Journal of Nutritional Research & Dietetics

Review Article

Food Insecurity and Anxiety: Possible Mechanisms, Risk Groups, and the Role of the Dietitian

Aliye Özenoğlu[1] | Gül Eda Kılınç Tulum[1,*]

[1] Ondokuz Mayıs University, Faculty of Health Sciences, Department of Nutrition and Dietetics, 55139, Samsun, Türkiye

Abstract

Food security is defined as the state in which all people have physical and economic access to sufficient, safe, and nutritious food to maintain an active and healthy life. Restricted access to food may be associated with an increased prevalence of mental health problems. Persistent concerns about access to food may impose a significant psychosocial stress burden on households and may be associated with an increased risk of anxiety disorders characterized by excessive and uncontrollable worry about daily events. Anxiety and stress levels may also be higher among specific risk groups, such as pregnant women, parents who skip meals to prioritize their children's nutritional needs, and students facing high living costs. In conclusion, food insecurity is a significant public health issue that may be associated with poorer mental health and quality of life, rather than being merely a biological hunger problem. As uncertainty regarding access to food may contribute to mental health problems, particularly anxiety, policies developed to ensure food security should adopt a holistic approach that addresses nutritional needs while also considering potential mental health consequences. The aim of this review is to evaluate the relationship between food insecurity and anxiety in light of the current evidence, elucidate the underlying biological and psychosocial mechanisms of this relationship, and highlight the role of dietitians in managing food insecurity.

Keywords: Anxiety, Food insecurity, Mental health, Public health.

Received: 17 July 2026 | Revised: 6 August 2026 | Accepted: 1 September 2026 | Published Online: 30 September 2026

1. Introduction

According to the Food and Agriculture Organization (FAO), food security is defined as a state in which all people have physical and economic access to sufficient, safe and nutritious food at all times, enabling them to meet their nutritional needs and food preferences for an active and healthy life (Idzerda et al., 2025; FAO et al., 2026). According to this definition, food security is an ongoing process that is essential for a healthy life and encompasses everyone. The World Food Security Summit Declaration of November 2009 outlined the four essential dimensions of food security based on this definition: food availability, food access, food utilization and stability (FAO et al., 2026). Availability is linked to production quantities, stock levels, and trade. The abundance and accessibility of food form the basis of food security. Accessibility (food access) refers to individuals' ability to access sufficient, safe, and nutritious food in terms of physical, economic, and social factors. Key determinants of this dimension include income level, food prices, transportation options, and social support mechanisms. Consumption (food utilization) refers to how efficiently the body uses food. Adequate energy and nutrient intake, good dietary habits, correct food preparation methods and variety are all essential for a healthy life. The proper use of food directly affects individuals' nutritional status. The final determining factor is stability, as adverse weather conditions, political instability, and economic crises can affect food security. For food security goals to be sustainable, all four dimensions must be met continuously (Hussain et al., 2025).

Provided the necessary conditions are met, food security is crucial for meeting the nutritional needs of human life. According to one study, from a micro perspective, the concept of food security refers to ensuring that households have access to adequate, healthy nutrition. In contrast, from a macro perspective, it refers to establishing a sufficient food

*Corresponding Author: Gül Eda Kılınç Tulum
Email: guleda.kilinc@omu.edu.tr

Diamond Open Access
© 2026 The Author(s)
Licensed under CC BY-NC 4.0
Published by iPeak Academy Ltd, United Kingdom

supply through national and international regulations and action plans. One of the fundamental requirements of food security is ensuring that sufficient and safe food is available for everyone at all times and is provided in a suitable manner (Ersoy Akçe, 2023). The inability to ensure food security leads to malnutrition and adverse health outcomes, as well as harming individuals' psychological well-being. Chronic stress caused by uncertainty over access to food is considered a significant risk factor for the development of anxiety disorders. Therefore, food security is now considered an important social determinant and public health indicator, as well as a nutritional one. In recent years, research has shown that food insecurity significantly increases the likelihood of depression, anxiety and perceived stress. Therefore, it is crucial to understand the effects of food insecurity on mental health in order to develop preventive public health policies and plan interventions for at-risk groups (Soylu, 2022). In light of this information, the aim of this review is to evaluate the relationship between food insecurity and anxiety in the context of the current evidence base, explain the underlying biological and psychosocial mechanisms of this relationship and emphasize the role of dietitians in addressing food insecurity.

2. Food Insecurity and Health Consequences

Limited access to adequate and balanced nutrition due to food insecurity has significant negative consequences for physical and mental health throughout life (Ekşioğlu, 2025). Children from food-insecure families are more likely to experience developmental and intellectual disorders, as well as obesity and various chronic diseases. In adults, malnutrition has been linked to diseases such as diabetes, high blood pressure and cancer. Furthermore, food inflation caused by economic sanctions, natural disasters, wars or economic crises makes access to nutritious food even more difficult. In regions where the value of money has decreased due to economic sanctions or crises and where sharp inflation occurs in the food market, the purchasing power of the population is severely reduced. This pushes people toward diets high in starchy foods, simple sugars and low-priced, high-fat foods (Hejazi et al., 2023). This dietary pattern leads to a preference for energy-dense but nutrient-deficient foods, particularly among low-income individuals. Women experiencing mild food insecurity exhibit the “hunger-obesity paradox”, meaning that, due to restrictions in their food budget, they increasingly gravitate toward refined grains and sugary alternatives that are low in nutritional value but high in calories (Seligman et al., 2007). Such dietary patterns may also increase the risk of micronutrient deficiencies. A recent systematic review and meta-analysis reported that food insecurity was associated with a higher likelihood of anemia, low ferritin concentrations and vitamin A deficiency in adults, highlighting the adverse nutritional consequences of poor diet quality (Lopes et al., 2023). These nutritional inadequacies, together with the psychosocial burden of food insecurity, may contribute to poorer mental health outcomes. Indeed, a systematic review and meta-analysis demonstrated that food insecurity is significantly associated with an increased risk of depression and stress (Pourmotabbed et al., 2020). The frequent consumption of energy-dense, nutrient-poor foods contributes to excessive weight gain and obesity, both of which are well-established risk factors for type 2 diabetes. Furthermore, food insecurity has been consistently associated with poorer glycemic outcomes and a higher prevalence of type 2 diabetes, emphasizing the crucial role of adequate access to nutritious foods in diabetes prevention and management (Levi et al., 2023). Among children, food insecurity has been linked to stunted growth and development, poorer cognitive and educational outcomes, and an elevated risk of mental health issues and disordered eating behaviors (Bidopia et al., 2023). In adults, it has been linked to poorer dietary quality, obesity, difficulties managing chronic diseases and negative psychological effects such as stress and depression (Briggs et al., 2024). However, the negative effects of food insecurity are not limited to these groups. In recent years, it has also become a significant public health issue among university students. In Australia, the proportion of students experiencing food insecurity increased from 42.0% in 2022 to 52.7% in 2024; this period was characterized by persistently high inflation. Students, particularly those from low-income families, those living far from home or those receiving government assistance, face significant difficulties accessing nutritious food due to high living costs and tuition fees (Kent et al., 2025). Similar findings have been reported in Turkey, where food insecurity among university students has been linked to poorer adherence to the Mediterranean diet, lower academic achievement, and higher levels of depression, anxiety, and stress (Esin & Ayyıldız, 2024). Therefore, food insecurity negatively alters healthy eating habits and increases the burden of chronic diseases, affecting all segments of society regardless of age, income group, and socioeconomic status.

The consequences of food insecurity extend beyond physical health. Recent studies show that it is also closely related to mental health problems such as depression, stress and anxiety. Those experiencing food insecurity are exposed to psychosocial stressors such as social stigma, shame and feelings of helplessness, as well as the biochemical effects of malnutrition. Chronic exposure to these stressors can activate the hypothalamic–pituitary–adrenal (HPA) axis, contributing to the dysregulation of the body's stress response and increasing vulnerability to anxiety symptoms (Herman et al., 2016). This situation challenges individuals'

emotional regulation skills, paving the way for the development of anxiety symptoms characterized by excessive and uncontrollable worry about daily life events. During periods of economic uncertainty in particular, limited access to food increases the risk of anxiety, creating a vicious cycle between malnutrition and mental health problems (Şahin & Akbulut, 2023). Therefore, examining the relationship between food insecurity and anxiety in detail is important for understanding the common mechanisms of these two significant public health issues.

3. Anxiety Disorders: Definition, Classification, and Epidemiology

Mental health is a fundamental state of well-being that enables individuals to fulfill their potential, cope with life's stresses, lead productive lives, and contribute to society (Aydınbaş & Ünlüoğlu, 2023). Currently, mental health issues represent a substantial proportion of the global disease burden, with anxiety disorders being among the most prevalent (Santomauro et al., 2021). While anxiety is a natural defense mechanism that individuals develop in response to threats or dangers, when it becomes persistent, excessive and uncontrollable to the point of negatively impacting daily life, it is considered a clinical disorder (Şahin & Akbulut, 2023). This condition manifests not only as psychological symptoms, but also as physical symptoms such as palpitations, shortness of breath, muscle tension, sleep disturbances, difficulty concentrating and chronic fatigue (Topçuoğlu, 2022). According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR) published by the American Psychiatric Association, generalized anxiety disorder, panic disorder, social anxiety disorder and specific phobias are among the most common anxiety disorders (American Psychiatric Association, 2022).

According to data from the World Health Organization, approximately 301 million people worldwide were living with anxiety disorders in 2019, making them one of the most common mental health problems (Liu et al., 2024). Studies show that anxiety disorders are approximately twice as prevalent in women as in men, mostly emerging in early adulthood, and increasing in prevalence among children and adolescents in recent years. Furthermore, the economic concerns and rising cost of living caused by the pandemic have led to a further 25% increase in anxiety prevalence worldwide (Santomauro et al., 2021). Anxiety disorders are not caused by a single factor; rather, the interaction of genetic, neurobiological, and environmental factors plays a decisive role (Güveli & İşeri, 2016). Individuals with a family history of anxiety are at a higher risk of developing the condition. Imbalances in neurotransmitters such as serotonin, gamma-aminobutyric acid (GABA), dopamine and norepinephrine are reported to form the biological basis of the disorder (Fox-Gaffney & Singh, 2025). Additionally, environmental and socioeconomic factors such as traumatic life events, negative childhood experiences, lack of social support, unemployment, low income, and economic concerns can reduce psychological resilience and contribute to anxiety development (Nacak, 2025). In conclusion, anxiety disorders are a common mental health problem resulting from the interaction of biological, psychological, and environmental factors, which significantly affect an individual's quality of life and daily functioning. Therefore, examining the impact of socioeconomic determinants such as food insecurity on anxiety has become increasingly important in recent years in terms of protecting mental health and developing effective intervention strategies.

4. Biochemical Mechanisms in the Relationship Between Food Insecurity and Anxiety: The Role of Micronutrients

Food insecurity increases the likelihood of individuals having a lower nutritional intake, particularly due to decreased consumption of fruit, vegetables and fish, restricted dietary diversity and increased consumption of energy-dense processed foods that are deficient in nutrients. This can lead to micronutrient deficiencies, especially in children. Indeed, studies have reported that children experiencing food insecurity have lower intakes of vitamins D and E, magnesium, and calcium (Chambers et al., 2024). This deterioration in nutritional quality has been shown to adversely affect both physical and mental health. The literature reports that increased consumption of fruit and vegetables, along with omega-3 fatty acids, zinc, magnesium, selenium and probiotics, is associated with lower anxiety levels. Conversely, increased consumption of foods high in sugar and refined carbohydrates is associated with higher anxiety levels (Aucoin et al., 2021). However, as much of the current evidence is based on observational studies and experiments on animals, more clinical intervention studies are needed to establish a causal relationship. Studies at the macronutrient and micronutrient levels also support this relationship. Increased intake of unsaturated fatty acids, riboflavin, vitamin B12, zinc and iodine has been linked to lower anxiety levels, while dietary disruptions have been associated with higher anxiety levels (Arslan & Atmaca, 2022). Furthermore, inadequate vitamin intake has been reported to be associated with irritability, a depressed mood and impaired cognitive function. B vitamin deficiencies are more frequently observed in individuals with mood disorders. There is a strong correlation between nutrients, brain development, cognitive function, and psychiatric symptoms, and nutritional insecurity is directly related to common mental health disorders (Akgöz & Yeşilkaya, 2021; Cabal-

Herrera et al., 2025). Magnesium, in particular, has been reported to reduce anxiety by regulating the stress response, decreasing hormonal activation, and suppressing glutamatergic activity. Vitamin B6 is also said to contribute to mood regulation and support magnesium levels. However, although the combination of magnesium and vitamin B6 has been reported to improve quality of life and physical functioning, it does not significantly reduce anxiety and depression scores more effectively than magnesium alone (Noah et al., 2021). Several biological mechanisms have been proposed to explain the relationship between food insecurity, micronutrient deficiencies and anxiety. Inadequate intake of essential micronutrients can interfere with the production and regulation of neurotransmitters such as serotonin, dopamine, gamma-aminobutyric acid (GABA) and norepinephrine, all of which play a key role in regulating mood and stress responses. Furthermore, deficiencies in nutrients that have antioxidant and anti-inflammatory properties, such as magnesium, zinc, selenium, and vitamins B6, B12, and folate, can lead to increased oxidative stress and neuroinflammation. This can disrupt neuronal function and emotional regulation. Furthermore, food insecurity has been linked to the chronic activation of the hypothalamic–pituitary–adrenal (HPA) axis, resulting in prolonged cortisol secretion. This can exacerbate anxiety symptoms and other mental health disorders (Firth et al., 2020; Marx et al., 2017).

5. The Relationship Between Food Insecurity and Anxiety: Risk Groups and Family Dynamics

Inability to access adequate and regular food may be associated with increased stress and psychological distress. Current evidence suggests that depression, anxiety, and mood disorders are more prevalent among individuals experiencing food insecurity, with concerns about food access representing a potential psychosocial pathway underlying these associations (Myers, 2020; Wolfson et al., 2021; Bateson et al., 2025). The relationship between food insecurity and anxiety has been reported to extend beyond psychological stress to include biological mechanisms. Prolonged food insecurity and economic uncertainty can activate the chronic stress response, leading to sustained stimulation of the hypothalamic–pituitary–adrenal (HPA) axis and changes in cortisol levels. It is thought that these physiological changes negatively affect mood regulation, contributing to the emergence and exacerbation of anxiety symptoms (Herman et al., 2016; Chiu et al., 2024).

Around 9% of adults who took part in the Scottish Health Survey said that they had worried about running out of food due to financial hardship in the previous 12 months. Furthermore, research indicates that severe food insecurity is associated with more serious mental health issues. Studies in the UK demonstrate that food insecurity exacerbates psychological issues, particularly among pregnant women and families with low incomes. In children, food insecurity has been linked to behavioral problems, low life satisfaction, anxiety and an increased risk of depression (Aceves-Martins et al., 2018; Chambers et al., 2024). However, the effects of food insecurity are not equally felt by all segments of society. Those most vulnerable to food insecurity include low-income households, single-parent families, elderly individuals, university students, immigrants, and individuals with chronic illnesses. Increased economic uncertainty and difficulty accessing nutritious food can lead to more frequent anxiety symptoms in these groups and negatively impact mental health (Osei-Owusu et al., 2024).

Food insecurity has significant consequences at both the individual and family levels. Parents' anxiety about being unable to provide their children with adequate, healthy food can lead to feelings of guilt and chronic stress. At the same time, increased economic pressure can exacerbate family conflicts and psychological distress. This situation has a negative impact on the mental health of parents, as well as on the emotional development, behavior and psychological well-being of children. Consequently, there is strong evidence of a bidirectional relationship between food insecurity and anxiety. Food insecurity increases stress and uncertainty levels, contributing to anxiety. Conversely, anxiety disorders negatively impact an individual's daily functioning, work capacity and economic situation, thereby increasing the risk of food insecurity. Therefore, interventions aimed at reducing food insecurity, especially among vulnerable groups, would significantly improve nutritional status and protect mental health (Shankar et al., 2017; Pourmotabbed et al., 2020).

5.1. Nutritional Insecurity During Pregnancy and Maternal Mental Health

Due to increased nutritional needs and physiological changes, pregnancy is one of the most sensitive periods in life to the effects of food insecurity on mental health. Experiencing food insecurity during this period can significantly impact maternal mental health. The mental effects of food insecurity can become particularly severe during pregnancy. According to a systematic review and meta-analysis, household-level food insecurity increases the likelihood of experiencing depressive symptoms during pregnancy by 2.52 times (OR: 2.52; 95% CI: 2.11–3.02). While studies on anxiety are limited, current evidence suggests that moderate to severe food insecurity is a significant risk factor for mental distress and generalized anxiety symptoms in pregnant women. It is considered a significant biopsychosocial stressor that negatively affects maternal mental health and may pose indirect risks to pregnancy

outcomes and the neurodevelopmental process of the fetus (Biete et al., 2025). For instance, Laraia et al. (2006) found that pregnant women experiencing food insecurity were more likely to exhibit symptoms of depression and perceived stress than those living in food-secure households. Similarly, a cohort study conducted as part of the Born in Bradford study in the UK found that pregnant women experiencing food insecurity were at significantly higher risk of developing common mental health disorders before, during and after pregnancy than food-secure women (Power et al., 2017).

5.2. Parental Sacrifice and Psychological Consequences in Food Insecurity

In households experiencing food insecurity, a defense mechanism known as 'parental buffering' is observed. A systematic review of 108 studies by Cain et al. (2022) found that parents often prioritize their children's food intake over their own nutritional needs by reducing portion sizes or skipping meals. However, this protective behavior can place a significant psychological burden on parents. Those trying to shield their children from food insecurity may experience feelings of helplessness, shame and inadequacy, contributing to elevated anxiety and stress levels (Cain et al., 2022).

5.3. Psychological and Behavioral Consequences of Food Insecurity in Children

Children experience food insecurity differently from their parents, and this can have a significant negative impact on their mental health, behavior and development. Studies report that children experiencing food insecurity are more likely to exhibit internalized problems, such as anxiety and depression, as well as externalized behavioral problems, such as hyperactivity and aggression. Furthermore, the high levels of anxiety experienced by parents due to food insecurity, coupled with the difficulties they face in accessing food, can have a detrimental effect on the quality of parent-child interactions. This can lead to adverse consequences for children's long-term mental health and psychosocial development (Cain et al., 2022; Dean et al., 2023). As well as having adverse effects on mental health, food insecurity can also hinder children's growth and development. A recent state-of-the-art review reported that persistent food insecurity is associated with poorer cognitive and academic performance, behavioral problems, and suboptimal psychosocial development. This can potentially limit children's ability to achieve their full developmental potential (Gallegos et al., 2021). Furthermore, a systematic review and meta-analysis found that household food insecurity was associated with an increased risk of developmental delay, poorer vocabulary and impaired school readiness in children under five (Oliveira et al., 2020).

5.4. Students as an Academic and Economic Risk Group

University students are considered a vulnerable group with regard to food insecurity. They often experience financial constraints, rising housing and education costs, reduced purchasing power and increased responsibility for food selection and preparation when living independently. Previous research has shown that food insecurity among university students is associated with higher levels of perceived stress, poorer sleep quality, disordered eating behaviors and poorer academic outcomes (Bruening et al., 2018). Food insecurity, which can be observed in different segments of society, is also a significant public health issue in academic circles. Students are particularly at risk of food insecurity due to limited income, rising living costs and academic responsibilities. Research shows that approximately half of students experience food insecurity. Students with very low food security have been reported to have significantly higher levels of anxiety and perceived stress due to the combined effects of academic stress and concerns about access to food (Coffino et al., 2021).

6. The Dietitian's Role

Food insecurity is a significant public health problem that leads to physical health issues related to inadequate food intake, as well as contributing to various mental health problems, particularly anxiety. Therefore, when assessing food insecurity in dietetics, it is important to consider not only nutritional status, but also the individual's psychosocial and economic circumstances. It is now essential for dietitians to consider not only an individual's energy and nutrient requirements, but also their socio-economic circumstances, access to food and mental health. For individuals experiencing food insecurity and anxiety, a nutritional psychiatry approach is considered a vital component of multidisciplinary care (Kundra et al., 2025). When working with individuals experiencing food insecurity, dietitians are advised to collaborate with relevant health professionals, especially psychologists, psychiatrists and social workers. Clinical assessments should evaluate anthropometric measurements and dietary patterns as well as skipping meals, portion control, reduced dietary diversity and concerns about access to food. This approach will contribute to the early identification of the effects of food insecurity on mental health and ensure appropriate referrals are made (Holben & Marshall, 2017; Wetherill et al., 2018).

The economic feasibility and sustainability of nutritional interventions are also crucial for successful treatment. In this context, including affordable, nutritious options such as eggs, pulses, whole grains and seasonal vegetables in the nutritional plan can increase adherence to recommendations and reduce feelings of inadequacy

regarding food access. For families with children, family-centered interventions should be planned bearing in mind that parents' physical and mental well-being influences children's nutritional behaviors and psychosocial development. In conclusion, food insecurity is a significant public health problem that affects more than just biological hunger; it impacts an individual's mental health, quality of life, and social functioning. Current evidence shows that uncertainties in access to food and the resulting chronic stress play a significant role in the development of various mental health problems, particularly anxiety. Therefore, policies aimed at improving food security should focus not only on improving nutritional status, but also on protecting mental health, strengthening social support mechanisms and adopting multidisciplinary approaches more widely. Furthermore, long-term prospective studies and intervention research across different age groups and at-risk populations are needed to better understand the causal relationship between food insecurity and anxiety.

In the United States, nutrition interventions addressing food insecurity have increasingly incorporated dietitians and healthcare-based approaches, such as nutrition counseling, screening and referral to food assistance programs, in order to improve dietary quality among vulnerable populations (Gundersen et al., 2021; Rudel et al., 2023). Dietitians and nutrition professionals in the United States have become more involved in identifying food insecurity, providing nutrition counseling and connecting individuals with community-based food resources, as part of a comprehensive healthcare approach that addresses social determinants of health (Blankenship et al., 2022; Short et al., 2025).

7. Conclusion

Food insecurity is a multifaceted public health issue that not only leads to physical health problems due to inadequate nutrient intake, but also significantly impacts individuals' mental health. Current evidence shows that food insecurity is associated with various mental health problems, primarily anxiety, via psychosocial factors and biological mechanisms such as chronic stress, activation of the hypothalamic–pituitary–adrenal (HPA) axis and nutritional deficiencies. Vulnerable groups, such as pregnant women, children, parents and socioeconomically disadvantaged individuals, are particularly susceptible to the negative effects of food insecurity. Therefore, managing food insecurity requires a holistic approach that considers not only ensuring adequate and balanced nutrition, but also addressing individuals' psychosocial needs. Dietitians play a crucial role in identifying individuals at risk of food insecurity early on, planning appropriate nutritional interventions and providing multidisciplinary care in collaboration with other healthcare professionals when necessary. In conclusion, policies aimed at reducing food insecurity should not only target improving nutritional status, but also protect mental health and enhance quality of life.

Furthermore, long-term prospective studies of diverse populations, as well as intervention research, are needed to improve our understanding of the causal mechanisms underlying the relationship between food insecurity and anxiety.

Declarations

Competing Interests

The authors declare that they have no financial or non-financial competing interests.

Funding

This study received no external funding.

Ethics Statement

Ethical approval was not required for this review because it did not involve human participants, animals, identifiable personal data, or unpublished individual-level data.

Data Availability Statement

No new data were generated or analyzed in this study.

AI Statement

Generative AI tools were used only in a limited and controlled manner for language editing. All content was reviewed and approved by the authors.

Author Contributions

A. Özenoğlu: Conceptualization, Methodology, Investigation, Writing, Review and Editing, Supervision, Data Provision.
G. E. Kılınç Tulum: Investigation, Writing, Review and Editing, Data Provision.

References

Aceves-Martins, M., Cruickshank, M., Fraser, C., & Brazzelli, M. (2018). Child food insecurity in the UK: A rapid review. *Public Health Research, 6*(13), 1-162. https://doi.org/10.3310/phr06130

Akgöz, H. F., & Yeşilkaya, B. (2021). The relationship between psychiatric disorders and nutrition. *Sağlık Akademisyenleri Dergisi, 8*(4), 330-336. https://doi.org/10.52880/sagakaderg.849741

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.; DSM-5-TR). American Psychiatric Association Publishing. https://doi.org/10.1176/appi.books.9780890425787

Arslan, M., & Atmaca, L. (2022). Covid-19 Pandemi sürecinde sağlık çalışanlarının makro-mikro besin öğeleri alımlarının anksiyete-kaygı durumları üzerine etkisinin incelenmesi. *Gevher Nesibe Journal Of Medical And Health Sciences, 7*(20), 147-157. https://doi.org/10.5281/zenodo.7133610

Aucoin, M., LaChance, L., Naidoo, U., Remy, D., Shekdar, T., Sayar, N., Cardozo, V., Rawana, T., Chan, I., & Cooley, K. (2021). Diet and anxiety: a scoping review. *Nutrients, 13*(12), 4418. https://doi.org/10.3390/nu13124418

Aydınbaş, G., & Ünlüoğlu, M. (2023). Sürdürülebilir kalkınma çerçevesinde mental sağlık ile ilişkilendirilen sosyoekonomik faktörler. *Düzce İktisad Dergisi, 4*(2), 29-53.

Bateson, M., Chevallier, C., Johnson, E. A., Johnson, M. T., Pickett, K. E., & Nettle, D. (2025). Does food insecurity cause anxiety and depression? Evidence from the changing cost of living study. *PLOS Mental Health, 2*(7), e0000320. https://doi.org/10.1371/journal.pmen.0000320

Bidopia, T., Carbo, A. V., Ross, R. A., & Burke, N. L. (2023). Food insecurity and disordered eating behaviors in children and adolescents: A systematic review. *Eating Behaviors, 49*, 101731. https://doi.org/10.1016/j.eatbeh.2023.101731

Biete, C., Biete, A., Patriota, E. S. O., Gonçalves, V. S. S., Buccini, G., & Pizato, N. (2025). Household food insecurity and symptoms of anxiety and depression during pregnancy: Systematic review and meta-analysis. *Maternal & Child Nutrition, 21*(1), e13714. https://doi.org/10.1111/mcn.13714

Blankenship, J., & Blancato, R. B. (2022). Nutrition security at the intersection of health equity and quality care. *Journal of the Academy of Nutrition and Dietetics, 122*(10), S12-S19. https://doi.org/10.1016/j.jand.2022.06.017

Briggs, R., Rowden, H., Lagojda, L., Robbins, T., & Randeva, H. S. (2024). The lived experience of food insecurity among adults with obesity: a quantitative and qualitative systematic review. *Journal of Public Health, 46*(2), 230-249. https://doi.org/10.1093/pubmed/fdae016

Bruening, M., Van Woerden, I., Todd, M., & Laska, M. N. (2018). Hungry to learn: the prevalence and effects of food insecurity on health behaviors and outcomes over time among a diverse sample of university freshmen. *International Journal of Behavioral Nutrition and Physical Activity, 15*(1), 9. https://doi.org/10.1186/s12966-018-0647-7

Cabal-Herrera, A., Kigen, B., Kapanga, E., Samia, A., Nabwera, H., & Samia, P. (2025). The impact of undernutrition and overnutrition on early brain development. *Seminars in Pediatric Neurology, 55*, 101212. https://doi.org/10.1016/j.spen.2025.101212

Cain, K. S., Meyer, S. C., Cummer, E., Patel, K. K., Casacchia, N. J., Montez, K., Palakshappa, D., & Brown, C. L. (2022). Association of food insecurity with mental health outcomes in parents and children. *Academic Pediatrics, 22*(7), 1105-1114. https://doi.org/10.1016/j.acap.2022.04.010

Chambers, S., Machray, K., & Fergie, G. (2024). Food insecurity in children and young people in Scotland. *Proceedings of the Nutrition Society, 83*(3), 157-169. https://doi.org/10.1017/S0029665124000090

Chiu, D. T., Parker, J. E., Wiley, C. R., Epel, E. S., Laraia, B. A., Leung, C. W., & Tomiyama, A. J. (2024). Food insecurity, poor diet, and metabolic measures: The roles of stress and cortisol. *Appetite, 197*, 107294. https://doi.org/10.1016/j.appet.2024.107294

Coffino, J. A., Spoor, S. P., Drach, R. D., & Hormes, J. M. (2021). Food insecurity among graduate students: Prevalence and association with depression, anxiety and stress. *Public Health Nutrition, 24*(7), 1889-1894. https://doi.org/10.1017/S1368980020002001

Dean, G., Vitolins, M. Z., Skelton, J. A., Ip, E. H., Lucas, C. B., & Brown, C. L. (2023). The association of food insecurity with mental health in preschool-aged children and their parents. *Pediatric Research, 94*(1), 290-295. https://doi.org/10.1038/s41390-022-02458-1

Ekşioğlu, E. (2025). Türkiye'de 2019'dan 2024'e temel gıda mallarının fiyat artışı karşısında asgari ücretin reel alım gücündeki değişim. *Scientific Journal of Innovation and Social Sciences Research, 5*(1), 1-14. https://izlik.org/JA85CU48EC

Ersoy Akçe, T. (2023). İnsani güvenlik kapsamında gıda güvenliği sorunsalını incelemek. *Erzincan Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 16*(2), 214-231. https://doi.org/10.46790/erzisosbil.1328829

Esin, K., & Ayyıldız, F. (2024). Food insecurity, Mediterranean diet adherence, and psychosocial health among university students in Türkiye. *International Journal of Environmental Health Research, 34*(1), 649-659. https://doi.org/10.1080/09603123.2023.2300405

FAO, IFAD, UNICEF, WFP, & WHO. (2026). *The State of Food Security and Nutrition in the World 2026.* https://doi.org/10.4060/cd8306en

Firth, J., Gangwisch, J. E., Borsini, A., Wootton, R. E., & Mayer, E. A. (2020). Food and mood: how do diet and nutrition affect mental wellbeing? *BMJ, 369*, m2382. https://doi.org/10.1136/bmj.m2382

Fox-Gaffney, K. A., & Singh, P. K. (2025). Genetic and Environmental Influences on Anxiety Disorders: A Systematic Review of Their Onset and Development. *Cureus*, *17*(3), e80157. https://doi.org/10.7759/cureus.80157

Gallegos, D., Eivers, A., Sondergeld, P., & Pattinson, C. (2021). Food insecurity and child development: a state-of-the-art review. *International Journal of Environmental Research and Public Health, 18*(17), 8990. https://doi.org/10.3390/ijerph18178990

Gundersen, C., Hake, M., Dewey, A., & Engelhard, E. (2021). Food insecurity during COVID-19. *Applied Economic Perspectives and Policy, 43*(1), 153-161. https://doi.org/10.1002/aepp.13100

Güveli, G. M., & İşeri, E. (2016). Anksiyete Bozukluklarının Etiyolojisi. *Turkiye Klinikleri Child Psychiatry-Special Topics, 2*(3), 7-13.

Hejazi, J., Aminzare, M., Ayatollahi, Y., Vakili, M. M., Hassanzadazar, H., & Rahimlou, M. (2023). Effect of a comprehensive nutrition education program on nutritional behavior and food security of female-headed households who receive welfare support in Zanjan Province, Iran. *BMC Public Health, 23*(1), 1512. https://doi.org/10.1186/s12889-023-16478-x

Herman, J. P., McKlveen, J. M., Ghosal, S., Kopp, B., Wulsin, A., Makinson, R., Scheimann, J., & Myers, B. (2016). Regulation of the hypothalamic-pituitary-adrenocortical stress response. *Comprehensive Physiology, 6*(2), 603-621. https://doi.org/10.1002/j.2040-4603.2016.tb00694.x

Holben, D. H., & Marshall, M. B. (2017). Position of the Academy of Nutrition and Dietetics: food insecurity in the United States. *Journal of the Academy of Nutrition and Dietetics, 117*(12), 1991-2002. https://doi.org/10.1016/j.jand.2017.09.027

Hussain, M. A., Li, L., Kalu, A., Wu, X., & Naumovski, N. (2025). Sustainable Food Security and Nutritional Challenges. *Sustainability, 17*(3), 874. https://doi.org/10.3390/su17030874

Idzerda, L., Lazarescu, C., Corrin, T., Vallières, E., Couture, A., Khan, S., McIntyre, L., Tarasuk, V., & Jaramillo Garcia, A. (2025). Food-based interventions to mitigate household food insecurity in Canada: A systematic review. *Health Promotion and Chronic Disease Prevention in Canada: Research, Policy and Practice, 45*(9), 367-385. https://doi.org/10.24095/hpcdp.45.9.03

Kent, K., Visentin, D., Peterson, C., Elliott, C., Primo, C., & Murray, S. (2025). Food Insecurity Among Australian University Students Is Higher and More Severe Across an Extended Period of High Inflation: A Repeated

Cross-Sectional Study 2022–2024. Health Promotion Journal of Australia, 36(2), e70037. https://doi.org/10.1002/hpja.70037

Kundra, A., Batool, H., Moore, S. G., Aslett-Bentley, A., Noonan-Gunning, S., Rice, I., Smith, J., & Marino, L. V. (2025). Supporting those experiencing food insecurity: A scoping review of the role of a dietitian. Journal of Human Nutrition and Dietetics, 38(1), e13407. https://doi.org/10.1111/jhn.13407

Laraia, B. A., Siega-Riz, A. M., Gundersen, C., & Dole, N. (2006). Psychosocial factors and socioeconomic indicators are associated with household food insecurity among pregnant women. The Journal of Nutrition, 136(1), 177-182. https://doi.org/10.1093/jn/136.1.177

Levi, R., Bleich, S. N., & Seligman, H. K. (2023). Food insecurity and diabetes: overview of intersections and potential dual solutions. *Diabetes Care*, *46*(9), 1599-1608. https://doi.org/10.2337/dci23-0002

Liu, J., Ning, W., Zhang, N., Zhu, B., & Mao, Y. (2024). Estimation of the global disease burden of depression and anxiety between 1990 and 2044: An analysis of the Global Burden of Disease Study 2019. *Healthcare, 12*(17), 1721. https://doi.org/10.3390/healthcare12171721

Lopes, S. O., Abrantes, L. C. S., Azevedo, F. M., Morais, N. D. S. D., Morais, D. D. C., Gonçalves, V. S. S., Fontes, E. A. F., Franceschini, S. d. C. C., & Priore, S. E. (2023). Food insecurity and micronutrient deficiency in adults: a systematic review and meta-analysis. *Nutrients, 15*(5), 1074. https://doi.org/10.3390/nu15051074

Marx, W., Moseley, G., Berk, M., & Jacka, F. (2017). Nutritional psychiatry: the present state of the evidence. Proceedings of the Nutrition Society, 76(4), 427-436. https://doi.org/10.1017/S0029665117002026

Myers, C. A. (2020). Food insecurity and psychological distress: a review of the recent literature. *Current Nutrition Reports, 9*(2), 107-118. https://doi.org/10.1007/s13668-020-00309-1

Nacak, S. (2025). Anksiyete Bozukluklarının Etiyolojisi: Genetik Ve Çevresel Faktörlerin Rolü. *Ases International Journal Of Health And Sports Sciences, 3*(1), 172-189. https://doi.org/10.5281/zenodo.15709534

Noah, L., Dye, L., Bois De Fer, B., Mazur, A., Pickering, G., & Pouteau, E. (2021). Effect of magnesium and vitamin B6 supplementation on mental health and quality of life in stressed healthy adults: Post-hoc analysis of a randomized controlled trial. *Stress and Health, 37*(5), 1000-1009. https://doi.org/10.1002/smi.3051

Oliveira, K. H. D., de Almeida, G. M., Gubert, M. B., Moura, A. S., Spaniol, A. M., Hernandez, D. C., Pérez-Escamilla, R., & Buccini, G. (2020). Household food insecurity and early childhood development: Systematic review and meta-analysis. *Maternal & Child Nutrition, 16*(3), e12967. https://doi.org/10.1111/mcn.12967

Osei-Owusu, C., Dhillon, S., & Luginaah, I. (2024). The impact of food insecurity on mental health among older adults residing in low-and middle-income countries: A systematic review. *PLoS One, 19*(3), e0301046. https://doi.org/10.1371/journal.pone.0301046

Pourmotabbed, A., Moradi, S., Babaei, A., Ghavami, A., Mohammadi, H., Jalili, C., Symonds, M. E., & Miraghajani, M. (2020). Food insecurity and mental health: a systematic review and meta-analysis. Public Health Nutrition, 23(10), 1778-1790. https://doi.org/10.1017/S136898001900435X

Power, M., Uphoff, E., Kelly, B., & Pickett, K. E. (2017). Food insecurity and mental health: an analysis of routine primary care data of pregnant women in the Born in Bradford cohort. *Journal of Epidemiology and Community Health, 71*(4), 324-328. https://doi.org/10.1136/jech-2016-207799

Rudel, R. K., Byhoff, E., Strombotne, K. L., Drainoni, M. L., & Greece, J. A. (2023). Healthcare-based food assistance programmes in the United States: a scoping review and typology. *Journal of Nutritional Science, 12*, e128. https://doi.org/10.1017/jns.2023.111

Şahin, K., & Akbulut, G. (2023). Besin güvencesizliği ile mental sağlık ilişkisi. Beslenme ve Diyet Dergisi, 51(2), 104-110. https://doi.org/10.33076/2023.BDD.1753

Santomauro, D. F., Herrera, A. M. M., Shadid, J., Zheng, P., Ashbaugh, C., Pigott, D. M., Abbafati, C., Adolph, C., Amlag, J. O., Aravkin, A. Y., et al. (2021). Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *The Lancet*, *398*(10312), 1700-1712. https://doi.org/10.1016/S0140-6736(21)02143-7

Seligman, H. K., Bindman, A. B., Vittinghoff, E., Kanaya, A. M., & Kushel, M. B. (2007). Food insecurity is associated with diabetes mellitus: results from the National Health Examination and Nutrition Examination Survey (NHANES) 1999–2002. *Journal of General Internal Medicine, 22*(7), 1018-1023. https://doi.org/10.1007/s11606-007-0192-6

Shankar, P., Chung, R., & Frank, D. A. (2017). Association of food insecurity with children's behavioral, emotional, and academic outcomes: a systematic review. *Journal of Developmental & Behavioral Pediatrics, 38*(2), 135-150. https://doi.org/10.1097/DBP.0000000000000383

Short, E., Akers, L., Callahan, E. A., Cliburn Allen, C., Crespo-Bellido, M., Deuman, K., Dimond, E., Hollowell, C., López, M. A., & Steeves, E. A. (2025). The role of registered dietitian nutritionists within food is medicine: current and future opportunities. *Journal of the Academy of Nutrition and Dietetics, 125*(8), 1075-1084. https://doi.org/10.1016/j.jand.2025.03.004

Soylu, A. C. (2022). Sürdürülebilir kalkınma ve gıda güvenliği ilişkisi. *Paradigma: İktisadi ve İdari Araştırmalar Dergisi, 11*(2), 100-111. https://izlik.org/JA85NR72BW

Topçuoğlu, V. (2022). Anksiyete Bozuklukları. *Istanbul Kent University Journal of Health Sciences, 1*(1), 38-40.

Wetherill, M. S., White, K. C., & Rivera, C. (2018). Food insecurity and the nutrition care process: practical applications for dietetics practitioners. *Journal of the Academy of Nutrition and Dietetics, 118*(12), 2223-2234. https://doi.org/10.1016/j.jand.2017.08.114

Wolfson, J. A., Garcia, T., & Leung, C. W. (2021). Food insecurity is associated with depression, anxiety, and stress: evidence from the early days of the COVID-19 pandemic in the United States. *Health Equity, 5*(1), 64-71. https://doi.org/10.1089/heq.2020.0059