The frequency of culturing stools from adults with diarrhoea in Great Britain

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SUMMARY

Utilizing the Office of Population Censuses and Surveys (OPCS) Omnibus Survey, it was possible to measure the frequency with which a stool culture was obtained following episodes of diarrhoea in adults. Interviewing over 8000 adults, over a 4-month period between October 1992 and January 1993, 633 persons (7·9%) reported one episode of diarrhoea in the previous month, and 5·4% of these individuals with diarrhoea reported that a stool had been requested for examination. No significant regional differences were observed with the sample size available. The estimate of the rate of diarrhoea in adults was just under one episode per person per year.

SUBJECTS AND METHODS

The frequency of infectious intestinal disease can be inferred from laboratory reports of identification of pathogens such as salmonella and campylobacter. This is done by the Public Health Laboratory Service, but is likely to underestimate the problem. Additional estimates of the frequency of enteric illness use data about persons coming to general practices, or use data from local morbidity surveys. The present study utilized the OPCS Omnibus Survey to measure the frequency with which a stool culture was obtained following an episode of diarrhoea.

Each month, the OPCS Omnibus Survey conducts interviews with approximately 2000 adult individuals (aged 16 or over) in private households in Great Britain [1]. The sampling frame used is the postcode address of all private household addresses. A new sample of 100 postal sectors is selected each month, stratified by region, the proportion of households renting from local authorities, and socioeconomic group. The postal sectors are selected with probability proportionate to size and, within each sector, 30 addresses (delivery points) are selected randomly. In households with more than one adult member, one person aged 16 or over is selected using random number tables. All interviews are carried out face-to-face by interviewers trained to carry out OPCS surveys. Advance letters are sent to all addresses giving a brief account of the survey. Interviewing is completed within a 2-week period each month. Interviewers call at all the

selected addresses unless a refusal has been made beforehand in response to the advance letter. The interviewer makes at least three calls at an address at different times of day before abandoning the attempt to contact the selected household member. The methods for the Omnibus survey have been described in detail elsewhere [1].

The Omnibus questionnaire routinely includes questions relating to social class, ethnic group, gender, age of respondent, month of report, and region. The Social Class variable is based on coding the occupation group of the informant's present or most recent main occupation. It does not apply to people who have never worked. For the period from October 1992 to January 1993, three additional questions were included: 'during the last month, that is, since this date last month, have you suffered from diarrhoea, that is, three or more loose bowel movements in any 24 hour period?' The answers allowed were: 'yes', 'no', or 'not certain'. Those individuals answering 'yes' were asked the second question: 'were you asked to provide a bowel movement sample to be analyzed by a doctor or laboratory?' The answers allowed were 'yes' or 'no'. A third question concerned the use during the last month of medicines for stomach problems, indigestion, gastritis, or stomach or duodenal ulcers. The answers were 'yes' or 'no'. Results from the survey were initially coded and entered into SPSS format by the Omnibus Survey personnel. Further analyses were completed using SPSS software (Chicago, Illinois, USA).

RESULTS

From the initial 12000 addresses, 10535 were found appropriate for interview. The response rate for these 10535 for the 4 months was 77% (Table 1).

Of those interviewed, 44·7% were male. Respondents reported their ethnic group as: white, 95·3%; Black/Caribbean, 1·0%; Black African, 0·2%; Black Other, 0·2%; Indian, 1·0%; Pakistani, 0·5%; Bangladeshi, 0·1%; Chinese, 0·3% and other, 1·1%. Ethnic group was not recorded in 0·3% of the sample. Respondents' socioeconomic class was as follows: professional, 4·0%; intermediate, 23·7%, skilled non-manual, 23·3%; skilled manual, 20·7%; semi-skilled, 16·7%, and unskilled, 7·5%. Socioeconomic class was not recorded in 4·1% of the sample. Respondents were divided into six regions; North, 26·1%, Midlands, 20·6%; London, 11·5%; South East England, 19·5%; South West England, 13·0% and Scotland 9·3%. The age groups of respondents were divided into six groups; 16–24, 10·4%; 25–44, 36·3%; 45–54, 14·8%; 55–64, 13·8%; 65–74, 14·0% and greater than 75 years, 10·8%.

A total of 633 persons (7·9%) reported one or more episodes of diarrhoea in the preceding month, an annual rate of just under one episode (0·95) per person per year. Of the 633 persons reporting a diarrhoeal episode, 5·4% reported that a sample of stool had been requested for examination.

In an attempt to determine risk factors associated with episodes of diarrhoea, univariate and multivariate analyses were performed. The study concerned the relationship between diarrhoea and the following potential risk factors; gender, age group, social class, ethnic group, region of residence and use of medications for stomach problems, indigestion, gastritis or stomach or duodenal ulcers in the month before interview.

Table 1. *Response obtained by Omnibus Survey from eligible addresses: October 1992 to January 1993*

Category of response	No.	Percentage
Refusals	1337	13
Informant incapable of interview	74	1
Non-contacts	941	9
Interviews achieved	8143	77
Total eligible addresses	10535	100

Table 2. *Adjusted odds ratios for factors associated with diarrhoeal illness with 95% confidence intervals and P-values*

Risk factor	Odds ratio	95% confidence interval	P-value
Female gender	1·2	1·0–1·4	0·04
Age group			
16–24	1·5	1·0–2·3	0·03
25–44	1·8	1·3–2·4	< 0·001
45–54	1·3	0·9–1·9	0·1
55–64	1·2	0·9–1·8	0·2
65–74	1·0	0·7–1·4	0·8
Ethnic group			
Black	0·2	0·1–0·8	0·02
Indian/Pakistani/Bangladeshi	0·4	0·2–1·1	0·07
Other	0·5	0·2–1·3	0·17
No prior antacid use	0·3	0·2–0·3	< 0·001

Univariate analyses

Females were more likely than males to have reported diarrhoea in the 1 month prior to interview. There was a statistically significant association between no prior antacid medication use in the month before the interview and diarrhoea in that same time period. All individuals less than 75 years old (except those in the age group 65–74) were more likely to have reported diarrhoea in the 1 month prior to interview compared with those over 74 years of age. Overall, age was found to be significantly associated with having diarrhoea, although this was essentially due to the age group 25–44.

There was no relationship between diarrhoea and ethnicity when the eight different ethnic groups were compared with the 'White' ethnic group. However, after grouping the ethnic groups into four categories (White; Black; Indian, Pakistani and Bangladeshi; and Others) there was a statistically significant relationship between diarrhoea and ethnicity, mainly due to the effect of the 'Black' ethnic group.

There was no relationship between diarrhoea and either region of residence or social class.

Multivariate analysis

Adjusted odds ratios for the factors found to be statistically associated with diarrhoea were obtained by including in a multivariate logistic regression model all variables significant at the 0·05 level in the univariate analysis. Odds ratios are presented in Table 2, together with their 95% confidence intervals and P-values. In the model, prior use of antacid medications, being in the age groups 16–24 and

25–44, 'Black' ethnic group and female gender were significant risk factors. It is not clear that prior use of antacids indicates that lowered gastric acidity is a risk factor for illness associated with infectious agents, or whether persons taking antacids are those more likely to have gastrointestinal illnesses, including diarrhoea. This study cannot separate these two possibilities.

DISCUSSION

A problem with the study is that only 4 months, at the end of the summer, were included, a time when the frequency of diarrhoea may be decreasing. Larger numbers, and a longer period, would be needed to determine if there are significant regional differences, and to evaluate the effects of ethnicity, age group and socioeconomic status.

Because age is a significant factor determining the frequency with which episodes of diarrhoea reach a physician and are then cultured, data for adults cannot be extrapolated to data concerning children. Since the OPCS Omnibus Survey does not include children, we were not able to study this aspect of the use of stool cultures.

Diarrhoea was defined as three or more stools of liquid or altered consistency. Philipp and colleagues have recently shown wide variations in the definition of diarrhoea used by the general public [2]. It is possible that some people went to the doctor with an illness that they called diarrhoea, even though it did not meet the definition of diarrhoea used in the Omnibus Survey.

ACKNOWLEDGEMENTS

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