astonished by the persistence of this unfavourable outcome throughout the lifetime, with high SMRs for both natural and unnatural causes of death even 20 years or more after the first admission for anorexia nervosa.

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Suicide rates in people of South Asian origin in England and Wales

A notable finding in McKenzie *et al's* study¹ of suicide rates in people of South Asian origin is that the high relative rates in younger Asian women reported in previous research studies are found in the 1993–98 data-set but not that for 1999–2003, which shows high relative rates for Asian women over 65. In discussing their results, the investigators acknowledge potential problems with the study's methodology, including the numerator (how well the SANGRA name recognition algorithm ascertains individuals of South Asian origin in more recent samples) and denominator (the validity of a linear interpolation of numbers over their period). However, perhaps cautions are required with respect to the overall robustness of the SANGRA algorithm and the issue of numerator/denominator compatibility: the numerator uses an operational definition of ethnicity (derived from name information) and the denominator is based on self-assignment by individuals to census categories.

These matters are brought into focus in the derivation of denominators. The investigators use the counts for the 1991 categories 'Bangladeshi', 'Indian', 'Pakistani' and 2001 categories 'Asian or Asian British: Bangladeshi, Indian, Pakistani'. They also include the 2001 category 'White and Asian' (numbering around 190 000 in the census) on the grounds that people in it '... could be identified by SANGRA if any of their names were of South Asian origin'. We have no systematic data on how offspring of these inter-ethnic unions are named, although qualitative research has revealed the complexity of the process.² Inclusion of the 'White and Asian' category also introduces heterogeneity into the South Asian collectivity. Evidence from the Office of National Statistics (ONS) Longitudinal Study for members having a 1991 and 2001 ethnic group showed that half (49.0%) of the 993 'White and Asian' persons identified as 'White' in 1991 and just 9.5% identified as one of the three South Asian groups.³ Similarly, in recent research half in the 'White and Asian' group prioritised 'White' when asked to name just one ethnic group that contributes most strongly to their identity. Our collective

identities affect our ability to make an individual life and have relevance in the context of suicide risk.

The investigators exclude 'Other Asian' (the free-text 'Any other Asian background' under the 'Asian or Asian British' label, numbering around 240 000 in the 2001 census) from the denominator 'because the majority of this group are of Middle Eastern or Sri Lankan origin'. Although around one in four were born in Sri Lanka and one in six in the Middle East, 37% had a region of birth in South Asia and 31% in the UK.⁴ Given that the focus is on ethnicity rather than country of birth, the ONS Longitudinal Study data are, again, informative: of members with a 1991 and 2001 ethnic group, 42% of 1285 'Other Asian' persons identified as Indian, Pakistani or Bangladeshi in 1991. In this study, none from the 'Other Asian' group are counted in the denominator.

Finally, the investigators point out that SANGRA was validated against real data. However, the key data-set were London and Midlands hospital in-patient admission data from the mid- to late-90s, a period during which the quality of ethnic coding was very poor, the team itself admitting that further studies are needed to confirm whether SANGRA is able to produce valid results across Britain.⁵

Beyond the parsimonious way in which the statistical data is presented (with no measure of the precision of the rate estimates), the collective effect of potential problems with numerator/denominator compatibility and concerns about SANGRA's performance is a factor which needs to be considered in making a judgement whether to accept these findings as the accurate contemporary evidence needed to shape specific prevention strategies.

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McKenzie *et al*'s findings¹ of low suicide rates among South Asian men in both 1993–98 and 1999–2003, and of high suicide rates among young South Asian women in 1993–98, are consistent with previously reported findings.² The difference from previous findings lies in the absence of an excess in young South Asian women in the recent period, 1999–2003, and an excess instead in older women.

In the absence of observed numbers of deaths and confidence intervals for the rates, it is not possible to interpret the statistical significance of the findings in Tables 1 and 2 of their article (i.e. which ethnic differences by age, gender and over time are statistically significant). Likewise, although the results were 'essentially unchanged' following the sensitivity analysis, it is unclear which differences remained statistically significant after the 11% inflationary adjustment for potential underidentification of South Asian suicides arising from the use of SANGRA.

High rates of suicide and attempted suicide among young South Asian women have been a consistent and enduring finding in national and international research over decades (see Raleigh² for references). Research specifically commissioned to examine this issue reported high rates of attempted suicide among young South Asian women in London, including those who were UK-born.³ A recent study found a 2.8-fold higher suicide rate among South Asian women aged 25–39 in contact with mental health services.⁴ Given the evidence overall, any decline in suicide rates in this group over the past decade would therefore be welcome. However, as this finding is counter to the evidence to date, it should be kept under review to ensure it is a real trend and not an artefact, given the caveats associated with analyses based on software-assigned ethnicity, many of which are acknowledged in the paper.

The constraints to inclusion of ethnicity at death registration were established by ONS in its review of death certification some years ago. Given the growing need for epidemiological monitoring of mortality rates and trends by ethnicity and cause of death, ONS, the Department of Health and the Information Centre should consider alternative approaches for making these data available, for example through data linkage, as undertaken in Scotland and recently by ONS for deriving infant mortality rates by ethnic group.⁵ This would provide sound, comprehensive epidemiological data with self-assigned ethnicity coding of numerators and population denominators on a consistent and comparable basis, thereby avoiding the potential mismatch between numerators and denominators in the use of name-recognition software. It would also obviate the need for researchers to have access to names, which is frequently not possible for data protection reasons.

In the interim, given the growing use of such proxies for epidemiological purposes, there is a strong case for these national agencies to undertake a systematic review of the available name-recognition software programs, to establish their robustness for epidemiological analyses using national data-sets and across the spectrum of morbidity and mortality. This would also be in keeping with the statutory responsibility of these national agencies for ensuring the availability of comprehensive national data to support equality monitoring.

- 1 McKenzie K, Bhui K, Nanchahal K, Blizard B. Suicide rates in people of South Asian origin in England and Wales: 1993–2003. *Br J Psychiatry* 2008; **193**: 406–9.
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Authors' reply: Our paper is the first to report findings at variance with previous studies and we welcome the opportunity to discuss the findings and subject them to scientific scrutiny.¹ The findings of a decreased rate of suicide in South Asian men has not been challenged. It is reassuring that the experimental