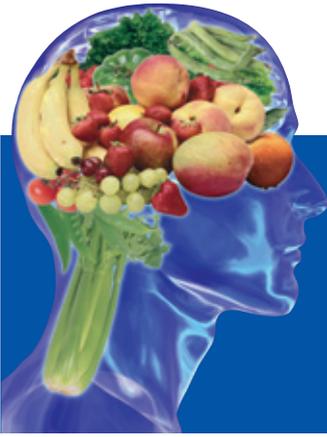


PREVENTING DEPRESSION THROUGH FOOD



The MooDFOOD research project has developed evidence based conclusions on the role of food in the prevention of depression.

The project examined evidence for the role of food groups, nutrients, dietary patterns, nutritional supplements and food related behaviours (such as mindful eating).

Dietitians can play a key role in helping people support their mental health through healthy eating.

Depression is one of the leading causes of disability in Europe. Up until now, dietitians have been limited in their ability to make evidence based recommendations to help people to support their mental health.

Results from the MooDFOOD project change that. We can now say that eating a healthy dietary pattern may help reduce depressive symptoms to support mental health.



SUMMARY OF CONCLUSIONS

PREVENTION OF DEPRESSION

- Following a healthy dietary pattern, consistent with national dietary guidelines, may reduce depressive symptoms in the general population. Vegetables, fruit and fish are particularly important.
- Evidence does not support taking nutritional supplements for the prevention of depression.
- For people with obesity, weight loss can reduce depressive symptoms.

TREATMENT OF DEPRESSION

- Following a healthy dietary pattern may help reduce depressive symptoms in patients with Major Depressive Disorder (MDD).
- Omega-3 supplements ($\geq 1\text{g/day}$ EPA and DHA) can have a small beneficial effect on depressive symptoms in patients with MDD using antidepressants.

WHAT SHOULD I ADVISE MY PATIENTS?

PATIENTS WITHOUT DIAGNOSED MAJOR DEPRESSIVE DISORDER:

What dietary advice can I provide to help reduce patient's risk of developing depression?

Advise your patients to follow a healthy dietary pattern every day, consistent with your national dietary guidelines. For people with obesity, weight loss can also help reduce depressive symptoms.

Should I be suggesting nutritional supplements?

No. Evidence shows that nutritional supplements are not effective in reducing people's risk of depression.

PATIENTS WITH DIAGNOSED MAJOR DEPRESSIVE DISORDER:

What dietary advice can I provide patients who already have depression?

Just like for the prevention of depression- a healthy dietary pattern may help reduce depressive symptoms.

Should I be suggesting nutritional supplements?

Omega-3 supplements ($\geq 1\text{g/day}$ EPA and DHA) can have a small beneficial effect on depressive symptoms in patients with MDD using antidepressants.

IMPORTANT - PLEASE NOTE

Presentation with depressive symptoms at primary health care level is a critical time for ensuring patients receive support and are referred to the appropriate mental health care provider. While a healthy dietary pattern may help reduce people's risk of depression, and may help in its treatment – it is not a substitute for appropriate mental health care and medication. In addition, nutritional supplements should never replace appropriate mental health care and medication.

WHAT IS A HEALTHY DIETARY PATTERN?



Lots of vegetables



Lots of fruit



Plenty of legumes



Fish every week



Wholegrain breads and cereals



Dairy products, poultry, eggs and nuts in moderation



Low in red and processed meats, as well as alcohol

EVIDENCE BASED CONCLUSIONS

In the field of diet and depression, much has been reported based on the findings of individual studies. This has led to many beliefs around the role of individual foods, nutrients and diets on depression. Misreporting of the evidence can have negative implications as it builds peoples fear of food, can imply the blame lies on the individual for their depression, or provides false beliefs that can deter people from accessing the mental health services they need. MoodFOOD researchers integrated the field of research on food and depression to form the evidence based conclusions below.



STRONG LEVEL OF EVIDENCE

Based on consistent evidence from meta-analysis of randomised controlled trials

PREVENTION

- Vitamin D, vitamin B12 in combination with folate and multi-nutrient supplements are not effective in reducing depressive symptoms in the general population.
- Evidence from weight loss trials as well as bariatric surgery trials shows weight loss reduces depressive symptoms in people with obesity.

TREATMENT

- Omega-3 supplementation ($\geq 1\text{g/day}$ of EPA and DHA) has a small effect on reducing depressive symptoms in patients with Major Depressive Disorder (MDD) using antidepressants.
- Vitamin B12 and folate supplements are not effective in reducing depressive symptoms in patients with MDD.

LIMITED LEVEL OF EVIDENCE

Based on consistent evidence from meta-analysis of prospective observational studies

PREVENTION

- Meta-analysis of prospective cohort studies shows that eating a healthy dietary pattern may reduce depressive symptoms in the general population.
- Regular intake of fish, vegetables and fruit may help to reduce depressive symptoms in the general population.
- Unhealthy dietary patterns (characterised in multiple forms such as western dietary patterns and those reliant on convenience/ processed foods) seem not associated with the development of depression in the general population.

TREATMENT

- Two small trials show that eating a healthy dietary pattern (as recommended by national dietary guidelines) can help to reduce depressive symptoms in patients with MDD.

AMBIGUOUS FINDINGS

Available studies show a high level of heterogeneity or conflicting results

PREVENTION

- Although there are some indications that unhealthy food groups such as sugar and refined grains, as well as junk/fast food may have an impact on the onset of depression currently findings on this association are ambiguous.

INSUFFICIENT EVIDENCE

There are too few studies to draw evidence based conclusions

PREVENTION

- There are too few studies to conclude whether individual supplements of magnesium, calcium, selenium, folate, vitamin B6, vitamin B12, omega-3 and zinc are effective in reducing depressive symptoms in the general population.
- There are too few studies to conclude whether the reversal of vitamin deficiencies with supplements can reduce depressive symptoms in the general population.

TREATMENT

- There are too few studies to conclude whether vitamin D, magnesium, selenium, zinc, calcium, vitamin B6 and multi-nutrient supplements are effective in reducing depressive symptoms in patients with MDD.
- There are too few studies to conclude whether the reversal of vitamin deficiencies with supplements can improve depressive symptoms in patients with MDD.
- There are too few studies to conclude whether weight loss can help reduce depressive symptoms in patients with MDD and obesity.

FIND OUT MORE

For more information on MoodFOOD's conclusions, including references visit the MoodFOOD website at www.moodfood-vu.eu

A HEALTHY DIETARY PATTERN FOR MENTAL HEALTH

Diets which were associated with reduced depressive symptoms scored highly for regular intake of vegetables, fruits, wholegrain breads and cereals, fish, legumes and nuts, healthy oils (such as olive oil) and being low in red meat, moderate in poultry plus dairy products and limited in alcohol.

The use of a scoring system in the studies suggests that an improvement in dietary pattern is a positive step for mental health. This matches well with the behavioural activation approach to changing lifestyle factors which helps clients

work towards small, achievable goals. Evidence also supports focusing on positive behaviours such as 'eat more vegetables', as opposed to a focus on restricting foods as the MoodFOOD project showed that too few studies are available to conclude that unhealthy dietary patterns may increase depressive symptoms.

Elements of the dietary pattern which may reduce depressive symptoms generally support European nations dietary guidelines. The specific elements which scored positively are outlined below:



Fruits & Vegetables

Eat at least 5 servings a day



Fats and Oils

Choose healthier vegetable oils that are rich in mono-unsaturated and poly-unsaturated fatty acids.



Fish and Seafood

Eat at least 1 serving of sustainably sourced fish and seafood a week - preferably oily/fatty fish



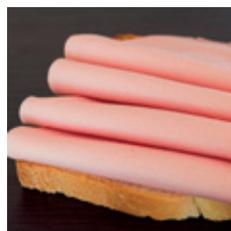
Meat

Eat less red meat. Poultry and legumes make a great alternative.



Pulses, legumes and nuts

Eat more



Processed Meat

Eat less red meat. Poultry and legumes make a great alternative.



Wholegrain breads and cereals

Swap refined options like white bread and sugary cereal with wholegrain and higher fibre options like whole grain/meal bread and pasta, brown rice, bran cereals and oats.



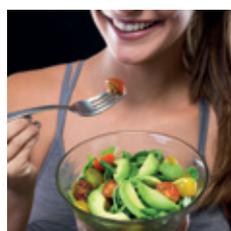
Alcohol

Avoid alcohol, or have no more than 14 standard drinks a week



Dairy Products

Eat dairy products every day



Body Weight

Achieve and maintain a healthy body weight through eating a healthy dietary pattern. For those with obesity weight loss can reduce depressive symptoms.

DESERVING FURTHER RESEARCH

There is a complex interplay between food-related behaviours, psychological eating styles, mindful eating and depression. Food behaviour and resulting dietary intake needs to be regarded as an interconnected system. Though there is currently insufficient evidence

to draw firm conclusions, there are promising indications that food related behavioural strategies, such as mindful eating, may help reduce depressive symptoms in the general population.

BEHAVIOURAL ACTIVATION

A proven, psychologist approved strategy for promoting positive behaviour change and mental health.

Behavioural activation is a form of cognitive behavioural therapy used in the treatment of depression. Its benefits also extend well beyond treating depression as it has been found to successfully encourage people into healthy behavioural changes.

While motivational interviewing focuses on building clients motivations and eliciting their own strategies for change, behavioural activation focuses more on building skills to achieve pre-set solutions/ activities. Behavioural activation helps break the cycle of negative thoughts and feelings people with depressive symptoms face. It encourages people to perform positive activities which support the values most important to them. Setting SMART activities and goals that are specific, measurable, achievable, realistic and time bound helps form a positive reinforcement cycle where recipients quickly gain a sense of achievement and feel empowered in achieving behaviour change. Lifestyle factors such as diet and physical activity are an excellent area for focusing these activities and behavioural activation can be delivered to both individuals and groups. Activities can include not only elements which directly support a healthy dietary pattern (such as eating more vegetables, fruits and legumes) but also behavioural strategies such as mindful eating. Key elements of behavioural activation include:

- **Self-monitoring** - through keeping food and mood diaries to monitor eating behaviours and food intake
- **Functional analysis** - identifying behaviour triggers and barriers to healthy eating in order to set effective activities and goals to address these.
- **Activity scheduling** - help prioritise behaviour change and create healthy routines with an active focus on reducing avoidance of activities and changing habits.
- **Improving food-related behaviours** - particularly the promotion of mindful eating

THE MOODFOOD PREVENTION TRIAL

Although primary analysis of the MoodFOOD trial did not find an effect of food related behavioural activation on the development of major depressive disorder, secondary analysis found that participants who showed the highest attendance at the behavioural activation sessions did in fact have a lower incidence of depression after one year.



Behavioural activation has been found to:

- ✓ Help manage type 2 diabetes
- ✓ Help achieve weight loss in people with obesity
- ✓ Help promote physical activity
- ✓ Help treat and prevent depression



FREQUENTLY ASKED QUESTIONS

WHAT CAUSES DEPRESSION?

Depressive feelings are experienced by all people and are a normal component of distress or grief. When depressive feelings turn into a disabling long-lasting disorder interfering with daily life, a clinical diagnosis of Major Depressive Disorder (MDD) may ensue. Although the exact aetiology remains unclear, depression is a multi-factorial disorder. Risk of depression is determined by a complex interplay of social, environmental and biological factors, including stressful experiences, genetics, lifestyle factors – including nutrition – and hormonal actions on the brain.

CAN VITAMIN DEFICIENCIES CAUSE DEPRESSION?

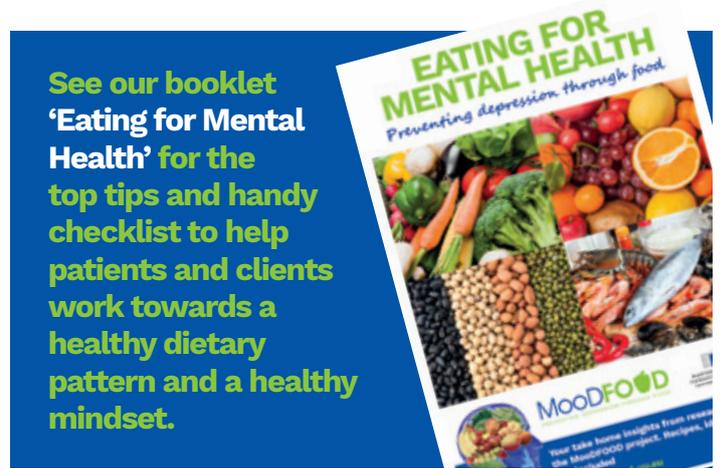
While nutritional supplements may be necessary for diagnosed deficiencies, the MoodFOOD project (including the MoodFOOD trial), found no evidence to support taking nutritional supplements to reduce depressive symptoms or prevent MDD. There are too few studies to determine whether reversing deficiencies through supplementation may reduce depressive symptoms. Thus, based on the current evidence, supplements should only be taken in line with national dietary guidelines.

HAS THE BENEFIT OF HEALTHY EATING IN PREVENTING DEPRESSION BEEN PROVEN IN A TRIAL?

The MoodFOOD trial, involving 1025 participants from around Europe could not prove that food related behavior activation therapy could prevent depression.. However, the trial indicated that there might be beneficial effects for those people that showed the highest attendance at behavioural activation sessions. So, there are indications that food related behavioural activation therapy might be helpful in the prevention of the depression. Meta-analysis of prospective observational studies showed that people eating a healthy dietary pattern who were followed over time were less likely to develop depression compared to people with a less healthy dietary pattern. This provides sufficient support for dietitians in taking proactive steps to empower patients and clients who are showing depressive symptoms into setting healthy goals for healthy lifestyles.

CAN EATING CERTAIN FOODS HELP PREVENT DEPRESSION?

Currently there are not sufficient studies to draw conclusions on the role of individual foods on the prevention of depression. Meta-analysis of observational studies found evidence that regular intake of fish, vegetables and fruit were associated with reduced depressive symptoms. No unhealthy foods or food groups have conclusively been found to be associated with increasing depressive symptoms. While high intake of added sugar seems to be associated with increased depressive symptoms, the limited number of studies and large variation in their design mean conclusions cannot yet be drawn. Therefore promoting a healthy dietary pattern – that focuses on foods to include, rather than foods to avoid, is the best way to help individuals to support mental health.



IS PROMOTING A HEALTHY DIETARY PATTERN FOR SUPPORTING MENTAL HEALTH ENVIRONMENTALLY SUSTAINABLE?

Promoting environmentally sustainable diets has never been more important and the good news is that a mental health friendly dietary pattern can also be an environmentally friendly dietary pattern. In the MoodFOOD trial behavioural activation techniques encouraged participants to successfully shift their dietary patterns to contain regular vegetables, fruit, legumes, wholegrain cereals, healthy oils and low fat dairy products. Such changes can have a positive impact on reducing environmental footprint of people's diets as long as they also achieve a balance between energy intake and energy needs, lower red meat intake and enjoy sustainably sourced fish in moderation. Most European dietetics associations now have environmental sustainability policies and guidelines. These policies consistently advocate eating a healthy amount of food, reducing red and processed meat intake, taking care to promote sustainably sourced fish and eating more plant based foods including beans and legumes. Examples can be seen in British Dietetic Association's Sustainable Diets Policy, the Swedish and Dutch dietary guidelines and the Netherlands Nutrition Centres 'Eating more sustainably' fact sheet.

WHO WAS INVOLVED IN THE MOODFOOD PROJECT?

The MoodFOOD project harnessed a multi-centre European consortium with expertise in nutrition, psychology, psychiatry and food-related consumer behaviour. Led by Vrije Universiteit Amsterdam, the project involved 14 organizations in 9 European countries including University College London, Azienda Sanitaria Firenze, University of Iceland, Amsterdam UMC locations AMC and VUmc, Aarhus University, GGZ InGeest, University of Exeter, Universitat de les Illes Balears and Leipzig University, as well as communication and dissemination partners the European Association for the Study of Obesity (EASO), European Alliance Against Depression (EAAD) and the Global Alliance of Mental Illness Advocacy Networks Europe (GAMIAN).

FIND OUT MORE

For more information, including patient resources & full reference lists, visit www.moodfood-vu.eu