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Abstract

An Observational Study of the Effect of Diet and Micronutrient Intake on the Association between Depression and Gastrointestinal Symptoms via an Online Survey Tool †

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Abstract: Background and objectives: Depression is a low mood-based disorder that affects approximately one in six people in the UK. Analyses of the gut in depressed individuals have demonstrated dysbiosis in the normal gut microbial composition. These imbalances have been associated with gut symptoms such as abdominal pain and nausea. This study aims to investigate the relationships between self-reported depression, gastro-intestinal (GI) symptoms and dietary intake. Methods: Participants with self-reported depression and healthy controls were recruited via Prolific. Participants were asked to complete a web-based online survey tool (Qualtrics), which included questions on diet, gut health and mental health. Estimated micronutrient intakes from reported fruit and vegetable intakes (FAVI) were calculated using dietary analysis software (myFood24). Results: In total, 496 adults consented to participate (n = 249 with self-reported life-time diagnosis of depression, n = 247 healthy controls). There was a significant positive correlation between the GI symptom score and the depression score (r = 0.506, $p < 0.001$) which included reported measures of nausea (r = 0.359) and pain (r = 0.419). FAVI and omega-3 intakes were inversely related to GI symptoms ($p = 0.010$, $p < 0.001$, respectively) and depression scores ($p < 0.05$) and significant mediators of the association between GI symptoms and depression (effect size −0.006, −0.025 respectively). Those with depression were found to have significantly lower intakes of vitamin C, folate, vitamin E and magnesium ($p < 0.05$), though analysis did not identify any significant mediation effects of micronutrient intake on the relationship between GI symptoms and depression scores. Discussion: Dietary intake has a significant mediation effect on the relationship between GI symptoms and depression. Participants in the depression group consumed significantly lower intakes of some important micronutrients found in FAVI, which suggests that depression and gut symptoms could influence food choices. Further research will be required to identify whether these observations correspond to the changes in the microbiome that have been associated with depression.

Keywords: depression; gut; fruit and vegetables; omega-3; probiotic

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