Food insecurity and low income in an English inner city


Abstract

Background Low incomes may not provide the minimum requirements for healthy living. We evaluated experiences of food insecurity in relation to income in inner London.

Methods Subjects attending 10 general medical practices completed a short self-administered questionnaire, including the short form Household Food Security Scale and a short food frequency questionnaire.

Results Responses were obtained from 431/495 (87 per cent) subjects. Overall 87 (20 per cent) of subjects were classified as food insecure. Food insecurity was negatively associated with household income ($p = 0.004$). University-educated subjects (8 per cent) were less often food insecure than all others (26 per cent). Subjects who were food insecure were less likely to report eating fruit daily (food secure 48 per cent, food insecure 33 per cent, $p = 0.017$) or vegetables or salads daily (food secure 56 per cent, food insecure 34 per cent, $p = 0.002$).

Conclusions Experiences of food insecurity may be common in households with incomes at the level of the UK national minimum wage or lower.

Keywords: food security, dietary intakes, income, socio-economic status

Introduction

In the United Kingdom, people in low-income households have low intakes of fruit and vegetables and low micronutrient intakes. For these households sources of lower priced, healthy foods may be relatively inaccessible. Morris et al. recently estimated that the cost of achieving recommended dietary intakes would account for between 20 and 24 per cent of a minimum income required for healthy living. Their study estimated that the minimum income required for healthy living was probably higher than the UK national minimum wage.

Food insecurity is evidently an important problem in middle- and low-income countries with important implications for public health. Recently, US workers have developed the concept of food insecurity as it applies to populations of high-income countries. Food insecurity has been defined as the ‘limited or uncertain availability of nutritionally adequate safe foods, or limited or uncertain ability to acquire foods in socially acceptable ways’. Food insecurity is socially defined and includes problems with the quantity and quality of the food available, uncertainty about the supply of food, and experiences of going hungry. Experiences of food insecurity include running out of food, running out of money to buy food, skipping meals, experiencing hunger and being unable to buy food, or buying cheaper foods because of financial constraints. Estimates suggest that up to 12 per cent of US households may experience some degree of food insecurity. Food insecurity has been associated with unfavourable food choices and it has been suggested that food insecurity may predispose to the development of obesity.

Previous UK studies of inequalities of diet and nutrition have studied the availability and consumption of different foods. In the present study, we aimed to evaluate experiences of food insecurity in relation to income among attenders at general medical practices in inner London.

Methods

The study was conducted as part of a medical undergraduate special study module (SSM) in public health. The SSM programme has been approved as an educational activity and subjects gave informed verbal consent to self-completion of an anonymous questionnaire. We selected 10 general practices located in South East London. These were chosen because they were located in areas that ranged from very deprived inner city areas to more affluent suburban areas. Within practices, we asked consecutive adults who were waiting for appointments on the survey day to complete the study questionnaire. The self-
administered questionnaire included the six-item Short Form Household Food Security Scale (HFFS). The scale includes items concerning experiences of cutting the size of meals or skipping meals because of lack of money for food, being hungry but not eating because of an inability to afford food, food not lasting and not having enough money to buy more, and being unable to afford balanced meals. Subjects were classified as food insecure if they responded positively to two out of the six items in the HFSS, and food insecure with hunger if they answered five out of the six questions positively. The highest frequency of ‘not known’ responses for any of the six items of the HFSS was seven (<2 per cent). These were therefore combined with negative responses. However, in a sensitivity analysis omitting cases with ‘not known’ responses made negligible difference to the results. The questionnaire also included items concerning self-rated health, long-term disability, educational qualifications, employment status, household income and food choices. The latter included a short food frequency questionnaire from the Health Survey for England 1994. These items have also been used in a study of food insecurity in Trinidad and Tobago. For

<table>
<thead>
<tr>
<th></th>
<th>Food secure</th>
<th>Food insecure</th>
<th>Odds ratio (95% CI)*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (median, range)</strong></td>
<td>40 (16, 86)</td>
<td>39 (17, 80)</td>
<td>0.98 (0.96–1.00)</td>
<td>0.084</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>119 (79)</td>
<td>31 (21)</td>
<td>—</td>
<td>0.134</td>
</tr>
<tr>
<td>Women</td>
<td>223 (80)</td>
<td>55 (20)</td>
<td>0.84 (0.48–1.47)</td>
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<tr>
<td><strong>Self-rated health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good/very good</td>
<td>179 (81)</td>
<td>42 (19)</td>
<td>—</td>
<td>0.301</td>
</tr>
<tr>
<td>Average</td>
<td>135 (80)</td>
<td>33 (20)</td>
<td>0.57 (0.27–1.24)</td>
<td></td>
</tr>
<tr>
<td>Bad/very bad</td>
<td>29 (71)</td>
<td>12 (29)</td>
<td>0.88 (0.32–2.42)</td>
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<tr>
<td><strong>Long-term disability</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>292 (81)</td>
<td>67 (19)</td>
<td>—</td>
<td>0.643</td>
</tr>
<tr>
<td>Yes</td>
<td>49 (72)</td>
<td>19 (28)</td>
<td>1.37 (0.65–2.87)</td>
<td></td>
</tr>
<tr>
<td><strong>Monthly household income after tax (UK£)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>£670</td>
<td>73 (65)</td>
<td>40 (35)</td>
<td>15.4 (2.03–117.7)</td>
<td>0.0041</td>
</tr>
<tr>
<td>£1250</td>
<td>90 (76)</td>
<td>28 (24)</td>
<td>6.61 (0.97–44.9)</td>
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<tr>
<td>£2500</td>
<td>102 (88)</td>
<td>14 (12)</td>
<td>2.31 (0.44–12.3)</td>
<td></td>
</tr>
<tr>
<td>&gt;£2500</td>
<td>58 (95)</td>
<td>3 (5)</td>
<td>—</td>
<td></td>
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<tr>
<td><strong>Highest educational qualifications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>No qualifications</td>
<td>85 (79)</td>
<td>22 (21)</td>
<td>2.09 (0.85–5.16)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>NVQ</td>
<td>19 (66)</td>
<td>10 (34)</td>
<td>3.96 (2.12–7.40)</td>
<td></td>
</tr>
<tr>
<td>O/A levels</td>
<td>98 (73)</td>
<td>36 (27)</td>
<td>3.83 (1.35–11.7)</td>
<td></td>
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<tr>
<td>Technical qualification</td>
<td>22 (69)</td>
<td>10 (31)</td>
<td>9.43 (3.14–28.3)</td>
<td></td>
</tr>
<tr>
<td>University degree</td>
<td>93 (92)</td>
<td>8 (8)</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Not known</td>
<td>21 (91)</td>
<td>2 (9)</td>
<td>1.10 (0.21–5.68)</td>
<td></td>
</tr>
<tr>
<td><strong>Employment status</strong></td>
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<td></td>
</tr>
<tr>
<td>Full-time work</td>
<td>138 (86)</td>
<td>22 (14)</td>
<td>—</td>
<td>0.060</td>
</tr>
<tr>
<td>Part-time work</td>
<td>48 (79)</td>
<td>13 (21)</td>
<td>1.47 (0.73–2.94)</td>
<td></td>
</tr>
<tr>
<td>Looking for work</td>
<td>17 (63)</td>
<td>10 (37)</td>
<td>1.46 (0.52–4.12)</td>
<td></td>
</tr>
<tr>
<td>Retired</td>
<td>62 (84)</td>
<td>12 (16)</td>
<td>1.01 (0.41–2.50)</td>
<td></td>
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<tr>
<td>Home duties</td>
<td>36 (75)</td>
<td>12 (25)</td>
<td>1.42 (0.47–4.30)</td>
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<tr>
<td>Disabled/long-term sick</td>
<td>17 (59)</td>
<td>12 (41)</td>
<td>2.38 (0.56–10.1)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>19 (83)</td>
<td>4 (17)</td>
<td>0.45 (0.04–4.53)</td>
<td></td>
</tr>
<tr>
<td>Not known</td>
<td>7 (78)</td>
<td>2 (22)</td>
<td>1.48 (0.19–11.8)</td>
<td></td>
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<tr>
<td><strong>Cigarette smoking</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-smoker</td>
<td>137 (81)</td>
<td>32 (19)</td>
<td>—</td>
<td>0.832</td>
</tr>
<tr>
<td>Current smoker</td>
<td>133 (77)</td>
<td>40 (23)</td>
<td>1.20 (0.59–2.47)</td>
<td></td>
</tr>
<tr>
<td>Ex-smoker</td>
<td>71 (83)</td>
<td>15 (17)</td>
<td>0.97 (0.38–2.49)</td>
<td></td>
</tr>
<tr>
<td>Not known</td>
<td>3</td>
<td>0</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

Figures are frequencies (per cent of row total) and odds ratios (95 per cent confidence interval) from logistic regression model.

*Odds ratios were adjusted for each of the variables shown.

†Test for trend.
analysis, items were categorized as shown in Table 1. To evaluate the independent associations of explanatory variables, a multiple logistic regression model was fitted with robust standard errors to allow for clustering of responses by general practices.12

Results

We approached 495 patients and 431 (87 per cent) responded. The median (range) age of subjects was 40 (16–86) years, and 278 (65 per cent) were women. Overall 87 subjects (20 per cent; 95 per cent confidence interval (CI) 16–24 per cent) were classified as food insecure and 28 (6 per cent; 95 per cent CI 4–9 per cent) were classified as food insecure with hunger. At the general practice level, the number of participating subjects ranged from 31 to 79 per practice, and the proportion with food insecurity by practice ranged from 3 to 32 per cent.

The characteristics of food insecure subjects are shown in Table 1. In univariate analyses, food insecurity was associated with lower household incomes, lower educational attainment and ‘looking for work’ (odds ratio 3.69, 95 per cent CI 1.88–7.25). After omitting three cases with missing age, and four cases with not known values for self-rated health or smoking status, the regression model was based on responses from 424 cases. In the multiple regression model, food insecurity was associated with lower household income (test for trend p = 0.004) and with lower educational attainment. Among those with household incomes of less than £670 per month (after tax and benefits), which is approximately equivalent to the national minimum wage of £4.20 per hour, 35 per cent were classified as food insecure. Among those with household incomes of £671–£1250 per month, 24 per cent were food insecure. Subjects with university education were less often food insecure than less educated groups. In this sample, subjects with technical qualifications (such as nursing and teaching) were more likely to be food insecure than those with no qualifications. This association was based on 32 subjects of whom 25 were women, and only 16 were in full-time work. The association appeared after adjusting for confounders and imbalance in the distribution of unmeasured confounders, such as number of persons in the household, might possibly account for this result.

Table 2 shows the proportion of subjects consuming different food groups on a daily basis. In general, the patterns of food consumption were similar in the food insecure and food secure groups but subjects who were food insecure were less likely to eat either fruit or vegetables or salads daily when compared with food secure subjects.

Discussion

Our results suggest that food insecurity may be frequent among people who attend for primary care consultations in this English inner city setting. South East London includes some of the most socio-economically deprived areas in the United Kingdom. In this context, the proportion of subjects reporting food insecurity was higher than from population surveys in the USA.6 Whereas food insecurity with hunger was uncommon, lesser degrees of food insecurity appeared to be important in influencing food choices. Subjects who were food insecure were less likely to be frequent consumers of fruits and vegetables.

A negative association between socio-economic status and consumption of fruit and vegetables has been well documented.13 An association between assessed food insecurity and low consumption of fruit and vegetables has also been reported in previous studies.8,14 The Acheson Inquiry into Inequalities in Health concluded that these food choices may have long-term consequences for health.15 For example, it has been proposed that subjects who are food insecure may chose to consume more energy-dense foods, in preference to fruit and vegetables, leading to the development of obesity.9,15–17

Our study had several limitations. The sample was restricted to subjects attending for primary care. As such they may have had poor health, which has been shown in some studies to be associated with food insecurity.5 Conversely, homeless people,
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or people who experienced other difficulties registering with a general practice, may have been under-represented. In view of these potential biases, our results are not suitable for estimating the prevalence of food insecurity in the general population. Nevertheless, they provide a strong indication that population-based studies of food security are needed. We used standardized instruments to assess both food insecurity and food choices but our short questionnaire did not include questions about the numbers of adults and children in households. This limits interpretation of information concerning household income.

In spite of these limitations, we feel it is safe to conclude that food insecurity may represent an appreciable problem in English inner cities. A recent review of interventions to improve nutrition in children, and the findings of the Acheson report, made several recommendations to address the problem of food poverty. These might include increasing the value of benefits to parents in low-income families, increasing provision of meals and other food in schools, and increasing the accessibility of food retail outlets in areas where they are lacking. The concept and measurement of food insecurity may prove to be of value in evaluating and monitoring such interventions.

References

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8 Tarasuk VS. Household food insecurity with hunger is associated with women’s food intakes, health and household circumstances. J Nutr 2001; 131: 2670–2676.

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