Depression, Anxiety and PTSD: New Treatment Approaches

Depression and anxiety are the most common mental health conditions worldwide, making them a leading cause of disability while PTSD is a debilitating condition that effects many emergency service workers. Beyond diagnosed conditions, subclinical symptoms of depression, anxiety and trauma affect the wellbeing and functioning of a large proportion of the population. With high rates of drug resistant treatment, new approaches are needed to manage both clinically diagnosed and subclinical depression, anxiety, and trauma.

Mood and Food

Firth, Joseph, James E. Gangwisch, Alessandra Borsini, Robyn E. Wootton, and Emeran A. Mayer. 2020 "Food and mood: how do diet and nutrition affect mental wellbeing?" British Medical Journal 369

The relationship between nutrition and mental health is recognised in folk wisdom and we know that alterations in food choices or preferences can be prompted by a change in psychological state (i.e. think 'stress eating' and 'comfort foods'). Yet studying the relationship between mood and food is difficult, not the least because of the clear potential for reverse causality.

Notwithstanding this complexity, there is a new science around mood and food that is promising new ways to think about managing mental health. Various studies on various topics in this field have found:

Mood and Carbohydrates
As well as the physical health risks on consuming highly refined carbohydrates (e.g. obesity and diabetes), diets containing high amounts of refined carbohydrates and sugars may also have a detrimental effect on psychological wellbeing.

- Data from longitudinal research show an association between progressively higher dietary glycaemic index and the incidence of depressive symptoms.
- Clinical studies have also shown potential causal effects of refined carbohydrates on mood - experimental exposure to diets with a high glycaemic load in controlled settings increases depressive symptoms in healthy volunteers, with a moderately large effect.
- Observational research has found that recurrent hypoglycaemia (low blood sugar) is associated with mood disorders. Several studies on humans have found that there is a relatively fast effect of diets with a high glycaemic index or load on depressive symptoms observed in human studies.
- There is a hypothesis that diabetes and mental illness have overlapping pathophysiology (though separate main models of disease pathophysiology) based on both conditions having similar abnormalities in insulin resistance, brain volume, and neurocognitive performance.

Diet, immune activation, and depression
Studies have found that sustained adherence to Mediterranean dietary patterns can reduce markers of inflammation in humans. A corollary this is that a modern western diet (i.e high in calories and saturated fats) has inflammatory effects, where inflammation is linked to various mental health conditions.

- Observational studies show that people with depression score significantly higher on measures of “dietary inflammation”.
- Randomised controlled trials of anti-inflammatory agents (eg, cytokine inhibitors and non-steroidal anti-inflammatory drugs) have found that these agents can significantly reduce depressive symptoms.
- The fact that specific nutritional components and general dietary patterns have anti-inflammatory effects raise the possibility that certain foods could relieve or prevent depressive symptoms. New studies show evidence for this.
- Importance of lifestyle - Recent clinical research has found daily stressors and a personal history with depressive disorders may cancel out the beneficial effects of healthy food choices on inflammation and mood.

Brain, gut microbiome, and mood

The gut microbiome refers to the trillions of microbial organisms, including bacteria, viruses, and archaea, living in the human gut. The gut microbiome interacts with the brain in bidirectional ways using neural, inflammatory, and hormonal signalling pathways.

- The role of altered interactions between the brain and gut microbiome on mental health has been proposed based on the following evidence:
- Major depressive disorder in humans is associated with alterations of the gut microbiome.
- Transfer of faecal gut microbiota from humans with depression into rodents appears to induce animal behaviours that are hypothesised to indicate depression-like states.
- Evidence that western diet contributes to weakening of gut barrier (a mucus layer with or without increased epithelial permeability) in gut, which is sometimes referred to as a “leaky
- gut”.
- A recent study found that the ingestion of probiotics by healthy individuals, which theoretically target the gut microbiome, can alter the brain’s response to a task that requires emotional attention and may even reduce symptoms of depression.

Conclusion

A Western diet (low in fibre and high in saturated fats, refined sugars, and artificial sweeteners) is less beneficial for mental health that a diet high in fibres, polyphenols, and unsaturated fatty acids. This diet, as found in a Mediterranean diet, can promote gut microbial taxa which can metabolise these food sources into anti-inflammatory metabolites (such as short chain fatty acids) and improve the gut microbiome in support of modulating processes that regulate emotion in the human brain.

Reclassifying MDMA and Psilocybin as a medicine for authorised psychiatrists in Australia

The Australian drug regulator, the Therapeutic Goods Administration (TGA) has reclassified two chemical compounds previously considered a poison as a medicine based on clinical trials on their use to treat drug-resistant depression and PTSD. Canada made this change in January 2022, but Australia is still ahead of the game compared to other countries.

There is a large body of evidence behind the TGA's decision including:

Psilocybin – A trial in New York involving people with terminal cancer found that single dose (21mg for 70 kg human) combined with psychotherapy (to structure a narrative around the drug experience) was found to have immediate, substantial, and sustained improvements in depression and anxiety. These benefits were sustained - there was a decrease in states of distress and improvement in quality of life after 6.5 months.
MDMA – Studies have found benefits of MDMA-assisted psychotherapy for people diagnosed with treatment-resistant PTSD where MDMA is used as a catalyst to facilitate trauma processing during psychotherapy. A meta-analysis of current research into MDMA-assisted psychotherapy is available here: https://annals-general-psychiatry.biomedcentral.com/articles/10.1186/s12991-020-00283-6

Conclusion

Rescheduling drugs known on the street as 'ecstasy' and 'magic mushrooms' is promising for individuals who don't respond to available medicines to treat depression and PTSD. More generally, it stands as something of a revolution in psychiatry. It is likely, over time, to be available to be used as a management option by other practitioners such as oncologists and psychologists.