

## The GUTFIT Cohort: Understanding of different gastrointestinal symptoms score variation between Chinese and non-Chinese individuals with functional constipation

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The diagnosis of functional constipation (FC) relies on patient-reported outcomes evaluated as criteria based on the clustering of symptoms. Although the ROME IV criteria for FC diagnosis is relevant for a multicultural population<sup>(1)</sup>, how an individual's lifestyle, environment and culture may influence the pathophysiology of FC remains a gap in our knowledge. Building on insights into mechanisms underpinning disorders of gut-brain interactions (formerly functional gastrointestinal disorders) in the COMFORT Cohort<sup>(2)</sup>, this study aimed to investigate the differences in gastrointestinal (GI) symptom scores among participants with FC in comparison to healthy controls between Chinese and non-Chinese New Zealanders. The Gastrointestinal Understanding of Functional Constipation In an Urban Chinese and Urban non-Chinese New Zealander Cohort (GUTFIT) study was a longitudinal cohort study, which aimed to determine a comprehensive profile of characteristics and biological markers of FC between Chinese and non-Chinese New Zealanders. Chinese (classified according to maternal and paternal ethnicity) or non-Chinese (mixed ethnicities) adults living in Auckland classified as with or without FC based on ROME IV were enrolled. Monthly assessment (for 3 months) of GI symptoms, anthropometry, quality of life, diet, and biological samples were assessed monthly over March to June 2023. Demographics were obtained through a self-reported questionnaires and GI symptoms were assessed using the Gastrointestinal Symptom Rating Scale (GIRS) and Structured Assessment of Gastrointestinal Symptoms Scale (SAGIS). This analysis is a cross-sectional assessment of patient-reported outcomes of GI symptoms. Of 78 enrolled participants, 66 completed the study (male, n = 10; female, n = 56) and were distributed across: Chinese with FC (Ch-FC; n = 11), Chinese control (Ch-CON; n = 19), non-Chinese with FC (NCh-FC; n = 16), non-Chinese control (NCh-CON; n = 20). Mean (SD) age, body mass index, and waist circumference were 40 ± 9 years, 22.7 ± 2.5 kg/m<sup>2</sup>, and 78.0 ± 7.6 cm, respectively. Ethnicity did not impact SAGIS domain scores for GI symptoms (Ethnicity x FC severity interaction p>0.05). Yet, the constipation symptoms domain of the GIRS was scored differently depending on ethnicity and FC status (Ethnicity x FC interaction p<0.05). In post hoc comparison, NCh-FC tended to have higher GIRS constipation severity scores than Ch-FC (3.4 ± 1.0 versus 3.8 ± 0.8 /8, p<0.1) Although constipation symptom severity tended to be higher in NCh-FC, on the whole, ethnicity did not explain variation in this cohort. FC status was a more important predictor of GI symptoms scores. Future research will assess differences in symptom burden to explore ethnicity-specific characteristics of FC.

**Keywords:** disorders of gut-brain interactions; functional gastrointestinal disorders; ethnicities; gastrointestinal symptoms scores

### Ethics Declaration

No

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### References

- Schmulson MJ & Drossman DA (2017) *J Neurogastroenterol Motil* 30 23(2), 151–163.
- Heenan P et al. (2020) *Inflamm Intest Dis* 5(3), 132–143.