

Dairy Foods May Help Support Mental and Emotional Health



Overview

Mental and emotional health are integral to overall well-being, with chronic stress and poor emotional well-being linked with diminished quality of life and productivity, as well as increased risk for chronic diseases such as type 2 diabetes, heart disease and stroke. Growing evidence suggests that healthy eating patterns play a meaningful role in helping to support mental and emotional health outcomes. Recent research links nutrient-dense dairy foods like milk, cheese and yogurt as well as the nutrients and bioactive compounds found in their unique food matrix, with potential contributions to psychological well-being. Collectively, findings indicate that dairy foods can be a valued part of a healthy eating pattern that helps to promote mental and emotional well-being.

Dairy foods provide key nutrients and bioactives that may help support mental and emotional health

Mental and emotional health, which includes the regulation of stress and anxiety and the promotion of mood and psychological well-being, is an increasingly recognized public health concern across the lifespan. The U.S. Centers for Disease Control and Prevention (CDC) reports that the nation is experiencing a mental health crisis, impacting people of all ages, but particularly U.S. youth.¹ Before the pandemic, depression rates were rising among individuals 12 years and older, and by 2023, approximately one in five American adults reported symptoms of depression or anxiety.^{2,3} In addition to these conditions, stress, psychological distress and mood have gained increasing attention from both the public and scientific communities. Chronic stress and poor emotional well-being are not only associated with diminished quality of life and productivity, but they may also contribute to increased risk for various health concerns like cardiometabolic conditions including type 2 diabetes, heart disease and stroke.^{4,5} Despite pharmacologic and behavioral interventions, many may experience residual symptoms or seek complementary, nonpharmacologic approaches to support mental and emotional health.

Eating patterns or food-based strategies can be important tools to help support emotional resilience and mental well-being, as growing evidence suggests that eating patterns may influence mental and emotional health.¹¹⁻¹⁴ Dairy foods (i.e., milk, cheese and yogurt) provide a nutrient-dense food matrix that delivers high-quality protein, vitamins, minerals and bioactive lipids (with the exception of fat-free varieties). Dairy foods may also provide prebiotics and probiotics when added. Together, these components may contribute to the pathways outlined in **Table 1**. Findings from decades of research focused on dairy foods, both individually and as part of healthy eating patterns, link regularly consuming dairy foods with the promotion of growth and development,¹⁵ cardiometabolic health,¹⁶⁻¹⁸ bone and muscle health,¹⁹⁻²¹ immune and digestive health^{22,23} and reduced risk for certain cancers.²⁴⁻²⁶ Emerging research also suggests that consuming dairy foods may help support mental and emotional health.^{13, 27-29}

Dairy foods may help contribute to mental and emotional health through several potential biological pathways

Although the evidence is still evolving, studies suggest that nutrients and bioactive components found in dairy foods may potentially help contribute to mental and emotional health. Emerging research suggests potential benefits through the modulation of gut-brain communication, neurotransmitter availability and stress-response pathways.

Gut-brain axis:

The gut-brain axis is a bidirectional communication system linking the digestive tract and central nervous system that plays a key role in regulating mood, stress and emotional processing.³⁰ A limited but growing number of human and animal studies indicate prebiotics and probiotics that may be added to dairy foods as ingredients may favorably influence gut-brain signaling via neural, hormonal and immune pathways.³¹⁻³⁶ This finding may help explain emerging research linking these components with a beneficial role in stress, anxiety, mood and depressive symptoms.^{37, 31, 32, 38-41}

Neurotransmitter-related mechanisms:

Dairy foods provide nutrients involved in neurotransmitter synthesis and function, including nutrients necessary for the serotonin and GABA pathways,^{42, 43} which play important roles in mood regulation and anxiety modulation.^{43,44} For example, serotonin production and availability are influenced by nutrients found in dairy foods such as calcium, vitamin D, tryptophan and α -lactalbumin.^{42, 43,45, 46} Tryptophan and tryptophan-rich proteins have been associated with potential improvements to mood, stress responses and emotional processing,^{44,47-51} although more research is needed to validate these findings.

What is mental and emotional health and how do you measure it?

Mental and emotional health is a state of emotional, psychological and social well-being that enables individuals to manage life's stresses, regulate emotions and behavior, develop meaningful relationships, realize their abilities and function productively while maintaining freedom from disabling anxiety and depression.^{6, 7}

Research often uses a range of validated tools to assess aspects of mental and emotional health including stress, anxiety, mood and depression. Common measures include the Profile of Mood States (POMS), the Patient Health Questionnaire-9 (PHQ-9) and General Anxiety Disorder-7 (GAD-7), which measures mood states, depressive symptoms and anxiety-related symptoms, respectively.⁸⁻¹⁰

Stress-response regulation (HPA axis):

The hypothalamic-pituitary-adrenal (HPA) axis is the body's primary stress-response system.^{40,52} Chronic stress can dysregulate the HPA axis, contributing to anxiety, depression and other adverse health outcomes.^{40, 52} Emerging research indicates a potential role of calcium^{45, 53} and supplementation of prebiotics^{35, 54} in influencing outcomes related to cortisol regulation and stress adaptation. Two cross-sectional studies in healthy U.S. adults observed that higher calcium intake was associated with fewer depressive symptoms, lower perceived stress and anxiety and more positive mood and resilience.^{45, 53}

Table 1. Potential Mechanisms Linking Dairy Food Components to Mental and Emotional Health

Dairy Component	Potential Benefits	Potential Beneficial Mechanisms
Micronutrients		
Calcium	- Reduced depressive symptoms^{*53} - Lowered perceived stress and anxiety^{*45} - Increased positive mood and resilience^{*45}	- HPA-axis regulation^{*53,55} - Modulation of neurotransmitters^{*45}
Vitamin D	Reduced depressive symptoms^{*55, 56}	Modulation of neurotransmitters^{*56, 57}
Milk proteins and peptides		
Whey	- Improved stress management^{*58} - Improved well-being^{*58} - Reduced anxiety^{†59}	Modulation of neurotransmitters^{†59}
Alpha-lactalbumin	Improved mood^{*46, 60, 61}	Modulation of neurotransmitters^{*36, 46, 60-63}
Lactoferrin	- Improved stress management^{*64} - Reduced depressive symptoms^{†65}	- Modulation of parasympathetic and sympathetic nervous systems^{*64} - Modulation of inflammatory response^{†65}
Tryptophan	- Enhanced mood^{*44, 47, 48, 51} - Reduced anxiety or stress responses^{*44, 66} - Increased positive emotional processing^{*44, 50} - Improved depressive symptoms^{*51}	Modulation of neurotransmitters^{*44, 47, 50, 51, 66, 67}

Dairy Component	Potential Benefits	Potential Beneficial Mechanisms
Milk proteins and peptides		
Casein-derived peptides	- Reduced stress and anxiety^{*†68, 72} - Reduced depressive symptoms^{*†68, 71} - Improved mood^{*73}	HPA-axis regulation^{†68, 69}
Dairy lipids		
Milk fat globule membrane (MFGM)	- Improved stress^{*74, 75} - Reduced anxiety^{*75}	- Modulation of neurotransmitters^{*75} - HPA-axis regulation^{*75}
Phospholipids	Improved stress response^{*52}	HPA-axis regulation^{*52, 76}
Other bioactive components that can be added to dairy foods as ingredients		
Probiotics	Improved mood, depression, anxiety and stress^{*31-33, 37-41}	- Modulation of gut-brain axis^{*31-33, 40, 41} - Modulation of neurotransmitters^{*31, 40, 41} - HPA-axis regulation^{*40} - Modulation of inflammatory response^{*38}
Prebiotics	- Decreased anxiety^{*35, 54, 77-79} - Decreased stress^{*54}	- Modulation of the gut-brain axis^{*34, 35, 79} - HPA-axis regulation^{*54}

*Results based on studies conducted in humans

† Results based on studies conducted in animal models

Emerging evidence links dairy foods with possible benefits for stress, anxiety and depression

Recent systematic reviews and meta-analyses examining the role of dairy food consumption on mental and emotional health include results from observational research spanning from 2006 to 2022.^{28,29,80} In a 2023 systematic review evaluating the relationship between diet and anxiety in adult populations, higher dairy food consumption was associated with lower anxiety in 7 of the 19 studies that examined dairy foods, with the remaining 12 studies reporting neutral relationships.²⁸ Similarly, a 2023 meta-analysis of eight cohort studies (83,533 total participants) reported a beneficial relationship between fermented dairy food consumption (i.e., cheese and yogurt) and reduced depression risk.⁸⁰ In a 2020 systematic review of observational studies examining dairy food consumption and depressive symptoms, one study observed a beneficial association, five studies reported neutral associations and seven studies reported mixed associations depending on gender, dairy type or population.²⁹

Similarly, findings from the body of observational studies, including those published after 2022,^{84,89} suggest dairy foods (i.e., milk, cheese, yogurt) may have a beneficial to neutral association and impact on mental and emotional

health outcomes such as depression, anxiety and stress.^{13,14,27,45,81-98} In a 2020 cross-sectional and prospective cohort study of 9,298 Japanese adults (4,701 followed for ~5 years), consumption of dairy foods was associated with a lower risk of psychological distress.¹³ In a cross-sectional analysis of 1,233 healthy U.S. higher education students, higher dairy food consumption and calcium intake were associated with better mental health outcomes, including lower perceived stress and depressive symptoms.⁴⁵ Higher dairy and calcium intake was linked with lower perceived stress and higher positive mood scores, while higher calcium intake was also linked with lower anxiety, rumination and higher resilience scores. In 2023, Hockey et al.⁸⁷ found that higher consumption of high-fat total dairy foods and high-fat non-fermented dairy foods was associated with reduced odds of elevated depressive symptoms among 1,600 healthy Finnish adults, with no association found when consuming total or low-fat dairy foods. Additional cross-sectional studies in adults observed that greater consumption of milk, yogurt and unsweetened dairy foods is associated with lower depression, anxiety, and stress symptoms.^{14,83,88} In Iranian adults, higher milk and yogurt consumption was associated with lower odds of depression and anxiety, and milk intake was additionally associated with lower perceived stress.⁸³ Similarly, among women, greater daily consumption of unsweetened dairy products was associated with lower GAD-7 anxiety scores, whereas no significant relationship was observed among men.⁸⁸ In contrast, another cross-sectional factor analysis also identified that an unhealthy dietary pattern (which includes high-fat dairy among other foods such as red meat and soda) was the most dominant among Greek adults with high anxiety and depression symptoms.¹⁴

Limited intervention studies have been conducted on dairy foods and their impact on mental and emotional health. In a 2020 randomized controlled crossover trial, 41 adults (≥45 years old) with cardiovascular risk factors consumed a Mediterranean-style diet with three to four servings per day of dairy foods (MedDairy diet) for 8 weeks.¹¹ Compared with a low-fat control diet where participants were instructed to consume mostly low-fat foods and use low-fat cooking methods, MedDairy diet participants reported improvements in multiple mood domains, including total mood disturbance, tension, depression, anger and confusion.¹¹ In addition, most research evaluating the relationship between consuming dairy foods and mental and emotional health has focused on adults and young adults. However, a 2022 cross-sectional study of 1,353 children and adolescents (7-17 years old living in Beijing) found that habitual dairy food consumption (≥ 6 days/week) was inversely associated with depressive and social anxiety symptoms, with stronger effects observed among those with overall healthier diets rich in fruits and vegetables.⁸¹ In this emerging area of research, further longitudinal and clinical studies across broader populations, especially among children, are warranted to better understand the contributions of dairy foods and overall eating patterns to mental and emotional health across the lifespan.

Conclusion

Mental and emotional health is a growing public health priority, and healthy eating is increasingly recognized as a practical approach to help support well-being. Emerging evidence suggests that dairy foods may help support stress regulation, mood and emotional resilience, with mechanistic studies highlighting potential biological pathways to explore in future research. While additional research is needed to further understand the role of nutrition, foods and eating patterns in mental and emotional well-being across the lifespan, this growing evidence base suggests that dairy foods may help contribute to this important dimension of health, extending their potential benefits beyond established roles in chronic disease prevention.

Key Takeaways for Health & Wellness Professionals

Dairy foods provide nutrients and bioactives that may help support mental and emotional health. Milk, cheese and yogurt can provide unique proteins and lipids along with vitamins, minerals and other bioactive components that may help influence mechanisms related to mood, stress and emotional regulation.³¹⁻⁷⁹

Dairy foods may help influence mental and emotional health through multiple biological pathways.

Emerging mechanistic research links components in dairy foods with potential roles in gut-brain communication, neurotransmitter synthesis and stress-response regulation, including pathways linked to serotonin and cortisol.³¹⁻⁷⁹

The emerging evidence base suggests consuming dairy foods may be beneficial or neutral for mental and emotional health outcomes in adults. The evolving body of science suggests that consuming dairy foods like milk, cheese and yogurt may be linked with lower levels of stress, anxiety and depressive symptoms, though further research is needed.^{11,13,27-29,45,80-82,84-87,89-97}

Dairy foods can be part of a practical approach to helping support holistic wellness. Incorporating nutrient-dense dairy foods like milk, cheese and yogurt into healthy eating patterns may help support overall health – including mental and emotional well-being – alongside other lifestyle strategies.^{13,15-18,22-29,80}

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