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Proper Nutrition and Its Potential as Alternative Treatment of Depression

By

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At a young age of 62, a mother was severely depressed, among having other medical issues, and her family was worried that she would not live much longer. She lived alone, never saw anyone, and was a shadow of the person she once was. Her family considered putting her in a nursing home, but decided to use a day-habilitation center that allows nurses to give her proper care. This included medication for all of her ailments, proper food intake, and being around other people (Pettus 154). Her son said, “Her mood, functional capacity, and quality of life improved to a level I had never expected” (Pettus 154). He clearly describes that just putting her in the right atmosphere turned her into another person entirely, allowing her to become healthier in just a matter of time. Her life was changed by adopting new patterns, and accepting that if she did not change, she would not make it much longer. This is Mark Pettus’ mother. He described this situation in his book *It’s All in Your Head*. Dr. Pettus received his M.D. at the University of Massachusetts Medical School and completed his postdoctoral training at Harvard Medical School. Currently the Director of Medical Education, Wellness and Population Health at Berkshire Health Systems in Massachusetts, Dr. Pettus wrote this book to discuss how nutrition affects brain health and how the body reacts to certain substances.

Within the last two decades, a lot of research has been conducted to determine the factors that cause and prevent depression. This is important because the diagnostic count for mental diseases is rapidly increasing due to the stresses and unhealthy habits of many people. So far, researchers have come up with causes such as life-altering events, genetics, chemical imbalances in the brain, and lack of nutritional requirements. Many argue that all of these factors have something to do with why a person starts experiencing depressive symptoms. During tragic or uncontrollable events, such as a death in the family, it is natural to have symptoms of sadness and

low motivation levels. However, there is a possibility of certain things that can be changed to potentially help the onset or progression of depression.

Many people who suffer from depression are likely to continue their battle with this disease since minimal research exists that has explored the causes of and preventative strategies for depression. Proper nutrition is important to having a healthy body and mind. There has been an increased amount of research on folate, vitamin B6, vitamin B12, and more that have a large effect on chemicals in the brain. Without the proper intake of these nutrients, the body may react in this dismal state. Researchers have also been trying to find a cure. Medical health care professionals tend to prescribe antidepressants as a temporary solution for this disease, but the results are often inconclusive. Many individuals report that the pills make it impossible to conclude treatment due to addictive chemicals or that the side effects are worse than dealing with the depression itself. The growing amount of research on this topic predicts that proper diet may prevent progression of this disease. Therefore, health care providers may want to consider different routes of treatment as multiple causes of depression may need different prescriptions. Some medications may not be helpful, whereas possible nutritional alternatives may provide alternative treatment options.

Considering the variety of catalysts that may cause an onset of depression, every person's battle with this disease differs. A life-altering event, such as a close friend or family member's death or tragedy, genetics, and imbalanced chemicals in the brain are the most common causes discussed by medical professionals. Each of these has a harmful effect on a person's brain. Depending on the severity of the event, nutritional alternatives may not be enough to reverse depression because it is a severe trauma. However, a high possibility exists that nutritional supplements could help in a number of situations, varying in severity.

Many diseases are passed down genetically, and therefore could be a large part of why many people suffer from this mental disease. For example, many people who suffer from obesity or malnutrition have depressive symptoms because their brains are unable to function properly. This could be due to genetic diseases and/or poor nutrition. M.S.V.K Raju states in his study “Medical Nutrition in Mental Health Disorders,” published in *Indian Journal of Psychiatry*,

Although the determinants of mental health and mental disorders are complex, the emerging and compelling evidence for nutrition as a crucial factor in the high prevalence of mental disorders suggests that diet is as important to psychiatry as it is to cardiology, endocrinology, and gastroenterology. (Raju)

Most people are adamant about making sure they have proper dietary intake due to conditions such as cardiovascular disease and digestive disorders. However, proper nutrition also relates to brain function, and therefore how the entire body operates. Without giving the brain the proper tools to work, such as proper nutrition, the brain could reduce its ability to produce positive moods. A focus on better nutrition could enable the body to be in a physically healthy state, but also improve the mental state because of the vital nutrients the brain needs to correctly send signals to the body. In order to perform simple functions such as walking and talking, the brain has to send task-specific signals through neurotransmitters to allow the body to operate properly.

Proper nutrition relates to the way the mind sends messages to the body. Neurotransmitters are the vessels in which the body uses chemicals to send messages to the brain. Stephen Ilardi, author of *The Depression Cure*, studied depression and wrote about the neurotransmitters, serotonin and dopamine. He said,

Like all neurotransmitters, serotonin is a chemical messenger. It does its job by hopping from one brain cell to the next, relaying its signal in an elegant chemical code. Yet when

brain cells do not have enough omega-3 fats, they have trouble understanding the message of serotonin, and they start to misfire... [The] stress response triggers that onset of depression. (Ilardi 70)

Serotonin, the neurotransmitter that allows for the body to feel happy, regulates mood. Therefore, without the correct balance, the body does not know how to react. Ilardi also mentions that dopamine, alongside serotonin, gives the body a well-rounded feeling. A person is able to sleep, eat, stay alert, and be happier with the combination of these two neurotransmitters (Ilardi 70). With this information, the lack of omega-3 intake, may cause the brain to transmit incorrect signals. Ilardi continues to describe how the omega-3 allows for the neurotransmitters to be more effective by explaining that this fat comes in three molecules; DHA, EPA, and ALA and how they vary in length.

The long one, DHA, is the only omega-3 molecule that's abundant in the brain. And when brain cells don't have enough DHA, their membranes tend to get rigid and inflexible. This makes it hard for them to transmit their signals effectively. Not surprisingly, depressive patients often lack enough DHA. (Ilardi 75)

The omega-3 fat can be found in many substances such as fish and fish oils. Therefore, with a supplement or an increase in seafood products, a higher possibility of improvement in the patients' symptoms exists. Proper functioning of the neurotransmitters increases the likelihood of mental stability. This provides evidence for not only omega-3 fats helping the brain to function better, but other food substances as well. Noticing that the body works as a system, and not separately, is important to realize when discussing the effect of nutrition in the battle of depression because it ties the digestive system and brain directly to each other.

Among the discussion of neurotransmitters and how they function, Dianne Volker and Jade Ng wrote an article called “Depression: Does Nutrition Have an Adjunctive Treatment Role?” and published it in the journal of *Nutrition and Dietetics: The Journal of Dietitians Association of Australia*. These women discussed how dopamine, noradrenaline, adrenaline and serotonin affect the brain and how an imbalance of these chemicals affect mental illness. “Dopamine, noradrenaline, and adrenaline are derived from the hydroxylation and decarboxylation of the amino acids tyrosine and phenylalanine in a common pathway consisting of several steps” (Volker et al). The body needs twenty amino acids to function, eight of which come from the diet. Without these nutritional balances, the neurotransmitters do not have fuel to work. Serotonin comes from tryptophan in the diet, which be found in substances having protein bases: poultry, red meat, eggs, yogurt, and other protein rich foods. Therefore, with a lack of protein in the diet, there will not be enough serotonin to function. As mentioned before, proper levels of serotonin allow for happiness and contentment. If a person does not consume the proper amount of protein, a higher possibility exists that he or she will not feel mentally stable. All of the other neurotransmitters rely on each other for a balance in the brain. A good analogy of this relationship could be the filling up an ice cube tray. If the tray is not perfectly balanced, water spills out of one side, but is low on the other. If a person consumes too much sugar and high carbohydrate foods rather than protein and good carbohydrates, his or her system will be overflowing in some areas but low in others like serotonin. Considering there are many different diet regimens, there are many different balances of protein, fat, and carbohydrates that can impact each person’s body. In order to figure out what works for an individual, it may take time to find the right balance, but ultimately everything consumed in moderation can be beneficial. Furthermore, without these essential nutrients, the body can fall into a depressive state.

Luise Light also discusses serotonin in her book *What to Eat*. She describes how the body craves fatty and sugary foods when under stress because this allows for immediate pleasure. Once consumed, the digestive system converts a portion of the food into insulin. In turn, the insulin releases the amino acid tryptophan which travels to the brain becoming serotonin (Light 165). Light explains, “The body can’t make its own serotonin; it has to come from food or supplements” (Light 166). Without eating the right foods, the body will not be able to produce the correct behaviors. When people start eating healthier and focusing on diet, their overall mood improves, which in turn, benefits sleep patterns and general well-being.

Since there are multiple causes of depression, it is useful to discuss the different categories of the disease when evaluating patients. Scientists have divided the symptoms into two sections: those who suffer from depression as a result of a sudden tragic event and those who suffer due to background reasons such as genetic traits or chemical imbalances. Many factors determine how the body reacts to depression including age, gender, pregnancy, or other health issues.

Two main categories of depression exist, “Dysthymic Disorder” and “Major Depressive Disorder.” Paula Ann Ford-Martin, Teresa G. Odle, and Jacqueline Q. Longe describe the difference of these disorders in the “Depressive Disorders” article in *The Gale Encyclopedia of Medicine Journal*. Major Depressive Disorder is defined as “moderate to severe episodes of depression lasting two or more weeks” (Ford-Martin et al). This form, commonly found in people in their early 30’s, mainly affects women. Major Depressive Disorder tends to fluctuate in severity, and those who suffer from this form lose interest in activities they once enjoyed, do not sleep well, and feel worthless or hopeless. Dysthymic Disorder describes people who have symptoms lasting from two to sixteen years. The intensity of this type of depression fluctuates, but can become more prevalent over time (Ford-Martin et al.). Both of these divisions can occur in anyone at any age,

but symptoms generally begin in patients when they reach their early thirties. For those who battle this disease, the length of time they suffer defines the severity. The longevity of the symptoms generates the desire to find different treatment routes. For a shorter term basis, it might be more beneficial to prescribe an active exercise regimen and a better quality diet. However, if a patient suffers for a longer period of time, more extensive research into best possible treatments for that patient are needed.

Multiple studies of dysthymic disorder patients who have undergone nutritional changes to improve their mood and brain function exist. An important study, completed by A. Herva, J. Latinen, J. Miettunen, J. Veijola, J. T. Karovenen, and K. Lasky, discusses nutritional factors in the treatment of depression and was published in the *Journal of Obesity*. These scientists studied how obesity affects depression in over 11,000 people, ranging in age from 14 to 31. The study followed these subjects for over 30 years to see how they were affected as they moved forward with their lives. The results concluded that overweight adolescents are more likely to have depressive symptoms throughout their lives due to the pressure of body image and the consumption of unhealthy foods which inhibit their brain functionality (Herva et al.). The correlation between obesity and depression exemplifies dysthymic disorder and the way it can occur throughout people's lives. Since it is essential to be with those patients throughout a majority of their life, these scientists were determined to provide information that could help explain why some people are fighting this disease for such a long period of time. Their dedication demonstrates the severity of the need to understand why and how this disease works. Understanding the difference between the categories helps demonstrate the possibilities for treatment programs and helpful nutritional plans.

There are a considerable amount of studies that discuss how depression can affect people at certain stages of their lives. This includes children, adolescents, young adults, middle age adults, pregnant women, and the elderly. Some age ranges can experience depression as extremely traumatic, depending upon the cause of the distressed feeling. L. Gougeon, H. Payette, J.A. Morais, P. Gaudreau, B. Shatenstein, and K. Gray-Donald conducted a study titled “Intakes of Folate, Vitamin [B Sub6], and [Bsub 12] and Risk of Depression in Community-Dwelling Older Adults: The Quebec Longitudinal Study on Nutrition and Aging.” Published in the *European Journal of Clinical Nutrition*, this study focused on how each of these nutrients specifically affected the elderly population and included 1,793 men and women of the ages 67-84. “Researchers hypothesized that stronger associations between depression risk and nutrients are seen when there is lower adequacy or status, in this case [Bsub 6] and [Bsub12] or folate” (Gougeon et al.). It is important to understand that there is a significant difference between elderly patients because their bodies have endured so much more throughout their years. Due to this, their bodies do not function the same as younger individuals. Without the proper amounts of vitamin B6 and B12, these patients struggle to remain positive. The elderly population may have a tough time preparing and consuming adequately balanced meals due to their other health limits. If they cannot drive anymore, they may be relying on someone to bring them food. If they do not have enough strength, they may not be able to cut up vegetables anymore and rely on canned products with less nutrients. This population is losing the ability to help themselves and may need more assistance than they think. This could lead to depression from too many deficiencies in their diet. Plus, many elderly individuals feel isolated if their loved ones are absent, which could cause lack of appetite and motivation, therefore putting them in a dismal state.

In the *Journal of Nutrition, Health and Aging*, E. Mamplekou produced an article called “Urban Environment, Physical Inactivity and Unhealthy Dietary Habits Correlate to Depression Among Elderly Living in Eastern Mediterranean Islands: The Medis Study” explained that “Geriatric depression is a disease largely underdiagnosed and undertreated” (Mamplekou). This is due to genetic and dietary factors that are collectively stronger in late-life patients. This study also found that many people who had depression were also more likely to have another disease such as diabetes, hypertension, or hypercholesterolemia. They discussed many of the factors such as fish oil, alcohol consumption, and fatty acids that affect the elderly population. Taking all of these factors into observation allows society to understand why it is important to pay attention to what is being put into their bodies over the years, and how it is going to affect them later in life.

Depression is a serious risk and without proper care can lead to death in the elderly. Payne argues,

“Importantly, individuals with both depression and comorbid vascular disease are at a greater risk for poor outcomes; for example, myocardial infarction patients with comorbid depression are four times more likely to die within 18 months compared to patients without depression.” (Payne)

Martha Payne conducted a separate study on “Nutrition and Late-Life Depression: Etiological Considerations” and used many of these startling facts to demonstrate exactly how influential depression can be on the body. If the body is under copious amounts of stress or pain, it could provide causation for this disease to start taking over. This remains true for people at all stages in life, but as mentioned before is critical for elderly patients. Therefore, with more nutritional treatment and care, this demographic may be able to live longer and happier lives.

Another extremely common demographic for depression to occur is in pregnant and postpartum women. Many pregnant women experience depressive episodes during and after pregnancy due to the shift in hormones and their cravings for unhealthy foods. Dependent upon how healthy the mother has been throughout her life, improving dietary intake could be a very simple solution to lessen depressive symptoms. According to Adrienne O'Neill in her article "Preventing Mental Health Problems in Offspring by Targeting Dietary Intake of Pregnant Women," the diet quality of the mother is extremely likely to be transferred into the offspring. Therefore, the better the mother eats, the healthier the child should be. As discussed before, proper nutrition can help promote better moods throughout life. She conducted this study by examining over 23,000 mothers while they were pregnant, and after when the child was six months, eighteen months, three years, and five years old. She researched proper diets of mothers and children and calculated the effects that the mother's diet has on the child. She stated if there are depressive symptoms occurring with the mom, the results are fivefold for the children by the time they become a teenager (O'Neill.) If the mother is depressed, and eating poorly, the child will not be able to absorb nutrients in the womb. After the child is born, his diet can determine how his brain grows and processes. If he is eating in consistency with the mother, there is an extremely likely chance he will also suffer from mental illness due to the lack of nutrients. In conclusion, this study states, "We thus call for the application and evaluation of targeted, primary prevention strategies that focus on dietary intake with the view to improve mental health outcomes of mothers and offspring during the postnatal period and beyond" (O'Neill et al). This study demonstrates the correlation between physical and mental health by describing that the healthier the mother is, the healthier the child will be, allowing for less depression because of better quality food. She demonstrated that the importance of a mother's diet could affect the child, and these dietary behaviors could affect a

child her whole life. Without proper focus on the quality of food the child is getting, this child has higher risk for many other health issues.

Researchers have discussed some of the most important nutrients for soon-to-be mothers to be fatty acids, vitamin B12, folate, iron, zinc, calcium, selenium, and tryptophan. The investigation of these nutrients was discussed in the article “Nutrition Health Issues in Self-Reported Postpartum Depression” by Sabine Hogg-Kollars, Denise Mortimore, and Sarah Snow. This research proved that mothers with these nutrient deficiencies were 20.8% more likely to suffer from postpartum depression. The study concluded that mothers with vegetarian diets and low nutrient patterns showed more symptoms (Hogg-Kollars et al.). In order to understand the importance of each dietary nutrient, it can be helpful to see correlations like this in order to question the importance of protein and vitamins in dietary intake. In addition, analyzing each of these nutrients individually can provide information regarding the importance of prenatal care for the mother and baby.

Not only is it important for pregnant mothers, it is important for women in general. Many studies, as previously stated, show that women are more likely to suffer from depression than men. This prevalence in women could be due to hormones or the way a woman's body reacts to certain aspects of life such as food, events, and genetic traits. A specific focus on the diet and overall health regimen is required to maintain a balanced and healthy individual.

Research has proven that certain foods are important to help both men and women stay nutritionally sound. The recommended diet consists mostly of meats, whole grains, fruits, vegetables, and dairy. In order to have a complete diet, the USDA outlined daily standards necessary for the body to function. Each of these aspects has been studied to compare the functionality of the brain and how the body reacts to the consumed nutrient. Amy Meegan, Ivan

Perry, and Catherine Phillips produced a study in the *Directory of Open Access Journals* entitled “The Association between Dietary Quality and Dietary Guideline Adherence with Mental Health Outcomes in Adults: A Cross-Sectional Analysis.” The study focused on comparing dietary quality and composition and the relevance to depressive symptoms and anxiety. They studied 3,000 participants by using questionnaires and collected data on the age, gender, family history, medication, and medication history (Meegan et al.). The researchers took into account all of the variances between these individuals and eventually came up with the conclusion that people with “high dietary quality were almost twice as likely to report good well-being, even after adjustments for confounding factors, including antidepressant use and history of depression” (Meegan et al.). So, whether or not the patients had experienced symptoms of depression before the study, by increasing their dietary quality, they were able to report that their well-being had improved. They also stated, “Well-being is a non-heritable trait, thus it may be possible to improve an individual’s state of well-being by altering lifestyle, environmental and/or dietary factors, such as dietary quality” (Meegan et al.). The Irish Health Research Board supported this study through a grant using carefully selected participants to ensure accurate results. By researching the diet as a whole, this study concluded that a strong correlation between having a better diet quality and a better mental health state exists. This research will allow more studies to be conducted with the goal of discovering specific dietary nutrients that ensure the best chance of mental well-being.

A similar study by M.J. Gregorio, A.M. Rodrigues, M. Eusebio, R.D. Sousa, S. Dias, B. Andre, K Gronning, P.S. Coelho, J.M. Mendes, P. Graca, G.A. Espnes, J.C. Branco, and H. Canhao titled “Dietary Patterns Characterized by High Meat Consumption Are Associated with Other Unhealthy Lifestyles and Depression Symptoms” was published by *Frontiers of Nutrition*. In a study of Portuguese adults, these researchers found that the entire diet affects brain function. The

study focused on all of the participants' dietary choices, physical activity, alcohol and tobacco consumption, and current diseases. The research discovered two conclusive types of dietary patterns. The first pattern is referred to as the "meat dietary pattern" and the second was "fruit and vegetables dietary pattern." The people who consumed the most fruits and vegetables were deemed healthier because the people who consumed more meat were more likely report depressive symptoms. With this information, the researchers also concluded that females and the elderly were more likely to report depressive symptoms (Gregorio et al.). In general, women and the elderly are more likely to report depressive symptoms for a variety of reasons. In comparing the two dietary patterns it is important to notice that most of the fruit and vegetables necessary for the body contain proper vitamins and minerals. However, meat is also important part of the diet in moderation. Most of the information that has been produced by a numerous amount of studies has come from researchers and scientists examining specific vitamins and minerals that improve brain functioning for separate reasons.

There are many other dietary factors that could affect the brain function, such as folate, vitamin D, and Vitamin B. Without an individual knowing the deficiencies in his diet, there could be outstanding depression progression. There are many different nutrients and vitamins that the body needs to function; therefore, an imbalance can disrupt the functioning of the body. The brain functions by neurotransmitters carrying chemicals throughout the brain to affect the mood and brain activity in general. The article "Understanding Nutrition, Depression, and Mental Illness" was written by Sathyanarayana Rao, M. Asha, B. Ramesh, and Jagannatha Rao and published in the *Indian Journal of Psychiatry*. Within this article the authors stated,

Studies have indicated that daily supplements of vital nutrients are often effective in reducing patients' symptoms. Supplements containing amino acids have also been found

to reduce symptoms, as they are converted to neurotransmitters, which in turn alleviate depression and other mental health problems. (Rao et al.)

The authors further explained that patients who take antidepressants are at risk for side effects that could make them take inappropriate amounts of their medication, and these drugs could potentially be more harmful than the actual disease (Rao et al.). In addition, the authors suggested that nutritional supplements could prevent some symptoms. “Deficiencies in neurotransmitters such as serotonin, dopamine, noradrenaline, and a-aminobutyric acid are often associated with depression” (Rao et al.). Without the proper balance of chemicals in the brain, a higher risk for incorrect mood levels exists because the neurotransmitters rely on ingested nutrients. This can create a snowball of behavior, potentially dangerous for individuals who are not given proper strategies to relieve symptoms. This is essential to examine because many people might attempt to be prescribed an antidepressant to help with this issue. However, the patients generally do not change anything in their daily routine. Without changing something, a medication is only going to mask the symptoms instead of getting to the bottom of the cause.

Vitamin D, a specific vitamin crucial to mental well-being, has been researched by psychiatrist Mukesh Mohan Bhimani, who released a study on the correlation between Vitamin D deficiency and mental health concerns such as depression and schizophrenia. He estimated that one billion people worldwide suffer from this deficiency. In his research, he cited Wilkins’ study on this subject, and concluded that the people who were given a supplement were significantly better than those who received a placebo (Bhimani). Considering most people get their Vitamin D just from sunlight exposure, one must realize that the majority of people who are depressed do not spend enough times outdoors. People in office or indoor jobs tend to feel more depressive symptoms and would benefit drastically from receiving the proper amount of daylight on a daily

basis. People can easily remedy this deficiency. If more offices offered a bench or outdoor area for people to eat lunch, this opportunity for sunshine could drastically increase their mood and motivation on a daily basis.

In addition to vitamin D, the B vitamins are some of the most essential nutrients in the diet. Extremely common nutrients, essential for the health of each individual, are Vitamin B6 and Vitamin B 12. The most common dietary sources of these vitamins are “ready-to-eat” cereals, fish, meat, poultry, yeast, certain seeds, bran, white potato and other starch vegetables, and non-citrus fruits, which make up a varied diet” (Gougeon et al.). As mentioned before, Gougeon and his co-workers performed a study of specific vitamins and their effect on the elderly population. The three-year study concluded that older women have a lower incidence of depression from food than men compared to others with lower intakes (Gougeon et al.). Those of the elderly population who did not consume as much B vitamins from either food or a supplement, were more likely to report more depression symptoms. Therefore, an increased risk exists for women when considering the importance of each specific vitamin in the diet.

To support Gougeon’s study, Martha Payne also investigated the vitamins’ effect on the elderly population. She explained how significant it is for the elderly population to focus on their intake of food due to the many reasons why the elderly are more susceptible to depressive symptoms. With their medical and health history, the elderly need to be concerned about proper nutrition, and without proper care, there may be consequences. “Numerous vascular risk factors and diseases, including hypertension, atherosclerosis, heart disease, cerebrovascular disease, stroke, diabetes mellitus and ischemic brain lesions, are more common in older depressed subjects than in younger depressed subjects” (Payne). To support her quote, Payne uses specific facts about B vitamins and folate. She claims that B vitamins are of the most importance because they are

crucial to neurotransmitter synthesis and metabolism (Payne). Without having the correct amount of these B vitamins, the brain cannot send the correct signals of happiness and satisfaction, which can eventually lead to permanent neurological damage. Therefore, a lack of B vitamin in food or supplements could lead to depressive symptoms and should be monitored in the elderly specifically. Concurring with how the omega-3 fats are used to transmit signals to the body, Vitamin B also plays a huge role in successfully giving the brain the proper tools to function.

Folate, another common nutrient discussed by scientists and researchers, is required for serotonin and other neurotransmitters. Folate can be found in citrus fruits such as oranges and strawberries, green vegetables, beans, eggs, and whole grains (Payne). Most people consume at least a couple of these foods throughout the day, but if they do not have a balanced diet including any of these ingredients, a misfire of communication in the neurotransmitters could occur. On a general basis, these nutrients work together in order for proper balance, therefore allowing for the correlation between nutrition and brain function to be quite evident.

Many of the studies listed have also reported the Mediterranean diet to be one of the most beneficial diets known. This diet contains a balance of vitamins, minerals, protein, carbohydrates, and fats that the body needs to function. M.S.V.K. Raju discusses the Mediterranean diet as one of the best because of the rate of fish and oil consumption. In diets with these ingredients, it is likely that the body will function better. “Highest adherence to Mediterranean diet consisting of vegetables, fruits, nuts, cereals, legumes, fish and monounsaturated fatty acids had a lower risk of depression” (Raju). Many of the articles researched include this disclaimer because, on a general basis, it provides the best balance of the foods the body needs to function. The monounsaturated fatty acids include olive oil that is used at a higher rate in the Mediterranean area, and is balanced with other fats. Due to the effect fish oil, omega-3s, and fruits and vegetables have on the body,

one can easily understand that without these nutrients, a significant deficit in brain operations occurs.

Depression is also commonly found in people with other diseases. Many people who suffer from diabetes, cardiovascular disease, insomnia, and other debilitating diseases commonly suffer from depression symptoms as well. Many research studies discuss the links to why these health risks tend to coincide. Joel C. Exebio, Gustavo G. Zarinin, Cristobal Exebio, and Fatma G. Huggman organized a research project called “Healthy Eating Index Scores Associated with Symptoms of Depression in Cuban-Americans with and without Type 2 Diabetes: A Cross-Sectional Study.” This was published in the *Nutrition Journal*. These scientists decided to research this topic due to the fact that type 2 diabetes is twice as likely to occur in the Hispanic population than the Caucasian population. In addition, a higher prevalence of depression exists in subjects who have diabetes. The study states “Diet is one of the key factors in glycemic control, consequently, it affects the physical quality of life of the patient, and it is likely to affect the emotional side as well, specifically feelings and attitudes” (Exebio et al). Diabetes can affect a person’s entire life. Every moment, those with diabetes must think about how much sugar they have in their system, whether their body is about to crash, and if they need to give themselves insulin based on their body’s needs. This study focused on male and female diet quality to assess if gender could be a factor in developing depression; they found that in general there were significant symptoms of depression with diet quality overall. There was a slight increase in women as compared to men, but the focus should be on better diet quality in general (Exebio et al.). Therefore, when people who are suffering from diabetes do not eat correctly, their behavior may be difficult to alter. Diabetics may not be able to focus on what to eat because their body is not reacting as it should, and depression may change the cravings the body wants to make itself feel

better. Although this study focused on the Cuban-American population, relevant information exists for the science of the body while undergoing stress. This correlation between physical health risks and depression, evident in many studies, provides scientists with further questioning regarding the relationship between proper diet and health conditions.

Cardiovascular disease, another example of a health risk that can lead to depression, has also been researched within this context. As mentioned before, Mark Pettus wrote a book concerning how the body and mind work together. He focused on physical and mental health combining to make an overall healthy individual. In his chapter “Mood, Emotion, and Health” he wrote,

We’re learning, however, that many dimensions of our overall emotional health are intricately connected with physical and spiritual health in an acquired fashion, amenable to change and adaptation. This is fundamentally shifting our paradigm for screening, diagnosis, and multidimensional treatment strategies. Take depression, for example. Historical perspective examined depression as a sad mood, the dark trait of an individual, separate from all that influenced physical health. Now we recognize depression and its many contributors as having the neurobiological characteristics of disrupted brain neurotransmitters like serotonin and norepinephrine. We now recognize depression as an independent risk factor for cardiovascular disease and complications. Studies demonstrate that having a heart attack is twice that of an individual without depression. (Pettus 151)

Depression is a widely known disease that coincides with other diseases, such as cardiovascular disease. Patients who are suffering from both could be at a much larger risk. In examining how the body develops such a disease, diet becomes extremely relevant. A deficit occurs from the lack of nutritional food in diet, an excessive amount of fatty foods, not enough exercise, and even

smoking and alcohol consumption. All of these habits together can put a lot of stress on the body that it cannot handle without repercussions. Therefore, many of these health issues occur at the same time. Also, it is crucial to examine the elderly population, as most of these symptoms take time to have an effect so drastic on the body. Therefore, if a person has been smoking for many years and has not focused on nutrition, he is more likely to develop these kinds of problems. That correlates to people who have been eating fried and fatty foods, drinking excessive amounts of alcohol, and not treating their bodies with the care they need to function correctly. With these discoveries and correlations, one finds it difficult to imagine that anyone could truly be of sound mind without proper nutrition and care of the body.

Many people also discuss the benefits of fish oil in the case of cardiovascular diseases. One study, “Fish Oil Helps with Heart Disease but Not Mood: Omega-3’s May Not Combat Depression, but Sleep, Exercise, and Talk Therapy Can Help Manage the Condition,” describes fish oil as beneficial to the diet, but not an overarching cure-all. Omega-3’s help the neurotransmitters function properly and are an important part of the diet, but they cannot cure depression on their own. Overall, cardiovascular disease is greatly associated with depression symptoms, and with the proper consumption and balance of foods, it can help decrease the symptoms of fatigue and sadness. Many people associate cardiovascular disease with too much fatty foods such as fast food diets. There is a significant amount of information on how a poor diet will affect the body.

In this era, it is very common for people to eat at fast food restaurants for a quick and easy meal. However, it is also commonly known that the food consists mostly of fried ingredients and soft drinks. Ladea Popa discusses in her article “Nutrition and Depression at the Forefront of Progress” in the *Journal of Medicine and Life*, the risks of eating fast food and alternative healthier

options. She states, “The Mediterranean diet has been linked to a low prevalence of depression while fast-food consumption has been found to increase the risk of developing and aggravating this disorder, hence the need for nutritional interventions” (Popa). Popa completed this study to add to the importance of how people tend to eat in America, and what the effects of that can be. She also states that many antidepressants are treating the symptoms using serotonin reuptake inhibitors (SSRIs) but medication can be reduced if the diet consists of food high in tryptophan. Tryptophan is converted to serotonin when ingested. This investigation, conducted in Europe, used 12,000 volunteers over six years to study their eating patterns. The people who consumed a majority of processed foods and high trans-fat were 48% more likely to develop depression. Scientists have linked the processed food diet to higher depression risks because it substitutes beneficial fats, such as polyunsaturated and monounsaturated fats for the trans-fats in mass produced food (Popa). When examining the work that Ms. Popa cites and analyzes, evidence shows that with the increase of fast food consumption, a higher risk for depressive symptoms exists. Not only does it change where the food source comes from, it changes the chemicals in the body enough to produce major depressive disorders.

Popa also discusses how depression and stressful life events can allow the body to crave unhealthy food choices. To expand on this subject, T.S. Wiley conducted a comparative study and published it written in his book *Lights Out*. He discussed what happens to the body when there is not enough sleep, and too much sugar. His chapter titled *It's All in Your Head: No Sleep and Too Much Sugar Make You Go Crazy*, explains how the body reacts when these two events occur. When a person stays up too late the hormones shift and the appetite changes drastically. Hence, midnight cravings occur. “The sugars you crave send your insulin up to create the insulin resistance you need to get fat. On your way to tubby, you convert all the carbohydrates you’ve

eaten into cholesterols as VLDL and you retain water, which alters your blood pressure. At this point, any doctor would tell you there's heart disease on the horizon" (Wiley 96). As previously discussed, heart diseases play a significant role in depressive symptoms, so if someone consumes all of these unhealthy foods because he cannot sleep at night, possible causation for depression exists. He expands on how lack of sleep can put the body in a bipolar state of mind. With depression, "having chronic, high cortisol and chronic high insulin together puts your mind in the constant 'panic' state of summer mating." (Wiley 97). This deficiency throws the entire balance of brain chemicals off, causing the insulin clock to omit its off switch (Wiley 97). So as Popa discusses how the harmful foods can have a bad reaction in the body, having cravings due to lack of sleep also can increase risk of depression. Someone with insomnia may also be depressed for these reasons. It creates a snowball effect, and does not allow the person to recover from his bad eating habits and cravings. This also signifies the importance of sleep to mental stability and reiterating how the body works as a whole.

Considering all of the specific nutrients that our body needs, and a balance of sleep and exercise, continuous proper health becomes a challenge. This results in a large amount of antidepressant prescriptions. Many doctors do not take into account alternative routes because patients commonly suffer from depression. If the onset of depression results from genetic factors, tragic life events, or a general lack of nutrition in the diet, it is hard to assume that a single person will never experience depression at some point in his lifetime. Many people do not understand the impacts of their daily routine on their bodies. For instance, a very hardworking individual who is constantly under a lot of stress may have trouble maintaining a balanced mental state. In addition, an individual who constantly travels for work may be under a lot of stress and cannot always eat correctly due to the challenges of constant airport and travel disruptions. Many different examples

exist of people who are unable to dedicate the proper amount of focus on their health. This in turn leads to many people feeling depressed at times, feeling unable able to pull themselves out of this state. The most common treatment option, a visit to a doctor, often results in the request for a medication to help improve one's mood.

Many antidepressants are commonly prescribed to treat the depression symptoms, but results are often inconclusive. In the article, "Depression: What Can Be Done?" in the *HealthFacts* Journal, the author speaks of the most popular antidepressants that are prescribed to patients for depression. This article was written by a "News" interviewer to ask Dr. McGrath, an Associate Professor of Psychiatry at Columbia- Presbyterian Medical Center, a few questions about a depression treatment plan (Depression). Dr. McGrath gave the most popular antidepressant options, and then stated, "More often than not, the problem is with the inadequacy of treatment" (Depression). Doctors still do not know exactly what works with different people's depression symptoms because it is mainly a guessing game. No specific drug helps everyone. Doctors still guess how to treat due to each person's individual needs and unique symptoms. Natural Medicines in the Clinical Management Series says, "The response of an antidepressant is usually 50%-55%... For those patients who do not respond within about two weeks, a dose increase can be considered, but increasing the dose can also increase side effects" (Natural). Although antidepressants are prescribed most of the time, they are only 50% effective and experimental. Since no guarantee exists for the success of these medications, a resistant response to the medication due to its unreliability could result. Many researchers suggest that diet considerations have such a large effect on the mental stability of people, nutritional alternatives could have a better success rate and be more beneficial to the patient in the long run.

These anti-depressant medications can also have many unwanted side effects. These contraindications may include insomnia, weight gain, and loss of sex drive, mania, and hormone imbalances, potentially increasing the suffering for the patient. For example, Paula Anne Ford-Martin et al. described one of the most popular antidepressants prescribed. They stated, “Tricyclic antidepressants are less expensive than SSRIs, but have more severe side-effects, which may include persistent dry mouth, sedation, dizziness, and cardiac arrhythmias... A 10-day supply of TCA’s can be lethal if ingested all at once, so these drugs may not be a preferred treatment option for patients at risk for suicide” (Ford-Martin e. al.). These medications, not guaranteed to help, can be dangerous to patients with severe symptoms. Although there are many cases where prescription antidepressants may be helpful, the public is looking for a healthier alternative to medication. Other medications exist, but all of them have a list of side effects. Therefore, the benefits may not outweigh the risks. Also, as previously discussed, some of these side effects may lead to unhealthy habits in each individual. If a side effect of the drug is insomnia, the balance of hormones is going to change a person’s cravings. This can allow him to eat unhealthy foods and eventually lead to another disease such as cardiovascular troubles. This spiral effect could potentially never allow someone to get off this medication. Or without it, they may feel much worse than before. If doctors considered other treatments like nutrition dietary plans, there could be a considerable difference without involving prescription drugs.

In general, research has proven that many people have good results from using anti-depressants. There is a possibility that nutritional alternatives may not be enough to change a person’s symptoms completely, and that could result in a need for the medication. However, with current research, it is highly plausible that changing the diet of a patient could drastically improve his depression naturally. With dietary alterations, the person benefits in several areas: fewer

prescription medicine costs, fewer doctor's visits, and a chance at being healthier for a longer period of time without be reliant on a medication. Some doctors have been prescribing these kinds of treatment options before offering a medication for these reasons. Considering there are many reasons why a person may be depressed, there are many alternatives for treatment routes.

Although not a significant part of this study, another large part of becoming healthier physically and mentally is physical activity. By increasing the amount of fresh air and exercise a person has, the brain can de-stress. Many people who are exercise enthusiasts say that they go to the gym because it is addictive. When someone works out, the body releases endorphins. Endorphins are known as the "feel-good" chemical. So when the body feels good, it wants to feel that way consistently. In order for someone to be healthy, there should be a focus on a workout regimen to help the mind concentrate. Good food in addition will allow the body to gain as much benefit from the exercise as possible. With a focus on physical health, there is a strong likelihood that mental health will increase along that path.

Considering the effect that antidepressants have on the body, there are multiple reasons why it could be beneficial for doctors to recommend alternative treatment options. Due to the fact that different people react to different stimuli due to their age, medical history, and diet, it is essential to have a full understanding of how that patient's body works before prescribing him a blanket fix. Many people also want to shy away from the medications because it seems as though if they start, they will never be able to stop. This fear results from the unnatural change in hormones and the addictive qualities that medications can have on people. Without understanding what the body needs in order to function, it will not be able to produce happy and stable moods.

One finds it difficult to imagine that a single cure exists for each person in the world who suffers from a disease. There are different treatment options for almost everything. Different

medications, natural methods, and therapies can assist a person in diminishing some of the symptoms of a disease. So why would treating depression be any different than treating someone for another disease? Like Mark Pettus' mother, being in a different environment, having a more stable and consistent routine, and eating better quality natural foods can change one's life drastically. Numerous people are under the impression that medicine is their only hope to get better, but many other options may provide a better chance for long term results.

Mark Pettus sums up his argument in his book by saying, "In the connection between mood/emotion and behavior, we see clear evidence of less effective self-care in people with chronic depression and anxiety" (Pettus 152). Each nutrient put into the body is absorbed and used for a purpose. If the person does not ingest enough of what the body needs, depression could occur. Proper nutrition has a large part in having a physically healthy body, but it also helps with mental stability. With the recommended daily intake values of vitamins and nutrients, there could be a drastic change in a person affected by depression. If the depression occurs due to a tragic life event, adding in a positive dietary intake could help that person stay on the right track as he or she mourns and heals. Research has proven a strong correlation between proper nutritional tracks and decreasing depressive symptoms. If health care professionals ensure the proper dietary intake of their patients, before prescribing them an antidepressant, this practice could enable a more natural path to lifelong health.

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