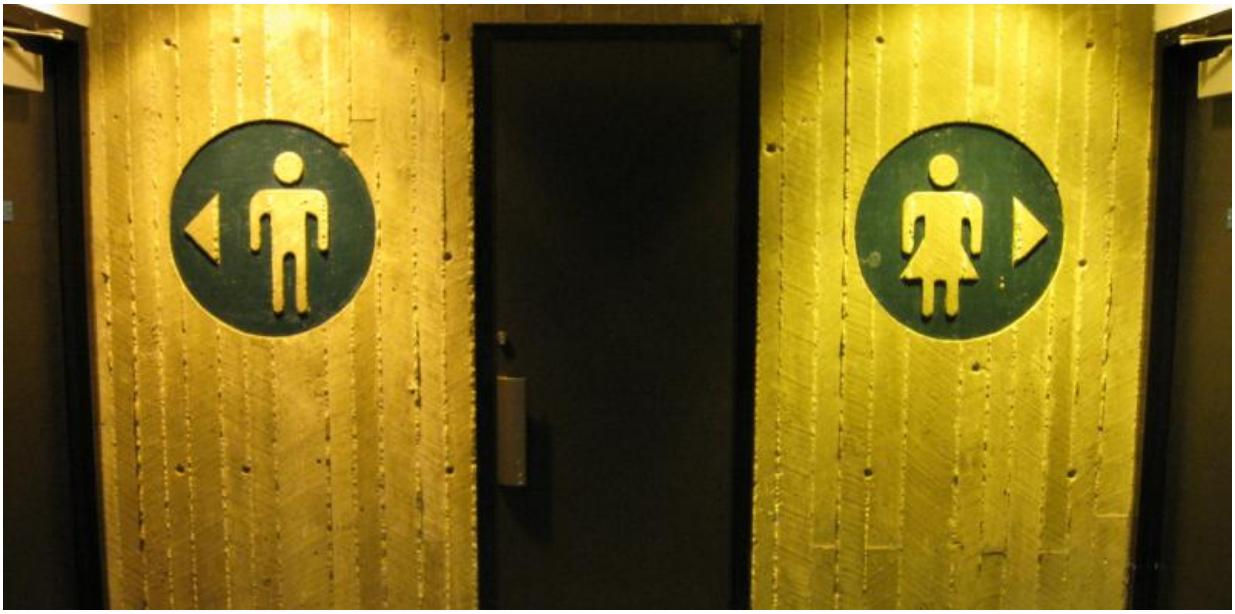
The brain and the gut talk to each other—how fixing one could help the other

July 17 2017, by Antonina Mikocka-Walus



People with chronic bowel conditions may need to use the toilet 20 to 30 times a day. Credit: daveynin/Flickr, CC BY

It's widely recognised that emotions can directly affect stomach function. As early as 1915, influential physiologist Walter Cannon noted that stomach functions are changed in animals when frightened. The same is true for humans. Those who stress a lot often report diarrhoea or stomach pain.

We now know this is because the brain communicates with the gastrointestinal system. A whole ecosystem comprising 100 trillion bacteria living in our bowels is an active participant in this brain-gut chat.

Recent discoveries around this relationship have made us consider using talk therapy and antidepressants as possible treatments for symptoms of chronic gut problems. The aim is to interfere with the conversation between the two organs by telling the brain to repair the faulty bowel.

Our research found talk therapy can improve depression and the quality of life of patients with gastrointestinal conditions. Antidepressants may also have a beneficial effect on both the course of a bowel disease and accompanying anxiety and depression.

What are gastrointestinal conditions?

Gastrointestinal conditions are incredibly common. About 20% of adults and adolescents suffer from irritable bowel syndrome (IBS), a disorder where abdominal discomfort or pain go hand-in-hand with changes in bowel habits. These could involve chronic diarrhoea and constipation, or a mixture of the two.

IBS is a so-called functional disorder, because while its symptoms are debilitating, there are no visible pathological changes in the bowel. So it is diagnosed based on symptoms rather than specific diagnostic tests or procedures.

This is contrary to inflammatory bowel disease (IBD), a condition where the immune system reacts in an exaggerated manner to normal gut bacteria. Inflammatory bowel disease is associated with bleeding, diarrhoea, weight loss and anaemia (iron deficiency) and can be a cause of death. It's called an organic bowel disease because we can see clear

pathological changes caused by inflammation to the bowel lining.

Subtypes of inflammatory bowel disease are Crohn's disease and ulcerative colitis. Around five million people worldwide, and more than 75,000 in Australia, live with the condition.

People with bowel conditions may need to use the toilet 20 to 30 times a day. They also suffer pain that can affect their family and social lives, education, careers and ability to travel. Many experience anxiety and depression in response to the way the illness changes their life. But studies also suggest those with anxiety and depression are more likely to develop bowel disorders. This is important evidence of brain-gut interactions.

Credit: AI-generated image (disclaimer)

How the brain speaks with the gut

The brain and gut speak to each other constantly through a network of neural, hormonal and immunological messages. But this healthy communication can be disturbed when we stress or develop chronic inflammation in our guts.

Stress can influence the type of bacteria inhabiting the gut, making our bowel flora less diverse and possibly more attractive to harmful bacteria. It can also increase inflammation in the bowel, and vulnerability to infection.

Chronic intestinal inflammation may lower our sensitivity to positive emotions. When we become sick with conditions like inflammatory bowel disease, our brains become rewired through a process called neuroplasticity, which changes the connections between the nerve signals.

Anxiety and depression are common in people suffering chronic bowel problems. Approximately 20% of those living with inflammatory bowel disease report feeling anxious or blue for extended periods of time. When their disease flares, this rate may exceed 60%.

Interestingly, in a recent large study where we observed 2,007 people living with inflammatory bowel disease over nine years, we found a strong association between symptoms of depression or anxiety and disease activity over time. So, anxiety and depression are likely to make the symptoms of inflammatory bowel disease worse long-term.

It makes sense then to offer psychological treatment to those with chronic gut problems. But would such a treatment also benefit their gut health?

Inflammatory bowel disease

Our recent study combined data from 14 trials and 1,196 participants to examine the effects of talk therapy for inflammatory bowel disease. We showed that talk therapy - particularly cognitive behavioural therapy (CBT), which is focused on teaching people to identify and modify unhelpful thinking styles and problematic behaviours - might have short-term beneficial effects on depression and quality of life in people with inflammatory bowel disease.

Credit: AI-generated image (disclaimer)

But we did not observe any improvements in the bowel disease activity. This could be for several reasons. Inflammatory bowel disease is hard to

treat even with strong anti-inflammatory drugs such as steroids, so talk therapy may not be strong enough.

Talk therapy may only help when it's offered to people experiencing a flare up in their disease. The majority of the included studies in our review were of people in remission, so we don't know if talk therapy could help those who flare.

On the other hand, in our latest review of 15 studies, we showed antidepressants had a positive impact on inflammatory bowel disease as well as anxiety and depression. It's important to note the studies in this review were few and largely observational, which means they showed associations between symptoms and antidepressant use rather than proving antidepressants caused a decrease in symptoms.

Irritable bowel syndrome

When it comes to irritable bowel syndrome, the studies are more conclusive. According to a meta-analysis combining 32 trials,both talk therapy and antidepressants improve bowel symptoms in the disorder. A recent update to this meta-analysis, including 48 trials, further confirmed this result.

The studies showed symptoms such as diarrhoea and constipation improved in 56% of those who took antidepressants, compared to 35% in the group who received a placebo. Abdominal pain significantly improved in around 52% of those who took antidepressants, compared to 27% of those in the placebo group.

Symptoms also improved in around 48% of patients receiving psychological therapies, compared with nearly 24% in the control group, who received another intervention such as usual management. IBS symptoms improved in 59% of people who had cognitive behavioural

therapy, compared to 36% in the control group.

Stress management and relaxation were found to be ineffective. Interestingly, hypnotherapy was also found effective for bowel symptoms in 45%, compared to 23% of control therapy participants.

What now?

Better studies exploring the role of talk therapy and antidepressants for symptoms of inflammatory bowel disease need to be conducted. We should know in a few years which patients are likely to benefit.

In the meantime, there is enough evidence for doctors to consider referring patients with irritable bowel syndrome for talk therapy and antidepressants.

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