

ETHNIC DIFFERENCES IN PHYSICAL ACTIVITY, DIET AND OBESITY

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Over the past decade, the UK Government has set recommended guidelines and action plans to encourage the population to eat a healthier diet and do more physical activity, partly in order to combat rising obesity levels. The Health Survey for England (HSE) collects data in relation to these guidelines, presenting an opportunity to examine differences between ethnic groups in meeting them. This report is based on results from the 2004 HSE.

The prevalence of obesity varies between ethnic groups in England with Black Caribbean, Black African and Pakistani women showing higher prevalence of obesity as measured by Body Mass Index (BMI = weight (kg)/height (m²)) than those in the general population and the prevalence was markedly lower for Chinese women (Sproston and Mindell, 2006). However, there is an increasing body of evidence that ethnic inequalities in health are mainly determined by social and economic inequalities (Nazroo, 2003).

In this project we investigate the independent effects of ethnicity, socio-economic characteristics and migration upon physical activity, diet and obesity for adults aged 16 and over and, for children aged 2-15, the effects of ethnicity and parental characteristics on physical activity, diet and obesity.

Key Findings

- Black African and Black Caribbean women were more likely than White women to be obese after controlling for a number of factors. However, none of the male minority ethnic groups were more likely to be obese than White males.
- Education was an important predictor of physical activity, diet and obesity after controlling for ethnicity and other factors. Mother's highest level of qualification was a strong predictor for physical activity, diet and obesity among girls, after controlling for ethnicity and other factors.
- Indian, Pakistani, Bangladeshi and Chinese women were all less likely to meet the physical activity guidelines than White women after controlling for age, migration, educational qualifications, economic activity, household income and area-level deprivation. Pakistani and Bangladeshi men were less likely than White men to meet the physical activity guidelines.
- Men from most ethnic groups were more likely to consume five or more portions of fruit and vegetable per day (5-a-day) than White men. Pakistani and Bangladeshi women were more likely than White women to consume 5-a-day.
- Maternal physical activity had a strong association with child physical activity and maternal 5-a-day consumption with child 5-a-day consumption. Parental obesity was a major predictor of childhood obesity, after controlling for ethnicity and other factors.

Data and methods used in the study

We used data from the HSE for 2004. The survey contained an ethnic boost providing data on Black Caribbean, Black African, Indian, Pakistani, Bangladeshi, Chinese, Irish and White groups. Key outcomes of the analysis were obesity, physical activity and fruit and vegetable consumption for adults and children. For adults and children, a series of logistic regression models were developed for each of the three outcomes. The adult models controlled for age, ethnicity, migration, educational qualifications, economic activity, household income and area-level deprivation (physical activity levels and levels of fruit and vegetable consumption were also included in the obesity models). For children, models included information about ethnicity, parental socio-economic characteristics, parental obesity, parental



physical activity and parental consumption of fruit and vegetables.

Adult obesity was measured by BMI which is an internationally recognised measurement of obesity and overweight. The analyses used a dichotomous variable of obese/not obese with obese defined as a BMI of more than 30kg/m for adults. Children were classified as obese/not obese using the International Obesity Task Force (IOTF) age-specific thresholds (Cole *et al.*, 2000). Physical activity for adults was defined as meeting/not meeting the current UK physical activity guideline of 30 minutes of at least moderate intensity physical activity (including walks of 30 minutes or more at a fairly brisk or fast pace, heavy housework, gardening, DIY, sports and exercise and occupational activity) five days per week. Fruit and vegetable intake for adults and children was defined as meeting the UK guideline of eating/not eating five or more portions of fruit or vegetables a day.

Results

The exploratory analysis — with no controls (Figures 1-3) showed gender differences within ethnic groups for the three outcomes of physical activity, fruit and vegetable consumption and obesity, so separate logistic regression models were run for men and women.

Ethnicity and physical activity

The results of the regression analysis, including the controls listed above, showed that Indian, Pakistani, Bangladeshi and Chinese women were less likely to meet the physical activity guidelines than the white female reference group (Figure 4). The White reference group has an odds ratio value of 1. For men, Pakistanis and Bangladeshis were less likely to be physically active than the White reference group. Among children (Figure 5), Black Caribbean, Indian

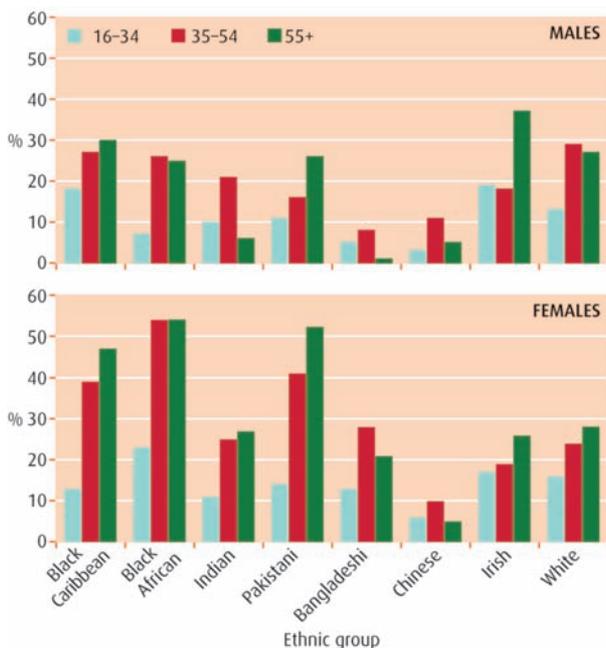


FIGURE 1. PERCENTAGE BMI OBESE BY AGE GROUP, AGED 16+

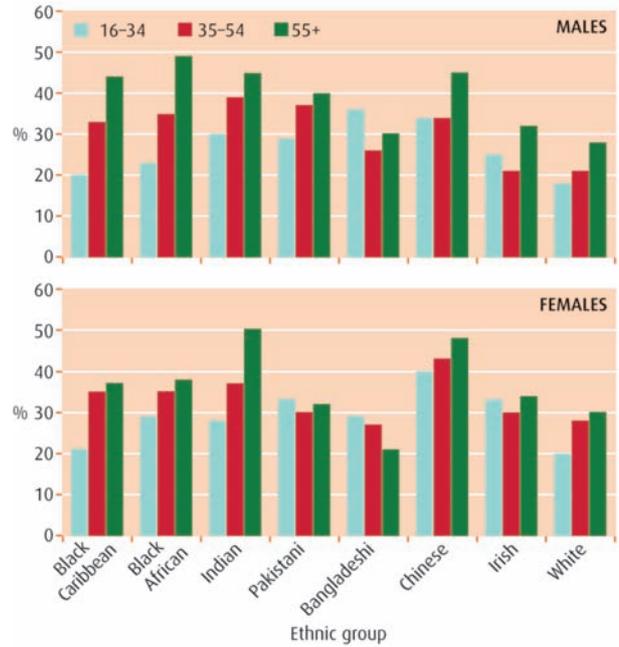


FIGURE 2. PERCENTAGE EATING 5-A-DAY BY AGE GROUP AND ETHNIC GROUP, AGED 16+

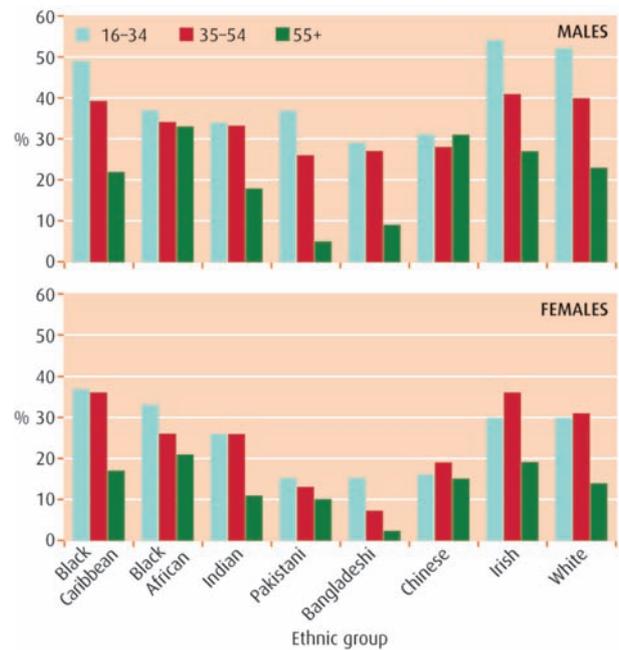


FIGURE 3. PERCENTAGE MEETING PHYSICAL ACTIVITY GUIDELINES BY AGE GROUP AND ETHNIC GROUP, AGED 16+

and Chinese boys and Black African, Indian and Pakistani girls were less likely to meet the recommended children’s physical activity guidelines than their white counterparts after controlling for other factors.

Ethnicity and fruit and vegetable consumption

The logistic regression results for fruit and vegetable consumption (not shown here) showed that Black

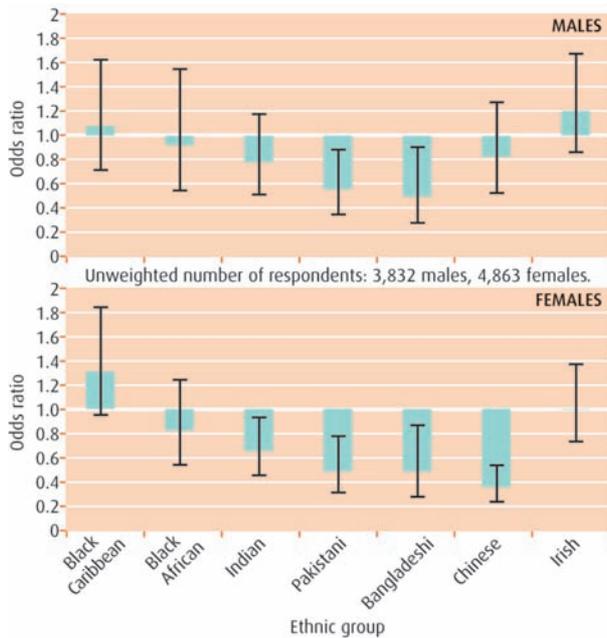


FIGURE 4. ODDS RATIOS: PHYSICAL ACTIVITY, AGED 16+

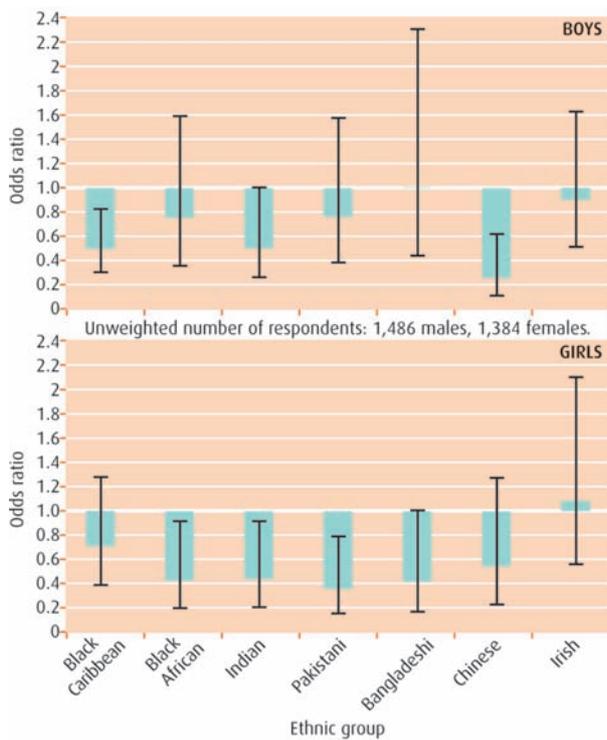


FIGURE 5. ODDS RATIOS: PHYSICAL ACTIVITY, AGED 2-15

Caribbean, Indian, Pakistani, Bangladeshi and Chinese adult males were more likely than White adult males to eat five or more fruit or vegetables per day (5-a-day) after controlling for other factors. In comparison, only Bangladeshi and Pakistani females were more likely than White females to eat 5-a-day. Black Caribbean, Pakistani, Bangladeshi and Irish boys were more likely than white boys to eat 5-a-day, however, the confidence intervals were very wide. There were no significant ethnic differences in the likelihood to eat 5-a-day amongst girls.

Ethnicity and obesity

For adult obesity (Figure 6) Indian, Pakistani, Bangladeshi and Chinese men had significantly lower odds of being obese than White men, after controlling for other factors, whilst Black Africans, Black Caribbean and Irish men were not significantly different to White men. The results showed different patterns for women, with Black Caribbean and Black African women more likely to be obese than White women (odds ratios of 2 and 3 respectively), while Chinese women remained nearly three times less likely to be obese than white women. The logistic regression models for children showed that Black African boys and girls had higher odds of obesity than the White reference group in models that include a full set of controls.

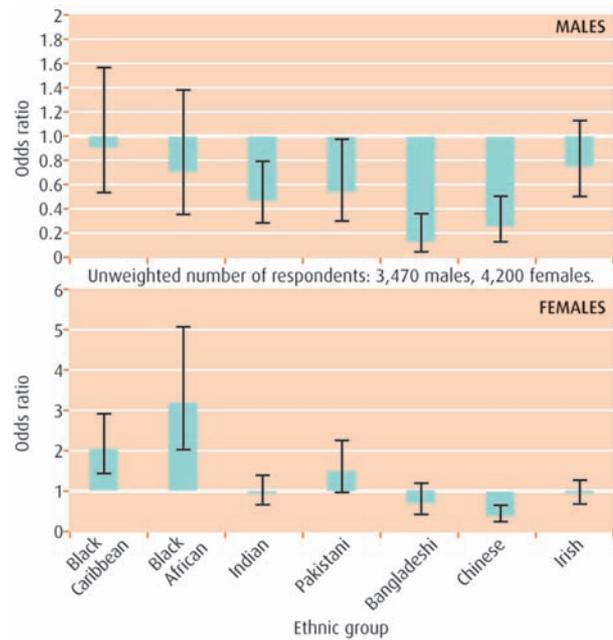


FIGURE 6. ODDS RATIOS: OBESITY, MALES AND FEMALES AGED 16+

Socio-economic determinants

Only a few of the socio-economic characteristics included in the logistic regression models were predictors of obesity, physical activity and fruit and vegetable consumption after controlling for other factors.

Highest educational level was a strong predictor for all three outcomes (physical activity, fruit and vegetable consumption and obesity). Men and women with no qualifications or low level qualifications had higher odds of being obese than those with degree-level qualifications. For men, those with qualifications below degree-level had higher odds of meeting the physical activity guidelines than those with degrees or equivalent but this may reflect higher levels of occupational activity among those less qualified. Both men and women with degree-level qualifications were more likely than those with lower-level qualifications to eat 5-a-day. For children, girls with mothers who had no qualifications were less likely to meet the activity guidelines and more likely to be obese than those whose mothers had a degree level qualification or higher. Mother's level of qualification was also an

important predictor of fruit and vegetable consumption among children (for both boys and girls).

Employment was a significant predictor of increased physical activity for men and women while boys with unemployed mothers were less likely to meet the recommended activity guidelines than those with mothers in employment. Income was significant for the consumption of 5-a-day; both males and females with higher household incomes were more likely to eat 5-a-day than those with lower household incomes. Low household income was also a predictor of obesity for women.

Migration

Migration was a significant predictor of fruit and vegetable consumption; females who migrated to Britain as an adult were more likely than those born in Britain to eat 5-a-day but there was no such difference for males. Girls with mothers who were born outside Britain were more likely to consume 5-a-day than those with mothers born in Britain. Migration was not a significant predictor of obesity or physical activity when holding other factors constant.

Diet and physical activity as predictors of obesity

Not meeting the physical activity guidelines had a significant effect on the likelihood of being obese (by comparison with the reference categories) for both men and women. Fruit and vegetable consumption was not a significant predictor of obesity. This can be explained by the fact that fruit and vegetable consumption is only a partial measure of diet and does not reflect eating habits as a whole. In addition, there is also evidence that self-reported data on food consumption may be inaccurate.

Parental diet, physical activity and obesity

Mothers' physical activity level had a positive influence on both boys' and girls' physical activity levels after controlling for other factors. However, fathers' activity level was not significant. Not surprisingly, parental consumption of 5-a-day was a strong predictor of child consumption; both maternal and paternal consumption were significant for both boys and girls. Parental characteristics were important in explaining children's obesity — in particular mother's obesity for girls and father's obesity for boys.

Policy implications and impacts

Black African and Black Caribbean women were more likely to be obese than White women but there was no difference between Black African or Black Caribbean men

and White men. This remains unexplained and requires more work to establish the various roles of life-style and eating patterns, occupation or body-image preference.

The very low levels of obesity for Chinese men and women — with no indication of an increase among younger generations — is not readily explained by levels of physical activity or 5-a-day, and again needs research in more depth to identify whether diet (using a better measure) plays a major role or whether there are additional factors.

The low levels of physical activity amongst Pakistani and Bangladeshi men and women suggest that policies aimed at increasing physical activity should target these ethnic groups. However, as levels were low among women and men, they cannot be simply explained by cultural barriers for women.

The results highlight the importance of recognising differences in levels of physical activity, diet and obesity not just between ethnic groups, but also between those with different levels of educational qualifications. The results suggest policies should target those with lower levels of education in order to combat obesity and encourage a healthy diet.

Parental BMI was a major predictor of childhood obesity, after controlling for ethnicity and other factors. These results suggest that interventions aimed at reducing childhood obesity should focus on parental characteristics, but they also need to be sensitive to gender and ethnic differences. The results suggest that maternal education may be a route for tackling obesity but it seems that girls are more receptive than boys.

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