American Journal of Psychiatric Rehabilitation

Expert Opinion Article

Need For Interprofessional Collaboration For Depression Interventions: From Research To Future Directions

SunHee Eissenstat, Ph.D.[1*], Ni Gao, Ph.D.[1], Rebecca Brody, Ph.D.[2], and Rucha Modak, M.Sc., M.P.H.[2]

[1*]Department of Psychiatric Rehabilitation and Counseling Professions,
[2]Department of Clinical and Preventive Nutrition Sciences, Rutgers, the State University of New Jersey,

***Correspondence:** Dr. SunHee Eissenstat
*Department of Psychiatric Rehabilitation and Counseling Professions, Rutgers, the State University of New Jersey, Research Tower Room #801P, 675 Hoes Lane W., Piscataway, NJ 08854. Email: sj643@shp.rutgers.edu, T) 1-908-889-2481. F) 1-908-889-2432

Abstract
Severe mental health conditions (SMHC) can result in detrimental health complications and affect the quality of life of people with these diagnoses. These conditions are associated with a decreased life span related to comorbidities, which largely impact the global health burden and healthcare costs. Therefore, exploring approaches other than standard treatment protocols to manage SMHCs is crucial. Interventions related to diet and nutrition have a positive association with improvement in mental health conditions, including depression. Access to interprofessional care, including mental health counseling and diet interventions, may benefit the treatment and management of SMHC.

Keywords: people with severe mental health conditions, depression, interprofessional care, diet interventions

Introduction

Mental illness is a disorder of psychological wellbeing that may result in clinically significant symptoms that negatively impact one's daily activities and quality of life (Stein et al., 2010). About 57.8 million, 22.8% of adults in the United States were diagnosed with mental health disorders in 2021 (NIMH, 2023), and the prevalence of serious mental illness (SMI) or SMHC (serious mental health condition) was 5.5% (NIMH, 2023). These statistics include major depressive disorder (MDD), bipolar disorder, and schizophrenia (Teasdale et al., 2023). People with SMHC suffer not only from mental health issues but also from drastic inequalities in physical health. These individuals have higher rates of obesity and related comorbidities, such as cardiovascular or metabolic diseases, compared to the general population (Aschbrenner et al., 2021; Firth et al., 2018; Lee & Singh, 2021). The contributing factors include an unhealthy diet, lack of exercise, less access to quality healthcare, and side effects from antipsychotic medications. Among these, diet has received attention as a linking factor between mental and physical health (Barber & Thornicroft., 2018). It is well-established that diet interventions can improve obesity and related health conditions. There is increasing evidence that they are also effective in improving mental health.

This review focuses on the findings from previous research studies that illustrate the connection between diet and depressive symptoms and intervention studies that establish the need for interprofessional interventions for people with SMHC, especially MDD. Integrated care is transforming the global healthcare system (World Health Organization, 2015). It provides a framework for the understudied benefits of collaboration between healthcare professionals (Stenz & Jansen, 2023). The growing body of evidence supporting the interplay between diet and depression (e.g., Opie et al., 2017; Goldsmith et al., 2016) underscores the need for collaboration between mental healthcare providers and registered dietitian nutritionists (RDN).

Diet Patterns and Depression: Implications for People with SMHC

MDD is a common SMHC, with a prevalence of 8.4% among adults in the USA (NIMH, 2022). MDD is also one of the most prevalent primary diagnoses among people with SMHC; however, many people with other SMHC, such as bipolar disorder and schizophrenia spectrum disorders, also experience depressive symptoms (Buckley, 2008). Approximately 30% of those with MDD have treatment-resistant depression, which does not respond to single or augmentation antidepressant medications and therapies (Voineskos et al., 2020). These individuals are at greater risk of the negative impacts of depression when compared to people with non-treatment-resistant depression (Voineskos et al., 2020). Traditional treatment strategies with pharmacological and psychotherapeutic approaches may be ineffective for approximately 30% of people with MDD (Ortega et al., 2022), suggesting a need for treatment outside conventional methods. Efforts to

identify lifestyle factors that may impact depression, especially as a solution to treatment-resistant depression, are expanding (Opie et al., 2015; Ortega et al., 2022). Among lifestyle interventions, the association between unhealthy diet patterns and depression is established in the literature (Beezhold et al., 2015; Jacka et al., 2015; Ortega et al., 2022; Wu et al., 2020). In 2018, Barber and Thornicroft discussed poorer overall diets as one factor in individuals developing SMHC (Barber & Thornicroft, 2018). However, diet recommendations are not routinely integrated into mental health care for people with SMHC.

Research signals that certain diet patterns, such as those with high levels of processed or fast foods, cholesterol, saturated fats, and added sugars, heighten systemic inflammation (Bergmans & Malecki, 2017; Koelman et al., 2022; Opie et al., 2017). An inflammatory response is a defense mechanism prompted when the body encounters harmful external stimuli (Köhler et al., 2017). Evidence suggests chronic inflammation contributes to depression (Halaris, 2018; Miller & Raison, 2016). Meta-analyses have found that SMHCs such as schizophrenia, bipolar disorder, and depression are associated with increased inflammatory markers, thus suggesting that the inflammatory pathway may offer insight into understanding depression among this population (Goldsmith et al., 2016; Wang & Miller, 2018). Regular consumption of the foods mentioned above elicits a pro-inflammatory response and can cause chronic inflammation, potentially exacerbating depressive symptoms (Beurel et al., 2020; Strawbridge et al., 2015).

In 2020, Firth and colleagues hypothesized that diets with a high glycemic index, such as those rich in refined carbohydrates, lead to rapid fluctuations in blood glucose and could worsen depressive symptoms; however, further research is needed to establish this association (Firth et al., 2020). The same study corroborated that individuals who consume diets high in calories and saturated fat, mainstays of the "Western diet," score higher on dietary inflammation indexes and are proposed to have a greater risk of depression (Firth et al., 2020). Similarly, Marx et al. observed that diets with higher amounts of saturated fats and refined carbohydrates may increase levels of peripheral inflammatory markers (Marx et al., 2021). Research suggests that among people with SMHC, a decline in cognitive function may be correlated with increased peripheral inflammatory markers (Goldsmith et al., 2016). Studies also infer that highly restrictive diets that eliminate common food groups entirely (e.g. meat, eggs, dairy, fruit, etc) are associated with greater odds of depressive symptoms (Matta et al., 2018).

According to Firth et al, people with SMHC consume more calorie-dense meals that include food choices of lower nutritional value compared to the general population (Firth et al., 2018). As a result, this population commonly has a body mass index indicating an overweight or obese weight status (Aschbrenner et al., 2021). In a secondary analysis of data from the U.K. Biobank study, people with SMHC, compared to healthy controls, consumed more saturated fat, carbohydrates, calories, and added sugars after controlling for demographic and socioeconomic factors (Firth et al., 2018). The study also found that people with SMHC consumed significantly more foods with a high inflammatory index than the healthy controls (Firth et al., 2018). These poor diet patterns contribute to physical health conditions such as cardiovascular or metabolic diseases but can also cause systemic inflammation, a known cause of depression (Marx et al., 2021). One postulated reason for poor diet patterns in patients with SMHC is the side effects of antipsychotic medications that may increase appetite (Firth et al., 2019).

Evidence supports that some diet patterns are more beneficial than others for people with depression. Regularly consuming anti-inflammatory foods such as whole grains, fruits, vegetables, and healthy oils, compared to foods rich in saturated fats, refined grains, and added sugars, positively impacts mental health (Marx et al., 2021). The Mediterranean diet, which is anti-inflammatory in its composition, reduces systemic inflammation, contributes to improved mental health, and decreases symptoms of depression (Lang et al., 2015; Marx et al., 2021; Quirk et al., 2013; Ventriglio et al., 2020). Other studies have found that plant-based diets are associated with greater mental well-being and less perceived stress (Beezhold et al., 2015). A 2014 meta-analysis suggests that increased intake of whole grains, fruits, vegetables, and healthy fats may be associated with a reduced risk of depression (Lai et al., 2014). Molendijk et al. reported that people adhering to a healthy diet pattern had a lower incidence of depression over time (Molendijk et al., 2018). A 2022 systematic review with meta-analysis reported that increased intake of an ultra-processed diet, lacking dietary fiber and essential fatty acids obtained from whole, natural foods, was associated with increased risk of depression, anxiety, and stress. They also reported that healthier eating habits decreased the risk of developing mental health disorders (Lane et al., 2022).

Lang et al. reported that intake of nutrients such as calcium, iron, zinc, magnesium, chromium, polyunsaturated fatty acids, and vitamins D, B6, B9, and B12 modulate the risk of depression by activating hormonal and neurotransmitter pathways (Lang et al., 2015). Nutrients such as the B group of

vitamins, choline, essential amino acids, and fatty acids obtained from well-balanced diets are crucial in synthesizing neurotransmitters (Lang et al., 2015). Thus, optimal nutrition may contribute to SMHC management (Kris-Etherton et al., 2021).

The evidence linking nutrition and diet patterns with depression supports research exploring diet interventions' effectiveness for people with depression, especially with anti-inflammatory diet patterns. Dietary habits are modifiable factors in the treatment of SMHC. Diet and nutrition play a role in the etiology of depression and other mental health disorders, but the exact mechanism remains unclear (Kris-Etherton et al., 2021).

Success from Diet Interventions for Depression

Based on observational studies associating anti-inflammatory diet patterns and a reduction in depressive symptoms, intervention studies have investigated the effect of controlled diets on mental health status, especially depressive symptoms (Parletta et al., 2019). Intervention studies incorporating anti-inflammatory diet guidelines have demonstrated consistent evidence for improvement in depressive symptoms among people with SMHC (Marx et al., 2021; O'Neill et al., 2022).

Parletta et al. provided healthy foods such as fruits, vegetables, nuts, olive oil, fish oil supplements, and cooking instructions with recipes based on Mediterranean eating style to people with self-reported depressive symptoms. They found that the Mediterranean diet group significantly reduced their depressive symptoms at three months compared to the control group, and improvements were maintained for six months (Parletta et al., 2019). Researchers also examined the impact of a Mediterranean diet versus a "usual" diet on mood by providing participants with a detailed meal plan and education session (McMillan et al., 2011). These studies with controlled diet interventions proved their effectiveness in improving depressive symptoms (McMillan et al., 2011; Parletta et al., 2019). However, the sustainability of these interventions is questionable since structured meal plans with complementary groceries are not available in real-life situations, thus lessening their applicability to people with SMHC.

Some dietary intervention studies acknowledged this limitation, and their interventions focused on providing diet counseling or educational sessions from dietitians or other healthcare professionals such as nurses or doctors (Einvik et al., 2010; Endevelt et al., 2011; Jenkinson et al., 2009). Other studies actively integrated behavioral health principles into their interventions. Jacka et al. found improvement in depressive symptoms among participants who received a motivational interviewing (MI) intervention in 7 group sessions focused on improving healthy eating and diet patterns, compared to those who participated in a social support group for depression (Jacka et al., 2017). Barnes et al. provided MI and psychoeducation sessions aimed at weight loss and also found an improvement in depressive symptoms (Barnes et al., 2018).

Swoboda et al. effectively used a telephone coaching MI intervention on healthy eating that improved depressive symptoms among people with diabetes (Swoboda et al., 2017). A combined intervention of diet and exercise using cognitive behavioral approaches such as "self-monitoring, goal setting, coping strategies, and problem-solving" positively changed depressive symptoms, anxiety, and health-related quality of life scores in women post-menopause with overweight or obesity (Imayama et al., 2011). Likewise, (Authors et al., in press) found in their meta-study that behavioral interventions without strict meal plans reported a greater effect size in improving depressive symptoms than in the control groups, suggesting the potential of using behavioral health principles in a dietary intervention. Given that these studies may not have exclusively focused on individuals with diagnosed depression (Barnes et al., 2018), it is important to note that their findings might not apply to individuals with more severe depressive symptoms. The samples in these studies were more educated or were socioeconomically stable, which may not fully represent individuals with SMHC (Barnes et al., 2018; Imayama et al., 2011). Additionally, the fact that most participants were compensated could potentially introduce bias into the study's outcomes. Some of these studies also faced challenges, such as a small sample size due to high attrition or recruitment difficulties (Jacka et al., 2017; Swoboda et al., 2017). Furthermore, there is a need for additional investigation into the long-term effects that persist after the interventions (Swoboda et al., 2017).

Even though there are some methodological limitations in the reviewed literature, the importance of nutrition and diet interventions in improving SHMC is well-established, and the need for expanded access to interprofessional care is evident (Stenz & Jansen, 2023). Reeves et al. conducted a systematic review and reported that enhanced interprofessional collaboration improves patient health outcomes (Reeves et al., 2017). Interprofessional collaboration may also decrease disparities related to differences in cultural and socioeconomic conditions (Ee et al., 2020). To date, studies on the relationship between diet patterns and depression have primarily concentrated on demonstrating the effects. However, there has been limited discussion about the practical dissemination of these findings, particularly in the context of interprofessional collaboration. This collaboration is

crucial and necessitates the involvement of both dietitians and mental health counselors in translating the research into clinical practice.

Interprofessional Collaboration in Mental Health Services

Interprofessional collaboration among mental health professionals and RDNs is paramount to achieving successful outcomes with diet interventions (Anderson Girard et al., 2018; Asher et al., 2022). Siloed care lacks a cohesive approach to treatment strategies, while interprofessional care, broadly, is essential for delivering quality healthcare (Anderson Girard et al., 2018; Ee et al., 2020; Grudniewicz et al., 2022; Reeves et al., 2017; Rugkåsa et al., 2020; Strunz et al., 2022). With growing evidence linking diet with SMHC, interprofessional partnerships between mental healthcare providers and RDNs are logical collaboration (Stenz & Jansen, 2023). However, limited literature establishes this collaboration. A study by Rich et al. assessed influences that affect interprofessional collaboration and identified three primary factors: "system, professional, and client factors." The authors noted that well-established system factors such as location of services, referral methods, billing, and professional networking play a key role in collaborative efforts. Professional factors included recognizing various healthcare roles, approaches, and beliefs of individual health professionals and the availability of services (Rich et al., 2021).

RDNs play an important role in the treatment of individuals with SMHCs by optimizing nutritional status through nutrition assessment, diet interventions and counseling to improve mental health (Anderson Girard et al, 2018). Mental health providers have expertise working with individuals who may have unique challenges due to prolonged mental health conditions, such as lack of motivation or side effects from medications. However, encroachment of professional roles, disagreement in treatment strategies, and lack of communication were barriers addressed in a qualitative study exploring the treatment of eating disorders among mental health providers and dietitians (Dejesse & Zelman, 2013). Barriers to interprofessional collaboration from the RDN perspective include insufficient time to collaborate, poor communication, and lack of proximity to other practitioners (Asher et al., 2022). Asher also highlights other professionals' poor understanding of the RDN role. Johnson and Mahan suggest financial, legislative, and political barriers keep mental health providers from interprofessional collaboration. (Johnson & Mahan, 2019). Collaboration can cause additional patient costs, or managed care may not approve it. One practical solution is to embed nutrition services into mental health practices to improve patient access to team-based care, a win-win for patients and practitioners alike (Furness et al., 2018).

A 2023 study assessed the advantages and barriers of collaborative care between nutrition and mental health professionals. The study reported that both dietitians and clinical psychologists exhibited knowledge of the symbiotic relationship between diet and depression (Stenz & Jansen, 2023). Yet, the psychologists reported being more active and confident in discussing the relationship between diet and depression with clients than dietitians. RDNs have the knowledge and skills to address mental health conditions from a nutrition lens (Anderson Girard et al., 2018). However, they do not typically participate in discussions regarding depression despite completing coursework on psychology, counseling techniques, and motivational interviewing (Stenz & Jansen, 2023). Johnson and colleagues reported that mental health professionals are concerned about crossing the professional boundary in addressing diet concerns (Johnson et al., 2021). Perceived scope of practice barriers may make providers hesitant to collaborate, limiting the benefits of interprofessional services (Rich et al., 2021; Stenz & Jansen, 2023). Team-based care, similar to the care provided by mental health professionals and RDNs for patients with obesity and disordered eating, can serve as models for depression treatment.

Poor nutritional intake, medication side effects contributing to obesity or diabetes, sedentariness, and lack of motivation to make change are recognized challenges that can be more effectively addressed by the RDN-mental health provider team (Teasdale et al., 2017). Likewise, improving behaviors around poor attendance at visits, social isolation, and being sedentary can be reinforced by both healthcare professionals. Dejesse et al. propose best practices for collaboration between mental health providers and dietitians, which include cultivating a network among providers who are aligned with communication and treatment philosophies and practices, seeking input about other professionals' roles, and educating each other (Dejesse & Zelman, 2013).

Interprofessional collaboration correlates with positive patient health outcomes and benefits for the entire healthcare team (Rich et al., 2021). This collaboration facilitates healthcare access to patients, improving overall quality of care while generating additional healthcare revenue and improving clinician time by reducing consultation time and readmission rates (Rich et al., 2021). To that end, our literature review suggests that achieving optimum treatment outcomes of SMHCs requires collaboration with many disciplines, including nutrition.

Figure 1. Facilitators and Barriers in Interprofessional Collaboration

Call for Action/Conclusion

It is thus established that people with SMHC, such as MDD, can benefit from diet interventions that may reduce their depressive symptoms while improving their quality of life and physical health. Having access to customized nutrition education and counseling from RDNs in collaboration with mental health professionals may help people with SMHC adhere to diet recommendions more effectively and sustainably, ultimately improving the quality of care (Mattei & Alfonso, 2020; Stenz & Jansen, 2023). However, insufficient evidence supports the interprofessional collaboration on this specific topic, highlighting the need for further research. Studying their intersected roles and collaboration protocols is crucial, especially in disseminating existing knowledge.

Diet interventions for depression have shown promise in improving mental health outcomes. These interventions, ranging from diet guidelines to behavioral approaches, have demonstrated their effectiveness in addressing depressive symptoms among individuals with self-reported mental health concerns. However, questions regarding these interventions' sustainability and broader applicability persist, as well as concerns about the representativeness of study samples. Despite these considerations, the significance of nutrition and diet interventions in enhancing self-managed mental health conditions is recognized. This underscores the need for expanded access to interprofessional care, where collaboration among healthcare professionals is pivotal in delivering quality mental health services. Further research would be requisite to understand the efficacy and logistics of implementing interprofessional collaboration between RDNs and mental health professionals and its effect on the health outcomes of people with SMHC (Rich et al., 2021; Stenz & Jansen, 2023). Both professions should recognize the benefits of interprofessional collaboration, embrace and support it, and commit resources to such endeavors. (Rich et al., 2021), and evaluate the benefits and barriers to interprofessional collaboration for continuous improvement (Johnson & Mahan, 2019). Still, no known research offers quantitative data on RDN or counselors' level of recognition of each other's role or available resources in their communities. Further studies can elucidate the training and resources needed for this professional partnership. Additional research avenues exist to address physical and mental well-being, such as incorporating exercise into interventions (Kandola et al., 2019). While this paper does not focus on physical activity, future studies may investigate its potential effectiveness when integrated into mental health interventions. Furthermore, it is essential to consider contextual factors among individuals with SMHC, including issues like poverty, food insecurity, and access to quality healthcare.

A model for collaboration also can be studied to provide a clear picture of the roles and responsibilities of RDNs and mental health professionals. During collaboration, professional boundaries may become indistinct, potentially causing conflicts and role ambiguity among various professionals (Johnson et al., 2021; Johnson & Mahan, 2019). Klein & Beeson found a positive relationship between intraprofessional and interprofessional identity that may suggest a solution for role conflict or ambiguity situations in interprofessional collaboration (Klein & Beeson, 2022). Establishing ethical and legal guidelines for fostering a community network of collaboration can alleviate barriers, enabling professionals to fully embrace the advantages of interprofessional teamwork. Such collaboration ultimately improves the quality of the healthcare delivery and health outcomes of patients.

References

1. Anderson Girard, T., Russell, K., & Leyse-Wallace, R. (2018). Academy of nutrition and dietetics: Revised 2018 standards of practice and standards of professional performance for registered dietitian nutritionists (competent, proficient, and expert) in mental health and addictions. *J Acad Nutr Diet*, *118*(10), 1975-1986.e1953. https://doi.org/10.1016/j.jand.2018.07.013

2. Aschbrenner, K. A., Naslund, J. A., Gorin, A. A., Mueser, K. T., Browne, J., Wolfe, R. S., Xie, H., & Bartels, S. J. (2021). Group lifestyle intervention with mobile health for young adults with serious mental illness: A Randomized controlled trial. *Psychiatric Services*, *73*(2), 141-148. https://doi.org/10.1176/appi.ps.202100047
3. Asher, K. E., Doucet, S., & Luke, A. (2022). A pan-Canadian study of registered dietitians' perceptions and experiences of interprofessional collaboration. *Journal of Interprofessional Care*, *36*(3), 362-370. https://doi.org/10.1080/13561820.2021.1900801
4. Barber, S., & Thornicroft, G. (2018). Reducing the mortality gap in people with severe mental disorders: The role of lifestyle psychosocial interventions. *Front Psychiatry*, *9*, 463. https://doi.org/10.3389/fpsyt.2018.00463
5. Barnes, R. D., Ivezaj, V., Martino, S., Pittman, B. P., Paris, M., & Grilo, C. M. (2018). Examining motivational interviewing plus nutrition psychoeducation for weight loss in primary care. *J Psychosom Res*, *104*, 101-107. https://doi.org/10.1016/j.jpsychores.2017.11.013
6. Beezhold, B., Radnitz, C., Rinne, A., & DiMatteo, J. (2015). Vegans report less stress and anxiety than omnivores. *Nutr Neurosci*, *18*(7), 289-296. https://doi.org/10.1179/1476830514y.0000000164
7. Bergmans, R. S., & Malecki, K. M. (2017). The association of dietary inflammatory potential with depression and mental well-being among U.S. adults. *Prev Med*, *99*, 313-319. https://doi.org/10.1016/j.ypmed.2017.03.016
8. Beurel, E., Toups, M., & Nemeroff, C. B. (2020). The bidirectional relationship of depression and inflammation: Double trouble. *Neuron*, *107*(2), 234-256. https://doi.org/10.1016/j.neuron.2020.06.002
9. Buckley, P. F. (2008). Update on the etiology and treatment of schizophrenia and bipolar disorder. *CNS Spectrums*, *13*(S1), 1-12. https://doi.org/10.1017/S1092852900028212
10. Dejesse, L. D., & Zelman, D. C. (2013). Promoting optimal collaboration between mental health providers and nutritionists in the treatment of eating disorders. *Eat Disord*, *21*(3), 185-205. https://doi.org/10.1080/10640266.2013.779173
11. Ee, C., Lake, J., Firth, J., Hargraves, F., de Manincor, M., Meade, T., Marx, W., & Sarris, J. (2020). An integrative collaborative care model for people with mental illness and physical comorbidities. *Int J Ment Health Syst*, *14*(1), 83. https://doi.org/10.1186/s13033-020-00410-6
12. Einvik, G., Ekeberg, O., Lavik, J. G., Ellingsen, I., Klemsdal, T. O., & Hjerkinn, E. M. (2010). The influence of long-term awareness of hyperlipidemia and of 3 years of dietary counseling on depression, anxiety, and quality of life. *J Psychosom Res*, *68*(6), 567-572. https://doi.org/10.1016/j.jpsychores.2009.11.004
13. Endevelt, R., Lemberger, J., Bregman, J., Kowen, G., Berger-Fecht, I., Lander, H., Karpati, T., & Shahar, D. R. (2011). Intensive dietary intervention by a dietitian as a case manager among community dwelling older adults: The EDIT study. *J Nutr Health Aging*, *15*(8), 624-630. https://doi.org/10.1007/s12603-011-0074-9
14. 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
15. Firth, J., Stubbs, B., Teasdale, S. B., Ward, P. B., Veronese, N., Shivappa, N., Hebert, J. R., Berk, M., Yung, A. R., & Sarris, J. (2018). Diet as a hot topic in psychiatry: A population-scale study of nutritional intake and inflammatory potential in severe mental illness. *World Psychiatry*, *17*(3), 365-367. https://doi.org/ 10.1002/wps.20571
16. Firth, J., Veronese, N., Cotter, J., Shivappa, N., Hebert, J. R., Ee, C., Smith, L., Stubbs, B., Jackson, S. E., & Sarris, J. (2019). What is the role of dietary inflammation in severe mental illness? A review of observational and experimental findings. *Front Psychiatry*, *10*, 350. https://doi.org/10.3389/fpsyt.2019.00350
17. Furness, T., Wallace, E., McElhinney, J., McKenna, B., Cuzzillo, C., & Foster, K. (2018). Colocating an accredited practising dietitian to an adult community mental health service: An exploratory study. *International journal of mental health nursing*, *27*(6), 1709-1718. https://doi.org/10.1111/inm.12470
18. Goldsmith, D. R., Rapaport, M. H., & Miller, B. J. (2016). A meta-analysis of blood cytokine network alterations in psychiatric patients: Comparisons between schizophrenia, bipolar disorder and depression. *Mol Psychiatry*, *21*(12), 1696-1709. https://doi.org/10.1038/mp.2016.3
19. Grudniewicz, A., Peckham, A., Rudoler, D., Lavergne, M. R., Ashcroft, R., Corace, K., Kaluzienski, M., Kaoser, R., Langford, L., McCracken, R., Norris, W. C., O'Riordan, A., Patrick, K., Peterson, S., Randall, E., Rayner, J., Schütz, C. G., Sunderji, N., Thai, H., & Kurdyak, P. (2022). Primary care for individuals with serious mental illness (PriSMI): Protocol for a convergent mixed methods study. *BMJ Open*, *12*(9), e065084. https://doi.org/10.1136/bmjopen-2022-065084
20. Halaris, A. (2018). Neuroinflammation and neurotoxicity contribute to neuroprogression in neurological and psychiatric disorders. *Future Neurology*, *13*(2), 59-69. https://doi.org/10.2217/fnl-2017-0039

21. Imayama, I., Alfano, C. M., Kong, A., Foster-Schubert, K. E., Bain, C. E., Xiao, L., Duggan, C., Wang, C. Y., Campbell, K. L., Blackburn, G. L., & McTiernan, A. (2011). Dietary weight loss and exercise interventions effects on quality of life in overweight/obese postmenopausal women: A randomized controlled trial. *Int J Behav Nutr Phys Act*, *8*, 118. https://doi.org/10.1186/1479-5868-8-118
22. Jacka, F. N., Cherbuin, N., Anstey, K. J., & Butterworth, P. (2015). Does reverse causality explain the relationship between diet and depression? *J Affect Disord*, *175*, 248-250. https://doi.org/10.1016/j.jad.2015.01.007
23. Jacka, F. N., O'Neil, A., Opie, R., Itsiopoulos, C., Cotton, S., Mohebbi, M., Castle, D., Dash, S., Mihalopoulos, C., Chatterton, M. L., Brazionis, L., Dean, O. M., Hodge, A. M., & Berk, M. (2017). A randomised controlled trial of dietary improvement for adults with major depression (the "SMILES" trial). *BMC Med*, *15*(1), 23. https://doi.org/10.1186/s12916-017-0791-y
24. Jenkinson, C. M., Doherty, M., Avery, A. J., Read, A., Taylor, M. A., Sach, T. H., Silcocks, P., & Muir, K. R. (2009). Effects of dietary intervention and quadriceps strengthening exercises on pain and function in overweight people with knee pain: Randomised controlled trial. *BMJ*, *339*, b3170. https://doi.org/10.1136/bmj.b3170
25. Johnson, K. F., Blake, J., & Ramsey, H. E. (2021). Professional counselors' experiences on interprofessional teams in hospital settings. *Journal of Counseling & Development*, *99*(4), 406-417. https://doi.org/https://doi.org/10. 1002/jcad.12393
26. Johnson, K. F., & Mahan, L. (2019). A qualitative investigation into behavioral health providers attitudes toward interprofessional clinical collaboration. *J Behav Health Serv Res*, *46*(4), 636-647. https://doi.org/10.1007/ s11414-019-09661-9
27. Kandola, A., Ashdown-Franks, G., Hendrikse, J., Sabiston, C. M., & Stubbs, B. (2019). Physical activity and depression: Towards understanding the antidepressant mechanisms of physical activity. *Neurosci Biobehav Rev*, *107*, 525-539. https://doi.org/10.1016/j.neubiorev.2019.09.040
28. Klein, J. L., & Beeson, E. T. (2022). An exploration of clinical mental health counselors' attitudes toward professional identity and interprofessionalism. *Journal of Mental Health Counseling*, *44*(1), 68-81. https://doi.org/10.17744/mehc.44.1.06
29. Koelman, L., Egea Rodrigues, C., & Aleksandrova, K. (2022). Effects of dietary patterns on biomarkers of inflammation and immune responses: A systematic review and meta-analysis of randomized controlled trials. *Advances in Nutrition*, *13*(1), 101-115.
30. Köhler, C. A., Freitas, T. H., Maes, M., de Andrade, N. Q., Liu, C. S., Fernandes, B. S., Stubbs, B., Solmi, M., Veronese, N., Herrmann, N., Raison, C. L., Miller, B. J., Lanctôt, K. L., & Carvalho, A. F. (2017). Peripheral cytokine and chemokine alterations in depression: A meta-analysis of 82 studies. *Acta Psychiatr Scand*, *135*(5), 373-387. https://doi.org/10.1111/acps.12698
31. Kris-Etherton, P. M., Petersen, K. S., Hibbeln, J. R., Hurley, D., Kolick, V., Peoples, S., Rodriguez, N., & Woodward-Lopez, G. (2021). Nutrition and behavioral health disorders: Depression and anxiety. *Nutrition Reviews*, *79*(3), 247-260. https://doi.org/10.1093/nutrit/nuaa025
32. Lai, J. S., Hiles, S., Bisquera, A., Hure, A. J., McEvoy, M., & Attia, J. (2014). A systematic review and meta-analysis of dietary patterns and depression in community-dwelling adults. *Am J Clin Nutr*, *99*(1), 181-197. https://doi.org/10.3945/ajcn.113.069880
33. Lane, M. M., Gamage, E., Travica, N., Dissanayaka, T., Ashtree, D. N., Gauci, S., Lotfaliany, M., O'Neil, A., Jacka, F. N., & Marx, W. (2022). Ultra-processed food consumption and mental health: A systematic review and meta-analysis of observational studies. *Nutrients*, *14*(13), 2568. https://doi.org/10.3390/nu14132568
34. Lang, U. E., Beglinger, C., Schweinfurth, N., Walter, M., & Borgwardt, S. (2015). Nutritional aspects of depression. *Cell Physiol Biochem*, *37*(3), 1029-1043. https://doi.org/10.1159/000430229
35. Laursen, T. M., Nordentoft, M., & Mortensen, P. B. (2014). Excess early mortality in schizophrenia. *Annu Rev Clin Psychol*, *10*, 425-448. https://doi.org/10.1146/annurev-clinpsy-032813-153657
36. Lee, H., & Singh, G. K. (2021). Psychological distress, life expectancy, and all-cause mortality in the United States: Results from the 1997-2014 NHIS-NDI record linkage study. *Ann Epidemiol*, *56*, 9-17. https://doi.org/10.1016/ j.annepidem.2021.01.002
37. Marx, W., Lane, M., Hockey, M., Aslam, H., Berk, M., Walder, K., Borsini, A., Firth, J., Pariante, C. M., Berding, K., Cryan, J. F., Clarke, G., Craig, J. M., Su, K. P., Mischoulon, D., Gomez-Pinilla, F., Foster, J. A., Cani, P. D., Thuret, S., Jacka, F. N. (2021). Diet and depression: Exploring the biological mechanisms of action. *Mol Psychiatry*, *26*(1), 134-150. https://doi.org/10.1038/s41380-020-00925-x
38. Matta, J., Czernichow, S., Kesse-Guyot, E., Hoertel, N., Limosin, F., Goldberg, M., Zins, M., & Lemogne, C. (2018). Depressive symptoms and vegetarian diets: Results from the Constances Cohort. *Nutrients*, *10*(11). https://doi.org/10.3390/nu10111695

39. Mattei, J., & Alfonso, C. (2020). Strategies for healthy eating promotion and behavioral change perceived as effective by nutrition professionals: A Mixed-methods study. *Front Nutr*, *7*, 114. https://doi.org/10.3389/ fnut.2020.00114
40. McMillan, L., Owen, L., Kras, M., & Scholey, A. (2011). Behavioural effects of a 10-day Mediterranean diet: Results from a pilot study evaluating mood and cognitive performance. *Appetite*, *56*(1), 143-147. https://doi.org/10. 1016/j.appet.2010.11.149
41. Miller, A. H., & Raison, C. L. (2016). The role of inflammation in depression: From evolutionary imperative to modern treatment target. *Nat Rev Immunol*, *16*(1), 22-34. https://doi.org/10.1038/ nri.2015.5
42. Molendijk, M., Molero, P., Ortuño Sánchez-Pedreño, F., Van der Does, W., & Angel Martínez-González, M. (2018). Diet quality and depression risk: A systematic review and dose-response meta-analysis of prospective studies. *J Affect Disord*, *226*, 346-354. https://doi.org/10.1016/j. jad.2017.09.022
43. Naslund, J. A., & Aschbrenner, K. A. (2019). Digital technology for health promotion: opportunities to address excess mortality in persons living with severe mental disorders. *Evid Based Ment Health*, *22*(1), 17-22. https://doi.org/10.1136/ ebmental-2018-300034
44. NIMH. (2022). *Major depression*. National Institute of Mental Health. Retrieved February 9 from https://www.nimh.nih.gov/health/statistics/major-depression
45. NIMH. (2023). *Mental Illness*. National Institute of Mental Health. Retrieved July 28 from https://www.nimh.nih.gov/health/statistics/mental-illness
46. O'Neill, S., Minehan, M., Knight-Agarwal, C. R., & Turner, M. (2022). Depression, is it treatable in adults utilising dietary interventions? A systematic review of randomised controlled trials. *Nutrients*, *14*(7). https://doi.org/10.3390/ nu14071398
47. Opie, R. S., Itsiopoulos, C., Parletta, N., Sanchez-Villegas, A., Akbaraly, T. N., Ruusunen, A., & Jacka, F. N. (2017). Dietary recommendations for the prevention of depression. *Nutr Neurosci*, *20*(3), 161-171. https://doi.org/10.1179/1476830515y.0000000043
48. Opie, R. S., O'Neil, A., Itsiopoulos, C., & Jacka, F. N. (2015). The impact of whole-of-diet interventions on depression and anxiety: A systematic review of randomised controlled trials. *Public Health Nutr*, *18*(11), 2074-2093. https://doi.org/10.1017/ s1368980014002614
49. Ortega, M. A., Fraile-Martínez, Ó., García-Montero, C., Alvarez-Mon, M. A., Lahera, G., Monserrat, J., Llavero-Valero, M., Gutiérrez-Rojas, L., Molina, R., Rodríguez-Jimenez, R., Quintero, J., & De Mon, M. A. (2022). Biological role of nutrients, food and dietary patterns in the prevention and clinical management of major depressive disorder. *Nutrients*, *14*(15), 3099. https://doi.org/10. 3390/nu14153099
50. Parletta, N., Zarnowiecki, D., Cho, J., Wilson, A., Bogomolova, S., Villani, A., Itsiopoulos, C., Niyonsenga, T., Blunden, S., Meyer, B., Segal, L., Baune, B. T., & O'Dea, K. (2019). A Mediterranean-style dietary intervention supplemented with fish oil improves diet quality and mental health in people with depression: A randomized controlled trial (HELFIMED). *Nutr Neurosci*, *22*(7), 474-487. https://doi.org/10.1080/1028415x.2017.1411320
51. Quirk, S. E., Williams, L. J., O'Neil, A., Pasco, J. A., Jacka, F. N., Housden, S., Berk, M., & Brennan, S. L. (2013). The association between diet quality, dietary patterns, and depression in adults: A systematic review. *BMC Psychiatry*, *13*, 175. https://doi.org/10.1186/1471-244x-13-175
52. Reeves, S., Pelone, F., Harrison, R., Goldman, J., & Zwarenstein, M. (2017). Interprofessional collaboration to improve professional practice and healthcare outcomes. *Cochrane Database Syst Rev*, *6*(6), Cd000072. https://doi.org/10.1002/ 14651858.CD000072.pub3
53. Rich, K., Murray, K., Smith, H., & Jelbart, N. (2021). Interprofessional practice in health: A qualitative study in psychologists, exercise physiologists, and dietitians. *J Interprof Care*, *35*(5), 682-690. https://doi.org/10.1080/ 13561820.2020.1803226
54. Rugkåsa, J., Tveit, O. G., Berteig, J., Hussain, A., & Ruud, T. (2020). Collaborative care for mental health: A qualitative study of the experiences of patients and health professionals. *BMC Health Services Research*, *20*(1). https://doi.org/10.1186/s12913-020-05691-8
55. Stein, D. J., Phillips, K. A., Bolton, D., Fulford, K. W., Sadler, J. Z., & Kendler, K. S. (2010). What is a mental/psychiatric disorder? From DSM-IV to DSM-V. *Psychol Med*, *40*(11), 1759-1765. https://doi.org/10. 1017/s0033291709992261
56. Stenz, C. F. H., & Jansen, K. L. (2023). Nutrition and depression: Collaboration between psychologists and dietitians in depression treatment. *Translational Issues in Psychological Science*, No Pagination Specified-No Pagination Specified. https://doi.org/10.1037/tps0000357
57. Strawbridge, R., Arnone, D., Danese, A., Papadopoulos, A., Herane Vives, A., & Cleare, A. J. (2015). Inflammation and clinical response to treatment in depression: A meta-analysis. *Eur*

Neuropsychopharmacol, *25*(10), 1532-1543. https://doi.org/10.1016/j.euroneuro.2015.06.007

58. Strunz, M., Jiménez, N. P., Gregorius, L., Hewer, W., Pollmanns, J., Viehmann, K., & Jacobi, F. (2022). Interventions to promote the utilization of physical health care for people with severe mental illness: A scoping review. *Int J Environ Res Public Health*, *20*(1). https://doi.org/10.3390/ijerph20010126
59. Swoboda, C. M., Miller, C. K., & Wills, C. E. (2017). Impact of a goal setting and decision support telephone coaching intervention on diet, psychosocial, and decision outcomes among people with type 2 diabetes. *Patient Educ Couns*, *100*(7), 1367-1373. https://doi.org/10.1016/j.pec.2017.02.007
60. Teasdale, S. B., Müller-Stierlin, A. S., Ruusunen, A., Eaton, M., Marx, W., & Firth, J. (2023). Prevalence of food insecurity in people with major depression, bipolar disorder, and schizophrenia and related psychoses: A systematic review and meta-analysis. *Critical Reviews in Food Science and Nutrition*, *63*(20), 4485-4502. https://doi.org/10.1080/10408398.2021.2002806
61. Teasdale, S. B., Samaras, K., Wade, T., Jarman, R., & Ward, P. B. (2017). A review of the nutritional challenges experienced by people living with severe mental illness: A role for dietitians in addressing physical health gaps. *Journal of human nutrition and dietetics*, *30*(5), 545-553. https://doi.org/10.1111/jhn.12473
62. Ventriglio, A., Sancassiani, F., Contu, M. P., Latorre, M., Di Slavatore, M., Fornaro, M., & Bhugra, D. (2020). Mediterranean diet and its benefits on health and mental health: A literature review. *Clin Pract Epidemiol Ment Health*, *16*(Suppl-1), 156-164. https://doi.org/10.2174/1745017902016010156
63. Voineskos, D., Daskalakis, Z. J., & Blumberger, D. M. (2020). Management of treatment-resistant depression: Challenges and strategies. *Neuropsychiatr Dis Treat*, *16*, 221-234. https://doi.org/10.2147/ndt.S198774
64. Wang, A. K., & Miller, B. J. (2018). Meta-analysis of cerebrospinal fluid cytokine and tryptophan catabolite alterations in psychiatric patients: Comparisons between schizophrenia, bipolar disorder, and depression. *Schizophr Bull*, *44*(1), 75-83. https://doi.org/10.1093/schbul/sbx035
65. World Health Organization. (2015). *WHO global strategy on people-centred and integrated health services: interim report* (No. WHO/HIS/SDS/2015.6). World Health Organization.
66. Wu, P.-Y., Chen, K.-M., & Belcastro, F. (2020). Dietary patterns and depression risk in older adults: Systematic review and meta-analysis. *Nutrition Reviews*, *79*(9), 976-987. https://doi.org/10. 1093/ nutrit/nuaa118