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Sociodemographic, health and lifestyle predictors of poor diets

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Abstract

Objective: Poor-quality diet, regarded as an important contributor to health inequalities, is linked to adverse health outcomes. We investigated sociodemographic and lifestyle predictors of poor-quality diet in a population sample.
Design: A cross-sectional analysis of the Survey of Lifestyle, Attitudes and Nutrition (SLÁN). Diet was assessed using an FFQ (*n* 9223, response rate = 89 %), from which a dietary score (the DASH (Dietary Approaches to Stop Hypertension) score) was constructed.
Setting: General population of the Republic of Ireland.
Subjects: The SLÁN survey is a two-stage clustered sample of 10 364 individuals aged 18 years.
Results: Adjusting for age and gender, a number of sociodemographic, lifestyle and health-related variables were associated with poor-quality diet: social class, education, marital status, social support, food poverty (FP), smoking status, alcohol consumption, underweight and self-perceived general health. These associations persisted when adjusted for age, gender and social class. They were not significantly altered in the multivariate analysis, although the association with social support was attenuated and that with FP was borderline significant (OR = 1·2, 95 % CI 1·03, 1·45). A classical U-shaped relationship between alcohol consumption and dietary quality was observed. Dietary quality was associated with social class, educational attainment, FP and related core determinants of health.
Conclusions: The extent to which social inequalities in health can be explained by socially determined differences in dietary intake is probably underestimated. The use of composite dietary quality scores such as the DASH score to address the issue of confounding by diet in the relationship between alcohol consumption and health merits further study.

Keywords
Dietary quality
DASH score
Dietary inequalities

Diets are not consumed in isolation but are the product of a complex interplay between individuals' economic circumstances[1–3], their social networks[4] and cultural beliefs[4,5] against the backdrop of both their individual[6,7] and global environments[8] and broader lifestyle behaviours[9–11]. The impact of poor dietary habits on health outcomes is an important focus of contemporary health promotion strategies. It is recognised that the social determinants of dietary behaviour are multifaceted. Research that clarifies the determinants of dietary behaviour should help us target health promotion initiatives more effectively.

Many indices have been developed over the past decades to assess dietary quality within specific populations on the basis of national dietary guidelines[12–14]. Recently, the Dietary Approaches to Stop Hypertension (DASH) score was developed to assess adherence to the 'DASH eating plan', which has been successfully shown to substantially reduce blood pressure among hypertensive and normotensive adults[12] and reduce LDL cholesterol levels[15]. Adherence to a DASH-style diet has also been associated with a lower risk of CHD and stroke, particularly among middle-aged women over a 24-year period[12], highlighting the potential long-term benefits of the DASH diet in preventing CVD and other chronic diseases among healthy adults.

Using a DASH score as an index of dietary quality, we examined the sociodemographic predictors of a poor-quality diet with reference to social indicators (social support, food poverty (FP) and self-perceived area deprivation), lifestyle behaviours (smoking status and alcohol consumption) and health outcomes (BMI and pre-existing diabetes).

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Methods

Study design

The present survey was the third Health and Lifestyle Survey in Ireland conducted in 2007[16–18] involving a nationally representative sample of 10 364 adults (62 % response rate) to whom a detailed health and lifestyle questionnaire was administered by interview. A total of 9223 (89 %) adults completed the FFQ, which was an adapted version of the one used in the European Prospective Investigation into Cancer and Nutrition[19] validated for use in the Irish population[20]. Participants who did not complete the FFQ were excluded from the present analysis.

Sampling

The survey population comprised adults aged ≥18 years living in private households in Ireland. Full details of the sampling frame can be found elsewhere[16]. In summary, the sampling frame used was the GeoDirectory, a list of all addresses in the Republic of Ireland, distinguishing between residential and commercial establishments. It was a multistage probability sample, where each dwelling had a known probability of selection. The sample was weighted to closely approximate the Census 2006 figures for gender, age, marital status, education, occupation, region, household size and ethnicity.

FFQ

Full details of the FFQ have been documented elsewhere[21]. Participants were asked to indicate their average use of food items during the previous year. The frequency of consumption of a medium serving or a common household unit was asked for each food item and later converted into quantities using standard portion sizes. The frequency categories were 'never or less than once a month', '1–3 times/month', '1 time/week', '2–4 times/week', '5–6 times/week', '1 time/d', '2–3 times/d', '4–5 times/d' and '≥6 times/d'. Individual food items were combined into food groups, with like-constituent foods being grouped together.

Dietary quality assessment

On the basis of a validated study by Fung *et al.*[12], we constructed a DASH score for each FFQ respondent. This was a composite score derived from standard food groups within the FFQ as described by Fung *et al.*[12]. For each food group, consumption was divided into quintiles and participants were classified according to their intake ranking. Consumption of healthy food components was rated on a scale of 1–5: the higher the score the more frequent the consumption of that food; that is, those in quintile 1 had the lowest consumption and received a score of 1; conversely, those in quintile 5 had the highest consumption and received a score of 5. Less-healthy dietary constituents, where low consumption is desired, were scored on a reverse scale, with lower consumption receiving the higher scores. Component scores were summed up and an overall DASH score for each person was calculated; a lower score indicated a poor dietary quality.

Health and lifestyle questionnaire

Sociodemographic characteristics

The European Socio-Economic Classification (ESeC) was used to examine social class differences in dietary quality. ESeC was developed by the European Commission for comparative social analysis and is the official European social classification[22]. It aims to differentiate positions within labour markets and production units in terms of their typical 'employment relations'. ESeC differentiates among employees according to their source of income, economic security and prospects of economic advancement, as well as on the basis of their location with regard to systems of authority and control at work. Data on occupational position were coded to the International Standard Classification of Occupations 1988. This information combined with employment status, supervisory or management position and number managed or employed yields the ESeC position[22]. In its complete form, ESeC differentiates between nine class locations. We used a collapsed form that identified four classes and an unknown/unclassified grouping. The classifications were as follows:

1. Large employers/professionals/managers.
2. Intermediate/lower supervisory and technicians.
3. Self-employed and small employers.
4. Lower sales/service/lower technical and routine occupations.
5. Unknown/unclassified.

Where individuals were currently not in the labour market, information on their most recent job was requested. Information on the ESeC position of the main earning member in the household was sought. This information was used to construct a household class using the dominance procedure, where the position of the individual with the highest class position in the household was taken as that of the household[23].

Behavioural and lifestyle characteristics

A 'current smoker' was defined as one who smoked 'every day' or on 'some days' or one who stated 'having smoked at least 100 cigarettes during my lifetime'. Respondents were classified as either current smokers or non-smokers. Average alcohol consumption was estimated as the units of alcohol consumed per week. A single question was included on self-rated health. Respondents were asked to rate their health on a 5-point scale ranging from 'excellent' to 'poor'. Respondents were asked whether they had experienced any chronic illness, including diabetes, from a predefined list in the past 12 months.

International Physical Activity Questionnaire
A series of questions were asked relating to the time spent being physically active. The responses were used to calculate the International Physical Activity Questionnaire score for each respondent (http://www.ipaq.ki.se/scoring.pdf). These scores were classified as high (approximately equivalent to >10 000 steps/d), moderate (approximately equivalent to 5000–10 000 steps/d) or low (approximately equivalent to <5000 steps/d). For this analysis, a binary variable was created: 'low' or 'moderate/high', with 'low' defined as being physically inactive.

BMI
SLÁN 2007 respondents were asked to self-report their own height and weight. BMI was calculated as weight in kilograms divided by the square of height in metres (kg/m^2) and individuals were classified as overweight or obese on the basis of a BMI $\geq 25{\cdot}00\,kg/m^2$ or $\geq 30{\cdot}00\,kg/m^2$, respectively.

Social indicators

Food poverty
FP was assessed by asking 'Can you afford to buy the foods you want?' Responses permitted were 'always', 'usually', 'sometimes', 'rarely' and 'never'. Participants were grouped as having 'no FP' if they responded 'always', 'possible FP' if they responded 'usually' and 'probable FP' if they responded 'sometimes', 'rarely' or 'never'.

Social support
Three questions on social support structures were asked: 'How many people are so close to you that you can count on them if you have serious personal problems?' Responses permitted were 'none', 'one or two', 'three to five' and 'more than five'. 'How much friendly interest do people take in what you are doing?' Responses permitted were 'a lot', 'some', 'uncertain', 'little' and 'none'. 'How easy is it to get practical help from your neighbours if you should need it?' Permitted responses were 'very easy', 'easy', 'possible', 'difficult' and 'very difficult'. These questions formed the Oslo Social Support Scale[24]. Details of the social support measures have been reported elsewhere[25].

Area deprivation
Respondents were asked 'How much of a problem are each of the following in your neighbourhood/area – rubbish or litter lying around; vandalism and deliberate damage to property; insults or attacks to do with someone's race or colour; house break-ins; poor public transport; lack of food shops/supermarkets that are easy to access; graffiti on walls or buildings; people being drunk in public; lack of open public places'. Permitted answers were 'a big problem', 'a bit of a problem' and 'not a problem'. An area-deprivation score was calculated on the basis of responses. Scores ranged from 1 (a big problem) to 3 (no problem) for each problem, and an overall score ranged between 9 and 27. The score was collapsed into a categorical variable with four options: 'no', 'low', 'medium' or 'high' self-perceived area deprivation.

Statistical analysis
Data were analysed using the Statistical Package for the Social Sciences statistical software package version 17·0 (SPSS Inc., Chicago, IL, USA). Associations between mean DASH scores and demographic, lifestyle and behavioural characteristics have been described using ANOVA.

Relationship between dietary quality (DASH score) and hypothesised predictor variables was assessed using univariate analysis and an ordinal logistic regression. The DASH score was collapsed to an ordinal variable on the basis of DASH score quintiles and entered as the dependent variable. A poor diet was defined as a DASH score in the lowest quintile. We present results as unadjusted; gender-stratified age adjusted; age, gender and social class adjusted; and fully adjusted.

Results

We have reported previously on the overall general characteristics of the study population[16,27]. In summary, the age, gender and sociodemographic profiles of respondents were comparable to the Census 2006 figures. Internal consistency of the DASH score was tested against variables not included in the original score. Respondents who rarely consumed fried food had higher mean DASH scores (26·3 (SD 4·7)) compared with those who consumed fried food daily (21·9 (SD 4·2)). Respondents who 'rarely' added salt to food at the table had higher mean DASH scores (26·2 (SD 4·8)) compared with those who 'always/usually' added salt to food (23·6 (SD 4·6)). On the basis of Cohen's standard effect size cut-off points[26], changes in DASH scores of 2·42, 1·45 and 0·48 represent a large, moderate or small effect size, respectively. Using the DASH score in the way it is reported does not necessarily measure adherence to the DASH diet per se. Table 1 shows the comparison of the DASH score across quintiles with the DASH diet recommendations. Those in the highest quintile (the best-quality diet) met the recommendations for fruit, vegetables and whole grain consumption. They also had the lowest consumption of red processed meat and salty snacks and the lowest Na intake compared with those in the lowest quintile (the worst-quality diet). Table 2 shows the unadjusted mean DASH scores presented by gender for key indicators, and Figs 1a and 1b present the age-adjusted OR for the likelihood of having a poor-quality diet (a DASH score in the lowest quintile). In the age-adjusted model, education, marital status and employment group remained significant demographic factors associated with dietary quality for men and women. Lifestyle behaviours also

Table 1 Comparison of DASH score with DASH diet recommendations: number of daily servings of food groups according to DASH score quintile

Food group	DASH score (quintile)					Recommended daily servings in DASH diet
	1	2	3	4	5	
Whole grains	1·46	1·93	2·18	2·43	2·73	3
Fruit	1·56	2·16	2·75	3·14	4·31	4–6
Vegetables	2·34	3·08	3·53	4·08	5·37	4–6
Legumes	0·32	0·35	0·37	0·40	0·51	3–6/week (0·64/d)
Low-fat dairy foods	0·51	0·85	0·98	1·24	1·71	2–4
Red processed meat	1·87	1·47	1·21	1·08	0·76	Limited
Sweetened snacks and beverages	3·65	2·34	1·82	1·35	0·86	Limited
Salty snacks	0·82	0·52	0·42	0·34	0·21	Limited
Na consumption	3684	3322	3109	2961	2660	2300 mg

DASH, Dietary Approaches to Stop Hypertension.

remained significant predictors of dietary habits. Being a smoker and a non-moderate drinker was significantly associated with poor-quality diet (Figs 1a and 1b). Individual health outcomes associated with poor dietary quality differed somewhat between men and women in the age-adjusted models. Non-diabetic men had higher odds of having low DASH scores compared with diabetic respondents. Women who were classified as underweight (BMI $\leqslant 18{\cdot}49\,kg/m^2$) had significantly higher odds of having low DASH scores compared with normal-weight women. BMI status did not affect the dietary quality of men. In the age-adjusted model, the impact of social indicators on dietary quality differed between men and women (Figs 1a and 1b, respectively). Men with poor social support had higher odds (borderline significant) of having poor-quality diets compared with those with strong social support. Social support did not influence dietary quality in women. The presence of FP significantly affected dietary quality in men and women. Those with probable FP had higher odds of having poor-quality diets compared with those with no FP.

Table 3 shows the regression model adjusted for age, gender and social class, as well as the fully adjusted model. In the fully adjusted model, education and social class remained significantly associated with poor-quality diet. Respondents with low educational level had twice the odds of having a DASH score in the lowest quintile compared with those with tertiary education (OR = 2·0, 95% CI 1·69, 2·24). Lifestyle behaviours also remained significant influencing factors on dietary quality. Smokers had significantly higher odds of having poor-quality diets compared with non-smokers. A U-shaped trend was evident with alcohol consumption. Compared with moderate drinkers (1 to <7 units/week), non-drinkers had significantly higher odds of having poor-quality diets. The likelihood of having a poor-quality diet further increased with increased consumption of alcohol. Respondents who consumed more than 21 units of alcohol per week had almost twice the odds of having poor-quality diets compared with moderate drinkers. In the fully adjusted model (Table 3), health outcomes significantly affected dietary quality. Those with low levels of physical activity had higher odds of having poor-quality diets. Non-diabetic respondents had higher odds of having poor-quality diets compared with diabetic respondents. Underweight respondents had almost twice the odds of having poor-quality diets compared with normal-weight respondents. Rating one's general health as fair or poor increased the likelihood of having a poor diet compared with rating one's general health as excellent. In the fully adjusted model, the relationship between FP and dietary quality remained significant ($P = 0{\cdot}02$), whereas the relationships between dietary quality and social support and between dietary quality and self-perceived area deprivation were attenuated.

Discussion

Principal findings

The present research yielded four primary results. First, education and social class were associated with dietary quality. Second, lifestyle behaviours, in particular smoking status (being a smoker) and alcohol consumption (non-moderate consumption), significantly affected dietary quality. Third, BMI status (being underweight) and diabetes status (non-diabetic) were key indicators of poor dietary quality. Finally, adjustment at the individual level attenuated the relationship between social indicators and dietary quality.

These analyses aimed to explore the differences among predictors of dietary quality, particularly those influenced by gender and sociodemographic factors. It is well documented that men and women have different dietary patterns, and we expected differences to exist in the determinants of dietary quality. Therefore, we were surprised at the significant lack of differences in the main predictors of poor-quality diets between men and women.

Possible weaknesses

Limitations of the study include the cross-sectional design and the relatively low response rate (62%). However, this is similar to the response rates found in other major National Health and Lifestyle Surveys[17,18]. Data on non-participation were not available; however, sample weights were used, derived from the most recent Census[28]. Caution had to be

Table 2 Unadjusted mean DASH scores by gender and key demographic and lifestyle factors

	Dash score				
	Men (*n* 3680)		Women (*n* 3799)		
	Mean	SD	Mean	SD	*P**
Sociodemographic indicators					
Age group (years)					
18–29	22·5	4·7	24·7	4·8	<0·01
30–44	23·8	4·6	25·9	4·6	
45–64	24·9	4·7	26·6	4·7	
≥65	24·2	4·7	25·9	4·6	
Educational level					
Primary	23·3	4·7	25·1	4·7	<0·01
Secondary	23·6	4·6	25·6	4·6	
Tertiary	25·1	4·6	27·0	4·6	
European socio-economic classification					
Large employers, professional, managers	25·2	4·6	27·1	4·5	<0·01
Intermediate, lower supervisory occupations and technicians	23·8	5·0	26·3	4·5	
Self-employed and small employers	23·4	4·5	25·8	4·9	
Lower sales/service, lower technical and routine occupations	23·2	4·7	24·9	4·8	
Unknown/unclassified	23·1	4·6	24·7	4·5	
Marital status					
Married/cohabiting	24·6	4·6	26·3	4·7	<0·01
Separated/divorced/widowed	24·2	4·8	25·7	4·6	
Single/never married	23·0	4·5	25·4	4·8	
Lifestyle indicators					
Smoking status					
Non-smoker	24·4	4·7	26·2	4·7	<0·01
Smoker	23·7	4·8	25·7	4·8	
Alcohol consumption (units/week)					
1–<7	24·6	4·8	26·2	4·6	<0·01
No drink	24·1	4·5	25·9	4·9	
7–<14	24·1	4·8	26·0	4·6	
14–<21	23·4	4·5	25·7	4·9	
>21	22·9	4·7	24·7	5·7	
Self-reported general health					
Excellent	24·5	4·7	26·3	4·7	<0·01
Very good	24·2	4·8	26·4	4·6	
Good	23·6	4·8	25·6	4·8	
Fair	23·6	4·5	25·3	4·8	
Poor	23·8	4·7	25·0	4·5	
Physical activity					
Low	23·9	4·7	25·5	4·6	<0·01
Moderate	24·3	4·8	26·6	4·8	
High	24·2	4·2	26·6	3·8	
Health outcomes					
BMI (kg/m^2)					
Normal weight (⩽18·49)	23·7	5·0	26·0	4·7	0·012
Underweight (18·50–24·99)	22·7	4·1	24·2	5·2	
Overweight (25·00–29·99)	24·3	4·5	26·2	4·6	
Obese class I (30·00–34·99)	24·4	4·8	26·1	4·8	
Obese class II (⩾35·00)	23·7	4·0	26·2	4·8	
Diagnosed diabetes					
No	23·9	4·7	26·0	4·7	0·007
Yes	25·8	4·9	26·1	4·4	
Social indicators					
Food poverty					
None	24·0	4·8	26·2	4·7	<0·01
Possible	22·9	4·5	24·9	4·8	
Probable	22·7	4·4	24·6	4·4	
Social support					
Poor	23·6	5·0	25·6	4·8	<0·01
Medium	23·7	4·7	25·9	4·7	
Strong	24·4	4·7	26·1	4·8	
Self-perceived area deprivation					
No	24·1	4·6	25·9	4·6	0·074
Low	24·1	4·7	26·0	4·7	
Medium	24·1	4·9	26·2	4·8	
High	23·6	4·6	25·4	4·9	

DASH, Dietary Approaches to Stop Hypertension.
*Results presented are stratified by gender; *P* values relate to overall significant difference in DASH score across the predictor indicators independent of gender.

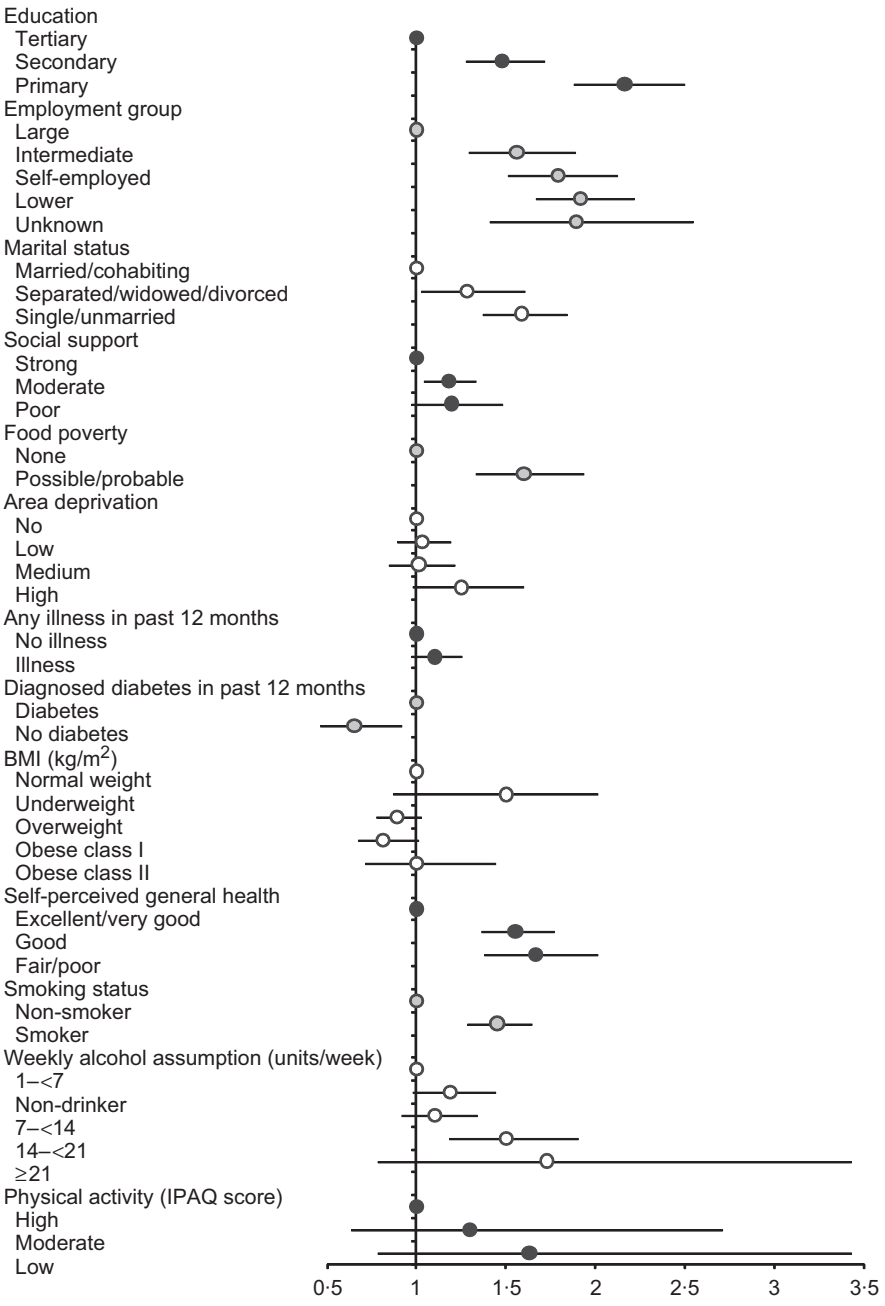


Fig. 1a Age-adjusted prevalence OR for poor-quality diet (DASH score in the lowest quintile) for men (DASH, Dietary Approaches to Stop Hypertension; IPAQ, International Physical Activity Questionnaire)

exercised when interpreting the results of the cross-sectional study. The exposure measurement of dietary intake could be influenced by a recall bias of the FFQ. Although the FFQ used in the present study had been validated previously for use in this population[18,20,29], all measurement errors associated with this retrospective method of dietary assessment were applicable. Social class was associated with poor-quality diet. However, given the cross-sectional design of the present study, it was not possible to determine the causal pathway of this association. Smoking and alcohol status were associated with dietary quality in the present study. However, we could not dismiss the possibility of reverse causation. The determinants of food choice and dietary behaviour are multifactorial – associations found in cross-sectional studies are not, by themselves, evidence of causality. Irrespective of the direction of causation, these modifiable behaviours have the potential to reduce morbidity and mortality from CVD and type 2 diabetes.

Implications of our findings

Lower levels of education and social class are significant predictors of poor dietary quality. Level of education

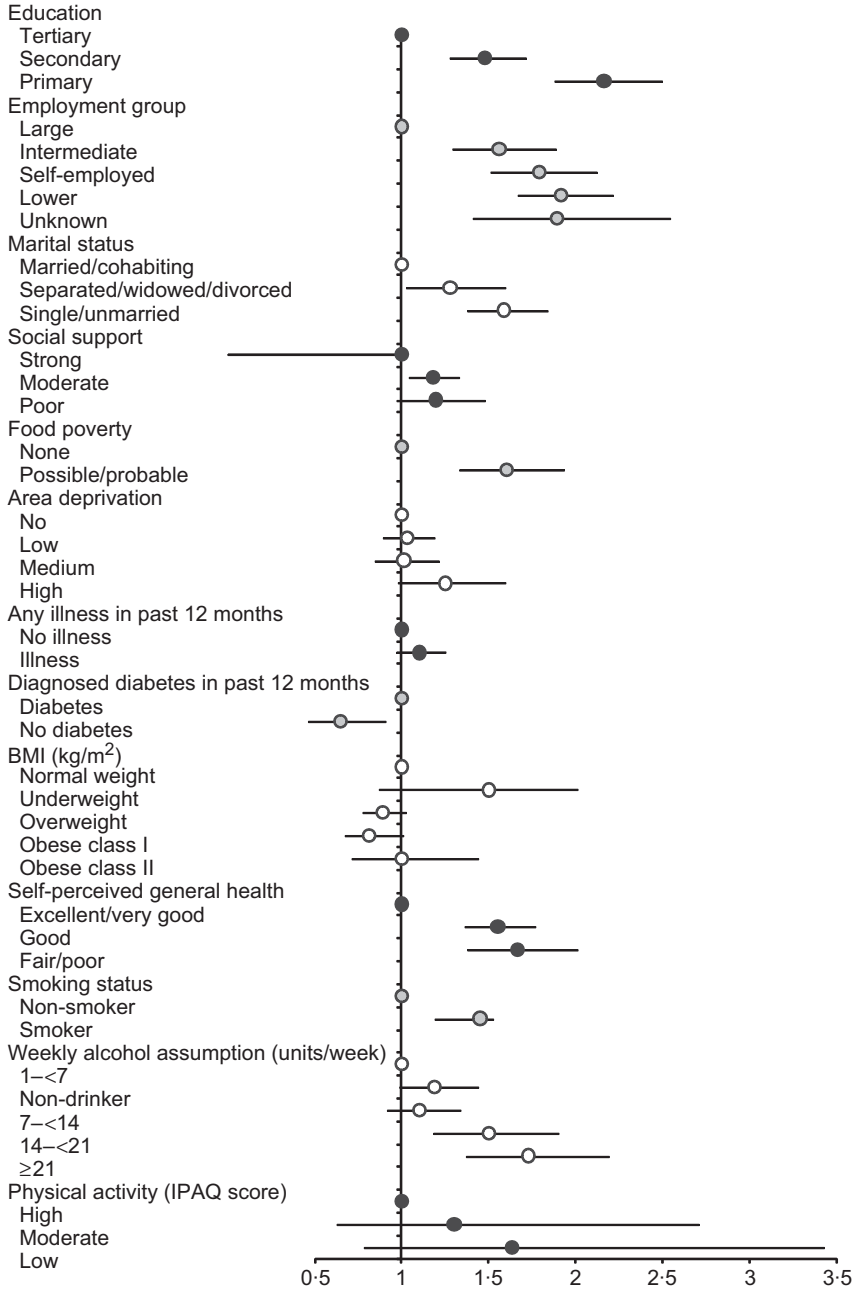


Fig. 1b Age-adjusted prevalence OR for poor-quality diet (DASH score in the lowest quintile) for women (DASH, Dietary Approaches to Stop Hypertension; IPAQ, International Physical Activity Questionnaire)

significantly influences occupational attainment, social class and therefore income[23]. Lower income is strongly associated with a less-healthy diet[3,30,31]. Even after controlling for social class, a more efficient measure of permanent or long-run income, level of education remains a significant predictor of dietary quality. This could suggest that education may also measure differences in levels of knowledge on health and cultural preferences that may also influence health behaviours, and diet and nutrition in particular[13].

In the battle against preventable chronic diseases, primary prevention through lifestyle and diet is essential and the present study highlights the importance of including measures of lifestyle in the interpretation of dietary quality and diet–disease relationships. We have highlighted a number of areas for further investigation. Given the U-shaped relationship between dietary quality and alcohol consumption, clarifying the causal pathway between the two is important in the study of diet–cardiovascular and alcohol–cardiovascular relationships.

Table 3 Sociodemographic, lifestyle and health predictors of poor-quality diet for men and women

	Each model adjusted for age, gender and social class			Fully adjusted model (*n* 4548)†		
	OR	95 % CI	*P* value	OR	95 % CI	*P* value*
European socio-economic classification						
Large employers, professionals, managers	–	–	–	1·0	–	<0·001
Intermediate, lower supervisory occupations and technicians	–	–		1·2	0·98, 1·37	
Self-employed and small employers	–	–		1·5	1·30, 1·84	
Lower sales/service, lower technical and routine occupations	–	–		1·5	1·30, 1·75	
Unknown/unclassified	–	–		1·4	1·06, 1·85	
Educational level (*n* 7523)						
Tertiary	1·0	–	<0·001	1·0	–	<0·001
Secondary	1·5	1·35, 1·67		1·6	1·36, 1·79	
Primary/some secondary	2·0	1·81, 2·27		1·8	1·57, 2·14	
Marital status (*n* 7510)						
Married	1·0	–	<0·001	1·0	–	0·25
Separated/divorced/widowed	1·2	1·09, 1·41		1·1	0·93, 1·34	
Single	1·2	1·09, 1·32		1·1	0·95, 1·25	
Social support (*n* 7444)						
Strong support	1·0	–	0·03	1·0	–	0·60
Moderate support	1·1	1·00, 1·20		1·1	0·94, 1·17	
Poor support	1·2	1·00, 1·36		1·1	0·88, 1·34	
Food poverty (*n* 7223)						
None	1·0	–	<0·001	1·0	–	0·02
Possible/probable	1·3	1·18, 1·50		1·2	1·03, 1·45	
Area deprivation (*n* 7392)						
No deprivation	1·0	–	0·40	1·0	–	0·42
Low deprivation	1·0	0·90, 1·11		1·0	0·85, 1·13	
Medium deprivation	0·9	0·81, 1·04		0·9	0·76, 1·05	
High deprivation	1·0	0·86, 1·23		0·9	0·67, 1·14	
Diabetes (*n* 7476)						
No	1·0	–	0·84	1·0	–	0·02
Yes	0·8	0·65, 1·03		0·7	0·47, 0·93	
BMI (*n* 7104; kg/m^2)						
Normal weight (18·50–24·99)	1·0	–	0·003	1·0	–	0·007
Underweight (⩽18·49)	1·6	1·20, 2·14		1·9	1·27, 2·89	
Overweight (25·00–29·99)	1·0	0·90, 1·08		1·0	0·89, 1·13	
Obese class I (30·00–34·99)	0·9	0·75, 0·99		0·8	0·69, 1·01	
Obese class II (⩾35·00)	0·9	0·75, 1·10		1·0	0·70, 1·30	
General health (*n* 7503)						
Excellent/very good	1·0	–	<0·001	1·0	–	<0·001
Good	1·4	1·24, 1·50		1·4	1·20, 1·50	
Fair/poor	1·5	1·32, 1·71		1·5	1·20, 1·80	
Smoker (*n* 7486)						
Non-smoker	1·0	–	<0·001	1·0	–	0·02
Smoker	1·2	1·12, 1·32		1·1	1·02, 1·27	
Alcohol consumption (*n* 6077; units/week)						
1–<7	1·0	–	<0·001	1·0	–	<0·001
No drink	1·1	1·01, 1·27		1·2	1·05, 1·38	
7–<14	1·1	0·94, 1·21		1·1	0·98, 1·31	
14–<21	1·4	1·12, 1·62		1·4	1·10, 1·69	
>21	1·6	1·34, 2·00		1·7	1·31, 2·01	
Physical activity (*n* 6276)						
High	1·0	–	<0·001	1·0	–	<0·001
Moderate	1·3	0·71, 2·39		1·1	0·51, 2·16	
Low	1·8	0·98, 3·32		1·4	0·69, 2·95	

*Linear test for trend.
†Model adjusted for age and gender, and all listed variables.

Further, the use of a composite dietary quality score, such as the DASH score, to address the issue of confounding by diet in the relationship between alcohol consumption and health merits further investigation. We have highlighted the fact that underweight has a more detrimental effect on dietary quality compared with overweight and obesity. It may be that these underweight individuals have lower food diversity and consume lower quantities of all foods, including healthy foods. Diet is an important component of the treatment of type 2 diabetes. Some studies suggest that individuals with diabetes may not follow the recommended dietary guidelines[32,33]. As expected, in the current study, being diabetic was a significant positive influencing factor on dietary quality among men.

Conclusion

Our findings emphasise the fact that dietary quality is strongly associated with social class and educational attainment and is influenced by core lifestyle behaviours. Results from prospective cohort studies confirm the importance of dietary and nutritional behaviours in preventing and reducing the risk of mortality[34,35] and morbidity[36–40]. However, lifestyle behaviours are not always included in studies that explore dietary quality and diet–disease relationships. Given the unequivocal diet–disease relationship, it is essential to explore the determinants of low-quality diet and contribute to the evidence base for public policy, health promotion and clinical practice on the prevention and management of chronic diseases. The present study highlights the importance of including measures of lifestyle in the interpretation of dietary quality and diet–disease relationships. It also highlights the need for a greater emphasis on health protection as opposed to traditional health educational measures in approaches to tackling chronic diseases.

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