

## Suicide and attempted suicide among people of Caribbean origin with psychosis living in the UK

K. MCKENZIE, J. VAN OS, C. SAMELE, E. VAN HORN, T. TATTAN  
and ROBIN MURRAY on behalf of the UK700 GROUP

**Background** A report from a 1980s cohort claimed that suicidal behaviour was four times less common in UK-resident people of Caribbean origin with psychosis than in British Whites. Since then, evidence has accumulated that the rate of suicide and suicidal ideation has been increasing.

**Aims** To compare rates of suicidal behaviour in people of Caribbean and British White origin in a large multi-centre sample of patients with psychosis.

**Method** A secondary analysis of 708 patients with psychosis followed up for 2 years. Outcome measures of reported suicide and attempted suicide were adjusted for socio-economic and clinical differences between groups at baseline.

**Results** People of Caribbean origin had a lower risk of suicidal behaviour than British Whites (odds ratio adjusted for age and gender 0.49, 95% CI 0.26–0.92). There was a strong negative interaction between ethnic group and age: suicidal acts were four times less likely in people of Caribbean origin aged over 35 years compared with British Whites, but there was no large or significant difference in those under 35.

**Conclusions** The previously reported lower relative risk of suicidal behaviour in people of Caribbean origin with psychosis is restricted to those over 35 years, suggesting that the protective effect of Caribbean origin is disappearing in younger generations.

**Declaration of interest** None.

African–Caribbeans with psychosis in the UK are reported to be at lower risk of suicide and attempted suicide than British Whites (McKenzie *et al*, 1995). Low rates are also reported for the general population, but rates in young African–Caribbeans may be rising (Soni-Raleigh, 1996; Bhugra *et al*, 1999). The National Confidential Inquiry (Department of Health, 2001) reported that African–Caribbean service users who committed suicide tended to be younger and suicides often were considered to be preventable. Although previous suicide attempts are the most important risk factor for suicide, such behaviour in African–Caribbean service users has rarely been investigated specifically. Contemporary data are required to inform evidence-based strategies for suicide reduction. We present a secondary data analysis from a large multi-centre case management trial. We investigated whether suicidal behaviour was still less likely in African–Caribbeans with psychosis compared with British Whites and whether any changes in relative rates were due to an effect across the population or just in the young.

### METHOD

#### Subjects and setting

The data source was the UK700 Project, which is a randomised controlled trial of two types of intensive case management (Burns *et al*, 1999; Creed *et al*, 1999). The sample is considered to be representative of White British and African–Caribbean patients with chronic illness who would normally be seen by community mental health teams in inner-city areas (Burns *et al*, 1999; Creed *et al*, 1999; McKenzie *et al*, 2001; Walsh *et al*, 2001).

#### Data collection

The rationale for the study, the baseline characteristics of the study group and the outcome of the case management trial have

been reported elsewhere (Burns *et al*, 1999; Creed *et al*, 1999). In brief, patients with research diagnostic criteria (RDC)-defined psychosis (Spitzer *et al*, 1978) aged 18–65 years who had been admitted at least twice to a psychiatric hospital were enrolled in a randomised controlled trial of intensive case management between February 1994 and April 1996.

Demographic and socio-economic information was documented at baseline. Diagnoses were made using the Operational Criteria Checklist for Psychotic Illness assessment (McGuffin *et al*, 1991) from patient notes and from a semi-structured mental state examination performed for completion of the Comprehensive Psychopathological Rating Scale (Jacobsson *et al*, 1978), which includes the Montgomery and Åsberg Depression Rating Scale (MADRS; Montgomery & Åsberg, 1979). Clinical history was assessed using the World Health Organization (WHO) Life Chart (World Health Organization, 1992).

#### Ethnicity

Ethnicity was assigned by observers, according to Office of Population Censuses and Surveys (OPCS) ethnicity categories (OPCS & General Register Office for Scotland, 1992). This was supplemented by information on patient's and patient's parents' place of birth. The aim was to produce a group of Caribbean origin and, for comparison, as homogeneous a British White group as possible.

The OPCS census 'White' category can include people from a variety of countries. The largest minority ethnic group, the Irish, are usually subsumed in this group but they may have different mental health needs to those born in the UK of British parents (Littlewood & Lipsedge, 1997). This can make explanations of any differences between groups difficult. In this study, White British=OPCS category White with mother and father born in the UK.

Patients of Caribbean origin are also a heterogeneous group. However, this group has shared histories, reasons for migration, concentrations in certain geographical areas of the UK and shared experiences of discrimination. These may produce similarities in their needs and experience of services. In this study, Caribbean origin=OPCS category Black–Caribbean or Black Other with mother or father born in the Caribbean or UK.

## Follow-up

Stratified randomisation ensured that equal proportions of White British and Caribbean origin patients were allocated to each treatment arm. Patients were followed up for an average of 2 years from the time they were randomised. They were re-interviewed at 1 and 2 years and all the instruments used at baseline were repeated. Here we present data for the 2-year follow-up.

Follow-up interviews were undertaken by independent researchers not involved in patient care. Patients and, when available, relatives and carers were interviewed. Each patient's case manager was interviewed. Other mental health professionals involved in the case were interviewed. Patients' case notes were also reviewed. The aim was to construct as accurate a picture as possible of the course of the illness, admissions and treatment.

## Measurement of suicide and suicide attempts

The main outcome variable was suicidal behaviour (attempted or completed suicide) between the baseline and 2-year follow-up interviews (Walsh *et al*, 2001). In the WHO Life Chart interview (World Health Organization, 1992), individuals were asked whether they had attempted suicide during this time and, if so, how often. A suicide attempt was defined as a self-destructive act carried out with the intention of ending one's life. Ratings were based not only on patient report but also on all available sources of information, including case notes and interviews with relatives and case managers. Where a 2-year outcome interview with a subject was not possible, an attempt was made to complete the WHO Life Chart using all other sources of information. Completed suicides were also recorded at each centre.

## Statistical analysis

Demographic and clinical differences between African-Caribbean and White British patients were investigated in univariate analyses. Differences between the two groups were considered significant at a level of  $P < 0.05$ . Possible explanatory variables for any difference were decided *a priori* and included gender, age, education, diagnosis, MADRS score and length of illness.

The 2-year relative risk of suicidal behaviour (suicide and suicide attempts) was

calculated in the total sample and comparisons were made between the two ethnic groups using the chi-squared test initially for binary variables. Logistic regression analysis yielding odds ratios (ORs) was subsequently used to assess the effects on suicidal behaviour or demographic and clinical differences between the groups. Models included age, RDC diagnosis, educational level, MADRS score and time from onset of psychosis to study entry.

In order to test whether any association between suicide and ethnicity varied as a function of age, age by ethnicity interactions were added to the logistic regression model and assessed by the likelihood ratio test. A sensitivity analysis was conducted to assess the possible effect of differential drop-out.

We had conceptualised suicide and suicide attempts as one type of behaviour (Walsh *et al*, 2001) but accept contrary views that there may be differences between those who complete suicide and those who attempt suicide; therefore, for completeness, we repeated the analysis excluding those who had completed suicide.

## RESULTS

### Baseline characteristics

There were 203 patients of Caribbean origin and 234 White British. Those of Caribbean origin were significantly younger than the White British patients, were less likely to have A-levels or a degree and were more likely to be diagnosed as suffering from RDC-defined schizophrenia. They had a shorter time from onset of illness to study entry than the White British and lower mean MADRS scores (Table 1).

### Sources of information

There was no difference between the groups in the mean number of sources of information (patient, carers, relatives,

mental health professionals, case notes, others) used to complete the interview schedule at baseline (Caribbean origin 2.6; White British 2.6) or follow-up (Caribbean origin 2.6; White British 2.7).

A total of 26 patients of Caribbean origin (13%) and 35 White British (15%) were not interviewed at follow-up. There were no differences between the groups in the proportions of patients who refused interview or the reasons for non-interview. The most common reason for non-interview was refusal: 25 patients refused to be interviewed (6.5% of Caribbean origin and 5.5% White British). There was no difference between the groups in the mean number of sources of information that were used for those patients who were not interviewed at follow-up (Caribbean origin 2.0; White British 1.8).

### Patients who dropped out of the study

A total of 45 patients dropped out of the study (20 of Caribbean origin, 25 White British). There was no difference between those of Caribbean origin and the White British in the rate of drop-out from the study. For those who dropped out there were no group differences in gender, mean age, educational level, diagnosis, depression score or duration of illness as measured by months between first onset of psychosis and study entry. Among those who dropped out, more White British were recorded as having attempted suicide in the 2 years before entry to the study (7 White British, 1 of Caribbean origin;  $P = 0.05$ ).

### Length of follow-up

Patients were followed up, on average, for 24 months and over 50% of patients were interviewed within 1 month of their 2-year interview date. There was no difference

**Table 1** Significant differences between the group of Caribbean origin and the White British group at baseline

	Caribbean origin (n=203)	White British (n=234)	P
Age in years, mean (s.d.)	37.3 (11.9)	40.1 (11.4)	0.02
Months from onset to study entry, mean (s.d.)	145.8 (104)	168.5 (131)	0.045
Attained A-level or degree, n (%)	17 (8)	58 (24)	0.001
MADRS score, mean (s.d.)	8.7 (7.9)	10.7 (8.5)	0.01
Diagnosis of schizophrenia, n (%)	102 (50.2)	73 (31.2)	0.001
Diagnosis of affective illness, n (%)	3 (1.5)	25 (10.7)	< 0.0001

MADRS, Montgomery and Åsberg Depression Rating Scale.

**Table 2** Unadjusted and adjusted odds ratios for suicidal behaviour over the follow-up period for White British compared with people of Caribbean origin

	Caribbean origin	White British	Odds ratio (95% CI)	Odds ratio adjusted for age, gender, MADRS score, education, diagnosis, time since onset
Completed suicide	3	4	–	–
Attempted suicide	14	29	0.52 (0.26–1.02)	0.54 (0.26–1.13)
Attempted suicide in those under 35 years of age	12 (13%)	13 (18%)	0.7 (0.36–1.51)	0.93 (0.37–2.32)
Attempted suicide in those over 35 years of age	2 (2.1%)	16 (11.4%)	0.17 (0.04–0.71)	0.19 (0.04–0.89)
Total attempted or completed suicide	17	33	0.56 (0.30–1.03)	0.59 (0.30–1.14)
Total attempted or completed suicides in those under 35 years of age	14 (15.7%)	14 (20.7%)	–	0.92 (0.38–2.2)
Total attempted or completed suicides in those over 35 years of age	3 (3.2%)	19 (13.4%)	–	0.26 (0.07–0.93)

MADRS, Montgomery and Åsberg Depression Rating Scale.

between the groups in the proportions of patients interviewed early, late or on time.

### Effect of ethnic group

There was no significant difference in the number of completed suicides between the groups (31.5% of Caribbean origin and 41.7% White British).

People of Caribbean origin had a lower (albeit statistically imprecise) risk of performing, on at least one occasion, a suicidal act over the follow-up period: 17 (8.4%) of the Caribbean origin group and 33 (14.7%) of the White British group (OR=0.56, 95% CI 0.30–1.03;  $P=0.063$ ). After adjustment for age and gender, this difference was increased rather than decreased (OR=0.49, 95% CI 0.26–0.92;  $P=0.025$ ). Additional adjustment for RDC diagnosis (four categories: schizophrenia; schizoaffective psychosis; affective psychosis; other psychosis), chronicity (defined as months from onset of psychotic symptoms to study entry), level of education (in three levels: no qualifications; CSE/GCSE/GCE O-levels; A-levels/degree) and MADRS depression score increased the odds ratio by only a slight amount compared with the unadjusted odds ratio (OR=0.59, 95% CI 0.30–1.14;  $P=0.12$ ). An analysis performed by excluding those who had died by suicide produced similar results (see Table 2).

### Age by ethnic group interaction

There was a strong negative interaction between age and ethnic group (unadjusted model: likelihood ratio statistic (LRS)=6.8, 6.8, d.f.=1,  $P=0.0093$ ; model adjusted for gender, diagnosis, educational level and chronicity: LRS=6.7, d.f.=0.0097). Stratified analyses revealed that there was no

significant difference between the groups in the number of people who performed at least one suicidal act in those aged under 35 years (14/89 Caribbean origin patients (15.7%) and 14/67 White British patients (20.8%);  $P=0.54$ ) but there was a significant difference in those aged over 35 years (3/94 Caribbean origin patients (3.2%) and 19/142 White British patients (13.4%);  $P=0.01$ ). Thus, in the group aged 35 years and older, Caribbean ethnic group was associated with a significantly lower risk (OR adjusted for all confounders, including age in years=0.26, 95% CI 0.07–0.93), whereas there was no large or significant protective effect in the group aged under 35 years (adjusted OR=0.92, 95% CI 0.38–2.20).

Analysis by excluding completed suicides produced similar results (see Table 2): LRS=6.52, d.f. 1,  $P=0.012$ .

### Sensitivity analyses

Previous suicide attempts are a predictor of future suicide attempts. Given the positive association between ethnic minority group and previous suicide in those who dropped out of the study, an attempt was made to assess the possible impact on the results of those who dropped out. It was assumed that all of those who dropped out of the study who had a past history of suicide attempts would have attempted suicide in the follow-up period even if we had been unable to find data to support this. The data-set was modified to reflect this assumption and the regression analyses were re-run. For the whole group there was a significant difference between those of Caribbean origin and White British (OR=0.52, 95% CI 0.27–0.99). There was no significant difference between those

of Caribbean origin and White British in those under 35 years of age (OR=0.72, 95% CI 0.32–1.64) but significant differences were found between patients of Caribbean origin and White British patients in the rates of suicidal behaviour in those over 35 years of age (OR=0.24, 95% CI 0.07–0.85).

## DISCUSSION

This is the largest comparative study of suicidal behaviour in UK-resident people of Caribbean and White British origin.

However, the study is a secondary analysis of UK700 data and so was limited in its ability to test hypotheses. The UK700 study was powered to investigate the impact of case management on the outcome of illness but suicide was not one of the primary outcome variables. Subsequent work demonstrated that the predictors of suicide and attempted suicide in the study were similar and this led to the use of the term 'suicidal behaviour' and analyses in which suicide and attempted suicide have been treated as a continuum. Here, analysis of those who attempt but do not complete suicide, either alone or in conjunction with those who complete suicide, does not significantly affect the result. Although there are differences in the risk factors for attempted suicide and completed suicide in the general population, these differences in risk factor profiles are not always found in patients with severe mental health problems (Walsh *et al*, 2001).

### Sources of bias

The fact that subjects were asked to recall events over a 2-year period may have introduced recall bias. If this recall bias was

different for our ethnic groups, the results could be an artefact of this process. However, recall bias was minimised by the use of multiple data sources and the fact that clients were seen regularly because they were taking part in a case management study.

It could be argued that, despite this, there could still be bias. For instance, the fact that people of Caribbean origin are known to be harder to engage could have led to biased assessments of suicide attempts. Clinical teams may have been more likely to miss suicide attempts in this group. However, this would not explain our findings, because younger people of Caribbean origin are considered more difficult to engage than older patients but there was no difference between their rates of suicidal behaviour and those of the White British group.

Bias in reporting could have been due to differences within the Caribbean origin group. Older people of Caribbean origin may have had as many suicidal acts but may have been less likely to admit to it. We could not exclude this possibility but we would have expected it to be minimised by close follow-up during the study.

### Generalisability of results

This study could be criticised and its results said not to be generalisable as patients may have received better care than usual because they were taking part in a case management trial. Although this could have decreased differences between ethnic groups it is not clear how it would have led to the age differential in relative risk of suicidal behaviour reported here. Generalisability could be questioned because all the centres were in the inner city. However, the vast majority of patients of Caribbean origin live in inner-city areas (Nazroo, 1997) and the majority of those with psychosis are likely to live in such areas.

Data collection could be criticised because observers (caseworkers, carers and relatives) were not blind to the ethnicity of patients. We cannot exclude this source of bias but none of the assessors was part of the team that envisioned this analysis and none was aware that data from the study were to be pooled to investigate rates of suicidal behaviour in ethnic groups.

### CLINICAL IMPLICATIONS

- Rising rates of suicidal behaviour in young people of Caribbean origin in the UK are reflected in mental health service users with psychosis.
- Young people of Caribbean origin with psychosis are as likely as their White British peers to attempt suicide and should be monitored.
- People of Caribbean origin with psychosis who are over 35 years of age are at lower risk of suicidal behaviour than a comparison group of White British service users.

### LIMITATIONS

- All four sites were in the inner city. This limits our ability to generalise results to the whole population or to discuss absolute rates.
- It has not been possible to analyse differential rates of reporting bias by patients.
- Assessors were not blind to the ethnicity of patients, which could have introduced reporting bias.

K. McKENZIE, MRCPsych, Department of Psychiatry and Behavioural Sciences, Royal Free and University College Medical School, London; J. VAN OS, MD, PhD, Department of Psychiatry and Neuropsychology, Maastricht University, The Netherlands; C. SAMELE, PhD, Department of Psychiatry, Institute of Psychiatry, London; E. VAN HORN, MRCPsych, The John Howard Centre, London; T. TATTAN, MRCPsych, Fromeside Clinic, Bristol; ROBIN MURRAY, MD, FRCPsych, Department of Psychiatry, Institute of Psychiatry, London

Correspondence: Dr Kwame McKenzie, Department of Psychiatry and Behavioural Sciences, Royal Free and University College Medical School, Royal Free Campus, Rowland Hill Street, London NW3 2PF, UK

(First received 20 November 2001, final revision 4 February 2003, accepted 19 February 2003)

### Reasons for the differences

The results of the study reflect findings from the general population where the rate of suicide in younger people of Caribbean origin is climbing while older people of Caribbean origin remain at lower risk than their White British peers (Soni-Raleigh, 1996). There has been no specific research to investigate this phenomenon but there have been a number of hypotheses that attempt to explain it. It has been claimed that changes in suicide rates may be due to decreased religious affiliation. However, it is unclear whether the change in religious beliefs between younger and older people of Caribbean origin is greater than that between younger and older British Whites.

Selection for migration could be important. Older people of Caribbean origin who decided to make the journey to the UK may be more able to cope with the rigours of being a minority in the UK than their children.

### Community factors

There could also be an effect of community. Older people of Caribbean origin are more likely to stay living within their community. The loss of support of the community or the higher exposure/loss of protection from discrimination faced by younger people of Caribbean origin who move away from their communities and into more diverse occupational and residential areas could be important. Neeleman has shown a relationship between the density of people of Caribbean origin in an area and their rates of suicide and presentation to accident and emergency departments with suicide attempts (Neeleman & Wessely, 1999; Neeleman *et al*, 2001). The rates of birth are higher from areas where they are more in the minority. There is a dose-response relationship but the relationship is complex and influenced by social class. Our sample of patients were nearly all unemployed, on Government support and concentrated in

social housing in poorer inner-city wards. Because of this residential concentration, simple ethnic density effects are unlikely to explain our findings.

There is some evidence from the USA that patterns of suicide in minority groups change between the first and second generations. The second and subsequent generations seem to approximate better to the rates of the host population (US Department of Health and Human Services, 2001). It may well be that our findings reflect a cultural shift within those of Caribbean origin in the UK, with White British norms being taken up by younger members and solutions to difficulties in life, such as suicide, being seen as more acceptable to them.

## ACKNOWLEDGEMENT

This paper was made possible by an educational grant from Haringey Healthcare National Health Service Trust. Our thanks to Dr Galatia Politopoulou for her help with earlier drafts of this paper.

The UK700 Group is a collaborative study team involving four clinical centres. At the time of the study the group consisted of: *Manchester Royal Infirmary*: Tom Butler, Francis Creed, Janelle Fraser, Peter Huxley, Nicholas TARRIER and Theresa TATTAN; *King's Hospital/Maudsley Hospital, London*: Thomas Fahy, Catherine Gilvarry, Kwame McKenzie, Robin Murray, Jim Van Os and Elizabeth Walsh; *St Mary's Hospital/St Charles Hospital, London*: John Green, Anna Higgitt, Elizabeth van Horn, Donal Leddy, Patricia Thornton and Peter Tyrer; *St George's Hospital, London*: Robert Bale, Tom Burns, Matthew Fiander, Kate Harvey, Andy Kent and Chiara Samele;

*Centre for Health Economics, York*: Sarah Byford and David Torgerson; *London (Statistics)*: Simon Thompson (*Royal Postgraduate Medical School*) and Ian White (*London School of Hygiene and Tropical Medicine*).

## REFERENCES

- Bhugra, D., Desai, M. & Baldwin, D. (1999)** Attempted suicide in west London. I. Rates across ethnic communities. *Psychological Medicine*, **29**, 1125–1130.
- Burns, T., Creed, F., Fahy, T., et al (1999)** The outcome of intensive versus standard case management for severe psychotic illness: the UK 700 case management trial. *Lancet*, **353**, 2185–2189.
- Creed, F., Burns, T., Fahy, T., et al (1999)** Comparison of intensive and standard case management for patients with psychosis: rationale of the trial. *British Journal of Psychiatry*, **174**, 74–78.
- Department of Health (2001)** *National Confidential Inquiry into Suicide and Homicide by People with Mental Illness*. London: Department of Health.
- Jacobsson, I., von Knorring, L., Mattson, B., et al (1978)** The comprehensive psychopathological rating scale – CPRS – in patients with schizophrenic syndromes. *Acta Psychiatrica Scandinavica*, **271** (suppl), 39–44.
- Littlewood, R. & Lipsedge, M. (1997)** *Aliens and Alienists*. London: Routledge.
- McGuffin, P., Farmer, A. E. & Harvey, I. (1991)** A polydiagnostic application of operational criteria in psychotic illness: development and reliability of the OPCRIT system. *Archives of General Psychiatry*, **48**, 764–770.
- McKenzie, K., van Os, J., Fahy, T., et al (1995)** Psychosis of good prognosis in Afro-Caribbean people now living in the United Kingdom. *BMJ*, **311**, 1135–11328.
- , Samele, C., van Horn, E., et al (2001)** Comparison of the outcome and treatment of psychosis in people of Caribbean origin living in the UK and British Whites. Report from the UK700 trial. *British Journal of Psychiatry*, **178**, 160–165.
- Montgomery, S. A. & Åsberg, M. (1979)** A new depression scale designed to be sensitive to change. *British Journal of Psychiatry*, **134**, 382–389.
- Nazroo, J. Y. (1997)** *Ethnicity and Mental Health: Findings from a National Community Survey*. London: Policy Studies Institute.
- Neeleman, J. & Wessely, S. (1999)** Ethnic minority suicide: a small area geographical study in south London. *Psychological Medicine*, **29**, 429–436.
- , Wilson-Jones, C. & Wessely, S. (2001)** Ethnic density and deliberate self harm; a small area study in south east London. *Journal of Epidemiology and Community Health*, **55**, 85–90.
- Office of Population Censuses and Surveys & General Register Office for Scotland (1992)** *1991 Census Definitions*. London: HMSO.
- Soni-Raleigh, V. (1996)** Suicide patterns and trends in people of Indian subcontinent and Caribbean origin in England and Wales. *Ethnicity and Disease*, **1**, 55–64.
- Spitzer, R., Endicott, J. & Robins, E. (1978)** Research diagnostic criteria: rationale and reliability. *Archives of General Psychiatry*, **35**, 773–782.
- US Department of Health and Human Services (2001)** *Mental Health: Culture, Race and Ethnicity – A Supplement to Mental Health: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.
- Walsh, E., Harvey, K., White, I., et al (2001)** Suicidal behaviour in psychosis: prevalence and predictors from a randomised controlled trial of case management. Report from the UK700 trial. *British Journal of Psychiatry*, **178**, 255–260.
- World Health Organization (1992)** *WHO Schedules for Assessment in Neuropsychiatry*. Geneva: WHO.