

Whole Diet May Ward Off Depression and Anxiety

January 15, 2010 — A traditional or whole diet characterized by vegetables, fruit, whole grains, and high-quality meat and fish may help prevent mental illness — specifically, depression and anxiety. Conversely, a Western diet high in refined or processed foods and saturated fats may increase the risk of depression, new research suggests.

A large, cross-sectional study conducted by investigators at the University of Melbourne in Australia shows that women who regularly consume a so-called traditional diet were more than 30% less likely to have major depression, dysthymia, and anxiety disorders compared with their counterparts who consume a Western diet. In addition, the Western diet was associated with a 50% increased likelihood of depression.

"Simply put, if you habitually eat a healthy diet that includes fruit, vegetables, whole grains, and high-quality lean meat, then you may cut your risk of depression and anxiety," principal investigator Felice Jacka, PhD, told *Medscape Psychiatry*.

But one caveat here, said Dr. Jacka, is high-quality meat, which is difficult to come by in the United States. This is because most of the cattle in North America are raised — from birth to death — in feed lots, where they are fed a corn-based diet.

This method of raising cattle may have a "profound impact" on the quality of the meat, said Dr. Jacka. "It increases saturated fat and decreases very important good fatty acids. Whereas in Australia, red meat, such as beef and lamb, comes from pasture-raised animals, so it has a much healthier fatty acid profile," she said.

One of the findings that was not published in the article is that people who consumed more beef or lamb within Australia's recommended dietary guidelines (not more than 4 times per week) were less likely to have depression and anxiety.

According to Dr. Jacka, recent Australian studies show that a good proportion of individuals' dietary intake of omega-3 fatty acids actually comes from red meat.

"We've traditionally thought of omega-3s as only coming from fatty fish, but actually good-quality red meat, that is, naturally raised, has very good levels of omega-3 fatty acids, whereas red meat that comes from feedlots tends to be higher in omega-6 fatty acids — a fatty acid profile that is far less healthy and may in fact be associated with more mental health problems," she said.

The study was published online January 4 in the *American Journal of Psychiatry*.

Lack of Evidence

According to the investigators, unlike many medical conditions, most notably cardiovascular disease, psychiatric disorders lack evidence-based primary prevention and treatment strategies based on dietary modification. Previous studies that have looked at a potential link between diet and depressive illness have focused on individual nutrients or food groups, but they note that none has looked at the impact of a whole diet.

However, they add, that limiting studies to individual nutrients or foods may provide an incomplete picture of the relationship between diet and mental health. "We don't eat individual nutrients, we eat a whole diet," said Dr. Jacka.

"Up until very recently there really haven't been any studies that have looked at the impact of whole diet on common mental disorders, which is really interesting since over the past 10 years or so there's been a real burgeoning in the literature regarding the impact of diet on cardiovascular disease, diabetes, and the metabolic syndrome," she added.

Interestingly, many of the same underlying mechanisms that influence some of these conditions, such as immune dysfunction and subsequent inflammation, have also been shown to influence depression, Dr. Jacka pointed out.

To assess the association between individuals' regular diet and the prevalence of mental health disorders, the investigators used data from the Geelong Osteoporosis Study, a large epidemiologic study.

Unexpected Finding

The study included 1046 women ages 20 to 93 years. Participants' diets were assessed using the Cancer Council Victoria dietary questionnaire, a comprehensive food frequency tool that reports on 74 foods and 6 alcoholic beverages during the preceding 12 months on a 10-point frequency scale.

To diagnose current mental disorders, participants were assessed using the Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition, Text Revision) Research Version, Non-Patient Edition. In addition, psychological symptoms were measured with the 12-item version of the General Health Questionnaire (GHQ-12). Scores on the GHQ-12, major depressive disorder, dysthymia, and anxiety disorders were the study's primary outcomes.

After adjustment for age, socioeconomic status, education, and health behaviors, the results revealed that a traditional or whole food diet was associated with a reduction in depression and anxiety risk, with respective odds ratios (ORs) of 0.65 (95% confidence interval [CI], 0.43 – 0.98; $P < .05$) and 0.68 (95% CI, 0.47 – 0.99; $P < .05$).

In contrast, those who consumed a Western diet of processed or fried foods, refined grains, sugary products, and beer had higher GHQ-12 scores. Those who scored higher on the Western-

type or processed food diet tended to be approximately 50% more like to have depression (OR, 1.52; 95% CI, 0.96 – 2.41). However the researchers found no link between the Western diet and an increased risk of anxiety.

In an unexpected finding, the researchers also found a tendency for a so-called modern diet — which consisted of foods such as fruits, salads, fish, tofu, beans, nuts, yogurt, and red wine — was associated with a higher, rather than lower, likelihood for depression among younger, more educated women.

The researchers speculate that this may be due to reverse causality. "We think these women may have been attempting to improve their depressive symptoms by consuming a healthier diet," said Dr. Jacka.

Growing Public Awareness

Dr. Jacka pointed out that recent research conducted in primary care practices in Australia show that up to 30% of individuals with depression change their dietary habits as a way of improving their depressive symptoms, a finding she views as an indication of a growing public awareness about the potential relationship between diet and mental health.

Although primary care physicians often encourage their patients to improve their diets and increase their exercise level to help improve cardiovascular risk factors, the field of psychiatry "is just not there yet," said Dr. Jacka.

In large part, she said, this is due to a lack of evidence to support the hypothesis that a healthy diet can help prevent and/or treat mental illness, but the tide is turning, said Dr. Jacka. Two recent studies published late in 2009 [*Br J Psychiatry*. 2009;195:408-413, *Arch Gen Psychiatry*. 2009;66:1090-1098] also support the link between diet and mental health and depression risk.

"The good thing about these studies is that they were able to rule out reverse causality as an explanation for their findings. In other words, they found if you had a poorer-quality diet you were more likely to develop depression over the ensuing years, which supports what we found in our cross-sectional study, but depression itself did not lead to a poorer diet," said Dr. Jacka.

Public Policy Implications?

"The data are fairly consistent, and I do think it's time we started a conversation about public health messages about the potential role of diet in prevention as well as the treatment of depression particularly and mental health in general," said Dr. Jacka.

She added that her group currently has a paper in press investigating a link between diet and depression in a cohort of adolescents that shows "a very clear" relationship between diet quality and the presence of depression.

"My feeling is that the negative impact of the processed food industry is really going to make itself felt [in terms of the physical and mental health] on the younger generation," she said. She

pointed out that nutrition has an impact on the developing brain, adding that 75% of psychiatric illnesses begin before the age of 25 years.

"I believe that these dietary studies support the hypothesis that diet is causally related to depression, but we need to do more research to be sure that these just aren't chance findings. We also need to test whether [dietary] interventions in the early stages of depression may be of use," said Dr. Jacka.

Diet's 'Profound Impact'

Commenting on the study for *Medscape Psychiatry*, Fernando Gómez-Pinilla, PhD, at University of California Los Angeles' Neurotrophic Research Laboratory, said the study is impressive and makes an important contribution to the literature.

"This is a very well-controlled study and demonstrates the importance of a whole diet, not only on physical health, but also mental health," Dr. Gómez-Pinilla said.

Animal research by Dr. Gómez-Pinilla and colleagues has demonstrated that diet has a significant and rapid impact on brain-derived neurotrophic factor (BDNF), which plays a key role in psychiatric illness in general and depression in particular.

Boosting levels of neurotrophins appears to be one of the main ways antidepressant medications work. Dr. Gómez-Pinilla's group has shown that feeding rats a Western diet high in refined sugars and saturated fats has a very immediate and obvious impact in reducing BDNF level, which has a resulting impact on learning and memory.

Like Dr. Jacka, Dr. Gómez-Pinilla said the psychiatric community has been somewhat reticent about advocating diet as a preventive and/or treatment strategy for mental illness. However, he said, this research, as well as other recent studies, may help convince clinicians about the "profound impact" diet can have on mood and psychiatric disorders in general and perhaps help shift clinical practice.

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