

BJPpsych

The British Journal of Psychiatry

Suicide by age, ethnic group, coroners' verdicts and country of birth. A three-year survey in inner London.

J Neeleman, V Mak and S Wessely

BJP 1997, 171:463-467.

Access the most recent version at DOI: [10.1192/bjp.171.5.463](https://doi.org/10.1192/bjp.171.5.463)

References

This article cites 0 articles, 0 of which you can access for free at:

<http://bjp.rcpsych.org/content/171/5/463#BIBL>

Reprints/ permissions

To obtain reprints or permission to reproduce material from this paper, please write to permissions@rcpsych.ac.uk

You can respond to this article at

<http://bjp.rcpsych.org/cgi/eletter-submit/171/5/463>

Downloaded from

<http://bjp.rcpsych.org/> on January 17, 2012
Published by The Royal College of Psychiatrists

Suicide by age, ethnic group, coroners' verdicts and country of birth

A three-year survey in inner London

JAN NEELEMAN, VIVIENNE MAK and SIMON WESSELY

Background Information on suicide in ethnic and immigrant groups in England and Wales is limited.

Method A three-year (1991–1993) survey was conducted of all unnatural deaths of residents of an urban area. 'True likely' and 'official' age-adjusted suicide rates were compared by ethnicity and, for Whites, birthplace.

Results Irrespective of verdict, 329 likely suicides were identified. Relatively few ethnic minority and White immigrant suicides had received a suicide verdict. Afro-Caribbeans had relatively low, and young Indian women relatively high suicide rates. Rates of Scottish- and Irish-born residents were 2.1 to 2.9 times higher than the local base rate. Young White males' rates were higher than those of the elderly.

Conclusions Classification of suicide is biased with respect to ethnicity and national origin. Rate patterns for ethnic minority groups reflect patterns seen in attempted suicide. In this deprived area, young White male suicide rates have surpassed those among the old.

Little is known about the epidemiology of suicide by immigrant status and ethnicity in England and Wales (E&W). A recent nationwide analysis of official suicide found that most first-generation White immigrants had higher rates than native Whites (Raleigh & Balarajan, 1992). However, analysis of official suicide rates by immigrant status yields limited information on how ethnicity affects the epidemiology of suicide. First, the increasing group of minority residents born in E&W remains unaccounted for. Second, suicide misclassification may be associated with ethnicity (Warschauer & Monk, 1978), biasing comparisons. Third, nationwide analysis may obscure regional patterns, like in inner cities where ethnic groups cluster. We report a three-year survey of suicides of residents of a multi-ethnic urban area. Suicides were classified using clinical rather than legal criteria (O'Donnell & Farmer, 1995). Rates were compared by ethnicity and, among Whites, birthplace. Coroners' suicide classification was compared by ethnicity and, among Whites, country of birth.

METHOD

Sample

Details of all residents of the inner London boroughs of Lewisham, Lambeth and Southwark and the adjoining outer London borough of Greenwich (1991 census: 902 008 residents; 16% overall male unemployment; 23% ethnic minority residents) who died of unnatural causes (suicide, open, accidental and drug dependence verdicts) between 1 January 1991 and 31 December 1993, were obtained from the local coroner's court ($n=553$), or, if other courts had processed them ('transferable deaths'), from the Office for National Statistics ($n=58$). Cases were imputed to be suicides ($n=329$) if a suicide verdict was given, a suicide note had been found, the method unambiguously indicated suicide

and/or communications of suicidal intent had been recorded. Unless stated otherwise, rates and ratios were calculated using this sample.

Interrater reliability

The reliability of the cause of death (suicide *v.* other causes) imputation was assessed by comparing independent ratings (J.N. and V.M.) of 50 consecutive unnatural deaths obtained from the local court. This series included unnatural deaths of local ($n=17$; included in the sample) and out-of-area residents ($n=33$).

Ethnicity and country of birth

Ethnicity was established from coroners' and forensic records including post-mortem photographs, and coded according to Office of Population Censuses and Surveys categories as follows: White, Black Caribbean, Black African, Indian subcontinent (combining the categories Indian, Sri Lankan, Pakistani and Bangladeshi) and All-Asian (combining people from the Indian subcontinent with other Asian groups). Country of birth was classified as E&W, Scotland, Republic of Ireland and elsewhere.

Coroners' verdict by ethnic and immigrant status

The association of ethnic and, for Whites, immigrant status (assessed using country of birth), with coroner's verdict was examined using logistic regression, modelling the odds of a non-suicide verdict according to ethnic/immigrant status and adjusting for differences in gender, age and suicide method.

Suicide rates by ethnicity, country of birth, age and verdict

The 1991 census was used to calculate gender-specific rates and age-standardised mortality ratios (SMRs) (using Whites as reference) for the ethnic groups. Ethnic minority rates based on our imputation of suicide were compared with suicide verdict-based estimates. The census groups Black Caribbean and Black other were joined to give the Afro-Caribbean population at risk as described by Van Os *et al* (1996), whose methods were also used to correct for census under-enumeration of Afro-Caribbean men. Gender-specific rates by ethnicity were also stratified by age to assess ethnic age effects which might be obscured

by standardisation. For Whites, gender-specific suicide rates were compared by country of birth within the British Isles (E&W, Republic of Ireland, Scotland) omitting Whites born elsewhere. Age standardisation for these groups was not possible, but an SMR for suicide of people born in the Republic of Ireland was calculated using as the reference population all Whites not born there. Numbers were too small to allow stratification by country of birth for ethnic minority residents. Ninety-five per cent confidence intervals (CIs) for rates and SMRs were calculated using exact methods (Breslow & Day, 1987).

RESULTS

The sample

The sample consisted of 226 male (mean age 41.2 years; 95% CI 39.2–43.3) and 103 female cases (mean age 44.6 years; 95% CI 41.2–48.0), with 172 suicide, 19 accidental, one drug dependence and 137 open verdicts. Forty-nine concerned non-Whites. Suicide notes had been found in 20 cases which had not received suicide verdicts.

Interrater reliability

For 50 consecutive court cases of unnatural death (16 suicide, 19 open, 11 accidental and four drug abuse verdicts; 44 Whites and six non-White deaths), the interrater reliability of cause of death imputation was given by a kappa of 0.96. One White male death, an open verdict with uncertainty about method of death used, was classified differently by the two independent raters.

Coroners' verdicts by ethnic and immigrant status

Drowning and jumping from heights ('passive methods') were used by proportionally more non-White (15/49; 31%) than White (44/274; 16%) victims. The reverse applied to overdoses (10/49; 20% *v.* 96/274; 35%). The proportionate use of other methods did not differ by ethnicity ($\chi^2=7.5$; d.f.=2; $P=0.02$). Among White deaths, method used and country of birth (E&W *v.* other countries) were not associated ($\chi^2=1.2$; d.f.=2; $P=0.55$). The odds of a non-suicide verdict were higher in deaths of women compared with men (odds ratio (OR) 2.2; 95% CI 1.4–3.6), in deaths resulting from passive compared with other methods (OR 6.4; 95% CI 3.2–13.0), in ethnic minority compared with White deaths

(OR 2.1; 95% CI 1.1–3.9) and in deaths of Whites not born in E&W compared with those who were born there (OR 2.5; 95% CI 1.5–4.1); the last effect was particularly strong for the Scottish. Age at death was not associated with likelihood of a suicide verdict (OR 1.00; 95% CI 0.99–1.01). The association of ethnicity and, among Whites, immigrant status, with higher likelihood of a non-suicide verdict persisted after adjustment for confounders (Table 1). Results were similar when open and suicide verdicts only were compared.

Standardised suicide rates by ethnicity and verdict

Afro-Caribbean men and especially women had lower age-standardised suicide rates than Whites. Women from the Indian subcontinent had higher rates than White women; the effect was stronger when all Asian women were combined. No pattern emerged for Asian or African people. There was a substantial discrepancy between research- and suicide verdict-based rates and SMRs. This affected estimates of SMRs with respect to Whites of all ethnic groups but those of Indian and Asian women especially (Table 2).

Age-specific rates by ethnic group

Adult White men under 76 years had higher suicide rates than those over 76 years old. Despite the low SMR for Afro-Caribbean men, young men in this group had uncorrected rates comparable to those of Whites. The lower suicide rate of Afro-Caribbean

women compared with Whites applied across the age range. Although the SMR for Indian and Asian men was near 1 (Table 2), their suicide rate in the middle-aged groups appeared higher than among Whites. The raised SMR for Indian women was mainly attributable to increased rates, compared with Whites, among the young (Table 3).

White suicide rates by country of birth

Compared with White people born in E&W, and unadjusted for age, Whites born in Scotland and the Republic of Ireland had 2.1 to 2.9 times higher rates; the relative excess was greatest for women and was obscured when coroners' verdicts only were analysed (Table 4).

DISCUSSION

In this first British study of suicide by ethnicity, we found that the official suicide rate for the study area substantially underestimated the likely true frequency of suicide which was high by (inter)national standards. Official under-registration affected Asian women and White Irish and Scottish immigrants most strongly and obscured important epidemiological patterns.

Compared with Whites, Afro-Caribbean true likely suicide rates were lower, and those of Indian and Asian women higher. However, the overall reduced rates of Afro-Caribbean men was less clear-cut among the young. The high overall suicide rate of

Table 1 Classification of suicide by ethnic group and, for Whites, country of birth

	Odds ratio (95% CI) for non-suicide <i>v.</i> suicide verdict		
	Unadjusted	Age, gender adjusted ¹	Age, gender and method ² adjusted ³
Effect of ethnicity (baseline: All Whites)			
All non-White	2.1 (1.1–3.9)	2.3 (1.2–4.3)	2.4 (1.1–5.0)
Afro-Caribbean	2.0 (0.7–5.7)	2.6 (0.9–7.5)	3.0 (0.9–9.7)
African	1.2 (0.3–4.3)	1.2 (0.3–4.4)	1.4 (0.3–5.7)
All-Asian	2.8 (1.1–6.9)	2.7 (1.1–7.5)	2.7 (0.9–7.9)
Effect of country of birth (Whites only; baseline: E&W)			
Scotland	6.6 (1.8–3.9)	6.8 (1.9–25.0)	5.8 (1.4–23.1)
Republic of Ireland	2.4 (1.05–5.3)	2.3 (1.01–5.2)	2.7 (1.1–6.7)
Elsewhere	1.5 (0.7–3.4)	1.4 (0.6–3.2)	1.7 (0.7–4.3)

1. Improvement of fit compared with previous model. For ethnic comparison $\chi^2=11.4$; d.f.=2; $P<0.01$. For country of birth comparison $\chi^2=7.4$; d.f.=2; $P<0.03$.

2. Passive, intoxication, other.

3. Improvement of fit compared with previous model. For ethnic comparison $\chi^2=58.9$; d.f.=2; $P<0.01$. For country of birth comparison $\chi^2=45.2$; d.f.=2; $P<0.01$.

Table 2 Suicide rates and SMRs by gender and ethnic group. Research and suicide verdict-based estimates¹

Group	Men ²	Women
Suicide rates per 100 000 (95% CI) (number of deaths)		
All	17.6 (15.4–20.1) (<i>n</i> =226) 10.3 (8.7–12.3) (<i>n</i> =132)	7.3 (6.0–8.8) (<i>n</i> =103) 2.8 (2.1–3.8) (<i>n</i> =40)
White	18.8 (16.3–21.6) (<i>n</i> =187) 11.4 (9.5–13.7) (<i>n</i> =113)	7.9 (6.4–9.7) (<i>n</i> =87) 3.4 (2.4–4.7) (<i>n</i> =37)
SMR (95% CI) (observed/expected number of deaths) (baseline Whites)		
Afro-Caribbean	0.7 (0.4–1.2) ³ (14/19.1) 0.5 (0.2–1.1) ⁴ (6/11.5)	0.2 (0.02–0.6) (2/11.4) 0 (0/5.1)
African	0.6 (0.2–1.3) (6/10.4) 0.5 (0.1–1.4) (3/6.2)	0.9 (0.2–11.4) (4/4.7) 0.9 (0.1–3.1) (2/2.3)
Indian subcontinent	0.9 (0.3–1.9) (6/6.8) 1.0 (0.3–2.9) (4/4.1)	1.8 (0.6–4.2) (5/2.8) 0 (0/1.2)
All-Asian	1.1 (0.6–1.9) (13/12.0) 0.8 (0.3–1.8) (6/7.2)	2.0 (1.0–3.6) (10/5.1) 0.5 (0.0–2.5) (1/2.2)

1. Suicide verdict-based estimates in italics.

2. Six cases of unknown ethnicity omitted from ethnic comparisons.

3. After correction for census under-enumeration: SMR=0.5 (95% CI 0.3–0.9) (O/E=14/25.8) (correction applied across the age groups) or: SMR=0.6 (95% CI 0.3–1.0) (O/E=14/24.6) (correction applied to age group 25–44).

4. After correction for census under-enumeration: SMR=0.4 (95% CI 0.1–0.9) (O/E=6/15.5) (correction applied across the age groups) or: SMR=0.4 (95% CI 0.2–0.9) (O/E=6/14.6) (correction applied to age group 25–44).

Table 3 Age-specific suicide rates (95% CI) per 100 000 by ethnic group

Group	Age group			
		20–44	45–75	76+
White	m: 187	27.0 (22.2–32.4)	21.6 (16.9–27.6)	14.7 (6.3–29.0)
	f: 87	9.5 (7.1–12.7)	11.6 (8.4–16.0)	5.6 (2.1–12.1)
Afro-Caribbean	m: 14	26.5 ¹ (14.1–45.3)	3.2 ² (0.1–17.8)	0
	f: 2	0.5 (0.1–1.6)	2.8 (0.3–1.1)	0
African	m: 6	15.0 ¹ (4.9–35.0)	15.7 (0.4–87.5)	0
	f: 4	5.1 (0.6–18.4)	34.4 (4.2–124.3)	0
Indian subcontinent	m: 6	18.1 (3.7–52.9)	31.2 (3.8–112.7)	0
	f: 5	23.2 (6.3–59.3)	13.0 (0.3–72.5)	0
All-Asian	m: 13	32.5 (15.6–59.8)	46.8 (9.6–136.7)	0
	f: 10	18.2 (6.7–39.7)	17.3 (0.4–96.4)	92.0 (2.3–512.4)

1. After correction for under-enumeration (across the age range): 18.0 (9.6–30.8).

2. After correction for under-enumeration (across the age range): 3.1 (0.1–17.3).
m, male; f, female.

Indian women was mainly attributable to the long-suspected high rate among the young (Raleigh *et al*, 1990). Compared with Whites born in E&W, those born in other parts of the British Isles had very high rates; the magnitude of this excess was larger than reported before for E&W nationally on the basis of official statistics (Raleigh & Balarajan, 1992). Contrary to recent national (Charlton, 1995) and regional (Obafunwa & Busuttil, 1994) reports, we found young White men to have higher suicide rates than the elderly.

Methodological considerations

The adopted method of imputing cause of death on the balance of probabilities was reliable and has been suggested to be more valid than the coroners' classification which is based on legal criteria (O'Donnell & Farmer, 1995); this is supported by the observation that in 20 non-suicide verdict cases a suicide note had nevertheless been found.

As ethnicity is not recorded routinely on death certificates, there was no alternative other than to assign it retrospectively, in

some cases from post-mortem photographs. It could not be assigned blind from cause of death, so that non-random ethnic misclassification by cause of death may, theoretically, threaten the study's validity. However, this is unlikely as the first assessor (who was aware of the study's aim) classified ethnic minority deaths similarly to the second (who was not, initially, interested in ethnicity).

Numbers of ethnic minority deaths were too small to allow meaningful stratification by birthplace. For them, the estimates refer to both first- and later-generation immigrants so that, for non-Whites, the study cannot address whether, and if so, how, immigration affects suicide risk.

Age standardisation was not possible for the comparison between Whites born in different parts of the British Isles. However, approximate standardisation for the Irish group suggests that resulting bias, if any, is small. Suicide rates for White people born outside the British Isles were not calculated as this group is too heterogeneous to be meaningfully aggregated.

Comparison with previous knowledge

Suicide misclassification in E&W has received considerable attention (O'Donnell & Farmer, 1995; Neeleman, 1996; Neeleman & Wessely, 1997) but differential misclassification by ethnic and immigrant status has not been reported before for the English system. However, ethnic biases have been reported for the US system (Warschauer & Monk, 1978).

Rates of non-fatal suicidal behaviour have been reported to be low in Afro-Caribbeans and high in young Indian women (McKenzie *et al*, 1995; Neeleman *et al*, 1996). Attempted (Centers for Disease Control, 1991) and completed suicide rates (Griffith, 1989) are lower among African than White-Americans. This study confirms that this pattern extends to completed suicides among these groups in E&W. However, young Afro-Caribbean male rates were not clearly lower than those of Whites. Bearing in mind the uncertainties about the size of the population at risk (Van Os *et al*, 1996), this may suggest convergence to the local base rate for this group, in line with reported increasing young African-American rates (Shaffer *et al*, 1994).

The estimated age-unadjusted excess (crude mortality ratio) of Scottish and Irish first-generation immigrant rates was higher

CLINICAL IMPLICATIONS

- Ethnic and immigration status are important variables in connection with suicide risk. In England and Wales, Afro-Caribbean people are at a low risk and Scottish- and Irish-born people at a high suicide risk.
- Ethnic minority and White immigrant suicides are more likely than those of others to be misclassified as other causes of death so that epidemiological patterns are obscured.
- In this deprived inner-city area suicide rates among young White men exceed those among elderly men.

LIMITATIONS

- No information was available on psychiatric history of the suicide victims. Future psychological autopsy studies of suicide need to take ethnic and immigration status into account as a modifying or independent risk factor.
- Numbers were small; routine recording of ethnicity on death certificates would facilitate examination of suicide patterns by ethnic/immigrant group on a nationwide basis.
- Ethnicity was assigned retrospectively on the basis of coroners' depositions and forensic evidence; prospective studies of suicidal behaviour in relation to ethnicity are needed.

JAN NEELEMAN, MRCPsych, Department of Social Psychiatry, University of Groningen and Department of Psychological Medicine, Institute of Psychiatry, London; VIVIENNE MAK, MRCPsych, Lambeth, Southwark and Lewisham Health Commission, London SE1; SIMON WESSELY, MRCPsych, Department of Psychological Medicine, Institute of Psychiatry, 103 Denmark Hill, London SE5 8AF

Correspondence: Dr J. Neeleman, Department of Social Psychiatry, University of Groningen, PO Box 30001, 9700 RB Groningen (NL). Fax 0031 50 316 1699; e-mail: j.neeleman@med.rug.nl

(First received 30 August 1996, final revision 15 April 1997, accepted 17 April 1997)

Table 4 Suicide rates per 100 000 and CMRs¹ (95% CIs) by gender and country of birth; Whites only. Research and suicide verdict-based² estimates³

		Men	Women
E&W	Rate	20.1 (17.1–23.7) (142) <i>12.9 (10.5–15.8) (91)</i>	7.7 (6.0–9.9) (60) <i>4.0 (2.8–5.6) (31)</i>
	CMR ¹	2.1 (1.05–3.8) <i>0.6 (0.1–2.2)</i>	2.7 (0.9–6.3) <i>1.1 (0.0–6.1)</i>
Scotland	Rate	41.9 (20.9–75.1) (11) <i>7.6 (0.9–27.4) (2)</i>	20.8 (6.7–48.5) (5) <i>4.2 (0.1–23.4) (1)</i>
	CMR ¹	2.1 (1.05–3.8) <i>0.6 (0.1–2.2)</i>	2.7 (0.9–6.3) <i>1.1 (0.0–6.1)</i>
Republic of Ireland ⁴	Rate	44.6 (26.4–70.5) (18) <i>24.8 (11.9–45.6) (10)</i>	22.1 (10.6–40.7) (10) <i>2.2 (0.1–12.2) (1)</i>
	CMR ¹	2.2 (1.3–3.5) <i>1.9 (0.9–3.5)</i>	2.9 (1.4–5.3) <i>0.6 (0.0–3.3)</i>

1. Crude mortality ratio with respect to White people born in E&W.

2. Suicide verdict-based estimates in italics.

3. No deceased were born in Northern Ireland; deceased born outside the British Isles (n=28) omitted.

4. SMR (using likely suicides) with respect to White people not-born in the Republic of Ireland (n=246). Men: 2.0 (1.2–3.2) (O/E=18/8.8). Women: 2.6 (1.2–4.7) (O/E=10/3.9). SMR (verdict based) with respect to White people not born in the Republic of Ireland. Men: 1.9 (0.9–3.5) (O/E=10/5.4). Women: 0.6 (0.0–3.3) (O/E=1/1.7).

than previously published by Raleigh & Balarajan (1992) who used official (i.e. suicide verdict-based) statistics. The present results poignantly illustrate how official statistics based on suicide verdicts only strongly underestimate the Scottish and Irish excessive suicide rates compared with those among Whites born in E&W. The reformulated suicide rates (i.e. including undetermined deaths) of E&W on the one hand, and Scotland and Ireland on the other, do not nearly differ to such a large extent (Neeleman & Wessely, 1997) so that migration to E&W (inner London in this instance) is associated with an increase of suicide risk for these groups. This study cannot solve whether this results from selection of vulnerable individuals into emigration (Adelstein *et al*, 1986) or social causation of increased risk due to relatively poor circumstances in the receiving country.

ACKNOWLEDGEMENTS

J.N. was supported by a Wellcome Trust Training Fellowship in Epidemiology and working at the Department of Psychological Medicine, Institute of Psychiatry, London SE5 during this study. Thanks to Dr T. Fahy for commenting on previous drafts and to local coroners for their cooperation.

REFERENCES

- Adelstein, A. M., Marmot, M. G., Dean, G., *et al* (1986) Comparison of mortality of Irish immigrants in England & Wales with that of Irish and British nationals. *Irish Medical Journal*, **79**, 185–189.
- Breslow, N. E. & Day, N. E. (1987) *Statistical Methods in Cancer Research Vol. 2: Design and Analysis of Cohort Studies*, p. 70. Lyon: IARC.
- Centers for Disease Control (1991) Morbidity and Mortality Weekly Report: Attempted suicide among High School Students – United States, 1990. *Journal of the American Medical Association*, **266**, 1911.
- Charlton, J. (1995) Trends and patterns in suicide in England & Wales. *International Journal of Epidemiology*, **24**, s45–s52.
- Griffith, E. E. H. (1989) Recent trends in suicide and homicide among Blacks. *Journal of the American Medical Association*, **262**, 2265–2269.
- McKenzie, K., Van Os, J., Fahy, T., *et al* (1995) Psychosis with good prognosis in Afro-Caribbean people now living in the UK. *British Medical Journal*, **311**, 1325–1327.
- Neeleman, J. (1996) Suicide as a crime in England & Wales: legal history, international comparisons and present implications. *Acta Psychiatrica Scandinavica*, **94**, 252–257.
- , Jones, P., Van Os, J., *et al* (1996) Parasuicide in Camberwell; ethnic differences. *Social Psychiatry and Psychiatric Epidemiology*, **31**, 284–287.
- & Wessely, S. (1997) Changes in classification of suicide in England & Wales; time trends and associations with coroners' professional background. *Psychological Medicine*, **27**, 467–472.
- O'Donnell, I. & Farmer, R. (1995) The limitations of official suicide statistics. *British Journal of Psychiatry*, **166**, 458–461.

Obafunwa, J. O. & Busuttill, A. (1994) A review of completed suicides in the Lothian and Borders region. *Social Psychiatry and Psychiatric Epidemiology*, **29**, 100–106.

Raleigh, V. S., Bulusu, L. & Balarajan, R. (1990) Suicides among immigrants from the Indian subcontinent. *British Journal of Psychiatry*, **156**, 46–50.

— & **Balarajan, R. (1992)** Suicide levels among immigrants in England & Wales. *Health Trends*, **24**, 91–94.

Shaffer, D., Gould, M. & Hicks, R. (1994) Worsening suicide rate in black teenagers. *American Journal of Psychiatry*, **151**, 1810–1812.

Van Os, J., Castle, D., Takai, N., et al (1996) Psychotic illness in ethnic minorities: clarification from the 1991 census. *Psychological Medicine*, **26**, 203–208.

Warschauer, M. E. & Monk, M. (1978) Problems in suicide statistics for Whites and Blacks. *American Journal of Public Health*, **68**, 383–388.