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Disparate patterns of hospitalisation reflect unmet needs and persistent ethnic inequalities in mental health care: the Scottish health and ethnicity linkage study

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Objectives. The presence and extent of mental health inequalities in Scotland is unclear. We investigated ethnic variations in psychiatric hospitalisations and compulsory treatment in relation to socioeconomic indicators.
Design. In a retrospective cohort study design, using data linkage methods, we examined ethnic variations in psychiatric [any psychiatric, mood (affective), and psychotic disorders) hospitalisations and use of the Mental Health (Care and Treatment) (Scotland) Act 2003 (Emergency Detentions (ED), Short-Term Detentions (STD) and Compulsory Treatment Orders (CTO)] using age (and sex for compulsory treatment), car ownership, and housing tenure adjusted risk ratios (RR). 95% CIs for the data below exclude the reference White Scottish group value (100).
Results. Compared to the White Scottish population, Other White British men and women had lower hospitalisation from any psychiatric disorder (RR = 77.8, 95% CI: 71.0–85.2 and 85.8, 95% CI: 79.3–92.9), mood disorder (91.2, 95% CI: 86.9–95.8 and 83.6, 95% CI: 75.1–93.1), psychotic disorder (67.1, 95% CI: 59.9–75.2 and 78.5, 95% CI: 67.6–91.1), CTO (84.6, 95% CI: 72.4–98.9) and STD (88.2, 95% CI: 78.6–99.0). Any Mixed Background women had higher hospitalisation from any psychiatric disorder (137.2, 95% CI: 110.9–169.6) and men and women had a higher risk of psychotic disorder (200.6, 95% CI: 105.7–380.7 and 175.5, 95% CI: 102.3–301.2), CTO (263.0, 95% CI: 105.4–656.3), ED (245.6, 95% CI: 141.6–426.1) and STD (311.7, 95% CI: 190.2–510.7). Indian women had lower risk of any psychiatric disorder (43.2, 95% CI: 28.0–66.7). Pakistani men had lower risk of any psychiatric disorder (78.7, 95% CI: 69.3–89.3), and higher risk of mood disorders (117.5, 95% CI: 100.2–137.9). Pakistani women had similar risk of any psychiatric and mood disorder however, a twofold excess risk of psychotic disorder (227.3, 95% CI: 195.8–263.8). Risk of STD was higher in South Asians (136.9, 95% CI: 109.0–171.9). Chinese men and women had the lowest risk of hospitalisation for any psychiatric disorder (35.3, 95% CI: 23.2–53.7 and 44.5, 95% CI: 30.3–65.5) and mood disorder (51.5, 95% CI: 31.0–85.4 and 47.5, 95% CI: 23.2–97.4) but not psychotic disorders and higher risk for CTO (181.4, 95% CI: 121.0–271.0). African women had higher risk of any psychiatric disorder (139.4, 95% CI: 119.0–163.2). African men and women had the highest risk for psychotic disorders (230.8, 95% CI: 177.8–299.5 and 240.7, 95% CI: 163.8–353.9) and were also overrepresented in STD (214.3, 95% CI: 122.4–375.0)

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and CTO (486.6, 95% CI: 231.9–1021.1). Differences in hospitalisations were not fully attenuated when adjusted for car ownership and housing tenure and the effect of these adjustments varied by ethnic group.
Conclusion. Our data show disparate patterns of psychiatric hospitalisations by ethnic group in Scotland providing new observations concerning the mental health care experience of Chinese, Mixed background and White subgroups not fully explained by socioeconomic indicators. For South Asian and Chinese groups in particular, our data indicate under and late utilisation of mental health services. These data call for monitoring and review of services.

Keywords: ethnicity; mental health; psychiatric disorder; compulsory treatment; data linkage

Introduction

The global burden of chronic mental illness mandates research to better understand what determines vulnerability and resilience to such illness and to achieve better management (Sahakian et al. 2010). Management of mental health problems is more challenging in multi-ethnic societies, where doctors and patients may have different understandings of the causes and management of these diseases.

Globally, migrant and minority ethnic populations have an increased risk of hospitalisation from psychosis (Bresnahan et al. 2007; Cantor-graae et al. 2003; Cantor-Graae and Selten 2005; Kirkbride et al. 2006; Selten, Slaets, and Kahn 1997; Selten et al. 2001; Veling et al. 2006; Zolkowska, Cantor-Graae, and McNeil 2001) across generations (Cantor-graae et al. 2003; Cantor-Graae 2007; Coid et al. 2008; Selten et al. 2001; Veling et al. 2006) with evidence of considerable heterogeneity by diagnosis. In England, for example, there is an excess of diagnosed schizophrenia in African-Caribbean and African Black populations compared to the White English and other ethnic groups (Bhugra et al. 1996, 1997; Harrison et al. 1988, 1997; Hickling and Rodgers-Johnson 1995; Mahy et al. 1999). Ethnic variations in hospitalisations are even more exaggerated for compulsory admissions under mental health legislation (Care Quality Commission and Mental Health National Development Unit 2011) and these excesses have been reported consistently over the last three decades (Bhui et al. 2003; Cochrane 1977). Despite substantial reform of mental health services and introduction of race equality policies in mental health in England, this discrepant pattern of service usage has not changed over the years (Care Quality Commission and Mental Health National Development Unit 2011).

In contrast, little is known about the mental health burden and health service usage by these communities in Scotland (Netto et al. 2001; Scottish Ethnicity and Health Research Strategy Working Group 2009). One reason for this could be that the proportion of non-White population in Scotland is smaller than in England; at the 2001 census only 2% of the Scottish population is non-white, compared to 8% for the UK as a whole. The proportionately smaller size of the minority ethnic population in Scotland has led some analysts to comment that issues related to ethnicity and 'race' are less politicised and visible than in England (Miles and Muirhead 1986; Netto et al. 2001), which may impact on mental health care and treatment for individuals from minority ethnic groups. Further, the ethnic composition of the minority ethnic population in Scotland differs from that of England; the largest minority ethnic groups in Scotland are Pakistanis (31.3%), Chinese (16%), and Indians (14.8%), with Caribbean (1.8%) and Black Scottish (1.1%) forming the

smallest groups. This is in contrast to England where Indians form the largest minority ethnic group and Chinese the smallest (General Register Office for Scotland 2001). In Scotland, Irish, Lithuanians, Jews, Italians and Polish formed the early migrants in the century before 1950, followed by Indians, Pakistanis, Bangladeshis and Chinese in the next 50 years (NHS Health Scotland 2009). The minority ethnic population is concentrated in the cities of Glasgow, Edinburgh, Dundee and Aberdeen, but there are also significant numbers of people from minority ethnic groups across rural Scotland, including the Highlands and the Islands.

Scotland provides a devolved context for health care and the study of mental health treatment of minority ethnic groups; Williams and Johnson (Williams and Johnson 2010) have drawn attention to the distinctive nature of multiculturalism in this country. This suggests the scope for devolved government to exercise some responsibility for issues related to race equality and for mental health policy makers and service providers to take a different stance from that adopted by the central government in Westminster or the Department of Health (Department of Health 2005; Sashidharan 2003). This may have an impact on mental health care and treatment for individuals from minority ethnic groups in Scotland. However, at present, such a surmise cannot be evaluated as the mental health of minority ethnic groups is under-researched in Scotland (Netto et al. 2001) contrary to policy and legislation commitments (Home Office 2000; Scottish Executive 1999; Scottish Executive Health Department 2002).

Geographic inequalities in health within the UK further necessitate the need for Scottish-specific data. Scotland has the highest suicide rate in the UK, twice that of England (Brock et al. 2006; Platt et al. 2006) and a history of greater economic deprivation (Carstairs and Morris 1989) and poorer health (Hanlon et al. 2005) compared to England and Wales. Much of the UK data on ethnic variations in mental health service use comes from England and focuses largely on African origin and South Asian populations with some work on the Irish. In comparison, apart from a study looking at psychological stress in South Asians in Glasgow in the 1980s, there appears to be no Scotland-specific data on the prevalence of mental health disorders in minority ethnic communities (Myers, McCollam, and Woodhouse 2005). Irish born English residents are overrepresented as users of psychiatric services, not far behind the African-Caribbean population for rates of schizophrenia and exceeding African-Caribbeans in overall hospitalisations (Bhugra 2004; Bracken et al. 1998). This group also shares the excess mortality seen in the White Scottish born in England and Wales (Harding and Balarajan 1996, 2001; Wild et al. 2007) and Scotland (Fischbacher, Steiner, et al. 2007). However, there is no comparable data on mental health outcomes of these groups living in Scotland, or reliable national data on the health of other minority groups, such as the Chinese (Myers, McCollam, and Woodhouse 2005). This makes it difficult to ensure appropriate policy development, service planning, and delivery of health services and research.

Studying ethnic variations in psychiatric hospital admission enables us to identify ethnic inequalities in psychiatric care. Under-representation of an ethnic group in mental health services may be due to difficulties in accessing such services or due to good mental health. Conversely, over-representation may be attributed to poor mental health or lack of access to preventative services and other community-based services or other barriers to seeking help. Policymakers and clinicians need to monitor ethnic differences in mental health treatment for service planning and

delivery in order to identify potential risk factors and ensure equal access to appropriate preventative and other mental health services, and to examine whether changes have been made over time in the responsive of the services to diverse groups.

The aims of this retrospective cohort study was to use linked data to investigate ethnic variations in psychiatric hospitalisations and compulsory treatment under the Mental Health (Care and Treatment) (Scotland) Act 2003 in Scotland, including the potential contribution of socioeconomic indicators as confounders in the relationship between ethnicity and mental health service usage. We hypothesised that minority ethnic groups living in Scotland would have lower psychiatric hospitalisations overall and higher hospitalisations for psychosis and compulsory treatment.

Method

Population

Details of the methods have been published previously (Bhopal et al. 2010; Fischbacher, Bhopal, et al. 2007). In brief, 2001 census (providing information on sociodemographic variables and ethnic group (selected from a list of 14 categories) as reported by the individual or the householder completing the form) and health data (hospital day case and inpatient discharge data already linked to death records Scottish Morbidity Records 04 (SMR04) database) were linked using the probability linkage method using the unique identifiers from the 2001 census for Scotland and the Scottish Community Health Index or CHI number (a national register of patients using the NHS). In this study, approximately 95% of the 2001 census population of 4.9 million was linked to health records overall (4.65 million, with 85% or more linked in every ethnic group).

We studied all first psychiatric hospitalisations between 1 May 2001 to 30 April 2008, for any psychiatric diagnosis [F00–99, X60–X84, Y10–Y34, Y87.0, and Y87.2 (ICD 10) and 290–305, 307.0–307.3, 307.5, 307.7, 307.9, 308–315, 317–319, E95 and E98 (ICD9)], mood (affective) disorders [F30–39, (ICD10) or 296, 311, 309.0 (ICD9)], and psychotic disorders (schizophrenia, schizotypal and delusional disorders) [F20–29, (ICD10) or 295, 297, 298 (ICD9)]. First hospitalisation was defined as no previous admission for the same diagnosis in the preceding 10 years.

Data on the use of the 2003 Act were obtained from the Mental Welfare Commission (MWC) for Scotland, an independent organisation working to safeguard the rights and welfare of everyone with a mental illness, learning disability or other mental disorder. The MWC monitors the Mental Health Act in Scotland. The Commission is informed, by hospitals and the Tribunal, of all episodes of treatment under the Mental Health Act and its annual reports are based on this information. For the purpose of this study the Commission provided us with a dataset consisting of anonymised data on all episodes of treatment under the 2003 Act over a three-year period from April 2006 to March 2009.

Due to small numbers, we amalgamated the ethnic categories of African, Caribbean and Black Scottish and Other Black groups as 'African Origin' group, referred to as African for short. For the MWC data, the South Asian group was also combined because of small numbers, and includes Indian, Pakistani, Bangladeshi and Other South Asian ethnic categories from the census. For the same reason, men

and women were combined. We examined sex differences, and the numbers were small, but there were no important or statistically robust differences.

Statistical analysis

We examined the relationship between eight indicators of socioeconomic position and first psychiatric admission rates (all diagnoses) to identify potential confounding factors (the numbers were insufficient to assess this for specific diagnoses). The indicators were: (1) the postcode (zipcode) based Scottish Index of Multiple Deprivation (SIMD), (2) car ownership, (3) highest qualification of the individual, (4) highest qualification in the household, (5) National Statistics Socioeconomic Classification at individual, (6) household levels, (7) household tenure and (8) economic activity in the previous week. Housing tenure (no missing data) and car ownership (data completeness for each disorder 93–96%) were selected as the most consistently associated measures. Across ethnic groups, those who owned houses (compared to those who rented) and those who owned 1 + car (compared to none) had a lower relative risk of first psychiatric disorder. For housing tenure, the 95% CI excluded 100 in 8/11 ethnic groups for men and women and for car ownership, the 95% CI excluded 100 in 7/11 ethnic groups for men and 10/11 for women (Appendix 1). House and car ownership were consistently shown to be associated with a lower relative risk of first psychiatric disorder for the majority of ethnic groups and in both sexes. In comparison, the other six indicators were less consistent. Car ownership and housing tenure varied by ethnic group. Therefore, these two indicators satisfied the prerequisite for confounders, that is, associated with risk factor and outcome. Due to small numbers, socioeconomic adjusted analyses were restricted to overall psychiatric hospitalisations for all ethnic groups, and Pakistani and White subgroups for mood and psychotic disorders.

Rates for first admission for any psychiatric disorder, first admission for mood (affective) disorders, and first admission for psychotic disorders were compared between ethnic groups. Using Poisson regression with robust error variance we calculated relative risk ratios (RR) adjusted for age, car ownership and housing tenure. The rates of use of Emergency Detention Certificates (EDC), Short-term Detention Certificates (STDC) and Compulsory Treatment Orders (CTOs) of the Mental Health (Care and Treatment) (Scotland) Act 2003 were calculated by ethnic group as relative risk ratios adjusted for age and sex using Poisson regression with robust variance (Bhopal et al. 2012). Ratios were multiplied by 100 for easier interpretation. In the results, we focus on findings that are statistically robust (where the 95% CI for the RR does not include 100, the value for the standard White Scottish comparison population).

Data were analysed using SAS version 9.2.

Ethics and disclosure

We followed a strict protocol to prevent inadvertent disclosure. The analysis was conducted on a standalone computer in a locked room in the General Register Office for Scotland, now National Records of Scotland, only by named researchers (MS, NB, GB). All outputs were reviewed by a disclosure committee before release.

The work was approved by the Multicentre Research Ethics Committee (for Scotland) and the Privacy Advisory Committee of National Services Scotland. The ethical and other permissions and related issues have been reported in detail (Bhopal et al. 2010), including an independent assessment by an ethicist (Boyd 2007).

Results

MWC data linkage outcome

We were unable to link 25% of episodes on the MWC database to our census – CHI look-up file because these records did not have a 2001 census record. We examined the linked and unlinked population by age and sex. A higher proportion of the unlinked were men (28% vs. 21% of women) and younger people (mean age 41 vs. 50 in linked), and many were in the age group 20–40 years of age (37%). From April 2006 to March 2009, 9099 episodes were linked, with 4077 detentions under Emergency Detention Certificate (EDC), 7098 short-term detentions (STDC) and 1226 CTO were granted.

Sociodemographic profile of population

Table 1 presents the sociodemographic characteristics of the population and shows that non-White minority ethnic groups were younger at first psychiatric hospitalisation. 2001 census data on education, rural residence, car ownership and housing tenure are included and show differences between ethnic groups with a higher proportion of no qualifications, and a smaller proportion of rural households and rented accommodation in the Pakistani population.

Psychiatric disorder hospitalisations by ethnic group and sex

Table 2 shows risk of hospitalisation for psychiatric disorder (any diagnosis), mood (affective) disorder and psychotic disorders by ethnic group and sex.

Men

In men, age adjusted risk ratios for any psychiatric disorder were lower in Chinese, Other White British and Pakistani compared to White Scottish men. Age-adjusted risk ratios for mood disorder were also lower in Chinese, Other White British and Other South Asian men and higher in Pakistani men. Chinese men had the lowest risk of hospitalisation for both these disorders, 50–65% lower compared to White Scottish men. In contrast, risk ratios for psychotic disorder were similar or higher in minority ethnic groups compared to the White Scottish. Age-adjusted risk ratios for psychotic disorders were 100–130% higher for men from Any Mixed background and African groups and only lower for Other White British men.

Women

For women, risk ratios for any psychiatric disorder were higher in the Any Mixed Background and African group, and lower in the Chinese, Other White British and

Table 1. Sociodemographic profile of population.

Ethnic group	Age[a] (mean, CI)		No qualifications[b] (%)	Rural households[b] (%)	No car ownership[b] (%)	Household tenure[b] (%)	
	Male	Female		Rural		Rented	Owned
White Scottish	51.4 (51.1–51.7)	56.8 (56.5–57.1)	35.0	21.0	26.0	32.8	67.2
Other White British	55.7 (54.6–56.9)	58.8 (57.7–59.9)	18.0	37.0	17.0	28.9	71.1
White Irish	56.4 (54.0–58.9)	63.7 (61.3–66.1)	32.0	13.0	33.0	36.3	63.7
Other White	54.5 (51.6–57.3)	56.3 (53.8–58.8)	23.0	20.0	28.0	43.1	56.9
Indian	36.2 (30.5–41.9)	38.6 (33.2–44.0)	24.0	7.0	21.0	29.4	70.6
Pakistani	38.9 (34.7–43.1)	31.8 (29.4–34.2)	43.0	3.0	17.0	25.3	74.7
Other South Asian	45.8 (37.5–54.2)	44.7 (33.8–55.7)	30.0	7.0	31.5	45.5	54.5
African	38.9 (30.0–47.7)	43.1 (35.6–50.6)	20.6	12.6	37.3	52.2	47.8
Chinese	35.8 (26.3–45.3)	39.3 (31.0–47.5)	38.0	6.0	21.0	31.8	68.2
All other ethnic group	36.0 (29.3–42.7)	43.1 (36.6–49.6)	29.0	12.0	33.0	53.8	46.2

[a]Mean age at first psychiatric disorder (any diagnosis).
[b]Taken from Analysis of Ethnicity in the 2001 Census summary report (Office of the Chief Statistician 2004).

Table 2. First psychiatric disorder (any diagnosis), mood (affective) disorders and psychotic disorder 01/05/2001–30/04/2008: events- and age-adjusted risk ratios with 95% CI, by ethnic group and sex.

	First psychiatric disorder			First mood disorder			First psychotic disorder		
	Events	Risk ratio	95% CI	Events	Risk ratio	95% CI	Events	Risk ratio	95% CI
Men									
White Scottish	19829	100.0		6618	100.0		3684	100.0	
Other White British	1390	77.8	71.0–85.2	548	91.2	86.9–95.8	215	67.1	59.9–75.2
White Irish	265	107.6	92.4–125.5	83	104.2	86.2–125.9	45	108.9	84.9–139.7
Other White	261	82.3	62.3–108.8	94	87.2	70.1–108.5	71	111.0	77.5–159.2
Indian	41	71.5	50.2–101.9	12	56.0	27.8–112.9	12	87.3	54.1–140.7
Pakistani	80	78.7	69.3–89.3	45	117.5	100.2–137.9	29	113.6	94.1–137.2
Other South Asian	23	79.1	62.0–100.9	7	63.0	45.8–86.7	[a]		
Chinese	20	35.3	23.2–53.7	11	51.5	31.0–85.4	10	70.9	33.1–151.8
African	26	90.1	56.5–143.8	9	81.7	54.4–122.6	16	230.8	177.8–299.5
Any mixed background	47	128.4	91.6–179.8	18	138.9	67.8–284.7	19	200.6	105.7–380.7
Women									
White Scottish	22168	100.0		9812	100.0		3177	100.0	
Other White British	1640	85.8	79.3–92.9	727	83.6	75.1–93.1	221	78.5	67.6–91.1
White Irish	265	91.5	81.9–102.2	113	94.1	77.0–115.0	37	94.2	67.4–131.6
Other White	322	91.8	74.6–113.0	152	88.1	69.8–111.3	67	122.5	88.8–169.0
Indian	20	43.2	28.0–66.7	14	55.1	27.7–109.8	10	126.0	59.8–265.7
Pakistani	76	85.9	64.6–114.1	48	96.5	71.3–130.7	35	227.3	195.8–263.8
Other South Asian	18	79.1	48.9–128.1	14	116.0	78.0–172.7	[a]		
Chinese	24	44.5	30.3–65.5	14	47.5	23.2–97.4	7	75.8	45.4–126.6
African	34	139.4	119.0–163.2	12	90.1	60.0–135.3	10	240.7	163.8–353.9
Any mixed background	54	137.2	110.9–169.6	22	109.5	92.7–129.3	11	175.5	102.3–301.2

Indian group. Chinese and Other White British women also had lower risk ratios for mood (affective) disorder. Chinese women had the lowest risk, with a 50% lower risk for these disorders compared to White Scottish women. In contrast, women from minority ethnic groups had the highest risk ratio for hospitalisation from psychotic disorder. These were 75–120% higher for Any Mixed background, African and Pakistani women and lower for Other White British women.

Compulsory treatment by ethnic group

Table 3 shows that, in contrast to psychiatric hospitalisations, non-White minority ethnic groups had similar or higher risk of compulsory treatment compared to the White Scottish, and the extent of ethnic inequalities increased with duration of detention/order. The Any Mixed Background group had a consistent two to threefold higher risk of emergency detention (EDC), short-term detention (STDC) and compulsory treatment order (CTO) compared to the White Scottish. The African group had a twofold excess of STDC and over fourfold excess risk of CTO. South Asians had a 36% excess risk of STDC and the Chinese group had almost twofold excess risk for CTO. The Other White British was the only group to have a lower risk of compulsory treatment compared to the White Scottish, consistent with the lower risk of hospitalisations described above.

Adjustment for validated socioeconomic indicators

Figure 1a shows that in men, for any psychiatric disorder, further adjustment for housing tenure attenuated the risk ratio in Other White British (from 77.8 to 81.8) and in Pakistani men (from 78.7 to 86.1). Adjustment for car ownership and age attenuated the risk ratio in Other White British (88.5), Pakistani (92.3) and Chinese (from 35.3 to 40.2) men and the CI now included 100 for Other White British and Pakistani men though differences were still evident. Figure 1b shows that adjustment for housing tenure did not greatly change these data in women except that the CIs now included 100 in the Other White British, Any Mixed Background and African group. In contrast, adjustment for car ownership greatly attenuated the risk ratio in Other White British women (from 85.8 to 95.6).

For mood (affective) disorder, adjustment for housing tenure and car ownership completely attenuated differences between the Other White British and White Scottish (data not shown, adjusted RR for Other White British men = 100, women = 92.2 with CI including 100). However, adjustment for these factors augmented differences in Pakistani men (data not shown. RR 130.2, CI 113.3, 149.5). For psychotic disorders, differences in the Other White British were attenuated on adjustment for car ownership and housing tenure and the CI now included 100 (data not shown). Adjustment for these factors augmented differences in Pakistani women (adjusted RR = 285).

Discussion

Principle findings

Our data highlight disparate patterns of mental health hospitalisation by ethnic group in Scotland.

Table 3. Emergency and short-term detention certificates and CTO 1 April 2006 to 31 March 2009, age- and sex-adjusted risk ratios with 95% CI, by ethnic group.

	Emergency detention certificate			Short-term detention certificate			CTO		
	Events	Risk ratio	95% CI	Events	Risk ratio	95% CI	Events	Risk ratio	95% CI
White Scottish	3612	100.0		6264	100.0		1721	100.0	
Other White British	290	92.7	81.4–105.5	483	88.2	78.6–99.0	127	84.6	72.4–98.9
White Irish	35	86.1	59.6–124.3	70	94.3	72.8–122.2	15	73.8	43.2–126.2
Other White	59	93.4	73.0–119.6	107	102.8	81.0–130.5	30	103.2	73.5–145.1
South Asian[b]	41	102.8	73.0–144.6	85	136.9	109.0–171.9	22	124.7	91.8–169.4
Chinese	[a]			16	81.6	50.5–131.9	10	181.4	121.0–271.9
African	7	117.5	43.6–316.3	20	214.3	122.4–375.0	13	486.6	231.9–1021.1
Any mixed background	22	245.6	141.6–426.1	42	311.7	190.2–510.7	10	263.0	105.4–656.3

[a]Insufficient numbers < 5.
[b]Indians, Pakistanis and other South Asians combined.

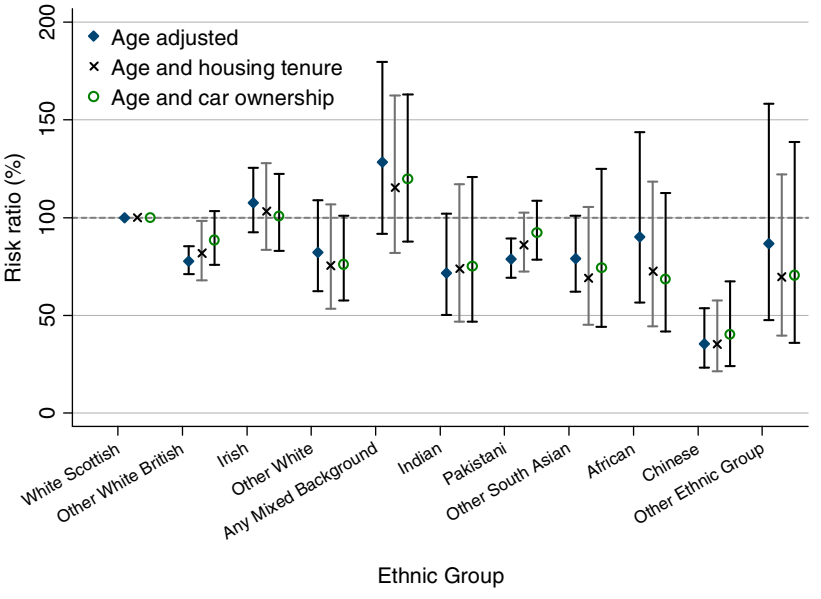

Figure 1. (a) First psychiatric disorder (any diagnosis) 01/05/2001–30/04/2008, age, car ownership and housing tenure adjusted risk ratios with 95% CI, by ethnic group (men). (b) First psychiatric disorder (any diagnosis) 01/05/2001–30/04/2008, age, car ownership and housing tenure adjusted risk ratios with 95% CI, by ethnic group (women).

We found lower risk of psychiatric hospitalisation in the Other White British (mostly English), and similar risk in the White Irish, compared to the White Scottish for every disorder. Consistently, risk of compulsory treatment was lower in the Other White British group compared to the White Scottish. In contrast, the general lower risk of hospitalisation for psychiatric disorders in non-White minority ethnic groups was not reflected when differences in psychotic disorders and use of mental health legislation for compulsory hospitalisation in Scotland were examined. Any Mixed Background, African and Chinese groups were at higher risk of being detained under the 2003 Act compared to the White Scottish. This was clearest for longer term orders, such as Compulsory Treatment Order. Despite a lower risk of hospitalisation for any psychiatric disorders, Pakistani women had an excess risk of hospitalisation for psychotic disorders, and South Asians were also overrepresented in compulsory treatment.

Socioeconomic differences based on car ownership and housing tenure largely accounted for the mental health hospitalisation differences seen between Other White British and White Scottish populations. In contrast, controlling for these socioeconomic factors did not remove the differences seen in the Pakistani group. Adjusting for car ownership and housing tenure only further increased the relative risk of mental health hospitalisation.

Findings in relation to the literature

Ethnic differences in psychiatric hospitalisations may reflect ethnic or cultural differences in illness recognition, health seeking behaviour, service utilisation,

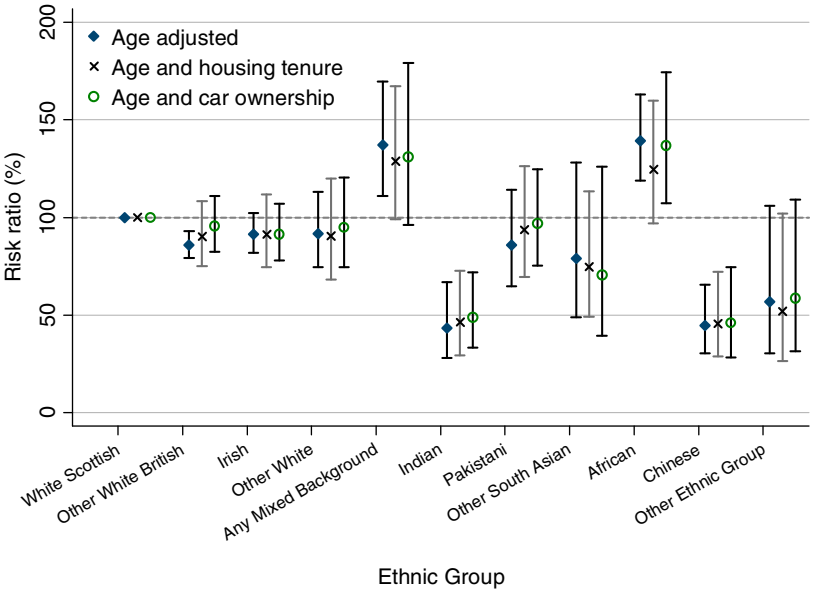

Figure 1. (*Continued*)

institutional factors, and other unmeasured socioeconomic factors (such as long working hours and social networks), and illness incidence. The generally lower hospitalisation for psychiatric disorders suggests, with the exception of Any Mixed Background men and women and African women, either relatively mentally healthy minority ethnic populations or underutilisation of services. There is evidence in favour of the latter both within our data and from other studies as discussed below.

Qualitative work carried out with diverse minority ethnic groups shows preference for informal support that is, a strong reliance on self and family members in managing and alleviating mental illness, in non-White minority ethnic groups (Ansari and Skinner 2004; Netto 2007). This, probably in combination with low awareness of the services available, dissatisfaction with appropriateness and cultural sensitivity of available services (Glasgow Association for Mental Health 2008) and cultural and educational barriers to accessing services, result in delayed medical help, sought only when informal methods prove ineffective, or when the situation becomes unmanageable and desperate (Ansari and Skinner 2004; Netto, McCloughan, and Bhatnagar 2007). This is clearly reflected in our very low rates of overall psychiatric disorders and mood (affective) disorders, but not for psychotic disorders, in these groups, suggesting the need for earlier intervention. This pattern, together with the marked excess risk for compulsory treatment in non-White minority groups, argues for lesser and later service utilisation.

We found no excess of mood (affective) disorders in South Asian women as previously reported (Coid et al. 2008; Kirkbride et al. 2008). Previous data show that South Asian women are less likely to report depressive symptoms (Cooper et al. 2006), or have a psychiatric history when presenting with parasuicide (Husain et al. 2006), and less likely to receive specialist and follow up care compared to White counterparts (Bhui et al. 2003; Cooper et al. 2010). Our data add to this work and

show apparent heterogeneity in mood (affective) disorders in South Asians with a higher risk in Pakistanis, particularly men, compared to Indians. There is no evidence to suggest Indians are at higher risk of underutilisation compared to Pakistanis, although much of the current work in South Asians in Scotland focuses mostly on Pakistanis (Newbigging, Bola, and Shah 2008).

The high rates of psychotic disorders in Pakistani women correspond with data from England showing higher rates for narrowly defined schizophrenia in Asian women compared to men (Kirkbride et al. 2006), and a fourfold higher risk in Pakistani and Bangladeshi women (Kirkbride et al. 2008). Consistent with previous work, adjustment for socioeconomic indicators did not remove all of the excess risk in these groups (Kirkbride et al. 2008). Our finding does not support the view that there is a social advantage that protects South Asian migrants from psychosis, at least not in Pakistanis (Pinto, Ashworth, and Jones 2008). Potential explanations, such as decreased socialisation and marginal economic status of this group, as well as increased stigma-related stress, require further study (Coid et al. 2008; Wheeler 1998). Qualitative work from Scotland shows that Pakistani/Indian respondents are more likely to associate mental health problems with social factors such as immigration, isolation, language difficulties, culture conflict and challenges associated with extended family living (Glasgow Association for Mental Health 2008). Clear socioeconomic and other differences exist between Indians and Pakistanis (Bhopal et al. 1999); for instance, Pakistanis have larger household sizes, and on income-based measures are more likely to suffer poverty (Netto, Sosenko, and Bramley 2011). They are also more likely to suffer from overcrowding, in part due to larger, multigenerational households, and the stresses associated with this (Netto, Sosenko, and Bramley 2011). It is difficult to disentangle the influences of socioeconomic class, ethnicity and religion (with Pakistanis more likely to be Muslims than the largely Hindu and Sikh Indian population in the UK) and the relationship between these differences, and their relationship to mental health risk and service utilisation remain to be elucidated.

In the Chinese group, we observed markedly lower risk for mood (affective) disorders but not for psychotic disorders and an over-representation for compulsory treatment. Our findings are consistent with current work suggesting under-use of services in the Chinese, possibly because of shame and stigma and language barriers, as well as perceptions of mental well-being and available mental health services (Chen and Kazanjian 2005; Glasgow Association for Mental Health 2008; Li et al. 1999; Newbigging, Bola, and Shah 2008; Sproston, Pitson, and Walker 2001). Qualitative work from Glasgow highlighted differences in perceived causes of mental health problems between Chinese and South Asian communities, with Chinese respondents more likely to attribute mental health problems to long working hours and financial issues (Glasgow Association for Mental Health 2008).

Data from England show a substantial excess of affective and non-affective disorders in African Black, African-Caribbean and Mixed ethnic groups (Kirkbride et al. 2006; Kirkbride et al. 2008). The Aetiology and Ethnicity in Schizophrenia and Other Psychoses (AESOP), a multicentre cross sectional study and the largest in England, reported ethnic differences in specific and all psychoses presenting at mental health services. Our data do not show the relative ethnic excess of the magnitude (6–9 fold) demonstrated by AESOP. This may be partly explained by the differences in study population and methods. AESOP data come from highly

urbanised or deprived localities from the catchment areas of South London, Nottingham and Bristol (Kirkbride et al. 2006). Case finding included all cases of mental disorder, both in the community and in specialist settings. Our study is based on hospital admissions only. We were unable to examine the more detailed diagnostic and ethnic group categories used in AESOP due to small numbers. Further, we used a different population (White Scottish) as our reference. The East London study, also in an urban and deprived population, demonstrated an excess for non-affective disorders in Black African (threefold) and Caribbean (fourfold) groups (Coid et al. 2008; Kirkbride et al. 2008). Our data are more comparable to that from a mixed urban/rural population from England showing twofold higher first psychotic disorder rates in African compared to the White British (Cheng et al. 2011).

Although housing tenure was consistently associated with mental health hospitalisation in our cohort, it is important to consider that this indicator may not be linked to poverty in some minority ethnic groups. For example, although it is commonly assumed that owner occupiers are generally better off than those living in the social and private rented sectors, in the case of some minority ethnic groups, this may not be the case. For instance, research shows the existence of 'reluctant' owner occupiers from Pakistani households, who have been forced into home ownership due to the lack of large accommodation in the public rented sector and fear of racial harassment and who are living in poor housing conditions (Littlewood and Kearns 1998; Third, Wainwright, and Pawson 1997). Car ownership may therefore, be a more reliable indicator of socioeconomic status than housing tenure among certain minority ethnic groups (Netto, Sosenko, and Bramley 2011). In contrast, it is likely that the differences between the culturally more homogenous groups, such as White Scottish and Other White British largely reflect differences in socioeconomic status as shown in our data.

Reasons for the ethnic variations for compulsory treatment are unclear. There is no evidence that non-White groups in Scotland have higher rates of mental illness than the Scottish White population. Our results do not show elevated rates for first admissions for non-White groups in general, compared to White Scottish. Overall first admission rates were elevated only in Mixed ethnic group (significantly so for women) and African women. Indian and Chinese men and women and Pakistani women had significantly lower risk of first admission compared to White Scottish. It is possible that a high risk of compulsory treatment as we have found in this study may be the result of poor service utilisation. For these reasons discussed above non-White minority populations may not access mental health services until their illness becomes very severe, increasing their chances of compulsory treatment.

Higher rates in ethnic minority groups in mental hospital admission and detention under the Mental Health Act (1983) in England have been reported consistently and still exist (Morgan et al. 2005). Ethnic differences in rates of admission and detention under the Mental Health Act have not altered recently in England (Care Quality Commission and Mental Health National Development Unit 2011). Hospital admission rates were higher than average among Black and Black/White Mixed groups while Indian and Chinese groups had lower than average rates. Pakistani and Bangladeshi groups had admission rates close to the national average (NHS Information Centre 2011). This is in contrast to our data showing an overrepresentation of Chinese and South Asian groups in compulsory treatment in Scotland.

Studies have indicated an association between the experience of racial discrimination and self assessed poor health, long standing illness that limits work, physical and mental health problems (Chakraborty, McKenzie, and King 2009; McKenzie 2003). For example, experience of interpersonal racism and perceiving racism in the wider society have been shown to have independent effects on the risk of common mental disorders (depression and anxiety), and psychosis for minority ethnic groups in England, after controlling for the effects of gender, age and socioeconomic status (Karlsen et al. 2005).

It has also been argued that problems with acculturation for first generation migrants may increase their vulnerability to mental illness (Bhugra 2004). The increased incidence of mental disorders noted amongst most migrant groups is partly attributed to the difficulties that they experience in dealing with such challenges. However, the relationship between acculturation and mental health is complex. Some studies have found a beneficial association between increased acculturation and mental health, whereas others have found a detrimental association or no relationship at all (Koneru et al. 2007).

Scottish mental health legislation is different to that in England. However, the criteria for compulsory treatment are very similar under the two jurisdictions and there is little to suggest significant variations in clinical practice between the two countries. On the basis of our findings, it would appear that there are some similarities in the experience of mental health services by non-White groups in the two countries. Whether the ethnic differences in detention found in Scotland are due to patient related factors or shortcomings within the health service in addressing the needs of these groups, remain unclear.

Further work is needed to understand the complex relationship between ethnicity and health in relation to social protective and risk factors, as well as use of mental health services in Scotland. In particular, the impact of social disadvantage throughout the life course (Morgan and Hutchinson 2009), social support structures in the family and community, migration experiences and cultural assimilation (Pinto, Ashworth, and Jones 2008) require further exploration. Our findings indicate the need for culturally appropriate and sensitive mental health services that will improve access for minority ethnic groups to community and specialist mental health services. Greater engagement between statutory services with community-based ones would help raise awareness of, and facilitate access to mental health services, including preventative services. It is important to raise awareness of existing ethnic disparities in service use and treatment in the mental health policy and practitioner community to ensure more equitable access to preventative services and early intervention; greater consideration of what might constitute ‘culturally sensitive’ mental health promotion and treatment; and ongoing ethnic monitoring and review of service provision and policy development. Scottish health care policy and service plans need to be reviewed urgently in light of these findings.

Strengths and limitations

The strength of the study is the exploration of mental health on a national scale in Scotland where data are sparse, the use of new methods, the availability of an ethnic code based on self-completion, information on a wide range of ethnic groups, and the linkage of census data to both hospital psychiatric morbidity and community/

hospital mortality. The validity of commonly used indicators of socioeconomic position is not yet established in multiethnic studies. We tested eight indicators and selected housing tenure and car ownership as the most closely associated with outcomes. As socioeconomic variables are co-correlated, adjustment for all simultaneously would be inappropriate, not least because mis-measurement errors in confounding factors may lead to either diminution or exaggeration of associations. These data break new ground in Europe, both in terms of findings and in linkage methods. Our data confirms previously observed trends seen in larger minority ethnic populations (such as England) despite differences in the size, composition and settlement of minority ethnic populations. Our findings are of particular relevance to other European countries with comparably small minority ethnic populations, and which have been under-researched. Our data provide important new observations particularly for less studied groups such as the Chinese, Mixed background and Other White groups.

The weaknesses of the study include the small population size for some non-White populations requiring their amalgamation, and hence small number of events, limiting detail on specific diagnoses and ethnic groups, and imprecision of estimates; the variation in linkage rates by ethnic group (ranging from 85.1% in Other South Asian to 95.3% in White Scottish); no data on recent migrants or other groups of concern such as refugees, Eastern Europeans such as the Polish, and gypsy travellers who were not enumerated separately in the 2001 Census; the lack of data on other socioeconomic indicators that may be more useful for mental health, for example, working hours, access to green space and so on, and the inability to capture events that may have occurred outside the UK. Our work follows the ethnicity related concepts and terminology previously discussed and summarised, in relation to its strengths and limitations, by Bhopal (Bhopal 2004, 2007). Our analysis is based primarily on Census-based ethnic group categories (completed either by head of household or delegated to individual members by the head of household), and therefore, does not allow further exploration of diversity within previously defined ethnic groups. Census categories have been created after (Sillitoe and White 1992) considerable consultation and analysis, which has been underway for some decades, but there are remaining limitations, including heterogeneity of populations included within groups, such as Indian, Chinese and the 'Any Mixed' category.

Additional information on related factors such as country of birth, language, literacy and religion can provide important detail on heterogeneity within ethnic groups when exploring barriers of access to and experience of mental health services. Some of these variables are available in the 2001 census (country of birth, religion), and language will be available in due course in the 2011 census. The number of outcomes for most Non-White groups in Scotland makes it difficult to use such data to refine the analysis, either in stratification or by incorporation of additional variables within statistical models. These practical limitations could be overcome in larger populations.

Key messages

(1) There are substantial ethnic variations in mental health hospitalisations in Scotland.

(2) Disparate patterns of hospitalisation in non-White groups indicate under and late utilisation of services.
(3) Differences between White Scottish and Other White British are present for every hospitalisation, but attenuate on adjustment for socioeconomic indicators.
(4) Extent of ethnic inequalities in compulsory treatment increase with length of order.

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References

Ansari, U., and C. Skinner. 2004. *'Bridging the Gap' Mental Health and Wellbeing Needs of People from Minority Ethnic Communities Living in Aberdeen*. Aberdeen: Pillar.

Bhopal, R. 2004. "Glossary of Terms Relating to Ethnicity and Race: For Reflection and Debate." *Journal of Epidemiology and Community Health* 58 (6): 441–445. doi:10.1136/jech.2003.013466.

Bhopal, R. 2007. *Ethnicity, Race and Health in Multicultural Societies; Foundations for Better Epidemiology, Public Health, and Health Care*, 1–357. Oxford: Oxford University Press.

Bhopal, R., C. Fischbacher, C. Povey, J. Chalmers, G. Mueller, M. Steiner, H. Brown, D. H. Brewster, and N. Bansal. 2010. "Cohort Profile: Scottish Health and Ethnicity Linkage Study of 4.65 Million People Exploring Ethnic Variations in Disease in Scotland." *International Journal of Epidemiology* 40 (5): 1168–1175. doi:10.1093/ije/dyq118.

Bhopal, R., N. Unwin, M. White, J. Yallop, L. Walker, K. G. Alberti, J. Harland et al. 1999. "Heterogeneity of Coronary Heart Disease Risk Factors in Indian, Pakistani, Bangladeshi, and European Origin Populations: Cross Sectional Study." *British Medical Journal* 319 (7204): 215–220. doi:10.1136/bmj.319.7204.215.

Bhopal, R. S., N. Bansal, M. Steiner, and D. H. Brewster. 2012. "Does the Scottish Effect Apply to All Ethnic Groups? All-cancer, Lung, Colorectal, Breast and Prostate Cancer in the Scottish Health and Ethnicity Linkage Cohort Study." *British Medical Journal Open* 2 (5). pii: e001957. doi:10.1136/bmjopen-2012-001957.

Bhugra, D. 2004. "Migration and Mental Health." *Acta Psychiatrica Scandinavica* 109 (4): 243–258. doi:10.1046/j.0001-690X.2003.00246.x.

Bhugra, D., M. Hilwig, B. Hossein, H. Marceau, J. Neehall, J. Leff, R. Mallett, and G. Der. 1996. "First-contact Incidence Rates of Schizophrenia in Trinidad and One-year Follow-up." *The British Journal of Psychiatry* 169 (5): 587–592. doi:10.1192/bjp.169.5.587.

Bhugra, D., J. Leff, R. Mallett, G. Der, B. Corridan, and S. Rudge. 1997. "Incidence and Outcome of Schizophrenia in Whites, African-Caribbeans and Asians in London." *Psychological Medicine* 27 (4): 791–798. doi:10.1017/S0033291797005369.

Bhui, K., S. Stansfeld, S. Hull, S. Priebe, F. Mole, and G. Feder. 2003. "Ethnic Variations in Pathways to and Use of Specialist Mental Health Services in the UK. Systematic Review." *British Journal of Psychiatry* 182: 105–116. doi:10.1192/bjp.182.2.105.

Boyd, K. M. 2007. "Ethnicity and the Ethics of Data Linkage." *BMC Public Health* 7 (1): 318. doi:10.1186/1471-2458-7-318.

Bracken, P. J., L. Greenslade, B. Griffin, and M. Smyth. 1998. "Mental Health and Ethnicity: an Irish Dimension." *The British Journal of Psychiatry* 172 (2): 103–105. doi:10.1192/bjp.172.2.103.

Bresnahan, M., M. D. Begg, A. Brown, C. Schaefer, N. Sohler, B. Insel, L. Vella, and E. Susser. 2007. "Race and Risk of Schizophrenia in a US Birth Cohort: Another Example of Health Disparity?" *International Journal of Epidemiology* 36 (4): 751–758. doi:10.1093/ije/dym041.

Brock, A., A. Baker, C. Griffiths, G. Jackson, G. Fegan, and D. Marshall. 2006. "Suicide Trends and Geographical Variations in the United Kingdom, 1991–2004." *Health Statistics Quarterly* 31: 6–22.

Cantor-Graae, E. 2007. "The Contribution of Social Factors to the Development of Schizophrenia: A Review of Recent Findings." *Canadian Journal of Psychiatry* 52 (5): 277–286.

Cantor-Graae, E., C. B. Pedersen, T. F. McNeil, and P. B. Mortensen. 2003. "Migration as a Risk Factor for Schizophrenia: A Danish Population-based Cohort Study." *The British Journal of Psychiatry* 182 (2): 117–122. doi:10.1192/bjp.182.2.117.

Cantor-Graae, E., and J. P. Selten. 2005. "Schizophrenia and Migration: A Meta-analysis and Review." *American Journal of Psychiatry* 162 (1): 12–24. doi:10.1176/appi.ajp.162.1.12.

Care Quality Commission and Mental Health National Development Unit. 2011. *Results of the 2010 National Census of Inpatients and Patients on Supervised Community Treatment Orders in Mental Health and Learning Disability Services in England and Wales*. London: Care Quality Commission.

Carstairs, V., and R. Morris 1989. "Deprivation: Explaining Differences in Mortality between Scotland and England and Wales." *British Medical Journal* 299 (6704): 886–889. doi:10.1136/bmj.299.6704.886.

Chakraborty, A., Kwame McKenzie, and Michael King. 2009. "Discrimination, Ethnicity and Psychosis-a Qualitative Study." *Ethnicity and Inequalities in Health and Social Care* 2 (1): 18–29. doi:10.1108/17570980200900004.

Chen, A. W. and A. Kazanjian. 2005. "Rate of Mental Health Service Utilization by Chinese Immigrants in British Columbia." *The Canadian Journal of Public Health* 96 (1): 49–51.

Cheng, F., J. B. Kirkbride, B. R. Lennox, J. Perez, K. Masson, K. Lawrence, K. Hill, et al. 2011. "Administrative Incidence of Psychosis Assessed in an Early Intervention Service in England: First Epidemiological Evidence from a Diverse, Rural and Urban Setting. *Psychological Medicine* 41 (5): 949–958. doi:10.1017/S0033291710002461.

Cochrane, R. 1977. "Mental Illness in Immigrants to England and Wales; An Analysis of Mental Hospital Admissions 1971." *Social Psychiatry* 12 (1): 25–35.

Coid, J. W., J. B. Kirkbride, D. Barker, F. Cowden, R. Stamps, M. Yang, and P. B. Jones. 2008. "Raised Incidence Rates of all Psychoses among Migrant Groups: Findings from the East London First Episode Psychosis Study." *Archives of General Psychiatry* 65 (11): 1250–1258. doi:10.1001/archpsyc.65.11.1250.

Cooper, J., N. Husain, R. Webb, W. Waheed, N. Kapur, E. Guthrie, and L. Appleby. 2006. "Self-harm in the UK: Differences Between South Asians and Whites in Rates, Characteristics, Provision of Service and Repetition." *Social Psychiatry and Psychiatric Epidemiology* 41 (10): 782–788. doi:10.1007/s00127-006-0099-2.

Cooper, J., E. Murphy, R. Webb, K. Hawton, H. Bergen, K. Waters, and N. Kapur. 2010. "Ethnic Differences in Self-harm, Rates, Characteristics and Service Provision: Three-city Cohort Study." *The British Journal of Psychiatry* 197 (3): 212–218. doi:10.1192/bjp.bp.109.072637.

Department of Health. 2005. *Delivering Race Equality in Mental Health Care: An Action Plan for Reform Inside and Outside Services and the Government's Response to the Independent Inquiry into the Death of David Bennett*. London: Department of Health.

Fischbacher, C., R. Bhopal, C. Povey, M. Steiner, J. Chalmers, G. Mueller, J. Jamieson, and D. Knowles. 2007. "Record Linked Retrospective Cohort Study of 4.6 Million People Exploring Ethnic Variations in Disease: Myocardial Infarction in South Asians." *BMC Public Health* 7 (1): 142. doi:10.1186/1471-2458-7-142.

Fischbacher, C., M. Steiner, R. Bhopal, J. Chalmers, J. Jamieson, D. Knowles, and C. Povey, 2007. "Variations in all Cause and Cardiovascular Mortality by Country of Birth in Scotland, 1997–2003.". *Scottish Medical Journal* 52 (4): 5–10. doi:10.1258/rsmsmj.52.4.5.

General Register Office for Scotland, 2. 2001. "Scotland Census 2001." http://www.gro-scotland.gov.uk/census/censushm/index.html.

Glasgow Association for Mental Health. 2008. *Promoting Awareness: Perception of Mental Health Needs of Black and Ethnic Minority Communities in Glasgow*. Glasgow: Glasgow Association for Mental Health.

Hanlon, P., R. S. Lawder, D. Buchanan, A. Redpath, D. Walsh, R. Wood, M. Bain, D. H. Brewster, and J. Chalmers. 2005. "Why Is Mortality Higher in Scotland than in England and Wales? Decreasing Influence of Socioeconomic Deprivation Between 1981 and 2001 Supports the Existence of a 'Scottish Effect'." *Journal Public Health (Oxf)*, 27 (2): 199–204. doi:10.1093/pubmed/fdi002.

Harding, S., and R. Balarajan, 1996. "Patterns of Mortality in Second Generation Irish Living in England and Wales: Longitudinal Study." *British Medical Journal* 312 (7043): 1389–1392. doi:10.1136/bmj.312.7043.1389.

Harding, S., and R. Balarajan. 2001. "Mortality of Third Generation Irish People Living in England and Wales: Longitudinal Study." *British Medical Journal* 322 (7284): 466–467. doi:10.1136/bmj.322.7284.466.

Harrison, G., C. Glazebrook, J. Brewin, R. Cantwell, T. Dalkin, R. Fox, P. Jones, and I. Medley. 1997. "Increased Incidence of Psychotic Disorders in Migrants from the Caribbean to the United Kingdom." *Psychological Medicine* 27 (4): 799–806. doi:10.1017/S0033291796004643.

Harrison, G., D. Owens, A. Holton, D. Neilson, and D. Boot. 1988. "A Prospective Study of Severe Mental Disorder in Afro-Caribbean Patients." *Psychological Medicine* 18 (3): 643–657. doi:10.1017/S0033291700008321.

Hickling, F. W., and P. Rodgers-Johnson. 1995. "The Incidence of First Contact Schizophrenia in Jamaica." *British Journal of Psychiatry* 167 (2): 193–196. doi:10.1192/bjp.167.2.193.

Home Office. Race Relations (Amendment) Act 2000. New Laws for a Successful Multi-racial Britain. 2000. London: Home Office.

Husain, M. I., W. Waheed, and N. Husain. 2006. "Self-harm in British South Asian Women: Psychosocial Correlates and Strategies for Prevention." *Annals of General Psychiatry* 5: 7. doi:10.1186/1744-859X-5-7.

Karlsen, S., J. Y. Nazroo, K. McKenzie, K. Bhui, and S. Weich. 2005. "Racism, Psychosis and Common Mental Disorder among Ethnic Minority Groups in England." *Psychological Medicine* 35 (12): 1795–1803. doi:10.1017/S0033291705005830.

Kirkbride, J. B., D. Barker, F. Cowden, R. Stamps, M. Yang, P. B. Jones, and J.W. Coid. 2008. "Psychoses, Ethnicity and Socio-economic Status." *The British Journal of Psychiatry* 193 (1): 18–24. doi:10.1192/bjp.bp.107.041566.

Kirkbride, J. B., P. Fearon, C. Morgan, P. Dazzan, K. Morgan, J. Tarrant, T. Lloyd, et al. 2006. "Heterogeneity in Incidence Rates of Schizophrenia and Other Psychotic Syndromes: Findings from the 3-center AeSOP Study." *Archives of General Psychiatry* 63 (3): 250–258. doi:10.1001/archpsyc.63.3.250.

Koneru, Vamsi K., Amy G. Weisman de Mamani, Patricia M. Flynn, and Hector Betancourt. 2007. "Acculturation and Mental Health: Current Findings and Recommendations for Future Research." *Applied and Preventive Psychology* 12 (2): 76–96. doi:10.1016/j.appsy.2007.07.016.

Li, P. L., S. Logan, L. Yee, and S. Ng. 1999. "Barriers to Meeting the Mental Health Needs of the Chinese Community." *Journal of Public Health Medicine* 21 (1): 74–80. doi:10.1093/pubmed/21.1.74.

Littlewood, A., and A. Kearns. 1998. *Below Tolerable Standard Housing and Ethnicity in Glasgow. A Scottish Homes Working Paper*. Glasgow: Scottish Homes.

Mahy, G. E., R. Mallett, J. Leff, and D. Bhugra. 1999. "First-contact Incidence Rate of Schizophrenia on Barbados." *The British Journal of Psychiatry* 175: 28–33. doi:10.1192/bjp.175.1.28.

McKenzie, K. 2003. "Racism and Health." *British Medical Journal* 326 (7380): 65–66. doi:10.1136/bmj.326.7380.65.

Miles, R., and L. Muirhead. 1986. "Racism in Scotland: A Matter for Further Investigation?" In *Scottish Government Yearbook*, edited by D. McCrone, 120–125. Edinburgh: Unit for the Study of Government in Scotland.

Morgan, C., and G. Hutchinson. 2009. "The Social Determinants of Psychosis in Migrant and Ethnic Minority Populations: A Public Health Tragedy." *Psychological Medicine* 40 (5): 705–709. http://dx.doi.org/10.1017/S0033291709005546.

Morgan, C., R. Mallett, G. Hutchinson, H. Bagalkote, K. Morgan, P. Fearon, P. Dazzan, et al. 2005. "Pathways to Care and Ethnicity. 1: Sample Characteristics and Compulsory Admission. Report from the AESOP Study." *The British Journal of Psychiatry* 186: 281–289. doi:10.1192/bjp.186.4.281.

Myers, F., A. McCollam, and A. Woodhouse. 2005. *Equal Minds: Addressing Mental Health Inequalities in Scotland*. Edinburgh: Scottish Executive.

Netto, G. 2007. "Creating a Suitable Space: A Qualitative Study of the Cultural Sensitivity of Counselling Service Provision in the Voluntary Sector in the UK." *Journal of Mental Health* 15 (3): 593–605.

Netto, G., F. Almeida Diniz, R. Arshad, M. Macewen, V. Patel, and R. Syed. 2001. *Audit of Minority Ethnic Research*. Edinburgh: Scottish Executive.

Netto, G., L. McCloughan, and A. Bhatnagar. 2007. "Effective Heart Disease Prevention: Lessons from a Qualitative Study of User Perspectives in Bangladeshi, Indian and Pakistani communities." *Public Health* 121 (3): 177–186.

Netto, G., F. Sosenko, and G. Bramley. 2011. *Poverty and Ethnicity in Scotland*. York: Joseph Rowntree Foundation.

Newbigging, K., M. Bola, and A. Shah. 2008. *Scoping Exercise with Black and Minority Ethnic Groups on Perceptions of Mental Wellbeing in Scotland: Final Report Edinburgh*. Edinburgh: NHS Health Scotland.

NHS Health Scotland. 2009. *Scottish Ethnicity and Health Research Strategy Working Group. Health in our Multi-ethnic Scotland. Future Research Priorities*. Edinburgh: NHS Health Scotland.

NHS Information Centre. 2011. *Mental Health Bulletin – Fourth Report from Mental Health Minimum Dataset (MHMDS) Annual Returns 2010*. Leeds: The Health and Social Care Information Centre.

Office of the Chief Statistician. 2004. *Analysis of Ethnicity in the 2001 Census: Summary Report*. Edinburgh: Scottish Executive.

Pinto, R., M. Ashworth, and R. Jones. 2008. "Schizophrenia in Black Caribbeans Living in the UK: An Exploration of Underlying Causes of the High Incidence Rate." *British Journal of General Practice* 58 (551): 429–434.

Platt, S., J. McLean, A. McCollam, B. A. Lamey, M. Mackenzie, D. McDaid, M. Maxwell, E. Halliday, and A. Woodhouse. 2006. *Evaluation of the First Phase of Choose Life: The National Strategy and Action Plan to Prevent Suicide in Scotland*. Edinburgh: Scottish Executive Social Research.

Sahakian, B. J., G. Malloch, and C. Kennard. 2010. "A UK Strategy for Mental Health and Wellbeing." *Lancet* 375 (9729): 1854–1855.

Sashidharan, S. P. 2003. *Inside Out: Improving Mental Health Services for Black and Minority Ethnic Communities in England*. London: Department of Health.

Scottish Ethnicity and Health Research Strategy Working Group. 2009. *Health in Our Multi-ethnic Scotland; Future Research Priorities*. Edinburgh: NHS Health Scotland.

Scottish Executive. 1999. *Towards a Healthier Scotland: A White Paper on Health*. Edinburgh: Scottish Executive.

Scottish Executive Health Department. 2002. *Fair for All: Working Together Towards Culturally-Competent Services*. Edinburgh: Scottish Executive.

Selten, J. P., J. P. Slaets, and R. S. Kahn. 1997. "Schizophrenia in Surinamese and Dutch Antillean Immigrants to The Netherlands: Evidence of an Increased Incidence." *Psychological Medicine* 27 (4): 807–811.

Selten, J. P., N. Veen, W. Feller, J. D. Blom, D. Schols, W. Camoenie, J. V. van Oolders, H. W. Hoek, V. M. Rivero, G. Y. van der, and R. Kahn. 2001. "Incidence of Psychotic Disorders in Immigrant Groups to The Netherlands." *British Journal Psychiatry* 178: 367–372.

Sillitoe, K., and White, P.H. 1992. "Ethnic Group and the British Census: The Search for a Question." *Journal of the Royal Statistical Society: Series B, Statistical Methodology* 155 (1): 141–163.

Sproston, K.A., L. B. Pitson, and E. Walker 2001. "The Use of Primary Care Services by the Chinese Population Living in England: Examining Inequalities." *Ethnicity and Health* 6 (3–4): 189–196.

Third, H., S. Wainwright, and H. Pawson. 1997. *Constraint and Choice for Minority Ethnic Home Owners in Scotland*. Edinburgh: Scottish Homes.

Veling, W., J.-P. Selten, N. Veen, W. Laan, J. D. Blom, and H. W Hoek, 2006. "Incidence of Schizophrenia among Ethnic Minorities in the Netherlands: A Four-year First-contact Study." *Schizophrenia Research* 86 (1–3): 189–193. doi:10.1016/j.schres.2006.06.010.

Wheeler, E. L. 1998. "Mental Illness and Social Stigma: Experiences in a Pakistani Community in the UK." *Gender and Development* 6 (1): 37–43. doi:10.1080/741922623.

Wild, S. H., C. Fischbacher, A. Brock, C. Griffiths, and R. Bhopal, 2007. "Mortality from All Causes and Circulatory Disease by Country of Birth in England and Wales 2001–2003." *Journal of Public Health* (Oxf) 29 (2): 191–198. doi:10.1093/pubmed/fdm010.

Williams, C., and M. R. Johnson. 2010. *Race and Ethnicity in a Welfare Society*. Maidenhead: McGraw Hill/Open University Press.

Zolkowska, K., E. Cantor-Graae, and T. F. McNeil. 2001. "Increased Rates of Psychosis among Immigrants to Sweden: Is Migration a Risk Factor for Psychosis?" *Psychological Medicine* 31 (4): 669–678. doi:10.1017/S0033291701003786.

Appendix 1. Age-adjusted relative increase (%) in risk of mental health hospitalisation (and 95% confidence interval) for each category increase in the variable for census-derived socioeconomic variables in men (a) and women (b).

Ethnic group	Number of first MH admission	SIMD[a]	Highest qualification (individual)[b]	Highest qualification (household)[b]	NS-SEC (individual)[c]	NS-SEC (household)[c]	Car owership[d]	Household tenure	Activity last week
		Quantitative	Quantitative	Quantitative	Quantitative	Quantitative	1+ vs. 0	Owned vs. rented	Working vs. inactive
(a) Men									
White Scottish	19829	82.9 (78.9–87)	62 (53.5–71.9)	68.1 (59.1–78.4)	21 (–12.5–49.2)	51.9 (38–64.6)	36.9 (29.8–45.5)	41 (32.4–51.8)	21.1 (17.5–25.6)
Other White British	1390	78.4 (74.5–82.6)	62.1 (50.9–75.7)	67.9 (56.9– 81)	29.7 (5.1–51.2)	47 (29.2–63)	39.8 (31.9–49.6)	47.3 (39.1–57.3)	27.5 (20.3–37.2)
White Irish	265	86.1 (79.2–93.6)	66.5 (58.5–75.6)	67.2 (56.2– 80.4)	43.1 (15.6–66.5)	44.9 (23.9–63.4)	38.4 (29.2–50.5)	37.7 (29–49.2)	20.4 (15.9–26.3)
Other White	261	77.1 (70.9–83.9)	67.8 (60.5–76)	73.4 (63.3–85.1)	9 (–30.7–41.8)	60.4 (35.7–81.4)	39 (29.2–51.9)	47.9 (38.2–60.1)	27.5 (22.1–34.2)
Any mixed background	47	87.6 (74.3–103.3)	108.8 (83.9–141.2)	85.6 (66.3– 110.5)	94 (52.9–123.4)	78.6 (51.8–100.5)	43.1 (32.1–57.8)	47.5 (35.8–63)	105 (49.3–223.8)
Indian	41	75.3 (61.6–93.5)	52.3 (40.7–67.1)	63.2 (44.4– 89.8)	3.6 (–105.6–73.8)	59.3 (8.8–96.5)	41.7 (19–91.2)	41.6 (21.7–79.8)	25.7 (11.5–57.1)
Pakistani	80	77.8 (66.1–91.7)	78 (62.7–97.1)	78.2 (66.9–91.5)	11.3 (–35.7–48.9)	37.6 (10.7–60.6)	29.5 (25.6–34.1)	37.6 (31–45.4)	23.3 (17.3–31.5)
Other South Asian	23	96.3 (77.4–119.7)	46.6 (34.7–62.6)	59.9 (37.7– 95.2)	104 (59.3–134.5)	106.4 (45.1–143.4)	107.2 (47.6–241)	79.2 (41.6–150.5)	67.7 (24–191)
Black	26	83.4 (69.5–100)	45.7 (33.1–63.1)	97.8 (61.1–156.5)	102.5 (51.2–136.1)	120.9 (95–140.5)	88.3 (50.3–154.8)	119.3 (81.2–175.2)	63.9 (23.1–176.7)
Chinese	20	87.4 (66.2–115.5)	85.7 (38.7–189.6)	89.4 (59.7– 133.9)	66.2 (–116–143.4)	99.5 (38.5–137.3)	56.3 (24.8–128)	54.6 (26.6–111.8)	109.5 (69–173.7)
All other ethnic group	26	92.5 (78.1–109.3)	84.2 (57.9–122.2)	95.5 (60.9– 149.6)	81.8 (22.4–121.3)	87.8 (39.6–121.5)	96.2 (53.1–174.2)	37 (21–65.2)	23.1 (15.2–35.1)
(b) Women									
White Scottish	22168	87.2 (82.9–91.7)	65.4 (56.4–75.9)	70.5 (60.8– 81.6)	28.8 (–1.1–54.3)	57.1 (41.5–71.3)	47.3 (36.9–60.7)	50.8 (39.5–65.5)	29.6 (27.2–32.3)
Other White British	1640	85.8 (80.3–91.7)	71.4 (61.6–82.7)	67 (58.4–76.9)	36.9 (18.2–53.8)	46.1 (27.4–62.7)	50.5 (38–67.1)	62.8 (50–78.8)	37.5 (33.3–42.2)
White Irish	265	92.7 (84.8–101.5)	69.1 (55.4–86.1)	68.4 (54.6–85.7)	42.6 (11.4–68.6)	67.3 (49.1–83.3)	52 (40.4–66.9)	65 (51–82.8)	41.8 (33–52.9)
Other White	322	78 (71.9–84.7)	74.7 (62.5–89.3)	72.2 (58.8–88.6)	47.4 (17.2–72.5)	64 (38.3–85.7)	53.3 (38.4–74.2)	63.4 (49.7–80.8)	41.7 (32.6–53.4)
Any mixed background	54	75 (66.3–84.8)	55.2 (38.9–78.5)	59.7 (44.9–79.4)	26 (–49–78.4)	32.1 (-0.7–59.6)	31.5 (19.7–50.2)	25.4 (18.5–34.7)	54.4 (32.5–91)
Indian	20	83.1 (62.7–110.2)	87.3 (57–133.6)	86.6 (49.4– 151.9)	83.4 (26.8–121.5)	116.5 (66.9–147.6)	37.2 (17.6–78.8)	90.3 (28.4–286.6)	58.7 (43.5–79.2)
Pakistani	76	88.4 (72.4–107.9)	98.6 (69.5–139.8)	95.2 (74.3– 121.9)	96.1 (76.9–112.3)	77 (37–107)	37.9 (29.8–48.3)	39.6 (28.7–54.6)	57.4 (42.3–78)
Other South Asian	18	88.4 (67.2–116.4)	89.6 (60–133.9)	89.9 (50–161.4)	60.9 (–4.6–105.5)	78 (27.8–113.6)	65.8 (21.3–202)	26.3 (15.4–44.5)	53.4 (18.3–155.4)
Black	34	77.9 (65.8–92.3)	71.2 (46.8–108.3)	51 (37–70.1)	73.7 (41.4–99.5)	11.8 (–32.7–47.8)	57.6 (37.6–88)	50.3 (34.7–73)	61.5 (29.1–129.9)

Appendix 1. (*Continued*)

Ethnic group	Number of first MH admission	SIMD[a]	Highest qualification (individual)[b]	Highest qualification (household)[b]	NS-SEC (individual)[c]	NS-SEC (household)[c]	Car owership[d]	Household tenure	Activity last week
		Quantitative	Quantitative	Quantitative	Quantitative	Quantitative	1+ vs. 0	Owned vs. rented	Working vs. inactive
Chinese	24	97 (79.9–117.8)	98.8 (68.7–142)	108.5 (73.3–161.1)	–19.4 (–372–115.9)	64.3 (–20–116.6)	33 (15.1–72.3)	92.8 (45.1–190.8)	19.9 (5.2–76.8)
All other ethnic group	19	79.8 (61.5–103.5)	94.8 (45.1–199.4)	102.8 (51.4–205)	101.8 (–16–155.4)	98.8 (49.3–132)	20.3 (8.2–50.6)	66.1 (20.5–213)	74.7 (23.5–237)

Note: An RR below 100 (reference) show a lower risk of MH for a higher socioeconomic level and for a specific ethnic-sex group.
[a]Figures are for each quintile increase in SIMD.
[b]Figures are for each category increase in highest qualification – that is, from none to low and low to high.
[c]Figures are for each category change in NS-SEC grouping, from N (never worked) to M (managerial and professional groups).
[d]Figures indicate difference in incidence between those who do not own cars and those who do.