

## Dietary fibre intake and common mental disorder: prospective findings from the Whitehall II study

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Several pathways potentially link the gut microbiome with common mental disorder<sup>(1)</sup>. Dietary fibre intake is essential in maintaining and shaping the composition of gut microbiome<sup>(2)</sup>. Existing evidence from prospective cohort studies of dietary fibre intake and mood disorders is mixed<sup>(3,4)</sup>. We studied associations between dietary fibre intake and common mental disorder (CMD) in the Whitehall II cohort study. We hypothesised an inverse association of fibre intake and incident common mental disorder 5 years later.

Analysis included 15,487 person-observations collected over 22 years of repeated data-collection. Dietary fibre intake was assessed using food frequency questionnaires, and energy adjusted<sup>(5)</sup>. CMD was measured with the 30-item General Health Questionnaire. Random-effects models were used to model the association between dietary fibre intake and CMD over 5-year cycles. CMD cases ( $\geq 5$  symptoms) were excluded at the start of each cycle. Analyses were adjusted for potential confounders (shown in Table 1), BMI, central obesity, cardiovascular disease (CVD), diabetes and cancer.

**Table 1.** Adjusted associations between dietary fibre intake and common mental disorders 5 years later.

	events / person observations	Incident common mental disorder at 5 years follow-up		
		Model 0 <sup>1</sup> OR (95% CI)	Model 1 <sup>2</sup> OR (95% CI)	Model 2 <sup>3</sup> OR (95% CI)
<b>Dietary fibre intake<sup>4</sup></b>				
Lowest Tertile	721 / 4941	Reference	Reference	Reference
Middle Tertile	658 / 5477	0.82** (0.72, 0.93)	0.82** (0.71, 0.93)	0.83* (0.72, 0.96)
Highest Tertile	577 / 5069	0.76*** (0.66, 0.87)	0.75*** (0.65, 0.86)	0.74*** (0.62, 0.88)
<i>P</i> for trend		<0.001	<0.001	0.001
Continuous (10 g/day increment)	1956 / 15487	0.87*** (0.80, 0.94)	0.86*** (0.79, 0.93)	0.86** (0.78, 0.95)

<sup>1</sup> Model 0: age, sex, their interaction and ethnicity.

<sup>2</sup> Model 1: Model 0 additionally adjusted for marital status, last grade level in civil service, smoking, alcohol intake, physical activity, sleep duration.

<sup>3</sup> Model 2: Model 1 additionally adjusted fish intake, modified dash score, coffee and tea intake, sugar intake from sweet food/beverages, sugar intake from sweet food/beverages \* sex and total calories.

<sup>4</sup> Dietary fibre intake was energy adjusted.

There was a significant inverse association between dietary fibre intake and CMD (Table 1; \* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ ). This association was slightly attenuated by adjustment for socio-economic factors, health behaviours, other dietary intakes such as sugar intake from sweet food/beverages. Further adjustment for BMI, central adiposity, cardio-vascular disease, diabetes and cancer did not change the results (not shown).

The study findings indicate a protective role of a diet high in fibre in long-term psychological health. In conclusion two of three prospective studies support the hypothesis<sup>(3,4)</sup>.

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