

# FODMAP intake and the risk of Irritable Bowel Syndrome in the community: results of a large, prospective, population based study

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## Introduction

- The cause of IBS is uncertain; however, food intolerance shares many features with this condition.
- Consumption of fermentable oligosaccharides, disaccharides, monosaccharides and polyols (FODMAPs) results in symptoms in some patients with irritable bowel syndrome (IBS) and clinical trials have shown that a reduced FODMAP diet improve symptoms in this group.
- However, previous studies have shown similar FODMAP intake in healthy controls and IBS patients and it is not proven that high FODMAP intake is a cause of symptoms in the community.
- Recent research has shown that psychological factors are associated with increased postprandial symptoms in IBS patients. Whether this is important in the development of intolerance to FODMAPs in the diet has not been shown.

## Aim

This population-based study aimed to assess (i) whether FODMAPs intake is different in healthy individuals compared to IBS patients. (ii) to assess the relative importance of, and interaction between, psychiatric disease, social stress and diet in the aetiology of IBS type symptoms in the general community.

## Methods

- Subjects aged 16-74y were randomly selected from five South-Chinese communities.
- All subjects consented to complete questionnaires by face-to-face inquiry with investigators including personal demographic and social information, gastrointestinal symptoms (Rome III), dietary intake (food frequency chart validated in Chinese community), psychiatric disease (HADS), life event stress (LES) and quality of life (SF-8).

## Results

### • Study Population

Of 1999/2115 (94.7%) members of the community that completed study questionnaires, 117(5.9%) had IBS by Rome III criteria.

### • Diet:

IBS subjects took less lactose than Non-IBS ( $P=0.024$ ) in the community group. Intake of other FODMAPs was similar between IBS and Non-IBS groups in the community ( $P=0.3458$ ).

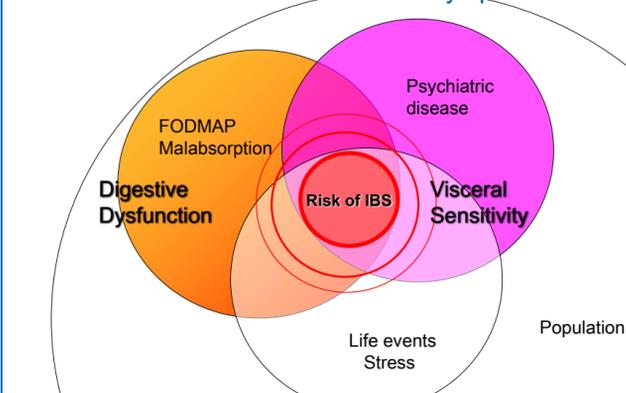
### • Psychosocial state:

Compared to the Non-IBS group, individuals with IBS had a greater likelihood of depression (OR 1.5 (0.97-2.32);  $p<0.05$ ), anxiety (2.84(1.84-4.39),  $p<0.001$ ), recent life event stress (1.5(1.03-2.20);  $P=0.03$ ) or medical and/or surgical co-morbidity (OR 2.90(1.30-5.45),  $P<0.001$ ). The IBS group also had lower quality of life as assessed by SF-8 score than Non-IBS ( $P<0.001$ ).

### • Joint risk analysis (table)

High intake of total FODMAPs intake was identified as a risk factors for IBS *only* in subjects with psychiatric disease and / or high levels of life event stress. Similar effects were seen for individual symptoms, in particular bloating (OR 2.4(1.25-4.60),  $p<0.008$ ). Increased risk of IBS was identified with ingestion of high intake of individual FODMAPs (e.g. fructose, fructans, lactose) in combination with psychosocial factors, but not with sucrose (non-FODMAP control) in any group.

Biopsychosocial Model:  
FODMAP intake as a cause of IBS symptoms



## Conclusions

- FODMAP intake was similar in IBS and healthy individuals in the community except for lactose intake which was lower in IBS subjects, likely due to avoidance of dairy products.
- Joint effects analysis demonstrated that high FODMAPs intake alone was not associated with abdominal symptoms; however, IBS was more common in those with a high FODMAPs intake and concomitant psychosocial factors known to increase visceral sensitivity to digestive dysfunction.

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Psych Disease	FODMAPs	Life Stress	IBS	Non-IBS	Adjusted* OR	p-value
No	Low	Low	19 (5.1)	356 (94.9)	1.0	-
"	"	High	23 (6.8)	315 (93.2)	1.2 (0.6-2.4)	0.530
"	High	Low	14 (3.5)	383 (96.5)	0.6 (0.3-1.3)	0.213
"	"	High	16 (4.5)	342 (95.5)	0.9 (0.5-1.9)	0.886
Yes	Low	Low	9 (7.6)	109 (92.4)	1.6 (0.7-3.8)	0.274
"	"	High	16 (9.5)	152 (90.5)	1.9 (0.9-3.9)	0.094
"	High	Low	5 (4.9)	97 (95.1)	1.0 (0.4-2.9)	0.932
"	"	High	15 (10.5)	128 (89.5)	2.3 (1.1-4.8)	0.029

\*Adjusted variables: age, sex, marital status, education, job, income, smoking, drinking, and medical history.

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