anxiety, and low mood. Visual inspection of the radar plots showed that the characteristics of these clusters were identical between the Rome III and Rome IV analyses. The Rome IV cluster results and their descriptions are shown in figure 1. Further analysis, showed that the proportion of patients with severe IBS symptom scores, high levels of perceived stress, and high levels of gastrointestinal-specific symptom anxiety was significantly higher in clusters with high psychological comorbidity ($p < 0.001$).

Conclusions Latent class analysis identifies seven distinct IBS subgroups characterised by a mixture of gastrointestinal symptoms, somatoform symptoms, and psychological co-morbidity. Further research is needed to assess the durability and stability of these subgroups over time, and whether they might be used to direct treatment.

P327 | **MODULATING HUMAN CORTICAL SWALLOWING FUNCTION BY CONDITIONING THE BRAIN WITH REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION**

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Background Various repetitive transcranial magnetic stimulation (rTMS) paradigms have been suggested as treatments for neurogenic dysphagia. However, there is no consensus as to what is the optimal paradigm for improving swallowing function. Moreover, the response to rTMS varies across individuals (NGM 2019, 31(7), e13612), which may be attributed to the preceding brain state. Our contention was that preconditioning human pharyngeal motor cortex with rTMS could stabilize and modify swallowing performance induced by brain stimulation.

Aim To compare the effects of preconditioned versus sham-preconditioned rTMS on swallowing performance.

Material and Methods Ten healthy volunteers (age=27±2 years; 6 males) were randomised to receive 4 conditions of combined 1Hz (inhibitory) and 5Hz (excitatory) rTMS: i. sham 1Hz immediately followed by active 5Hz (s1-0-5); ii. active 1Hz followed by 5Hz after 30 minutes (1-30-5); iii. sham 5Hz immediately followed by active 1Hz (s5-0-1); and iv. active 5Hz followed by 1Hz after 90 minutes (5-90-1). Both 1 and 5Hz rTMS paradigms were applied over the pharyngeal motor cortex of the 'dominant' hemisphere. Changes in swallowing reaction times and accuracy were determined, every 15 minutes from baseline to 60 minutes post-rTMS, and analysed using ANOVA.

Results Preconditioned 5Hz rTMS (1-30-5) enhanced swallowing accuracy when compared to the sham-preconditioned protocol (s1-0-5) ($F[1,9]=16.144$; $p=0.003$) (figure 1A). Significant improvement was mainly observed at 15 minutes post-rTMS ($p=0.049$). Similarly, preconditioned 1Hz rTMS (5-90-1) reduced swallowing accuracy when compared to the sham-preconditioned protocol (s5-0-1) ($F[1,9]=10.411$; $p=0.01$) (figure 1B). Unlike preconditioned 5Hz rTMS, the changes in swallowing accuracy were not significant at any specific time point. There were no significant changes in swallowing reaction times across any of the conditions.

Conclusions Preconditioning human pharyngeal motor cortex with additional rTMS can robustly modify human swallowing behaviour. Future studies should explore the therapeutic role of preconditioned rTMS as a more effective protocol for dysphagia.


P328 | **PSYCHOLOGICAL NEED IN PATIENTS WITH IRRITABLE BOWEL SYNDROME IN SECONDARY CARE**

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Introduction Irritable bowel syndrome (IBS) affects 17% of the UK population. Most treatments focus on managing the physical symptoms, however, IBS is associated with a wide range of psychological factors. The aim of this study was to investigate the psychological needs and prevalence of anxiety and depression in an IBS population referred to the gastroenterology dietitian in secondary care.

Methods A cross-sectional survey was conducted in August 2019. Patients with IBS attending the gastroenterology dietetic outpatient clinics completed a questionnaire comprising the following validated tools: the Patient Health Questionnaire (PHQ9), Generalised Anxiety Disorder Assessment (GAD7), Work and Social Adjustment Scale (WSAS), IBS Quality of Life (IBS-QoL) and Gastrointestinal Symptom Rating Scale (GSRS). Patients with other gut co-morbidities were excluded. Descriptive statistics and correlations were completed using SPSS.
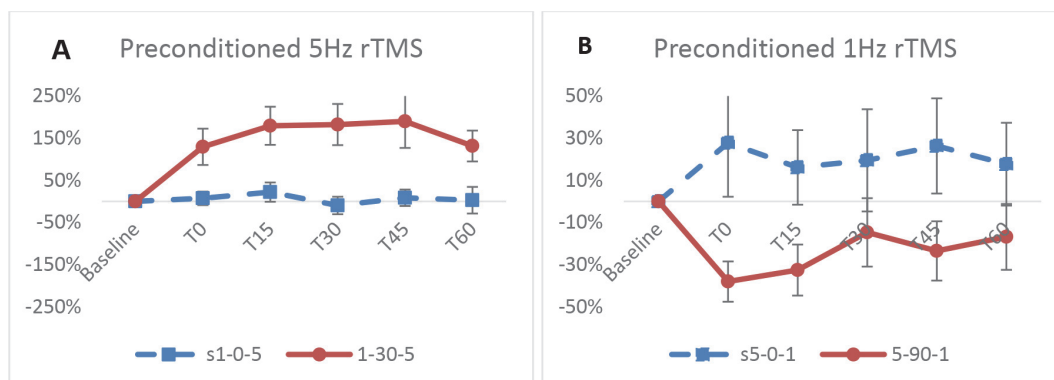
Abstract 327 Figure 1 A. Changes in swallowing accuracy after preconditioned 5Hz rTMS compared to sham-preconditioned rTMS. B. Changes in swallowing accuracy after preconditioned 1Hz rTMS compared to sham-preconditioned rTMS.

Results Fifty-nine patients were surveyed. Mood disturbance was high, with 48 (81%) scoring above the cut off for depression and 59 (100%) scoring above the cut off for anxiety. Additionally, 46 (78%) scored above threshold for functional impairment and IBS-QoL was low, 48.45 (SD = 27.96). Moderate/severe symptoms were reported for bloating 40 (68%), flatulence 39 (66%), incomplete evacuation 38 (64%), abdominal pain 32 (54%), faecal urgency 32 (54%), borborygmi 32 (54%), nausea 25 (42%), burping 24 (41%), acid regurgitation 22 (37%) and heartburn 19 (32%). Functional impairment was significantly correlated with anxiety (p<0.001), depression (p<0.001) and QoL (p<0.001). Depression, anxiety, QoL and functional impairment were correlated with nausea, borborygmi, bloating and abdominal pain. Anxiety, QoL and functional impairment were correlated with acid regurgitation. QoL was correlated with urgency to open bowels and depression was correlated with flatulence.

Discussion The psychological needs and functional impairment in IBS patients in secondary care were high. Anxiety and depression were higher than findings from other tertiary services (Kawoos et al, 2017, Cohen et al, 2006). QoL was worse than has been found in other studies with IBS-d patients (Andrae et al, 2013) and functional impairment was worse than in patients with IBS in primary care (Everitt et al, 2018). This is probably a reflection on the severity of impairment in those accessing secondary care. Impairment and psychological need only overlapped partially with physical symptoms indicating that a biopsychosocial approach (Engel, 1977) is called for. Psychological interventions have been found to be helpful for those with IBS (Ballou & Keefer, 2017; Ford et al, 2014).

This study promotes the need for psychological support for IBS patients accessing secondary care, which is currently under-resourced.

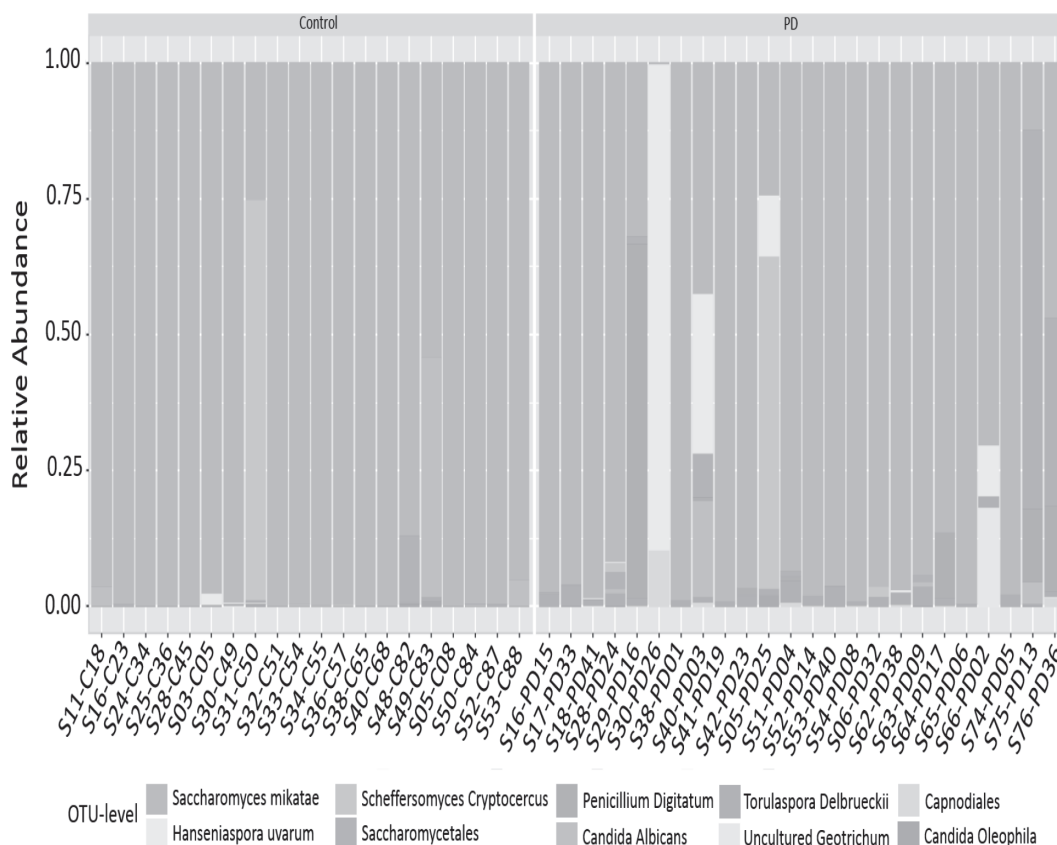### FAECAL MYCOBIOME DISPARITIES OF INDIVIDUALS AFFLICTED WITH PARKINSON'S DISEASES VERSUS CONTROL

Luke Flain*, Chris Probert, Alessandra Frau, Lauren Lett, Rachael Hough, Gerum Gebeyehu. *University Of Liverpool, Liverpool, UK*

Introduction Parkinson's disease (PD) a complex neurodegenerative disorder mainly affecting the dopaminergic neurones of the substantia nigra. Numerous studies have examined the role of α-synuclein within PD pathogenesis, although as yet a causal factor has not been established.

The hibernating spore hypothesis was a theory originally delineated in 2002. It hypothesised the ability of an infectious agent, possibly fungal in origin to act as the casual factor in PD development .[1] Recent literature has described varying levels of bacterial dysbiosis between individuals afflicted by PD, thus paving the way for research into the role of the mycobiome in PD pathogenesis.[2]

Methods Stool samples were obtained from 35 PD patients and 20 healthy controls. The samples were aliquoted and underwent DNA extraction utilising PSP and Qiagen kit protocols. Qubit analysis was performed with samples being diluted to 10 ng/μl to then undergo 18srRNA gene quantification for

Abstract P329 Figure 1