



Module 8: Mood Issues & Depression

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WHAT PHYSICIANS NEED TO KNOW

Mental health disorders including depression, bipolar disorder and schizophrenia are increasing globally. Depression will become the second leading cause of disability worldwide by 2020 according to the World Health Organization (WHO). This is a nearly twenty fold increase since WWII. Furthermore, mental health disorders affect almost twice as many women as men - an important fact for the Ob/Gyn physician.

Adequate nutrition in-utero and during the first few years of life is critical for proper neuron-cognitive development. Nutrition, along with social and behavioral factors, is thought to determine adult mental health.

Mental Health Disorders

PMS

Premenstrual syndrome is estimated to affect as much as 40 percent of American women. Symptoms include but are not limited to irritability, sadness, mood swings, difficulty concentrating, and lack of energy. The more extreme condition known as premenstrual dysphoric disorder (PMDD) affects nearly 3 to 9 percent of women. PMDD results in a great deal of emotional and physical distress for those affected. The balance of estrogen and progesterone play an important role in PMS. Estrogen is closely linked to levels of serotonin. When levels of either of these hormones rise or fall, they can impact both mood and energy levels. Some women are more sensitive to the effects of these fluctuating hormones. Women who suffer from PMS or PMDD were found to have lower levels of important vitamins and minerals, such as calcium, magnesium and vitamin D3. In a study that followed over 3000 women for more than 10 years, it was determined that a diet high in vitamin D reduced their risk of PMS by 40%. Similarly, women who took calcium (1000 - 1200 mg/daily) and magnesium supplements had better mood and less water retention than those women with insufficient intakes.¹

Post Partum Depression

Low intake of omega - 3 fatty acids (EPA and DHA) are associated with post partum depression. Studies conducted in 23 countries demonstrated lower levels of both DHA in breast milk and seafood consumption are linked with higher rates of post partum depression.²

Bipolar Disorder

In 1999, Andrew Stoll of Harvard University published findings which demonstrated that omega-3 fats were effective in the treatment of patients with bipolar disorder. This randomized double blinded study used doses approximately 6 grams of EPA and 3 grams of DHA. After just 4 months, this trial was ended given the significant findings. In almost every outcome measure, the group which used supplemental EPA and DHA outperformed the group which used only placebo.³

Treatment Options

Omega 3

The strongest evidence regarding nutrition and cognitive health is demonstrated with the long chain omega 3 fats, DHA and EPA, which is found in abundance among cold water fish. There is a correlation between fish consumption (cold water fish is the major source of omega 3 fat intake) and depression. Interestingly, the rise in mental health disorders over the past century parallels a decrease in consumption of omega 3 fats and simultaneous increase in omega 6 fatty acids (through the use of corn and soybean oils). High fish intake is associated with decreased risk of other mental health disorders including postnatal depression, seasonal affective disorder and bipolar disorder. A review in the *American Journal of Psychiatry* points to an omega 3 deficiency as a key contributor to many mood disorders.⁴

In fact, lower rates of depression are found in countries such as Japan where the consumption of fish is *high* as compared to Germany where rates of depression are 60 times higher and fish consumption is low.^{5,6}

Omega 3 fats (DHA and EPA) are arranged within the neuronal cell membrane so that optimal fluidity is created which is essential for cell-to-cell communication involved in learning, attention, and mood. Serotonin relies on this cell-to-cell communication in order to work efficiently and effectively. Without fluidity, there is impaired communication and function between cells. Factors that interfere with the ability of omega 3 fats to maintain fluidity and function include inadequate diet or excessive omega 6 fats which compete for both metabolic pathways and placement in cell membranes.

The brain is mostly fat (60% is fat by weight) and of this fat, 20% is DHA. DHA plays a large role in creating and storing chemicals that are involved in mood, memory and concentration. While there is no established clinical dose of omega 3 fats recommended for the treatment of depression, the American Psychiatric Association Committee recommends that all patients with mood disorders include fish oil daily. In addition, patients with mood, impulse-control, or psychotic disorders should consume at least 1 gram of EPA and DHA daily. Limited evidence shows that supplemental doses of up to 9 grams may be beneficial with physician monitoring.

In one study on depression, EPA was supplied as an additional treatment to individuals who had previously failed or not shown improvement with use of anti-depressants. After using EPA for nine months, individuals showed improved depressive symptoms and changes were seen in the lateral ventricular volume.⁷

Vitamin D

Research has suggested that Vitamin D may help relieve mood disorders due to its ability to effectively increase levels of serotonin. Vitamin D has been shown to be particularly effective in the treatment of seasonal affective disorder (SAD) which affects over 10 million Americans for up to 6 months of the year. People suffering from SAD were found to have normal blood levels of vitamin D during the summer; however levels dropped by as much as one third in the winter months. Those who took supplements for a year stabilized blood levels and experienced significant improvements in their depression.^{8,9}

B Vitamins

The B-complex vitamins, specifically thiamin, niacin, riboflavin, folic acid, biotin, B6, and B12, can influence maintenance and regulation of mood, and deficiencies are linked to depression. These vitamins play an essential role in the production of serotonin. Many studies have shown that low blood levels of Folate and B12 vitamins are related to depression. Evaluation of individuals hospitalized for depression shows that approximately 30% were deficient in vitamin B12.¹⁰ In fact, women over the age

of 65 with low levels of B12 were twice as likely to experience depression as those with normal levels. These vitamins have also been shown to increase the response to antidepressant medications when added to the diet. Placebo controlled trials have demonstrated that subjects with low thiamine levels experience low mood, irritability and fatigue which improved after supplementation.^{11,12}

Mood Stabilizing Foods

The foods we choose to include in our diets can directly impact how we feel given the effects on blood sugar levels and neurotransmitters like norepinephrine, serotonin and dopamine. These neurotransmitters work together to balance our moods including feelings of anger, irritability, anxiety, motivation, happiness, impulsiveness, and depression. It is clear that a decrease in one or all of these chemicals may result in a wide range of feelings. Evidence suggests that consuming tryptophan, one of the essential amino acids found in protein foods, can lead to an increase in serotonin within the brain. A meal that is high in carbohydrates and low in protein increases serotonin synthesis, while a high protein, low carbohydrate diet decreases serotonin synthesis. This is due to the competing absorption of other amino acids at the blood brain barrier and the fact that tryptophan is usually present in small amounts in protein foods. Once in the brain, tryptophan undergoes a series of enzymatic reactions, resulting in the production of the neurotransmitter serotonin.

Carbohydrates also affect body chemistry as fluctuations in blood sugar levels can cause irritability and fatigue. The types of carbohydrates consumed can affect mood differently. High quality carbohydrates such as those found in whole grains, oats, legumes, vegetables and fresh fruits and vegetables are digested slowly resulting in a more predictable rise in blood sugar. High quality carbs contain soluble fibers which serve to mitigate the rise in blood sugar that follows a high carbohydrate meal. Low quality carbohydrates, such as refined flours and sugars, can result in dramatic high and lows in blood glucose which may cause increased irritability and depression. For mood stabilization, the majority of the daily diet should come from high quality carbohydrates combined with protein. Protein plays a critical role in modulating mood by slowing the absorption of carbohydrates from the blood. For this reason it is advisable to recommend adding protein to all meals and snacks during the day.

Exercise

Exercise benefits overall health through its role in weight management and fitness, as well as mood regulation. Exercise is known to be important in regulating mood both for its role in the production of endorphins and for its contribution to feelings of self esteem and empowerment. It is not surprising that obesity and depression often co-exist and that exercise can help alleviate both conditions. The University of Texas Southwestern conducted a study that put people with mild to moderate depression on an exercise program using a treadmill or stationary bike, 30 minutes three to five times per week for 3 months. Those who worked out with moderate intensity reduced their depressive symptoms by half - a rate shared by those starting anti-depressive medications. Those who exercised with less intensity were still able to reduce their symptoms by an impressive 39 percent and 29 percent, respectively.¹³

It is important to recognize that women who diet frequently - often restricting carbohydrate, protein or both on very low calorie diets may be deficient in important precursors (like tryptophan and B vitamins). A combination of a healthy, well-balanced diet, exercise, and gradual weight loss is the optimal approach to weight loss and may possibly protect against depression in this population.

WHAT PATIENTS NEED TO KNOW

Eating can have a dramatic effect on your health. Evidence continues to emerge demonstrating what we eat can impact our mood by influencing chemicals (neurotransmitters) in the brain that help regulate our feelings of well being. For instance, serotonin is a neurotransmitter linked to positive feelings of well being. In addition, serotonin has profound influence energy levels, our ability to concentrate and manage stress. When serotonin levels are low it is difficult to focus and problem solve, sleep patterns can be interrupted, and irritability may be increased.

Serotonin levels fluctuate widely for women as it relates to with monthly menstrual cycles. Estrogen is a precursor to this important neurotransmitter. Low levels are linked to cravings for sugars and simple carbohydrates - foods which impact insulin levels influence them to spike and then drop - which further destabilizes mood. You should choose foods that not only support physical health but also stabilize mood, and maintain blood sugar and energy levels throughout the day.

- Good Carbohydrates
Levels of serotonin can be *increased* by eating healthy carbohydrates such as whole grains, fruits and vegetables. In addition, this benefit is prolonged when you consume healthy protein and fats are eaten at the same time. Healthy fats like those found in cold water fish (salmon, sardines, black cod etc) as well as those found in plants (flaxseed, walnuts, pumpkin seeds, etc) are essential for brain function and mood regulation.
- Sufficient Vitamin D Intake
Adequate intake of Vitamin D, either through food sources or supplement is also important for mood stabilization and serotonin levels particularly if you are susceptible to winter blues, also known as Seasonal Affective Disorder (SAD). People with this disorder tend to have normal levels in the summer months, however in the winter months levels can drop by as much as 1/3.
- Eat Quality Foods
The table below outlines high and low quality foods and why we categorize them in terms of quality. As you choose foods, try and choose more from the high quality categories.

Food	High Quality	Low Quality
<p><i>Carbohydrates</i></p> <p>With high quality carbohydrates there is a slow and steady rise in blood sugars, due in part to their fiber content which slows absorption from the stomach.</p> <p>Low quality carbohydrates will cause blood sugars to spike dramatically and then plummet.</p>	<p>Vegetables</p> <p>Fruits</p> <p>Beans</p> <p>Peas</p> <p>Lentils</p> <p>Brown and wild rice</p> <p>Barley</p> <p>Oatmeal</p> <p>Whole grain cereals</p> <p>Quinoa</p> <p>Wheat berries</p> <p>Millet</p> <p>Amaranth</p>	<p>Refined and processed foods (made with white flour and white sugar)</p> <p>Cereals</p> <p>chips</p> <p>Candy</p> <p>Soda</p> <p>Jelly/syrup</p> <p>Cakes</p> <p>Cookies</p>
<p><i>Protein</i></p> <p>Protein is a great mood stabilizer. It helps to slow sugar absorption into the blood.</p>	<p>Turkey breast</p> <p>Seafood</p> <p>Fish</p> <p>Egg whites</p> <p>Yogurt</p> <p>Enriched soy milk</p> <p>Beans</p> <p>Lentils</p> <p>Split peas</p> <p>Nuts (soy nuts, peanuts, almonds, walnuts etc.)</p>	<p>High fat meats</p> <p>Fried meats</p>

<i>Fats</i> Health fats are critical to the proper functioning and structure of brain cells.	Wild Salmon (fresh or canned) Herring Sardines Anchovies Omega fortified eggs Flaxseed (ground) Walnuts Canola oil	
<i>Vitamin D</i>	Wild salmon (with bones) Mackerel (not King) Sardines (with bones) Milk (low fat or fat free) Egg yolks Shiitake mushrooms Fortified whole grain cereals	
<i>B Vitamins/Folate</i>	Fortified Whole grains Lentils Black-eyed peas Soybeans Oatmeal Broccoli Artichokes Spinach Sunflower seeds Wheat germ	
<i>B Vitamins/B12</i>	Shellfish Wild salmon Fortified whole grain cereal Enriched soy milk Trout Tuna Lean beef Veggie burgers Yogurt Eggs Cheese	

- Try to exercise almost every day
Exercise is not only beneficial for weight loss and fitness, it also improves mood by helping you feel stronger, boosting your self esteem, and increasing self confidence. Exercise increases levels of natural chemicals/neurotransmitters that induce feelings of well being. Exercise also improves blood flow throughout the body and brain which improves function. Try to get at least 30 - 60 minutes of exercise most days of the week.

SUMMARY

- Avoid excesses in salt and sugar
- Eat less more often throughout the day
- Combine healthy carbohydrates, healthy fats and protein at each meal or snack
- Take a good quality multi vitamin with a full compliment of B vitamins
- Try to get regular exercise
- Do not abuse alcohol

To ask a question related to program module, please email our experts at info@obgynalliance.com.

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