

Ethnicity, social deprivation and psychological distress in adolescents

School-based epidemiological study in east London

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Background In adults the prevalence of psychological distress varies in different ethnic groups, and this has been explained by differences in socio-economic status. Is this also the case in adolescents?

Aims To examine whether ethnic differences in prevalence of psychological distress in adolescents are associated with social deprivation.

Method A cross-sectional questionnaire survey was used to assess 2790 male and female pupils, aged 11–14 years, from a representative sample of 28 east London secondary schools.

Results Rates of psychological distress were similar to rates in UK national samples in boys and girls. Bangladeshi pupils, although highly socially disadvantaged, had a lower risk of psychological distress (OR=0.63, 95% CI 0.4–0.9). Non-UK White girls had higher rates of depressive symptoms (OR=1.54, 95% CI 1.1–2.2).

Conclusions High rates of depressive symptoms in non-UK White girls may be related to recent migration. Low rates of psychological distress in Bangladeshi pupils in this sample relative to White pupils, despite socio-economic disadvantage, could be associated with cultural protective factors that require further investigation.

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Rates of psychological distress in adults vary according to ethnic group (Nazroo, 1997): higher levels are explained by social disadvantage, whereas lower rates are explained by culturally specific protective factors such as social cohesion (Nazroo, 1997; Sproston & Nazroo, 2002). There are continuities between psychological distress in childhood, adolescence and adulthood, and there may be common risk and protective factors relating to ethnicity in childhood and adulthood (Harrington *et al*, 1990). Less is known about ethnicity and psychological distress in adolescents, in whom developmental factors, educational issues and concepts of 'youth culture' may modify the relationships of ethnicity and distress (Garratt, 1996). The 1999 British Child and Adolescent Mental Health Survey included too few Black and ethnic minority young people for an adequate exploration of the relationship between ethnicity and psychological distress (Meltzer *et al*, 2000). The aims of our study were first, to measure the prevalence of psychological distress in a representative, school-based sample of adolescents from different ethnic groups, and second, to assess whether ethnic differences in psychological distress were associated with social disadvantage.

METHOD

Study design and sample selection

The Research with East London Adolescents: Community Health Survey (RELACHS) is a school-based epidemiological study of a representative sample of 2790 adolescents from year 7 (11–12 years) and year 9 (13–14 years) attending 28 schools in east London in 2001. All 42 eligible schools in the boroughs of Hackney, Tower Hamlets and Newham were stratified by borough and school type (comprehensive, voluntary and other). Thirty schools were randomly selected and balanced to ensure representation of single-gender and

mixed-gender schools; three declined and one was replaced. In each school that agreed to participate, representative mixed-ability classes were selected (two classes each from year 7 and year 9). The pupil response rate was 84% overall (85% in non-Whites, 77% in Whites); 3.5% refused to participate and 12.2% were unavailable on the survey day, including 3.2% absent sick, 0.9% on holiday, 1.0% attending another activity and 7.1% absent without explanation.

Ethnicity and cultural indicators

Ethnicity was self-rated by the adolescents using an adaptation of the Census 2001 questions (Office for National Statistics, 2001). Black children included those who classified themselves as Black African, Black British, Black Somali and Black African-Caribbean; small numbers precluded analysing these groups individually. The 'mixed' ethnicity group included White and Black Caribbean; White and Black African; White and Black; White and Asian; and mixed 'other'. The 'other' group included Chinese and Vietnamese, among others. Country of birth, main languages spoken at home, religion and its observance, and length of time in the UK were collected by child self-report in the questionnaire.

Socio-demographic factors

Previous research suggests that the use of multiple indicators of socio-economic status collected from adolescents can reliably indicate household socio-economic status (Rogers *et al*, 1995; Health Education Authority, 1997). In the questionnaire, socio-economic indicators included parental employment status, household crowding (>1.5 persons/room) and family car ownership. In addition, eligibility for free school meals was obtained from school records. We selected eligibility for free school meals as our main socio-economic adjustment variable because it is known to be a reliable indicator of socio-economic status in UK studies of young people, and it was also the indicator on which we had the most complete data (Sammons *et al*, 1997).

Main outcome measures

Data were collected by questionnaire on mental and physical health, health behaviours, height, weight and socio-demographic factors. The following

outcomes were included in the analyses reported in this paper.

Mental health

Child mental health was measured using the self-report Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; Goodman *et al*, 1998) which is a widely used psychometrically valid instrument for assessing psychological morbidity in UK children. A total difficulties score was derived by adding the scores of each of four sub-scales (emotional symptoms, conduct problems, peer problems and hyperactivity), producing a total score ranging from 0 to 40. In a nationally representative sample of adolescents (aged 11–15 years), the 1999 British Child and Adolescent Mental Health Survey, the overall prevalence of psychiatric morbidity was 11.2% (12.8% boys, 9.6% girls aged 11–15 years), established using multiple methods (Meltzer *et al*, 2000; <http://www.sdqinfo.com>). A score of 18 was chosen as the threshold for a 'high scorer' on the child self-completion version of the SDQ because this gave prevalence figures in the national data that were equivalent to the 9.5% prevalence found using multi-modal assessments (i.e. including data from parents and teachers) at national level (for children aged 5–15 years). We applied the same threshold to our data. The SDQ has been used in Bangladeshi adolescents before (Mullick & Goodman, 2001) and thus has validity in this group. The SDQ was supplemented by the brief and reliable 13-item Short Moods and Feelings Questionnaire (SMFQ; Angold *et al*, 1995) to measure core depressive symptoms. A threshold of 8 or more was chosen to define high scorers. This threshold yielded a positive predictive value of 80% and a negative predictive value of 68% in the original validation against the Diagnostic Interview Schedule for Children – Depression Scale (Angold *et al*, 1995).

Procedure

Data collection

Copies of the questionnaire were group administered to the pupils, who completed them individually in classrooms under the supervision of researchers who answered pupils' questions and checked questionnaires for missing data. Parents were informed by letter of the study, and passive consent (with active opt-out) was used.

Pupils gave written consent to participation in the study. The study protocol was approved by the East London and the City Local Research Ethics Committee.

Statistical analysis

All analyses were weighted to take account of unequal probabilities of selection. As the sample selection used a stratified cluster design with pupils clustered within schools, standard errors and 95% confidence intervals for means and proportions were calculated using the survey estimation (svy) commands available in STATA (StataCorp, 1999).

Odds ratios and corresponding 95% confidence intervals were calculated using the STATA logistic regression command with the cluster option specified. Three sets of logistic regression analyses were conducted:

- the proportions of children with high total SDQ and high SMFQ scores were compared by ethnic group;
- the proportions of children with high total SDQ and SMFQ scores were compared by socio-economic factors;
- a multivariate analysis including both ethnic group and socio-economic factors was performed.

These analyses were carried out for boys and girls combined and all models were adjusted for year group, gender and an interaction term between gender and year group. This interaction was included because the SDQ and SMFQ scores increased with age in girls but decreased in boys.

RESULTS

More than three-quarters of the participating children (78%) were non-White; the majority (79%) had been born in the UK and 9% had been in the UK for less than 5 years.

Gender differences in psychological distress

Both psychological distress and depressive symptoms increased with age in girls and decreased in boys (Table 1). In year 7 psychological distress scores were similar for boys and girls, but by year 9 boys had lower scores than girls. A similar pattern was seen for depressive symptoms, except that girls constituted a higher proportion

of the cases at year 7 as well as year 9 (Table 1).

Comparison with national data

Scores on the SDQ in our cohort were compared with national data from the 1999 British Child and Adolescent Mental Health Survey (Meltzer *et al*, 2000) and the Health of Young People 1995–97 survey (Prescott-Clarke & Primatesta, 1998). Based on the self-reported SDQ data from the 1999 survey and self-reported data in our survey, using the same threshold of 18 for high scorers in both studies, the proportion of high scorers on the SDQ was similar in boys in our sample (9.3%, 95% CI 7–12) and in boys the 1999 British Child and Adolescent Mental Health Survey sample (9.4% of boys aged 11–15 years). Rates were also similar for girls, with slightly higher rates of 11.3% (95% CI 10–13) in our sample being SDQ high scorers, compared with 9% of girls in the 1999 survey (Meltzer *et al*, 2000). The proportion of high scorers among girls in our survey was higher than the proportion of high scorers among girls in the Health of Young People study (7% in girls aged 10–12 years and 6% in girls aged 13–15 years in the latter), although rates were similar in boys in both studies (11% in boys aged 10–12 years and 9% in boys aged 13–15 years in the Health of Young People survey; Prescott-Clarke & Primatesta, 1998). In the Health of Young People study the SDQ was parent-reported rather than self-reported and the threshold for high scorers was 17.

Ethnic differences in rates of psychological distress

The largest ethnic groups were Bangladeshi (25%), White UK (21%) and Black (20%). All ethnic groups experienced high levels of familial social disadvantage compared with the national average, but this was most evident in the Bangladeshi group (Table 2). Rates of psychological distress on the SDQ varied modestly by ethnic group (Table 3). This was similar for the SMFQ, except that higher rates of depressive symptoms on the SMFQ were found in non-UK White girls, who were largely of Irish, Turkish or Greek origin.

Contrary to our expectations, psychological distress and depressive symptoms had little consistent association with social disadvantage using the indices of parental unemployment, lack of car ownership,

Table 1 Age and gender differences in psychological distress and depressive symptoms scores

	Year 7	Year 9	Total
Strengths and Difficulties Questionnaire			
Boys			
Score: mean (s.e.m.)	11.1 (0.23)	10.5 (0.18)	10.8 (0.17)
Case: % (95% CI)	10.5 (8–14)	8.0 (6–10)	9.3 (7–12)
Girls			
Score: mean (s.e.m.)	10.8 (0.31)	11.3 (0.28)	11.1 (0.23)
Case: % (95% CI)	11.3 (8–15)	11.4 (9–14)	11.3 (10–13)
Bases (unweighted)			
Boys	675	655	1330
Girls	675	740	1415
Short Moods and Feelings Questionnaire			
Boys			
Score: mean (s.e.m.)	4.69 (0.18)	4.13 (0.22)	4.41 (0.14)
Case: % (95% CI)	21.6 (19–25)	16.4 (13–21)	18.9 (16–22)
Girls			
Score: mean (s.e.m.)	5.22 (0.22)	6.15 (0.26)	5.71 (0.16)
Case: % (95% CI)	26.3 (23–30)	32.9 (29–37)	29.8 (27–33)
Bases (unweighted)			
Boys	668	657	1325
Girls	671	730	1401

household overcrowding or eligibility for free school meals (Table 4).

Odds ratios for SDQ high scores were statistically significantly lower among Bangladeshi pupils compared with the White UK group adjusting for gender, year group and the interaction of gender and year group (Table 5). This lower risk remained after further adjustment for socio-economic status in terms of eligibility for free school meals. The low risk of psychological distress in Bangladeshi pupils might be due to a preference for expressing

psychological distress in a somatic idiom rather than through emotional expression. However, the rates of reported somatic symptoms did not differ by ethnicity.

Non-UK White pupils had a higher risk of depressive symptoms on the SMFQ than White UK pupils adjusting for gender, year group, the interaction of gender and year group and socio-economic status, and although not significant, the odds ratio for a high SDQ score was also raised in this group (Table 5). It seemed possible that this might relate to refugee status. We

Table 2 Ethnicity and socio-economic status of the study group

Ethnicity	Boys n (%)	Girls n (%)	No car % (95% CI)	Eligible for free school meals ¹ % (95% CI)	Overcrowded % (95% CI)	Parent unemployed % (95% CI)
White UK	284 (21)	297 (21)	28 (23–35)	39 (32–47)	12 (9–15)	26 (21–31)
White other	73 (5)	88 (6)	34 (27–41)	58 (49–67)	20 (14–26)	45 (34–56)
Bangladeshi	371 (28)	319 (23)	40 (36–44)	66 (54–76)	51 (46–57)	62 (59–66)
Pakistani	103 (8)	81 (6)	14 (9–20)	50 (40–60)	31 (24–39)	35 (26–44)
Indian	106 (8)	144 (10)	15 (10–24)	34 (24–45)	21 (15–28)	26 (19–35)
Black	248 (18)	327 (23)	30 (26–34)	40 (33–48)	23 (19–28)	25 (19–32)
Mixed	97 (7)	97 (7)	39 (32–48)	46 (36–56)	17 (12–24)	30 (24–38)
Other	59 (4)	56 (4)	18 (11–27)	44 (28–60)	16 (9–28)	29 (18–44)
All	1341 (100)	1409 (100)	30 (28–33)	48 (42–54)	28 (23–33)	37 (32–43)

1. In England 14.9% and in London 24.5% of secondary school pupils are eligible for free school meals (Department for Education and Skills, 2002).

examined the year of entering the UK as a marker for recent migration and possible refugee status or asylum-seeking. Overall, 9% of pupils had entered the UK in the previous 5 years, but this proportion was higher in non-UK White pupils (26%) and Black pupils (19%). There was poorer mental health among more recent entrants than among the rest of the sample. Among non-UK White pupils, adjustment for recent migration reduced the risk of psychological distress on the SDQ from 1.36 (95% CI 0.8–2.3) to 1.19 (95% CI 0.7–2.0) and on the SMFQ from 1.54 (95% CI 1.1–2.2) to 1.25 (95% CI 0.9–1.8). Another possibility was that household composition might explain the high risk of psychological distress. We found that rates of psychological distress were similar in pupils from two-parent and mother-only families, and that the increased risk of depressive symptoms in the non-White UK pupils was not explained by differences between single-parent or two-parent household composition (results not reported).

Eligibility for free school meals was not associated with increased risk of a high SDQ score or with risk of depressive symptoms after adjustment for ethnicity. This weak association of socio-economic status with SDQ and SMFQ did not appear to differ by ethnic group (significance of interaction term for eligibility for free school meals by ethnic group, $P=0.52$).

DISCUSSION

This is the largest UK study of psychological distress in a representative sample of adolescents from ethnic minority groups. Psychological distress increased with age in girls and decreased in boys, in keeping with other studies (Meltzer *et al*, 2000). The rates of psychological distress in our study were similar to national data. Bangladeshi pupils, although highly socially disadvantaged, had a lower risk of psychological distress than White UK pupils. Non-UK White girls had higher rates of depressive symptoms than White UK girls.

Socio-economic position and psychological distress

Somewhat surprisingly, there was no association between indices of social disadvantage and psychological distress. In contrast, national data in the Health of Young People study showed a social gradient of high scores in parent-reported SDQ

Table 3 Analysis of high scorers on the Strengths and Difficulties Questionnaire (SDQ) and the Short Moods and Feelings Questionnaire (SMFQ): gender and ethnicity

Ethnicity	SDQ case ¹		SMFQ case ²	
	Boys	Girls	Boys	Girls
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
White UK	10.3 (7–16)	13.8 (11–17)	17.9 (13–24)	29.7 (24–36)
White other	14.0 (8–23)	14.1 (6–30)	16.9 (8–34)	41.4 (31–52)
Bangladeshi	5.7 (4–9)	9.7 (8–12)	19.0 (14–24)	26.6 (20–34)
Pakistani	7.6 (4–15)	14.9 (6–31)	18.7 (15–24)	27.8 (15–46)
Indian	12.7 (5–27)	10.5 (8–13)	19.2 (12–29)	28.6 (20–38)
Black	9.2 (6–13)	10.9 (8–14)	17.2 (12–23)	29.5 (25–34)
Mixed	17.0 (10–27)	8.9 (4–19)	26.0 (18–37)	29.1 (19–40)
Other	8.4 (5–14)	6.7 (3–16)	22.1 (14–34)	31.4 (23–41)

1. Score of 18 or more on the SDQ.

2. Score of 8 or more on the SMFQ.

by social class of head of household (Prescott-Clarke & Primatesta, 1998). The lack of effect of socio-economic position within our cohort may reflect lack of variability within it, given that every ward in the three boroughs lies in the bottom quintile of the government's index for deprivation (Department of Environment, Transport and the Regions, 2000). Measures of socio-economic position may not be equally indicative of social disadvantage across ethnic groups (Davey Smith, 2000), although we found a lack of association across all ethnic groups, including White

UK pupils. Lack of variation in socio-economic status and the possibility of area effects on psychological distress, even for those of more advantaged social position, may explain the apparently small effects of social disadvantage. Child psychiatric disorder also showed no social gradient related to poverty among Native Americans in the Great Smoky Mountains Study, although there was such a gradient in White children (Costello *et al*, 1997). The authors argued that the effects of poverty might have been mitigated by protective aspects of community or family life.

Table 4 Analysis of high scorers on the Strengths and Difficulties Questionnaire (SDQ) and the Short Moods and Feelings Questionnaire (SMFQ): gender and socio-economic status

Socio-economic factor	SDQ case ¹		SMFQ case ²	
	Boys	Girls	Boys	Girls
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Eligibility for free school meals				
No	8.4 (7–11)	11.7 (9–15)	18.2 (15–22)	30.6 (28–34)
Yes	9.9 (7–13)	10.9 (9–13)	19.4 (17–23)	29.2 (25–34)
Car ownership				
0	10.6 (8–14)	9.4 (7–13)	20.8 (16–26)	28.5 (25–32)
1	7.9 (6–11)	11.9 (10–15)	17.9 (15–21)	30.7 (27–34)
2+	10.4 (7–15)	11.9 (9–16)	18.1 (14–23)	29.0 (23–36)
Overcrowding				
< 1.5 persons/room	8.8 (7–11)	11.3 (10–13)	17.8 (15–21)	29.3 (27–32)
≥ 1.5 persons/room	10.2 (7–15)	10.5 (9–13)	21.9 (19–27)	30.8 (25–37)
Parental employment				
One/both working	9.2 (7–12)	11.3 (9–14)	18.1 (15–21)	29.6 (27–33)
Neither working	9.4 (7–13)	11.4 (9–14)	20.0 (15–26)	30.2 (26–35)

1. Score of 18 or more on the SDQ.

2. Score of 8 or more on the SMFQ.

Limitations of the study

The SDQ is a well-accepted screening instrument for adolescent mental ill-health, and the self-report version has been validated in a community and clinic sample (Goodman *et al*, 1998). In many studies it is used in a multi-method version incorporating parental and teacher versions of the questionnaire, to provide an overall prevalence score using an algorithm. The major limitation of our study was the reliance on self-reported assessment of psychological distress without triangulation by parental and teacher accounts and validation by a psychiatric assessment (Goodman *et al*, 2000). The sensitivity of the self-report version of the SDQ is low in other samples (15.9%), although it is slightly higher for depressive disorders (33.3%) and anxiety disorders (22.1%). Thus, we might not have identified all cases of psychological distress. Moreover, we did not assess the validity of the thresholds for psychological distress on the SDQ or SMFQ in this study population. In unravelling differences in rates of psychological distress between ethnic minorities, it would be very informative to have standardised interview-based measures of psychological distress. This is a goal for this study in future data collection.

Part of the difference in rates of high SDQ scores between the Health of Young People survey and our study in girls may be methodological. In the former survey parents completed the SDQ on behalf of their children, and might have under-reported problems (Prescott-Clarke & Primatesta, 1998). In our survey the pupils completed their own SDQ, which might have led to higher rates of reporting problems. Self-reports of emotional disorders with the SDQ in children aged 11 years upwards are as useful as teacher data, but not as useful as parent data, and are of less predictive value for conduct and hyperactivity disorders than parent or teacher data (Goodman *et al*, 2000).

The cross-sectional nature of our study means we cannot be certain of the direction of association. Having insufficient numbers in the various Black categories meant merging Black children from very different cultures into a single group. There were also relatively small numbers in the Pakistani and Indian groups. This was a further limitation, and more research is needed to examine psychological distress in these groups. Although the study lacked

Table 5 Odds ratios for poor mental health: analysis by ethnic group and socio-economic status

	SDQ case (n=2491)		SMFQ case (n=2475)	
	Adjusted odds ratio ¹ OR (95% CI)	Plus adjustment for (a) ethnicity/ (b) eligibility for free school meals OR (95% CI)	Adjusted odds ratio ¹ OR (95% CI)	Plus adjustment for (a) ethnicity/ (b) eligibility for free school meals OR (95% CI)
(a) Ethnicity				
White UK				
White other	1.39 (0.8–2.3)	1.36 (0.8–2.3)	1.53 (1.1–2.2)	1.54 (1.1–2.2)
Bangladeshi	0.64 (0.4–0.9)	0.63 (0.4–0.9)	0.92 (0.7–1.3)	0.92 (0.7–1.3)
Pakistani	0.92 (0.4–2.1)	0.91 (0.4–2.1)	0.97 (0.6–1.6)	0.97 (0.6–1.6)
Indian	1.02 (0.7–1.6)	1.03 (0.7–1.6)	1.01 (0.7–1.5)	1.01 (0.7–1.5)
Black	0.89 (0.6–1.3)	0.89 (0.6–1.3)	0.94 (0.7–1.2)	0.94 (0.7–1.3)
Mixed	1.16 (0.7–2.0)	1.15 (0.7–1.9)	1.25 (0.8–1.9)	1.25 (0.8–1.9)
Other	0.71 (0.4–1.2)	0.71 (0.4–1.2)	1.26 (0.8–1.9)	1.27 (0.8–1.9)
(b) Eligibility for free school meals				
No				
Yes	1.03 (0.8–1.4)	1.10 (0.8–1.5)	0.98 (0.8–1.2)	0.99 (0.8–1.2)

SDQ, Strengths and Difficulties Questionnaire; SMFQ, Short Moods and Feelings Questionnaire.
1. Adjusted for gender, year group and interaction term for gender × year group.

sufficient power to detect differences between the smaller ethnic groups, this was not the case for the Bangladeshi and White UK groups. As 12% of pupils were absent at the time of data collection, and as rates of psychological distress might have been higher among absentees, our estimates of psychological distress may underestimate the true prevalence. In general, there was a high rate of absence from schools, much of which could not be easily accounted for.

Depressive symptoms in non-UK White pupils

Non-UK White pupils had a higher risk of depressive symptoms relative to White UK pupils. This increased risk was diminished after adjustment for recent migration, suggesting that the excess risk for psychological distress might relate to stressors associated with migration. These might include traumatic experiences prior to migration, separation from parents and friends and difficulties adjusting to a new, alien environment (Bhugra & Jones, 2001).

Psychological distress in Bangladeshi pupils

Despite their high levels of social disadvantage, Bangladeshi pupils relative to White UK pupils were at decreased risk of psychological distress on the SDQ even after adjustment for gender, year group, the interaction of gender and year group, and

socio-economic status. Lower rates of psychological distress were also found in Bangladeshi girls (but not boys) in the British Child and Adolescent Mental Health Survey (Meltzer *et al*, 2000), suggesting that this is not an isolated finding. Why should Bangladeshi children have lower rates of psychological distress, when they live in conditions of social deprivation and Bangladeshi adults have high rates of physical illness (Bhopal *et al*, 1999)? One explanation could be that instruments such as the SDQ do not identify the idioms of psychological distress as effectively in Bangladeshi pupils as they do in pupils from other ethnic groups (Bhui *et al*, 2003). However, the SDQ has been used successfully to identify psychological distress in children in Bangladesh (Mullick & Goodman, 2001), and we did not find higher rates of somatic symptoms in Bangladeshi pupils who might have had a tendency to somatise emotional symptoms, as has been suggested in south Asian adults (Rack, 1982). High levels of family support and high ethnic density in the east London Bangladeshi population may be protective factors for mental health, but further research is needed to explore this (Halpern & Nazroo, 2000; Sproston & Nazroo, 2002). Research is also needed on cultural identity, the impact of religious belief and observance and the impact of culture on health behaviour in relation to psychological distress.

It may be that the mental health effects of living in an area with high levels of deprivation are counterbalanced by ethnically related protective factors (Costello *et al*, 1997). In east London these factors might include high levels of family support, religious belief, strong cultural identity and cohesion. If any of these factors are protective of mental health in the face of social adversity, there may be implications for the prevention of psychological distress in adolescents.

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CLINICAL IMPLICATIONS

- This study is further evidence that local services need to know their community well and be able to interpret local needs.
- Health promotion strategies that aim to reduce psychological distress in adolescents should focus on understanding the full range of potential protective factors, including cultural factors.
- Recent migration may be a risk factor for depressive symptoms in adolescent girls.

LIMITATIONS

- The main outcome was a self-reported assessment of psychological distress, which could be strengthened by validation using a psychiatric interview.
- The data reported were cross-sectional, which meant that the direction of association between ethnicity, social deprivation and psychological distress could not be determined.
- Small sample sizes within the different Black ethnic groups meant that variation in psychological distress within these different cultural groups could not be reliably assessed.

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