short chain carbohydrates (fermentable oligo-, di- and monosaccharides and polyols, FODMAPs) is effective in reducing symptom severity in IBS patients; however, no randomised controlled trial has demonstrated that the low FODMAP diet is superior to traditional dietetic practice for IBS management. The intention of this study was to compare the effect on IBS symptoms of a low FODMAP diet compared with an active comparator of traditional dietary advice, in outpatients with IBS in a setting resembling standard clinical practice.

In total, 75 adult patients meeting the Rome III criteria for IBS, with medium to severe symptoms based on an IBS Symptom Severity Score (IBS-SSS), were recruited from gastroenterology outpatient clinics in Sweden for inclusion in this multi-centre, parallel, randomised, controlled, single-blind, comparative trial. Exclusion criteria included severe cardiac, liver, neurological or psychiatric disease, or GI disease other than IBS. Patients were not allowed to be following an excessively restrictive diet prior to entering. Use of probiotics and IBS medications were permitted but were required to be stable throughout the study period. Prior to randomisation, subjects completed a daily stool diary based on the Bristol Stool Form (BSF) for ten days, and recorded dietary intake using a food diary over four days.

On Day 0, subjects completed the baseline IBS-SSS and were randomised to follow one of two different diets (diet A or diet B). Patients were advised on instructions on how to eat a low FODMAP diet (diet A) or eat according to traditional IBS dietary advice (diet B). The low FODMAP diet advised subjects to avoid food sources rich in fructans and galacto-oligosacchardies, lactose-containng products, foods with 'free fructose', and food items rich in sorbitol, mannitol, maltitol and xylitol. The traditional dietary advice instructed subjects on how and when to eat rather than what to eat and gave guidance such as regularly eating three meals and three snacks per day; never being too hungry or too full; eating in peace and quiet and chewing thoroughly; reducing intake of fatty and spicy foods, coffee, alcohol, onions, cabbage, and beans; avoiding soft drinks and carbonated beverages, chewing gum and sweeteners ending with –ol; and distributing fibre intake evenly over the day. Standardised verbal instructions and a brochure with written instructions about dietary inclusions, exclusions and alternatives were provided for both diet types. Daily stool diary, an IBS-SSS at day 14 and a food diary for four days in the last week of intervention were required from participants. After the four-week intervention, symptom severity was assessed using the IBS-SSS system.

Results were available for 67 subjects for the per protocol analysis. The IBS symptom severity was significantly reduced in both groups at the end of the intervention period compared with baseline. By day 14, the reduction in IBS-SSS was statistically significant in the low FODMAP group, with a trend toward significance in the traditional diet group. At the end of intervention, individual items of the IBS-SSS that reached statistically significant improvements were abdominal pain frequency, severity of abdominal distension and life interference in both groups, and bowel habit dissatisfaction in the traditional IBS diet group. The low FODMAP group had a significant reduction in daily stool frequency, with no significant effect observed in the traditional group. It was noted that clear dietary changes in line with the allocated diets were observed during the last week of intervention based on the diet diaries; however, it was also observed that both groups reduced their energy intake during the intervention period. When analysing the effect of dietary changes on IBS subtype, there was significantly less reduction of IBS symptoms in the IBS-constipation subtype compared to diarrhoea or mixed subtypes in the traditional IBS diet group. No significant differences between IBS subgroups in reduction of symptom severity scores were observed in the low FODMAP group.

This study demonstrated that both a low FODMAP diet and traditional dietetic advice provided in a clinical-like setting were effective in reducing severity of symptoms in participants with IBS, with no significant difference between the dietary approaches. Whilst the low FODMAP approach has gained some good evidence to support its use in IBS management, its superiority to current interventions remains unclear. Future research that includes a combination of both strategies might provide further clarity on optimal guidance and dietary intervention for people with IBS.

Spicy food consumption and mortality

Lv J, Qi L, Yu C, Yang L, Guo Y, Chen Y, Bian Z, Sun D, Du J, Ge P, Tang Z, Hou W, Li Y, Chen J, Chen Z, Li L. 2015. Consumption of spicy foods and total and cause specific mortality: population based cohort study. *BMJ;* 351: h3942

Spices have a long history of worldwide use for both food and medicinal purposes. Beneficial roles of spices and their bioactive constituents have been reported in a variety of experimental and small population studies on conditions including obesity, cardiovascular and gastrointestinal disease, cancers, and dermatological conditions. Collectively, these reports indicate spices may have a significant influence on morbidity and mortality in humans; however, evidence relating to the effect of daily consumption of spicy foods on mortality in prospective studies is lacking. Accordingly, the aim of the present study was to examine the associations between regular consumption of spicy foods and total and cause specific mortality, analysing data from the China Kadoorie Biobank (CKB) study.

The CKB is a prospective cohort study of over 0.5 million adults from 10 geographically diverse areas across China, with participants enrolled between 2004 and 2008 and continually followed up for morbidity and mortality status. In total, the CKB study includes

baseline data of 512 891 adults aged 30-79 years, with completed health questionnaires and physical measurements. The current study excluded people with cancer, heart disease and stroke history at baseline, leaving the final analysis including 199 293 men and 288 082 women. All participants provided information on spicy food consumption in their baseline questionnaire, providing details on frequency of consumption of 'hot, spicy foods'. Participants consuming spicy foods on at least a weekly basis were further asked to provide details on the main source of spices consumed with options being fresh chilli pepper, dried chilli pepper, chilli sauce, chilli oil, and other/don't know. A number of participants were resurveyed during 2008 to assess the reproducibility of spicy food consumption reported in the initial questionnaire. Statistical interpretation concluded spicy food consumption was reported consistently.

Covariates were obtained from the baseline questionnaire including socio-demographic characteristics, lifestyle behaviours, personal health and medical history, information on family members, physical activity level and habitual dietary intake. Information on deaths was obtained using death registries and residential records. Cause of death was sought from death certificates or a review of medical records and categorised as either cancer, ischaemic heart diseases, cerebrovascular diseases, diabetes mellitus, diseases of the respiratory system, infections, or other causes. Mortality data was analysed together with information on spicy food consumption to examine associations.

During a median follow-up of 7.2 years (total of 3.5 million person years follow-up), authors documented 11 820 deaths amongst men and 8 404 deaths amongst women. Absolute mortality rates according to spicy food consumption categories were 6.1, 4.4, 4.3, and 5.8 deaths per 1000 person years for participants who ate spicy foods less than once a week, 1 to 2, 3 to 5, and 6 to 7 days per week, respectively. Age adjusted and multivariate adjusted analyses showed a statistically significant inverse association between spicy food consumption and total mortality. A 14% relative risk reduction in total mortality was observed for participants who consumed spicy foods 6 or 7 days a week compared to those who ate spicy foods less than once a week. After multivariate adjustment, spicy food consumption was inversely associated with risk of death due to cancer, ischaemic heart diseases, and respiratory diseases. Fresh and dried chilli peppers were the most commonly used types of spices in those consuming spicy foods regularly. Further data analysis revealed that the inverse association of spicy food consumption with risk of death from cancer, ischaemic heart disease, and diabetes was stronger in those that consumed fresh chilli pepper as their predominant spice source compared to those who consumed non-fresh spicy foods. Authors postulated that compared with non-fresh spicy foods, fresh chilli pepper is richer in bioactive ingredients including capsaicin, vitamin C, and other nutrients, and thus these bioactive ingredients are likely to be effective in driving the observations.

Strengths of the study include its large sample size, prospective design, and control for risk factors for death. Limitations of the study include the self-reporting nature of spicy food consumption with measurement error inevitable. Information was not available on the preparation methods of spicy foods, and importantly, consumption of spicy foods may be correlated with other dietary habits and lifestyle behaviours that were not accounted for. The study included only a Chinese population hence the generalisability of the findings is unclear. Finally, whilst finding significant inverse associations between spicy food consumption and total and certain cause specific mortality, it is not possible to make causal inferences due to the observational nature of the study.

The effect of food order on postprandial glucose and insulin levels

Shukla AP, Illiescu RG, Thomas CE, Aronne LJ. 2015. Food order has a significant impact on postprandial glucose and insulin levels. *Diabetes Care*; 38:e98-e99.

Postprandial hyperglycaemia is an important therapeutic target for optimising glycaemic control in type 2 diabetes mellitus (T2DM) patients. Existing evidence suggests that the quantity and type of carbohydrate consumed influence blood glucose levels, with the total amount of carbohydrate consumed being the primary predictor of glycaemic response. Whilst alteration of macronutrient composition of a meal has been demonstrated to affect postprandial glucose levels, little data exists on the effect of food order on postprandial glycaemia. Accordingly, a small pilot study examining the effect of food order on patients with T2DM was undertaken, with results reported recently.

The small study involved a total of 11 subjects (6 female and 5 male) with metformin-treated T2DM. Subjects had an average of 54 ± 9 years, BMI of 32.9 ± 5kg/m^2, with average duration of diabetes 4.8 ± 2.4years. The trial utilised a within-subject crossover design. After a 12h overnight fast, subjects consumed an isocaloric meal with the same composition on two separate occasions, one week apart. The meal was based on a typical Western meal incorporating vegetables, protein and carbohydrate totalling 628 kcal: 66g protein, 68g carbohydrate, and 16g fat. During the first visit, the food order was carbohydrate followed 15 minutes later by the protein and vegetables. At the second visit, the food order was reversed. Blood was sampled for glucose and insulin levels at baseline and 30, 60, and 120 minutes after the start of the meal.

When vegetables and protein were consumed first followed by carbohydrate, mean post meal glucose levels were decreased significantly by 28.6%, 36.7% and 16.8%