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## Nutrition on the Prevention and Treatment of Depression

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Nutrition on the Prevention and Treatment of Depression

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### **Abstract**

Today, the general population consumes a diet high in sugars, saturated fats, incomplete protein sources, and the tendency to exceed the bodies caloric requirements. The trend of obesity due to poor dietary habits is alarming. Mental illness has increasingly risen over the past decade. Specifically, the incidence of depression has reached a startling rate. The relationship between poor dietary intake and depression have grown together and it is imperative that methods are introduced to aid in resolving this issue. The prevention and treatment of depression needs to be explored through alternative methods. Healthier dietary choices have been shown to have significant results in treating and preventing depression.

### **Acknowledgements**

I would like to thank my Senior Thesis Research Professor, Dr. Patricia Harris. Her compassion in her teaching has inspired me to embark on the journey of broadening my knowledge to deliver the upmost care as a nurse. She has impacted me and I will forever be grateful the tools I have learned from her.

**Table of Contents**

Abstract.....	2
Acknowledgements.....	3
Problem Statement.....	5
Research Questions.....	5
Literature Review.....	6
Micronutrients on the Prevention and Treatment of Depression.....	6-10
Foods for Depression.....	10-13
The Health Promotion Model on Eating Habits in the Prevention of Depression.....	13-16
Conclusion.....	16
Theoretical Framework.....	17-18
Proposal for Further Study.....	18-20
Strength, Limitations, and Implications.....	20-21
Appendix.....	22-25
References.....	27-28

### **Problem Statement**

The rate of depression is increasing. The rates of obesity from unhealth dietary intake are increasing. The annual cost in the United States for obesity ranges, “from \$147 billion to nearly \$210 billion per year” (Dor, 2010, p. 1). Research shows that unhealthy diet habits account for most healthcare costs and have resulted in a large economic burden for American citizens. An unhealthy diet habit is described as diets “high in sugars, saturated and trans fats, low fiber foods and high-sugar drinks [which] contribute to non-communicable diseases (NCDs) and other health problems...” (World Heart Foundation, 2021, p. 3). As explained by the World Heart Foundation, these diets have become a commonality in society; and as this trend increases, depression rates have gone up as well. The annual cost for major depressive disorder (MDD) creates an economic “burden of MDD is now estimated to be \$210.5 billion per year” (Kessler, 2012, p. 1). Depression is not limited to MDD, in fact, the disease incorporates eight different subcategories. Thus, these subcategories include mild/moderate depression, Postnatal depression (PND), Bipolar disorder, Seasonal Affective Disorder (SAD), Dysthymia, Psychotic depression, atypical depression, and mixed depression with anxiety disorder. For this review, the author will look at the alarming rates of depression and poor dietary habits. As health care providers, it is imperative we aim to prevent the and treat the occurrence of depression through healthy dietary habits.

### **Research Questions**

Does nutrition aid in the prevention and treatment of depression?

How does the Health Promotion Model aid in teaching healthy nutrition habits to prevent and treat depression?

### **Literature Review Introduction**

The literature review of this paper is composed by six research articles retrieved from the Dominican University Library and National Institute of Biomedical Medicine. The articles stress the importance of having a well-balanced diet with a variety of nutrients to prevent disease. This literature review specifically focuses on supplementation with certain nutrients to prevent/treat depression and health promoting behaviors to encourage good eating habits. Therefore, the purpose of this paper is to emphasize the importance of healthy eating as a preventative measure to decrease the severity and prevalence of depression through nutrition.

### **Micronutrients on the Prevention and Treatment of Depression**

The title of the research report, “Assessing the Evidence of Micronutrients on Depression among Children and Adolescents: An Evidence Gap Map” accurately describes the goal of the study (Campisi, 2020, pp. 908-927). The title is clear and concise that elicits the focus. At first glance, readers can identify what is being assessed, which population was targeted, and the struggle the research ran into. Without reading the introduction or abstract, the researcher can recognize the research report is related to nutrition and depression.

The abstract clearly states the gap in evidence on nutrition and its ability to prevent, treat, and/or influence the severity of depression. The literature assessed the impact of micronutrients on depression related to outcomes such as unipolar depression, MDD, dysrhythmia, acute depression, and mood disorders which may or may not be limited to bipolar 1 or bipolar 2 disorders. The databases consisted of 30 primary research publications with 47% late adolescents (15-19 y), about 40% early adolescents (10-14 y), and about 13% ages 6-9. Among these studies they examined single micronutrients and its impact on depression whereas the other 22 looked at micronutrient concentrations (intake or serum) and their impact on depression. The intention of

the summaries is indicated for easy understanding to the public and increase the understanding of where future research should be directed. The general problem of the study is introduced early in the report when the researchers state that, “depression is a leading cause of illness and disability among adolescents.” The problem is clear and states the significance of this disease and why it should be studied more. The researchers do a great job explaining the impact and severity depression has on the general population and how the conditions start by the age of 14. The study then progresses into the emerging field of nutritional psychiatry to begin the discussion on the association between mental health, nutrition, and treatment. The research study is justified because depression or any mental health illness is impacting the global population at large and the ability to receive adequate treatment and/or symptom management is becoming increasingly important.

This study was approved by the IRB at each participating institution. The problem statement is researchable. The target population was clearly described. The statistical procedures were appropriate for the methodology proposed. The characteristics of the sample were described. The authors completed ongoing studies were identified using [clinicaltrials.gov](http://clinicaltrials.gov) and the WHO International Clinical Trials Registry Platform. Along with, Campbell Systematic Reviews, Systematic Reviews, and Joanna Briggs Institute were searched to identify any additional systematic review publications. No date, language, or study design limits were imposed during the search process. All data was analyzed using two reviewers independently screened potentially relevant articles for eligibility criteria. If there was a dispute between the two reviewers and a third-party reviewer was used.

The study design was both quantitative and qualitative. The study design utilized a random control trial which applied to the research being conducted. The two major variables

identified in the method section of this study are independent and dependent. The independent variable is the supplementation with micronutrients. The dependent variable is the participants' change in depressive symptoms from supplementation with the micronutrients. The population to which the study applied was eligible adolescents suffering from depression or depression specific diagnoses. The method of choosing the sample was appropriate, however; the sample size was small and limited only to adolescents. One of the weaknesses identified in the study is that researchers conducted entirely in upper-middle-income countries, potentially limiting the generalization of this data. Another weakness identified in the methods section of the study was that not all participants in part one received the same micronutrients as the participants in part two, potentially deviating their outcome results.

The cited literature is pertinent to the research problem. The cited literature provided rationale for the research and why it was relevant to their study. Literature was cited and critically reviewed. The researchers cited and used literature from the past five years. The researcher cited supported studies and included opposing studies in their research study, like the use of medication to treat depression. The review concluded a summary of relevant literature and its implications to the research problem under study. The literature review was logically organized. The author included tables that showed the results obtained from a randomized control study. The literature review concluded with a summary. The study suggests there was an overwhelming lack of micronutrients in the general population's diet. Unfortunately, there is insufficient evidence to support recommendations for micronutrient supplementation in the management of depression among children and adolescents. As the interest in an association between micronutrients and depression grows, it is important to use these results as guidance for future research.

The research article, found on Dominican University Library, is titled “Micronutrient intake adequacy and depression risk in the SUN cohort study” (Villegas, et al., 2018). The aim of the research was to study the linkage between micronutrient intake and its risk to the incidence of depression. The objective of the study purposes the increasing incidence of depression due to the lack of proper dietary habits.

The developing dietary patterns and depression risk has increased over the last several years and a scientific report in 2015 described how “Adherence to higher quality patterns, such as traditional Mediterranean...have been associated with lower-risk of depression, whereas the adherence to processed or Western low-quality dietary patterns have been directly related to depression risk. (Villegas, 2018, p.2). The aim of the research was to longitudinally assess the role of multiple micronutrients intake adequacy and the future occurrence of a new medical diagnosis of depression.

The sample population examined participants that had lacking intake of four or more nutrients which included “B1, B2, B3, B6, B12, C, A, D, E, folic acid, zinc, iodine, selenium, iron, calcium, potassium, phosphorous, magnesium, and chrome” (Villegas, 2018, p. 3). Participants were classified as having no previous history of depression or antidepressants use at the baseline assessment. There was a total of 13,983 participants in the perspective analysis. They may report a new clinical diagnosis of depression at the follow-up by physician. The information was gathered by mail or web-based questionnaire with two and four year follow ups. The overall retention of the cohort was 90%. The study is a middle-aged longitudinal population study. Cox proportional-hazards models were fitted to assess the relationship between the adequacy of nutrient intake and incidence of depression in follow up appointments. The dietary intake was “assessed at baseline and after 10 years of follow-up with a 136-item validated semi-

quantitative food-frequency questionnaire ((FFQ)) (Villegas, 2018, p. 5). A trained dietician updated the nutrient database for Spain.

The research found that participants with four or more lacking nutrients were at an increased risk for depression. The higher participants were to reach the dietary reference intakes (DRI), the lower the risk of developing depression in the follow up questionnaire. The strength of the study was its usage of a wide variety of micronutrients to assess and see where participants were lacking. The study utilized questionnaires with a 90% commitment rate when a follow-up questionnaire was sent. But unfortunately, the study failed to obtain a proper informed consent prior to conducting this research and the cohort assumed that participants answering the first questionnaire was considered consent. The research is limited to university graduates of SUN. Also, the usage of questionnaire is asked at the two-year, four year, all the way to the fourteenth year may skew the results due to the duration and commitment of the study (Villegas, 2018, p.2). Overall, the research solidifies the increasing evidence of depression increasing due to lack of nutritional intake.

### **Foods for Depression**

Another research article, found on Dominican University of California database is titled, “Gender Difference in Healthy and Unhealthy Food Consumption and Its Relationship with Depression in Young Adulthood” (Lee & Allen, 2021). The aim of this research was to explore the relationship between the consumption of healthy and unhealthy foods and its linkage to depression. The study shows the connection between the two.

The abstract explains that eating healthy foods, including fruits and vegetables, “had a significant inverse relationship with depression” (Lee & Allen, 2021). The abstract provided the reader a quick overview of the research that was successfully performed. As the outline

continues, it explains the difference between male and female eating habits and its linkage to depression. The abstract is well-developed and easily understandable to its intended audience.

“The National Longitudinal Survey of Youth 1979 for Children and Young Adults (NLSY79 CY) was used for this study. The U.S. Bureau of Labor Statistics collected data from American young adults from 1986 through 2014” (Lee & Allen, 2021). The sample population included a total of 2983 adults ranging from the ages of 18 to 35 years old. The participants were divided between 1459 males and 1524 females. The survey collected data on American young adults.

The analysis strategies used ANOVA and Chi-square tests to explore the gender differences in control variables. The Logistic Regression Analysis was used to examine the association between and independent and dependent variable on the first research question of the, “consumption of healthy and unhealthy foods.” The Ordinary Linear Regression looked at research question two on the “consumption of healthy and unhealthy food influence depression” and research question three “if this relationship differs by gender” (Lee & Allen, 2021, p. 1). To ensure the research question were being measured and examined properly, a moderator was used.

The results of the study concluded that unhealthy foods have been found to be associated with symptoms of depression. The evidence demonstrated that there is an increase in depression symptoms with fast food and soft drink consumption. There is also an effect of fruit and vegetable consumption that implied that “increased fruit consumption may be critical to reduce young females’ depression” (Lee & Allen, 2021, p.2). The strength of this study is the large sample size of participants with nearly equal male to female ratio. The research examined a broad range of foods consumed that successfully solidified the research. However, a limitation of this study is it only looked at the American population and no other cultures or ethnicities.

Overall, the research effectively concluded that the intake of unhealthy foods is linked to depression which is easy for the reader to find.

The second literature review on foods for depression is titled “A systemic review and meta-analysis of dietary patterns and depression in community-dwelling adults” (Lai, 2014, pp. 181-197). The aim of the research was to study the association between dietary patterns and depression. The objective of the study purposes the increasing incidence of depression due to the lack of proper dietary habits.

The abstract was broken down into the background, objective, design, results, and conclusions. The purpose of this study was to address depression, as it is the second leading cause of disease burden and alternative measures to alleviate this increasing trend. The results and conclusion illuminate that there is a linkage between the two.

A meta-analysis in conjunction with the Preferred Reporting items for Systemic reviews was conducted to evaluate depression outcomes were higher compared with lower intakes of dietary patters. These dietary patterns included intake of fruits, vegetables, fish, and whole grains to help reduce the risk of depression. “Titles and abstracts of all articles were retrieved from Medline, Embase, and PsycInfo that was reviewed by two independent reviewers” (Lai, 2014, pp. 181-197). These reviewers included JSL and SH. Any disagreements were resolved by a third independent reviewer.

Fortunately, the results concluded that an intake of “higher intake of fruit, vegetables, fish, and whole grains have been associated to reduce depression” (Lai, 2014, pp. 181-197). The strength of this study is the well-defined criteria of the data extraction analysis. However, the studies selection was small and exclaimed how more randomized control trials and cohort studies

are needed to ensure the findings. Overall, the study found evidence of the impact of foods on the treatment and severity of depression.

### **The Health Promotion Model on Eating Habits in the Prevention of Depression**

The literature review is titled, “The Effect of Pender’s Health Promotion Model (HDM) in Improving the Nutritional Behavior of Overweight and Obese Women.” The title provides the reader with a good understanding of what the research focused on and the population it was targeting. It provides a clear understanding that nutrition is a behavior that the Health Promotion model aims to improve.

The abstract was broken down into four different parts that highlights the focus of the study. This helps the reader because instead of having to search through the literature the results can be found on the first page. The background information described the review of Pender’s Health Promotion model and how it can improve nutritional behavior of overweight and obese women.

The study utilized a quasi-experimental study with two groups, along with a pre-test and post-test to examine the effect of Pender’s HPM. It used “108 eligible women [54 in each group] selected and randomly assigned to two groups: one experimental and one control.” For a participant to be included they had to be 18-60 years old with a body mass index (BMI) of 25 or higher. The data was gathered using three questionnaires: demographics, Pender’s HPM constructs, and nutritional behavior. (Khodaveisi, 2017). The questionnaires were given as a pre-test and two months later. The data was analyzed by paired and independent t-tests. The tests were ANCOVA and Spearman’s correlation coefficient to identify the level of significance which was  $<0.5$ . There was a significant difference between before and after the interventions, this includes “nutritional behavior, perceived benefits, perceived self-efficacy, commitment to

action, interpersonal and situation influences, behavior related affect, and perceived barriers” (Khodaveisi, 2017, pp. 165-174).

The study was approved by the Ethics Committee of the Hamadan University of Medical Sciences, with written informed consent obtained from all the participants. To ensure validity, ten experts confirmed their content. Furthermore, the reliability was determined using a test-retest. Each component showed acceptable reliability and validity for the research.

The introduction described how obesity is known to be the biggest cause chronic disease. Obesity is also a risk factor for “hypertension, cardiovascular diseases, diabetes, and impaired quality of life, from both psychosocial and physiological perspectives, in men and women” (Khodaveisi, 2017, pp. 165-174). Therefore, the study aimed to find a correlation between health promoting behaviors and nutritional choices in the prevention of chronic diseases, but more specifically, psychological, and physiological consequences (i.e., depression). To conduct this research the study provided training interventions to the experimental group. The information was delivered through “lectures, questioning and answering, and group discussions in three 30-minute sessions” (Khodaveisi, 2017, pp. 165-174). The sessions incorporated nutritional behaviors, how to promote self-efficacy, and the commitment to healthier behaviors. Prior to the interventions, the results of the study were not favorable in either the experimental or control group. However, after the interventions, “A significant change was observed in the mean scores of nutritional behaviors in the experimental group” (Khodaveisi, 2017, pp. 165-171). The training interventions improved in the experimental group after being taught the perceived benefits of healthy behavior. The study successfully aided in the importance of healthy nutritional choices in the prevention of chronic and debilitating diseases, such as depression.

The biggest strength of the study was the organization and delivery of information. The audience can identify what the research aimed to investigate, how it was implemented, and the results. The weakness of the study is the limited participation and demographics. The participants were only women from Iran, ranging from the ages of 18-60. This issue lies in the cultural differences on what healthy foods are and what is/not accepted to be consumed.

Another meta-analysis was conducted to study the effects of health promotion intervention in the workplace on depression and anxiety symptoms. The title provides an accurate description on what the focus of the study is while describing the population it is looking at.

The objective of this study was to “investigate whether different types of health promotion intervention in the workplace reduce depression and anxiety symptoms” (Martin, et al., 2018, p. 1). The review exclaimed how depression and anxiety are the most common forms of mental disorders and are increasing in prevalence. The authors argue that the workplace should be utilized as a site “for or treat depression and anxiety among employee populations” (Martin, et al., 2018, p. 1). Fortunately, the results pooled a small, but positive overall effects on the interventions to reduce the symptoms of depression.

Twenty-two studies were conducted with a sample size of 3409 participants. The search was conducted through three different criteria. The first group was related to working adults. The second was mental health promotion on depression and/or anxiety. Lastly, search terms related to evaluating the effectiveness of interventions was inputted. Of these 22 studies, 17 were a meta-analysis that implemented 20 different interventions. The studies contained a quantitative evaluation of workplace health intervention “that reported outcome on a standardized mental health screening to measure depression and anxiety” (Martin, et al., 2018, p. 3). The variables

extracted covered “intervention descriptors, sample characteristics, implementation characteristics, and quality of research design” (Martin, et al., 2018, pp. 3-4). The research design used control groups, random allocation, and outcome indicators. The scores looked separately at depression and anxiety or a composite of both. A RevMan software created a standardized mean difference with 95% confidence intervals. The results concluded that there is a small difference in overall effects for the symptoms of depression through health promotion.

The strengths of the study specifically focused on depression and anxiety but also examined emotional distress, physical health, work stress, health risk reduction, health behaviors, smoking cessation, work environment, and alcohol misuse. The study is well rounded looking at several emotions and behaviors. Whereas the study failed to compose major results. For instance, most of the effects observed by the study were empirically small. The health promotion interventions had more successful when applied to a larger number of people than small, targeted groups. The research review successfully demonstrated how the health promotion model impacts depression and anxiety through interventions.

### **Conclusion**

The literature review supports the research questions. The evidence suggests that there is an increasing trend in depression and alternative treatment modalities and/or preventative techniques are needed. The research did an excellent job looking at various dietary nutritional deficiencies (ex: vitamin B, C, etc). or unhealthy diet tendencies such as fast food and soft drinks. However, unfortunately it lacked a sufficient sample size. The research also looked at patients already displaying symptoms of depression, therefore; research looking at preventative techniques (stop depression from occurring in the first place) can help eliminate this issue altogether. Most importantly, the research supported the need for additional investigation.

### **Thesis Framework**

For my research study, I plan to use Nola Pender's Health Promotion model as the framework to investigate the effects of healthy nutrition choices on the impact and severity of depression. Pender helped "patients prevent illnesses through their behavior and choices is the Health Promotion Model" (Petiprin, 2020, p. 1). Pender's focus was preventing problems before they occurred, and healthcare dollars could be saved by the promotion of healthier lifestyles. This Health Promotion model is an adequate framework for the proposed study because Pender's purpose is to assist nurses in understanding determinants of healthy behaviors as a basis for behavioral counseling to prevent diseases, decrease morbidities, improve quality of life, and decrease healthcare costs. (Petiprin, 2020, p.1). More specifically, one of the theory's most important aspects is encouraging healthy eating habits. The role of nurses is to implement this model. The collaboration between patients, families, and communities to create the best conditions for the expression of optimal health and high-level well-being. More specifically, the goal of public health nursing is to encourage healthy lifestyles such as dietary intake of healthy fruits, vegetables, whole grains, etc. In the model, there is a list of theoretical principles explaining how people are more likely to commit to a health-promoting behaviors and when families, peers, and health care providers are influencing the change it can increase or decrease commitment of health-promoting behaviors (Petiprin, 2020, p. 2).

With this study being modeled after Pender's theory, it looks at the person, environment, nursing, health, and illness. The goal is to increase preventative treatment modalities to decrease the occurrence of acute or chronic illnesses. The nursing intervention of advocating for healthier diets with a wide variety of nutrients should be encouraged to prevent and decrease the severity of depression. The effects of nutrition and supplementation of certain nutrients will be evaluated

for its effectiveness in preventing and treating depression. Overall, the results show Pender's HDM models can positively effect and improve nutritional behaviors that will contribute to the reduction and prevention of diseases like depression.

### **Proposal for Further Study**

The impact nutrition has on the development or progression of chronic diseases is well-known. Yet, despite continuous studies, the general population still fails to understand the influence it has. The amount of people who have been diagnosed with depression, suffered from depressive symptoms, recovering, or being readmitted for depression is now seen as one of the leading causes of disabilities. Therefore, there is a need for a longitudinal study that determines the effect of good nutrition on the development and/or severity of depression. There also needs to be research on the supplementation of certain nutrients to treat depression, along with the utilization of Pender's Health Promotion model to empower society to make health nutrition choices. Discrepancies will occur between differing cultural groups and ethnicities

The research question being studied is – what are the effects of promoting healthy nutrition habits in adolescents to prevent depression? The author would hypothesize that introducing health promoting behaviors on nutrition in early adolescence will decrease or prevent depression from occurring. The purpose of this study is to examine whether initiating these behaviors will decrease the progressing trends of depression through good nutritional habits.

After the study is approved by the Institutional Review Board (IRB) participants who meet the criteria will be surveyed before and after the educational intervention to assess their knowledge. The inclusion criteria will include adolescents from 6-19 with no previous diagnosis or depressive symptoms. The study will be quantitative with surveys and questionnaires. The exclusion criteria will eliminate any children with a previous diagnosis of depression. The

recruitment for the study will include the emerging field of nutritional psychiatry, flyers, and social media. To maintain reliability and validity the participants identities will be confidential. Informed consent can be completed by adolescents over 14, however; any adolescents that were younger will need parents' approval. A pre and post Test survey will be used that will be analyzed by the Likert Scale to assess the participants change in knowledge. The participants responses will be confidential to ensure survey questions are answered truthfully. A Cronbach's alpha scale will be used to assess the reliability of the Likert scale survey used in this study. A Cronbach's alpha score of 0.7 is acceptable and indicative that the measure is internally consistent. To construct validity the Fatigue Severity Scale will be used.

The questions that will be asked on the surveys and questionnaires include the six categories will ask the following questions: Do you know what the health promotion model is? Do you know any health promoting behaviors are? Are you empowered to make lifestyle changes for the better? Do you know what health nutrition habits are? Do you understand how micronutrients play a critical role in optimal functioning and well-being? Do you know what foods prevent depression? Participants' responses will be ranked 1-6: 1=not confident, 2=slightly hesitant, 3=neutral, 4=slightly confident, 5=confident, 6=very confident. Since responses have a numerical value, quantitative data will be obtained and analyzed. Then, the participants will then receive an educational training intervention on health promotion and nutrition.

Part two of the study will include the same participants who participated in part one of the study. The survey will be administered five years later after participants have been given all the information and empowerment to make these lifestyle changes. The participants will be asked again about their knowledge on health promotion behaviors and the importance of nutrition in the prevention of depression after receiving the education training intervention

according to a six-point Likert scale. The survey will be asking the same questions and assessed the same way. The participants will rate their confidence the same way as previously noted. The numerical value will allow the study to be obtained and analyzed through quantitative data. Once data is collected and analyzed, data from parts one and two of the study will be compared using a one-way ANOVA to determine the differences between the six categories.

### **Strengths, Limitations, and Implications**

One of the strengths of the study is educational training interventions that will teach participants health promoting behaviors and nutritional habits to prevent the incidence of depression. By conducting this study, researchers will be filling the knowledge gap and thus decrease the ever-increasing trends of depression.

The limitations in the study will run into difficulties due to cultural/ethnic differences among patient populations. For instance, some cultures may not eat certain foods whereas others do. Another limitation is the study is over a five-year duration. Participants may not be inclined to answer the survey so many years later. Thus, this will cause faults in the final analysis.

A suggestion for future researchers would be to include a larger population of participants that provides education intervention material in decreasing or treating depression through nutrition. The last suggestion would be to implement the combination of screening and training on interventions based on the specific population of participants culture and ethnicity. It may be difficult to implement this last suggestion as there are many different cultures and ethnicities, but it could be possible, and yield better results long term.

### **Conclusion**

Depression is now recognized as one of the leading disabilities. Furthermore, there is a lack of knowledge on the importance of proper nutrition. The research will examine how nutrition impacts depression. The study can show that educational interventional teaching on health promoting behaviors and nutrition can prevent, treat, and decrease the severity of depression. Also, it will substantially reduce healthcare costs. Overall, this review can devise appropriate interventions to improve the quality of life or prevent the reduction in quality of life for the affected population.

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design	Study Methods	Major Finding(s)	Strengths	Limitations
<p>Almudena Sánchez-Villegas</p> <p>Aurora Pérez-Cornago</p> <p>Itziar Zazpe</p> <p>Susana Santiago</p> <p>Francisca Lahortiga</p> <p>Miguel Angel Martínez-González</p> <p>Villegas, et al., 2018</p>	<p>The aim of the research was to look at the linkage between micronutrient intake and its risk to depression</p>	<p>The participants had a lacking intake of nutrients in 4 or more which include B1, B2, B3, B6, B12, C, A, D, E, folic acid, zinc, iodine, selenium, iron, calcium, potassium, phosphorous, magnesium, and chrome.</p> <p>We compared participants with inadequate intake for <math>\geq 4</math> nutrients vs. those with one nutrient. Participants were classified as having incident depression if they had no previous history of depression or antidepressants use at baseline, but they reported during follow-up a new clinical diagnosis of depression by a physician, use of antidepressant drugs, or both.</p>	<p>The information was gathered by mail or a web-based questionnaire with a two and four year follow up. The overall retention of the cohort was 90%.</p> <p>The study was approved by the Institutional Review Board of the University of Navarra. Written informed consent was not requested and instead completion of the first questionnaire was considered to imply informed consent.</p>	<p>The study is a middle-aged longitudinal population study. Cox proportional-hazards models were fitted to assess the relationship between adequacy of nutrient intake and the incidence of depression during follow-up.</p>	<p>The research found that participants with four or more nutrients lacking were at an increased risk for depression. The higher participants were to recaching the Dietary recommendation index (DRI), the lower the risk of developing depression in the follow up questionnaire.</p>	<p>The study used a wide variety of nutrients to be assessed. The study used participants that committed to being apart of the SUN project over a duration of time to track trends.</p>	<p>The study failed to obtain a proper informed consent.</p>
<p>Angela Martin</p> <p>Kristy Sanderson</p> <p>Fiona Crocker</p> <p>BA Hons</p> <p>Martin, et al., 2018</p>	<p>The aim of this study was to investigate the effects of health promotion in the workplace on depression and anxiety symptoms. These illnesses are increasing in prevalence and pose</p>	<p>The total sample size consisted of 3409 participants. There were three groups. The population was workplace employees to examine the common population with stress of work and external factors</p>	<p>There was a total of 22 studies and 17 were a meta-analysis on various health interventions to see which would impact the symptoms of depression and anxiety.</p>	<p>The study was divided into three categories. One examined the employee in the workplace, the second reviewed depression and anxiety on the employee's well-being, and the third</p>	<p>The results indicated a small positive effect. The participants were able to show a reduction in symptoms of both depression and anxiety.</p>	<p>The study specifically focused on depression and anxiety but also examined emotional distress, physical health, work stress, health risk reduction, health behaviors, smoking cessation, work environment,</p>	<p>Most of the effects observed by the study were empirically small.</p> <p>The health promotion interventions were had more successful when applied to a larger number of</p>

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design	Study Methods	Major Finding(s)	Strengths	Limitations
	lifetime risks. Both direct and indirect approaches were utilized to see if depression and anxiety were reduced.	at risk or suffering from anxiety and/or depression.		looked at the effectiveness of the interventions implemented. The Cochrane search terms were used to identify interventions and trials.		and alcohol misuse. The study is well rounded looking at several emotions and behaviors.	people than small, targeted groups.
Susan C Campisi Clare Zasowski Shaija Shah Ashka Shah Glyneva Bradley- Ridout Daphne J Korczak Peter Szatmari  Campisi, et al., 2020	There is increasing evidence that nutrition may have the ability to prevent, treat, and/or influence the severity of depression.	The sample size included adolescents from the ages 6 to 19 years old. There is a total of 30 primary search publications	The study was conducted on systematic searches by academic health science librarians. The data was retrieved from EBSCOhost, Ovid MEDLINE, Ovid EMBASE, Ovid PsychINFO, Elsevier, Cochrane, and CINAHL	The searches consisted of three concepts which included depression, selected micronutrients, and children. All citations were inserted into an online systemic review software where 2 reviewers independently screened	Supplementation with Vitamin D, zinc, vitamin C, and iron showed improved depression whereas folate showed mixed results.  Decreased micronutrient intake of iron, calcium, manganese, potassium, vitamin D, vitamin E, zinc, vitamin B-6, folate, vitamin B-12, and vitamin C showed increased depressive symptoms	The review instituted accurate developmental ages to understand how nutrients play a vital role in growth and development of physical and psychosocial.	There was a limitation based on the specific geographical location studied and age.
Angela Martin Kristy Sanderson	The aim of this study was to investigate whether different	Twenty-two studies were conducted with a sample size of 3409	The studies contained a quantitative evaluation of workplace health	The research design used control groups, random allocation, and	The results concluded that there is a small	The strengths of the study specifically focused on depression	The study failed to compose major results. For instance, most of

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design	Study Methods	Major Finding(s)	Strengths	Limitations
<p><b>Fiona Cocker</b> <b>BA Hons</b> <b>Martin, et al., 2020</b></p>	<p><b>types of health promotion interventions in the workplace reduce depression and anxiety symptoms</b></p>	<p>participants. The search was conducted through three different criterions. The first group was related to working adults. The second was mental health promotion on depression and/or anxiety. Lastly, search terms related to evaluating the effectiveness of interventions was inputted. Of these 22 studies, 17 were a meta-analysis that implemented 20 different interventions.</p>	<p>intervention that reported outcome on a standardized mental health screening to measure depression and anxiety</p> <p>The variables extracted covered intervention descriptors, sample characteristics, implementation characteristics, and quality of research design.</p>	<p>outcome indicators. The scores looked separately at depression and anxiety or a composite of both. A RevMan software created a standardized mean difference with 95% confidence intervals.</p>	<p>difference in overall effects for the symptoms of depression through health promotion.</p>	<p>and anxiety but also examined emotional distress, physical health, work stress, health risk reduction, health behaviors, smoking cessation, work environment, and alcohol misuse. The study is well rounded looking at several emotions and behaviors.</p>	<p>the effects observed by the study were empirically small.</p>
<p><b>Jaewon Lee</b> <b>Jennifer Allen</b> <b>Lee &amp; Allen, 2021</b></p>	<p><b>The study explores the relationship between the consumption of healthy and unhealthy foods and depression among young adults and the effect it has based on gender</b></p>	<p><b>A total of 2983 young adults were chosen for the final sample size. The final sample of young adults included 1459 of males and 1524 of females.</b></p>	<p><b>A longitudinal study surveyed children and young adults. The US Bureau of Labor and Statistics collected data from the American adults from 1986 to 2014.</b></p>	<p><b>The Logistic Regression Analysis and Ordinary Linear Regression was conducted to examine the research questions on the consumption of healthy and unhealthy foods.</b></p>	<p><b>The consumption of healthy foods, which included fruits and vegetables, had a significant inverse relationship with depression. Moreover, an interaction between gender indicating different interventions being</b></p>	<p><b>The study used a large sample size of males and women. The study also looked at a long period of time to review the impact unhealthy food consumption has.</b></p>	<p><b>The study Is limited to the American population and no other cultures or ethnicities whose food choices may differ or impact their health and depression.</b></p>

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					needed for the young adult's mental health		
<p>Jun S Lai Sarah Hiles Alessandra Bisquera Alexis J Hure Mark McEvoy John Attia  Lai., et al. 2013</p>	<p>Depression is expected to be the world's leading cause of disease burden by the year 2020. There is a need for new approaches to prevent depression or delay its progression. Therefore, the study aims to review the impact of nutrition and its impactful role on depression.</p>	<p>Titles and abstracts of all articles were retrieved from Medline, Embase, and PsycInfo that was reviewed by two independent reviewers. These reviewers included JSL and SH. Any disagreements were resolved by a third independent reviewer.</p>	<p>A meta-analysis was conducted to evaluate depression outcomes for higher compared with lower intakes of dietary patterns. These dietary patterns included intake of fruits, vegetables, fish, and whole grains to help reduce the risk of depression.</p>	<p>The Preferred Reporting items for Systemic reviews and Meta-Analyses</p>	<p>The results of higher intake of fruit, vegetables, fish, and whole grains have been associated to reduce depression.</p>	<p>The eligibility criteria of the study was well defined</p>	<p>The study exclaims how it needs more randomized controlled trials and cohort studies to confirm the finding. There was only a few studies.</p>

## References

- Campisi, S., Zasowski, C., et al. (2020). Assessing the Evidence of Micronutrient on Depression among Children and Adolescents: An Evidence Gap Map. *National Library of Medicine*. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/32193537/>
- Dinan, T. (2017). Brain-Gut-Microbiota Axis and Mental Health. *Psychosomatic Medicine*. Retrieved from <https://www.proquest.com/nahp/docview/1970978818/abstract/AC8C3085D9534336PQ/1?accountid=25281>
- Dor, A., Ferguson, C., Langwith, C., Tan, E. (2010). Fast Facts: The Cost of Obesity. *School of Public Health & Health Services*. Retrieved from <https://stop.publichealth.gwu.edu/sites/stop.publichealth.gwu.edu/files/documents/Fast%20Facts%20Cost%20of%20Obesity.pdf>
- Harvard Health Publishing. (2019). What causes Depression?. *Harvard Medical School*. Retrieved from <https://www.health.harvard.edu/mind-and-mood/what-causes-depression>
- Hiza, H., Koegel, K., Pannucci, T. (2018). Diet Quality: The Key to Healthy Eating. *Journal of Academy of Nutrition and Dietetics*. Retrieved from [https://jandonline.org/article/S2212-2672\(18\)31331-5/fulltext](https://jandonline.org/article/S2212-2672(18)31331-5/fulltext)
- Kessler, R. C. (2012). The costs of depression. *Psychiatric Clinics of North America*. Retrieved from <https://www.workplacementalhealth.org/mental-health-topics/depression/quantifying-the-cost-of-depression>

- Khodaveisi, M. (2017). The Effect of Pender's Health Promotion Model in Improving the Nutritional Behavior of Overweight and Obese Women. *National Library of Medicine*. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5385239/>
- Lai, J., Hiles, S., Bisquera, A., et al. (2014). A systemic review and meta-analysis of dietary patterns and depression in community-dwelling adults. *American Society for Nutrition*. Retrieved from <https://academic.oup.com/ajcn/article/99/1/181/4577292#110570278>
- Lee, J. and Allen, J. (2021). Gender Differences in Healthy and Unhealthy Food Consumption and Its Relationship with Depression in Adulthood. *Community Mental Health*. Retrieved from <https://web-p-ebSCOhost-com.dominican.idm.oclc.org/ehost/detail/detail?vid=4&sid=d158df8c-ecea-48b9-8529-089d0b0ab479%40redis&bdata=JnNpdGU9ZWWhvc3QtbG12ZQ%3d%3d#AN=150363733&db=ccm>
- Martin, et al. (2018). Meta-Analysis of the Effects of Health Promotion Intervention in the Workplace on Depression and Anxiety Symptoms. *Scand J Work Environ Health*. Retrieved from file:///Desktop/Martin08\_SJWEH.pdf
- Menon, T. (2020). Everything you need to know about gut health. *Wexner Medical Center*. Retrieved from <https://wexnermedical.osu.edu/blog/everything-you-need-to-know-about-gut-health>
- Mulder, R. (2008). An epidemic of depression or the medicalization of distress? *PubMed*. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/18453728/>

- Newman, K. (2019). Obesity in America: A Public Health Crisis. *USNEWS*. Retrieved from <https://www.usnews.com/news/healthiest-communities/articles/2019-09-19/obesity-in-america-a-guide-to-the-public-health-crisis>
- Rogers, C. (2019). Gut Health, Immune System and Mental Health. *Positive Health*. Retrieved from <https://web-b-ebshost-com.dominican.idm.oclc.org/ehost/detail/detail?vid=4&sid=81c42eaa-a1c7-44f2-ad96-960761b431ed%40pdc-v-sessmgr02&bdata=JnNpdGU9ZWhvc3QtG12ZQ%3d%3d#db=ccm&AN=138670949&anchor=AN0138670949-9>
- Villegas, M., Et al. (2018). Micronutrient intake adequacy and depression risk in the SUN cohort study. *SUN*. Retrieved from <https://web.p.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=3&sid=7af95221-2ad1-45c7-975f-c203ab52df5a%40redis>
- World Heart Federation. (2021). Global Dietary Changes Threaten Health. *World Heart Federation*. Retrieved from [https://world-heart-federation.org/wp-content/uploads/2017/05/Factsheet\\_Unhealthy\\_diet.pdf](https://world-heart-federation.org/wp-content/uploads/2017/05/Factsheet_Unhealthy_diet.pdf)

