

Happy Brain, Happy Gut

How might we make it easier for those suffering from Inflammatory Bowel Disease to be freed from the anxiety of unexpected flare ups and enjoy a better quality of life?

The Challenge

Inflammatory Bowel Disease (IBD) patients and their caregivers are living with a chronic, life-long disease that is manifested in unpredictable flare-ups. At any time or place patients may experience unexpected symptoms such as diarrhea, fatigue, loss of appetite, fever, headache or a combination.

The unpredictability of these flare-ups can cause anticipatory anxiety, whilst the symptoms themselves can sap energy and make it hard for sufferers to cope with studies, work performance, social activities, and daily living in general.

As IBD is physically invisible to others, patient behaviours are often misunderstood, and sufferers can be labelled as misfits and be socially ostracised. This adds to their stress levels, which further exacerbates the frequency and severity of flare-ups.

The Solution

This solution proposes an integrated system to identify an individual's food triggers and simultaneously monitor their stress levels via real time data capture, analysis and reporting, tailored to the unique physiological make-up and challenges faced at different life stages. This solution allows individual IBD patients to flexibly adapt the options available for effective management of the presenting disease symptoms to enable them to live a healthy, normal life.

This solution offers an integrated system combining:

- Automated Food Logging

Wearable, medical-grade earpiece camera mounted on a headband, which takes live photos of meals, synced to Food(Ig) App developed by National University of Singapore's Smart Systems Institute.

Inbuilt AI identifies ingredients, portion sizes, and nutrients (leveraging the Food(Ig) database), thereby eliminating manual logging and tracking food intake with enhanced accuracy.

- Supporting Stress Management by utilising EEG to detect spikes in brain activity and activate stimulation of the vagus nerve, that links the brain to the gut, to reduce stress levels and stress-related digestive issues.
- Seamless Data Integration with AI Analytic Capability to enable correlation of symptom and trigger logs to improve accuracy of understanding of triggers, for timely intervention to prevent occurrence of avoidable disease flareups.

The Impact

This integrated solution will enable the 3,000 known IBD patients in Singapore to realise their dreams for a normal, healthy life. The treatment goal for IBD is to achieve remission, and sustain the remission for as long as possible, by preventing recurrent disease flare-ups. Currently there is no reliable, hassle-free solution to allow people living with IBD to maintain a "Food-Feelings-Symptoms Diary" for recording their food intake on a daily basis for long enough to definitively identify their own triggers. Addressing food triggers and mental health challenges in an integrated way could create a powerful break through in the management of IBD.

Vote!

Vote for us so that people living with chronic, lifelong gut conditions are freed up from the anxiety, fear and inconvenience associated with unexpected flare ups, and can enjoy a carefree quality of life empowered by personalised data.



The Design Team

Nidhi Swarup - Crohn's & Colitis Society of Singapore (CCSS)
Ramesh Om Shanti - Crohn's & Colitis Society of Singapore (CCSS)
Tan May Tan - Crohn's & Colitis Society of Singapore (CCSS)
Henry Lim - Crohn's & Colitis Society of Singapore (CCSS)
Dr Yu Fu - Crohn's & Colitis Society of Singapore (CCSS)
Ishwar Buxani (Rajul) - Crohn's & Colitis Society of Singapore (CCSS)
Rebecca Yap - Temasek Polytechnic, School of Design
Dexter Toh Jing Yiang - Temasek Polytechnic, School of Design