

Number of patients and control subjects who ate various cereals regularly or otherwise at breakfast

Frequency of consumption at breakfast	Cornflakes		Wheat		Porridge		Rice		Bran		Muesli	
	Patients	Controls	Patients	Controls	Patients	Controls	Patients	Controls	Patients	Controls	Patients	Controls
Regularly	47	39	36	27	27	23	13	7	0	6	0	4
Rarely or never	53	61	64	73	73	77	87	93	100	94	100	96
$\chi^2$	1.31		1.81		0.43		2.00					
P value	>0.1		>0.1		>0.1		>0.1		P* = 0.014		P* = 0.061	

\*Absolute P values calculated by Fisher's exact test.

We also obtained information on other foodstuffs which were eaten at breakfast. There was no obvious difference between the patients and the controls in respect of toast and bread, eggs, fried foods, and cereals in general. The patients were more likely than the controls to have taken milk as a drink but the difference was not statistically significant. They were also more likely to take sugar with their cereals but again the difference was not significant.

### Comment

We failed to confirm the findings of James.<sup>1</sup> Moreover, the social class distribution is known for the economically active adult male population of Oxfordshire based on a 1 in 10 sample. There was no major difference in the social class distribution of the men patients and the general adult male population of Oxfordshire, suggesting that Crohn's disease is not specially likely to affect any particular social class, a conclusion which agrees with the findings of Kyle.<sup>4</sup>

We are grateful to the Head of Research and Intelligence, County Secretary's Department, Oxfordshire County Council for supplying us with the information on the social class distribution of the economically active population of Oxfordshire.

<sup>1</sup> James, A H, *British Medical Journal*, 1977, 1, 943.

<sup>2</sup> Martini, G A, and Brandes, J W, *Klinische Wochenschrift*, 1976, 54, 367.

<sup>3</sup> Trowell, H C, in *Refined Carbohydrate Foods and Disease*, ed D P Burkitt and H C Trowell. London, Academic Press, 1975.

<sup>4</sup> Kyle, J, *Gastroenterology*, 1971, 61, 826.

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## Breakfast and Crohn's disease—II

James<sup>1</sup> has reported that there is a highly significant association between Crohn's disease and eating cornflakes for breakfast. This report aroused considerable interest and has been discussed in both medical journals<sup>2</sup> and the national press.<sup>3</sup> If true, the importance of this association would be considerable, suggesting that dietary factors play an important part in the pathogenesis of Crohn's disease. We have therefore surveyed a larger series of patients, and in addition, as a guard against systematic bias, have included patients with ulcerative colitis as a contrast group.

### Subjects, methods, and results

A total of 57 patients with Crohn's disease and 61 with ulcerative colitis were studied, and their breakfast habits compared with matched controls. The patients with Crohn's disease had an age range of 16-78 and on average 11 years had elapsed since diagnosis; 14 of them had presented after January 1976. Of the 57 cases, 22 had small-bowel disease, 13 large-bowel disease, 21 both small- and large-bowel disease, and one perianal disease alone. The patients with ulcerative colitis were aged 22-72. The controls (one for each patient) were matched for age (within five years) and sex, and were drawn from hospital inpatients and outpatients and staff. Patients and controls were asked questions from a standard form about their current breakfast eating habits. Details of everything they ate for breakfast were obtained,

although only the answers relating to breakfast cereals were analysed. In addition, any change in breakfast habits around or after the onset of disease was recorded in those patients with Crohn's disease presenting after January 1976.

The results are shown in the table below. In keeping with James's usage, "regularly" means at least once a week, and "never" means that the subject denied ever eating cornflakes for breakfast in adult life. The "rarely" category includes all other possibilities. In the Crohn's subgroup there were two patients who had regularly eaten cornflakes until the time of diagnosis but then had stopped doing so. They are recorded as regular cornflake eaters. Wheat cereal, rice cereal, and bran consumption at breakfast was also analysed and no significant differences were found among the three groups.

Number of patients and their controls who ate cornflakes regularly or otherwise

	Patients with Crohn's disease	Controls	Patients with recent onset Crohn's disease	Controls	Patients with ulcerative colitis	Controls
Regularly	17	16	4	4	22	16
Rarely or never	40	41	10	10	39	45
$\chi^2$	0.03		0.00		0.95	

None of these differences approach statistical significance.

### Comment

Dietary factors have been suggested as important in the aetiology of Crohn's disease. Nevertheless, dietary surveys are notoriously inaccurate. The most obvious potential weakness of a study such as that reported by James is that few people can recall with confidence what they regularly ate several years previously. Thus our patients with Crohn's disease would have had to recall their breakfast habits of (on average) 11 years previously. For this reason our subjects were asked only about their present habits, unless the onset of symptoms of Crohn's disease was recent (since January 1976). The inclusion of cases of ulcerative colitis provides a further contrast group, of people who are possibly more used to considering their dietary habits than those without bowel disease.<sup>4</sup>

The described association between Crohn's disease and eating cornflakes and other cereals at breakfast is not confirmed. A possible explanation for the discrepancy between the two studies is bias in the questioning and recall of the Crohn's patients in James's study. Although the two series are not directly comparable, the fact that in our study there was little or no difference in breakfast eating habits between patients with Crohn's disease of long standing and those with it of recent onset suggests that the alternative explanation, of a sudden change of habits at the onset of the condition, is unlikely. Our results suggest that patients with Crohn's disease eat cornflakes and other breakfast cereals to the same extent as patients with ulcerative colitis and as controls. Nevertheless, a prospective study is necessary finally to answer the question.

<sup>1</sup> James, A H, *British Medical Journal*, 1977, 1, 943.

<sup>2</sup> Ward, M, *Lancet*, 1977, 2, 903.

<sup>3</sup> *The Times*, 9 April 1977, p 4.

<sup>4</sup> Sturdevant, R A L, *Gastroenterology*, 1977, 73, 855.

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