



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; 12(5): 4497-4504
© 2023 TPI

www.thepharmajournal.com

Received: 04-03-2023

Accepted: 05-04-2023

Navdeep Kaur

M.Sc. Nutrition and Dietetics,
Department of Food Science and
Technology, School of
Agriculture, Lovely professional
University, Phagwara, Punjab,
India

Prevalence of eating disorders in male and female

Navdeep Kaur

Abstract

A continuous disturbance of eating or related behavior that results in changed food consumption or absorption, considerably compromising physical health or psychological and social functioning, is classified as an eating disorder. Eating disorders are psychological illness characterized by abnormal eating behaviors which might include insufficient or excessive food consumption, causing physical and mental suffering. The most frequent types of eating disorders are bulimia nervosa (BN) and anorexia nervosa (AN). An eating disorder is serious complex mental health issues that one's affects emotional and physical health. People with eating disorders develop an unhealthy relationships with food, their weight or appearance. AN, BN, and BED (Binge eating disorder) are all types of eating disorders. Eating disorders are treatable, people with untreated eating disorders may develop life-threatening problems. Eating disorders are caused by several complex factors including genetics, brain biology, personality, cultural and social ideals and mental health issues. It examines how the brain's system contributes to the development of eating disorders and identifies potential targets for pharmaceutical and psychological treatments.

Keywords: NPK, Farm yard manure, Vermicompost, Green manure, Neem cakes

Introduction

In the modern, fast-paced society, people don't even have a proper time to eat and depend a lot on fast foods and ready-to-eat food which lack vitamins and minerals and ultimately lead to several disorders and diseases. Eating disorders mention to a category of mental illness characterized by abnormal eating behaviors and patterns. This is becoming an elevated public health concern worldwide that can have serious psychological and physical outcomes, which influence people of all ages, genders, races, and backgrounds with an estimation of 70 million affected people (Aldea *et al.* 2021) ^[36]. A combination of genetic, neurobiological, and environmental factors caused eating disorders. People who are suffering from eating disorders have abnormalities in the connections of neurons that regulate appetite, reward, and emotion, which can lead to deregulated eating behaviors and also emphasizes the importance of early intervention in treating eating disorders, as they can become chronic and difficult to treat if left untreated for too long. Laura suggests that the treatment of eating disorders should focus on addressing the underlying neurobiological deregulation, as well as providing nutritional and psychological support (Lavender *et al.* 2015) ^[70]. There are many factors that can contribute to the eating disorders such as environmental, genetic, and societal pressures. Arguments such as being thin to be a standard of beauty can lead to eating disorders in women are a result of societal pressure. Bassi *et al.* (2017) ^[71] emphasized the multidisciplinary need involving medical, nutritional, and psychological mediation for the treatment of eating disorders. The study also suggested the use of CBT and FBT for essential treatment of eating disorders (Bassi *et al.* 2017; Scarf *et al.*, (2016) ^[71, 69] revealed in the study that people with Eating disorders often have a history of trauma or abuse and that these experiences can contribute to the psychological reason for these conditions. The study also emphasized the import of eating disorders and suggests that people with eating disorders need to learn to accept and appreciate their bodies, regardless of their shape or size and also advocates for an integrated approach toward treatment, which addresses the physical, psychological, and spiritual connection of the individual (Scarf *et al.* 2016) ^[69]. A study revealed that people with eating disorders often have distorted beliefs about their bodies and their relationship with food, which can contribute to the maintenance and development of these conditions and emphasizes the importance of CBT in the treatment of eating disorders, as it helps to address this distorted belief and replace them with more adaptive and realistic once and also suggests that cognitive behavioral therapy (CBT) should be customized to meet each person's requirements and preferences and integrated with other treatments, such as nutritional counseling and medical monitoring (Touyz *et al.* 2017) ^[68].

Corresponding Author:

Navdeep Kaur

M.Sc. Nutrition and Dietetics,
Department of Food Science and
Technology, School of
Agriculture, Lovely Professional
University, Phagwara, Punjab,
India

It provides an overview of the current understanding of eating disorders in adolescence, including the diagnostic criteria, epidemiology, and etiology of these conditions (Grange *et al.* 2016) [37]. It explores the roles of the brain and its reward system for growth of eating disorders, and suggests potential targets for Pharmacological and psychological interventions (Brooks *et al.*, 2016) [67]. Some review of the literature on disparities in access to and outcomes of eating disorder treatment among marginalized populations, and suggests strategies for addressing these disparities (Lade *et al.* 2021) [38]. Eating disorder has affected 30 million people in USA according to the National Eating Disorders Association. Despite the high prevalence of eating disorders, there is still a great deal of misunderstanding and stigma surrounding these illnesses, which can often delay or prevent individuals from seeking help (Anderson *et al.*, 2015) [39].

Eating disorders in women of young age are among the most prevalent psychiatric disorders, with potentially life-threatening consequences. Binge eating disorder with a prevalence similar to that of bulimia nervosa, has recently been recognized as a distinct entity, in the well-known ED namely AN and BN. In addition, there is increasing recognition that subclinical forms of these disorders are similar and can be correlated with mark able morbidity and mortality (Preti *et al.*, 2016) [10]. Complex eating disorders lead to chronic illnesses that can have devastating effects on physical, psychological, and social functioning with AN having the higher mortality rate of any psychiatric disorder.

Adolescence or adulthood are the starting phase of eating disorders most commonly in adult females (Gupta *et al.* 2017) [11]. Eating disturbances, body weight and shape are common factors that lead to eating disorders. These disorders can have serious consequences, including malnutrition, electrolyte imbalances, osteoporosis, depression, and anxiety. Eating disorders are believed to result from a combination of genetic, environmental and psychosocial factors as the exact causes of eating disorders are not fully realised (Smith *et al.* 2018) [12]. Although this disorder is more usual in females than males, it can affect individuals of any age, gender or socioeconomic background. Eating disorder is complex and multifaceted, with biological psychological and socio-cultural factors all playing a role in their development (Hilbert *et al.* 2019) [40]. These disorders typically involve a disturbance in eating behavior, including restrictive eating, binge eating, and purging. Effective treatment for eating disorders involves a multidisciplinary approach, including medical, nutritional, and psychological interventions (Brewerton *et al.* 2017) [41]. These disorders can have serious physical and psychological consequences, including malnutrition, electrolyte imbalance and depression (Harpin *et al.* 2016) [66].

Types of eating disorders

There are several eating disorders types that are recognized by experts in the field (figure 1) i.e. AN, ARFID, BN, BED, Pica, and OSFED are some of the most commonly recognized eating disorders types.

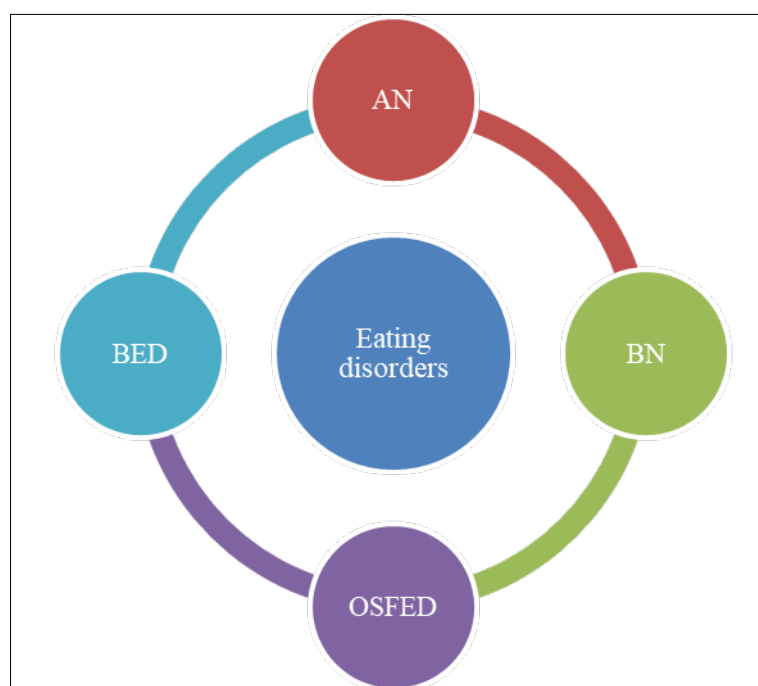


Fig 1: Types of eating disorders

1. Anorexia Nervosa (AN): It is characterized by a disruptive body image, a significant fear of weight gain and a continuous reduction of food intake, resulting in low body weight and malnutrition. It is linked to a number of physical and psychological side effects, including osteoporosis, cardiovascular disease, depression, obsessive-compulsive disorder, and anxiety. It reveals that the prevalence of AN in young women and men is roughly 0.9% and 0.3%, respectively. A generally manifests itself throughout adolescence, and affects the women more in comparison to that of males (Treasure *et al.*, 2015) [16].

2. Bulimia Nervosa (BN): It is an eating disorder characterized by binge eating episodes followed by compensatory behaviors such as self-induced vomiting, the use of laxatives, or excessive exercise. Individuals who are unhappy with their physical shape and weight frequently experience shame and guilt as a result of their eating habits. BN is linked to a number of health and psychological disorders, including electrolyte abnormalities, gastrointestinal issues, anxiety, and substance dependence. It is estimated that BN affects roughly 1.5% and 0.5% of young women and men respectively. BN usually appears throughout adolescence

or early adulthood, and it affects more women than men (Fairweather-Schmidt *et al.* 2015) ^[65].

3. **Binge-eating disorders (BED):** These are eating disorders characterised by recurring episodes of binge eating without compensatory behaviours. Individuals with BED frequently feel a loss of control during binge episodes, as well as feelings of guilt and humiliation afterwards. Obesity, hypertension, depression, and anxiety are among the physical and psychological consequences associated with BED. It reveals that BED affects roughly 3.6% of young women and 2.2% of young males. BED usually appears throughout adolescence or early adulthood, and it affects more women than men (Hudson *et al.* 2019) ^[42].
4. **Other Specified Feeding or Eating Disorders (OSFED):** OSFED is an umbrella category that comprises eating disorders that do not fit the diagnostic criteria for AN, BN, or BED. OSFED symptoms include anorexia nervosa, purging disorder, and sub threshold binge eating disorder. OSFED, like AN, BN, and BED, is associated with a variety of medical and psychological difficulties. It reveals that OSFED affects roughly 3.6% of young women and 2.3% of young men. OSFED can strike at any age and afflict people of any gender (Micali *et al.*, 2020) ^[19].
5. **Avoidant/restrictive food intake disorder (ARFID):** It is an eating disorder characterized by less interest in food, avoidance of specific or groups of food, or an inability to achieve nutritional demands. Individuals with ARFID may have difficulties digesting particular meals or may have sensory sensitivities that make certain textures or flavors difficult to swallow. ARFID is linked to a number of health and psychological issues, such as malnutrition, social isolation, and anxiety. According to Norris *et al.* (2017) ^[20], the prevalence of ARFID is roughly 1.2% in both men and women (Norris *et al.* 2017) ^[20].

Factors affecting eating behavior in male and female

The males were less engage in healthy eating behaviors compared to females, and the perceived barriers to healthy eating differed between genders. Specifically, males were more likely to report time constraints. The stress was associated with emotional eating in both males and females, but the relationship was stronger for females. Additionally, social support was a protective factor against emotional eating for females, but not for males. Both males and females experienced food cravings, females were more likely to act on them and consume food. Patricia also studied that females reported more frequent and intense food males (Lopes, *et al.* 2017) ^[58]. The food label use was associated with healthier food choices and lower calorie intake in both males and females, but the effect was stronger for females. Additionally, the study found that males were less likely to use food labels than females (French, *et al.* 2019) ^[60]. It seems that self-efficacy (confidence in one's ability to make healthy food choices) was a significant predictor of healthy eating behavior for both males and females. However, the relationship was stronger for females, indicating that self-efficacy may be a more important factor in influencing healthy eating behaviors in women (Miller *et al.* 2019) ^[61]. Food insecurity (lack of access to adequate food) was associated with poorer eating behaviors in both males and females, but the relationship was stronger for males. This study also found that males were more likely to engage in unhealthy eating behaviors in response to food insecurity, such as consuming fast food or skipping meals (Lopez *et al.* 2020) ^[59]. Body image dissatisfaction was a significant predictor of disordered eating

behaviors (such as binge eating or purging) in both males and females, but the relationship was stronger for females. The study also found that males were more likely to engage in excessive exercise as a means of managing body image dissatisfaction (Afghani *et al.* 2021) ^[64].

Psychological impact on both males and females

Eating disorders can lead to feelings of depression, anxiety, low self-esteem, and social isolation. The review also noted that males with eating disorders often experience greater stigma and shame than females (Mustelin *et al.* 2020) ^[47]. Both male and female college students with disordered eating behaviors reported higher levels of anxiety, depression, and stress than those without such behaviors. This study also found that males were more likely to engage in excessive exercise as a compensatory behavior than females (Cone *et al.*, 2019) ^[49]. Eating disorders often experience negative body image and distorted thinking patterns, which can contribute to the development and maintenance of the disorder. The review also noted that males with eating disorders may have a greater emphasis on muscularity and fitness than females (Shields *et al.* 2017) ^[50]. Griffiths revealed that both male and female adolescents with eating disorders reported higher levels of depression, anxiety, and obsessive-compulsive symptoms than healthy controls. This study also found that males with eating disorders were more likely to engage in compulsive exercise than females (Griffiths *et al.*, 2021). Males with eating disorders often experience delays in seeking treatment and may face greater stigma and shame than females. This review also noted that males may be more likely to engage in secretive or covert behaviors, such as binge eating in private, than females (Mitchison *et al.* 2015) ^[51]. Both male and female adults with eating disorders reported higher levels of depression, anxiety, and perceived stress than healthy controls. The males with eating disorders reported greater body dissatisfaction and lower self-esteem than females (Murray *et al.* 2019) ^[52]. These studies and reviews suggest that eating disorders can have a significant psychological impact on both males and females, including negative body image, distorted thinking patterns, depression, anxiety, and social isolation. However, there may be some gender differences in the way that these psychological impacts are experienced and expressed.

Social factors affecting eating disorders

The study conducted on Chinese participants supported the result that social factors have a positive effect on women's mental health (Zhang *et al.* 2022) ^[24]. Men were more likely to engage in physical activity when they received social support from their spouse, when women received support from friends they were more likely to engage in physical activity (Wenfei Zhu *et al.* 2016) ^[53]. Social support had a greater negative impact on depression in female college students than in male college students (Zhang *et al.* 2017) ^[24]. Social support had a stronger positive effect on sleep quality in Chinese female adolescents than in Chinese male adolescents (Chen *et al.* 2018) ^[54]. Social support also had a very much positive effect on health-related quality of life in female patients with chronic obstructive pulmonary disease than in male patients (Huang *et al.* 2019) ^[55]. These are just a few of the many studies on the social factors that affect men and women. The evolution of eating disorders, including cultural norms, peer influence, and family dynamics (Shaw *et al.* 2017) ^[56]. The special familial factors such as criticism and control also developed eating disorders. The role of social comparison theory underscores the importance of appearance-focused social comparison contributing to body dissatisfaction

and eating disorders (Myers *et al.* 2017) [57]. The role of social identity in the maintenance and development of eating disorders underscores the importance of social comparison and social support in shaping individuals' body image and eating behaviors.

Health implications of eating disorders

Anorexia nervosa can lead to heart failure, kidney failure, and other life-threatening complications. It can result in long-term bone loss, which increases the risk of osteoporosis and bone fractures. AN is associated with a higher risk of suicidal ideation and suicidal attempts, particularly in individuals with comorbid mood disorders. Bulimia nervosa can result in electrolyte imbalances, which can lead to heart arrhythmias, seizures, and other serious health issues and individuals with bulimia nervosa may experience gastrointestinal problems such as acid reflux and stomach ulcers. Bulimia nervosa may elevate the risk of cancer development, such as esophageal cancer. Binge eating disorder is associated with a higher risk of developing obesity and related health problems, such as Type 2 diabetes and heart disease. It may experience gastrointestinal issues, such as bloating, constipation, and abdominal pain. It is also associated with higher rates of anxiety, depression, and other psychiatric disorders (Treasure *et al.* 2017) [16]. These significantly increased the risk of mortality, particularly from suicide and medical complications. Eating disorders are an increased risk for cardiovascular complications, including arrhythmias, heart

failure, and sudden death (Jacobi *et al.* 2015) [72]. It can lead to gastrointestinal problems, such as delayed gastric emptying, esophageal dysfunction, and constipation (Galmiche *et al.* 2019) [73]. Eating disorders can lead to bone density loss, which can increase the risk of fractures and osteoporosis (Kohn *et al.* 2019) [74]. ED can lead to hormonal imbalances, including decreased levels of estrogen and testosterone, which can lead to infertility and other health problems (Misra *et al.* 2016). Hudson revealed that individuals who have eating disorders often have psychiatric comorbidities, such as depression, anxiety, and substance use disorders, which can further impact their health (Hudson *et al.* 2017) [43]. Eating disorders were at higher risk of developing respiratory problems such as asthma and pneumonia (Wagner *et al.* 2016) [44]. It is also an increased risk of developing mood disorders, such as bipolar disorders and major depressive disorder (Rojas *et al.* 2016) [45]. Eating disorders were at a higher of developing reproductive problems, such as irregular menstrual cycles and fertility issues (Zerwas *et al.* 2016) [46]. Eating disorders have an elevated risk of developing substance use disorders, such as drug and alcohol addiction (Mustelin *et al.* 2019) [48]. These reviews and studies the serious health implications of eating disorders and the importance of early intervention and treatment. Individuals with eating disorders receive comprehensive care from a team of healthcare professionals, including mental health providers, nutritionists, and medical providers. Figure 2 represents the health implications of eating disorders in the body.

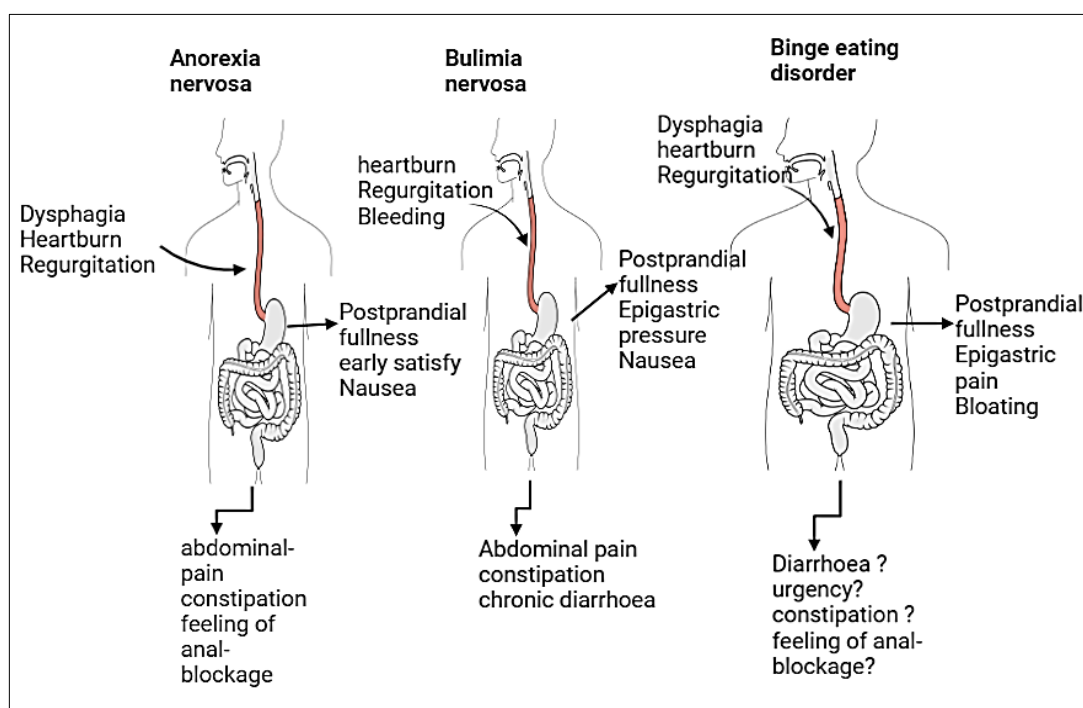


Fig 2: Health implications of eating disorders

Case studies related to eating disorders

Title	Type of Study	Participants	Key findings	References
Eating disorders in athletes: A review of literature	Review	36 studies	Athletes who were involved in aesthetic sports were more likely to develop eating disorders in comparison to who were involved in non-aesthetic sports.	Byrne <i>et al.</i> (2015) [75]
The relative associations of shape and weight over-evaluation, dissatisfaction and control with measures of psychopathology: A extension study examining AN, BN,	Cross-sectional	1227 individuals	Over-evaluation of shape and weight was associated with greater psychopathology regardless of clinical status, while preoccupation, dissatisfaction, and control were associated with greater	Linardon <i>et al.</i> (2019) [76]

and non-clinical samples			psychopathology in clinical samples.	
Competing with perfectionism longitudinal prediction of disordered eating in NCAA division in female athletes	Longitudinal	204 female NCAA Athletes	Perfectionism predicted an increased in disordered eating over time, and the relationship was partially mediated by body dissatisfaction and negative affect.	Fitzsimmons-craft, <i>et al.</i> (2019) ^[77]
Eating disorders risk and protective factors in medical students: A cross-sectional study	Cross-sectional	1020 medical students	Higher levels of stress and perfectionism, as well as low self-compassion, were associated with higher levels of eating disorders in medical students.	Guillemín <i>et al.</i> (2020) ^[78]
Identifying, key symptoms of AN and BN using a network approach	Network analysis	182 individuals with AN or BN	Dietary restraint weight concern and fear of weight gain were identified as the most central symptoms in the network for anorexia nervosa.	Murray <i>et al.</i> (2021) ^[79]
Eating disorders and body dimorphic disorder in the COVID-19 era: A review and meta-analysis	Systematic review and meta-analysis	26 studies	The prevalence of eating disorders and body dimorphic disorder increased during the COVID-19 pandemic, with individuals.	Byrne <i>et al.</i> (2022) ^[75]
The prevalence of eating disorders among adolescents in the united states	Cross-sectional	2,279 adolescents	2.7% of adolescents met the criteria for an eating disorder.	Pisetsky <i>et al.</i> (2015) ^[81]
Eating disorder examination questionnaire and clinical impairment Assessment	Cross-sectional	982 participants	The eating disorder evaluation questionnaire (EDE-Q) and clinical impairment Assessment (CIA) are both trustworthy methods for diagnosing eating disorder symptoms.	Berg <i>et al.</i> (2016) ^[80]
Eating disorders in males: A systematic review	Systematic review	28 studies	Males account for a sizable share of eating disorder cases, yet they are frequently misdiagnosed and untreated.	Murray <i>et al.</i> (2017) ^[82]
The impact of social media on body dissatisfaction and eating behaviors in young adults: A review	A systematic review	20 studies	In young people, social media use is connected with greater body dissatisfaction and improper eating behaviors.	Fardouly <i>et al.</i> (2018) ^[83]
CBT for eating disorders: A review of recent developments	Review	N/A	For eating disorder, CBT is an effective treatment with newer improvements concentrating on tailoring CBT to specific forms of eating disorders.	Waller <i>et al.</i> (2019) ^[84]
Eating disorders and suicide risk: A systematic review	Systematic review	19 studies	Suicidal behavior and suicide attempts are much common in those who have eating disorder.	Striegel <i>et al.</i> (2020) ^[85]

Conclusion

Males and females are both affected by eating disorders; however, there may be disparities in prevalence, presentation, and treatment techniques. Females are more prone to develop eating disorders in comparison to males, with rates of AN and BN being higher in females. However, guys are more likely to suffer from BED and other specific feeding or eating problems. Furthermore, they imply that social variables have a substantial role in the maintenance and development of eating behavior disorders, emphasizing the importance of social interventions as part of treatment for these disorders.

References

- Berthold N, Pytte J, Bulik CM, Tsochovner M, Medland SE, Akkari PA. Bridging the gap: Short structural variants in the genetics of anorexia nervosa. *International Journal of Eating Disorders*. 2022;55(6):747-753.
- Knatz S, Wierenga CE, Murray SB, Hill L, Kaye WH. Neurobiologically informed treatment for adults with anorexia nervosa: a novel approach to a chronic disorder. *Dialogues in clinical neuroscience*; c2022.
- MacCaughy CR. Eating disorder mental health literacy: A national survey of clinical social workers in the United States. *Journal of Social Work*; c2023. 14680173221144217.
- MacCaughy CR. Eating disorder mental health literacy: A national survey of clinical social workers in the United States. *Journal of Social Work*; c2023. 14680173221144217
- Barakat S, McLean SA, Bryant E, Le A, Marks P, Touyz S, *et al.* Risk factors for eating disorders: findings from a rapid review. *Journal of Eating Disorders*. 2023;11(1):8.
- Gorrell S, Reilly EE, Brosol L, Le Grange D. Use of telehealth in the management of adolescent eating disorders: patient perspectives and future directions suggested from the COVID-19 pandemic. *Adolescent Health, Medicine and Therapeutics*; c2022. p. 45-53.
- Schaefer LM, Forester G, Dvorak RD, Steinglass J, Wonderlich SA. Integrating aspects of affect, reward, and cognition to develop more comprehensive models of binge-eating pathology. *International Journal of Eating Disorders*; c2023.
- Uniacke B, Slattery R, Walsh BT, Shohamy D, Foerde K, Steinglass J. A comparison of food-based decision-making between restricting and binge-eating/purging subtypes of anorexia nervosa. *International Journal of Eating Disorders*. 2020;53(10):1751-1756.
- Cooper M, Reilly EE, Siegel JA, Coniglio K, Sadeh-Sharvit S, Pisetsky EM, *et al.* Eating disorders during the COVID-19 pandemic and quarantine: an overview of risks and recommendations for treatment and early intervention. *Eating disorders*. 2022;30(1):54-76.
- Preti A, Siddi S, Marzola E, Abbate Daga G. Affective cognition in eating disorders: A systematic review and meta-analysis of the performance on the "reading the mind in the eyes" test. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*. 2022;27(7):2291-2307.
- Gupta NJ, Kumar V, Panda S. A camera-phone-based study reveals the erratic eating pattern and disrupted daily eating-fasting cycle among adults in India. *PLoS one*. 2017;12(3):e0172852
- Smith AR, Zuromski KL, Dodd DR. Eating disorders and suicidality: What we know, what we don't know, and

- suggestions for future research. Current opinion in psychology. 2018;22:63-67
13. Molendijk ML, Hoek HW, Brewerton TD, Elzinga BM. Childhood maltreatment and eating disorder pathology: A systematic review and dose-response meta-analysis. *Psychological medicine*. 2017;47(8):1402-1416.
 14. Calzo JP, Horton NJ, Sonnevile KR, Swanson SA, Crosby RD, Micali N, *et al.* Male eating disorder symptom patterns and health correlate from 13 to 26 years of age. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2016;55(8):693-700.
 15. Treasure J, Stein D, Maguire S. Has the time come for a staging model to map the course of eating disorders from high risk to severe enduring illness? An examination of the evidence. *Early intervention in psychiatry*. 2015;9(3):173-184.
 16. Treasure J, Smith G, Crane A. Skills-based caring for a loved one with an eating disorder: The new Maudsley method. Routledge; c2016.
 17. Linardon J, Wade TD, De la Piedad Garcia X, Brennan L. The efficacy of cognitive-behavioural therapy for eating disorders: A systematic review and meta-analysis. *Journal of Consulting and clinical psychology*. 2017;85(11):1080.
 18. Bahji A, Mazhar MN, Hudson CC, Nadkarni P, MacNeil BA, Hawken E. Prevalence of substance use disorder comorbidity among individuals with eating disorders: A systematic review and meta-analysis. *Psychiatry Research*. 2019;273:58-66.
 19. Martini MG, Barona-Martinez M, Micali N. Eating disorders mothers and their children: a systematic review of the literature. *Archives of Women's Mental Health*. 2020;23:449-467.
 20. Feder S, Isserlin L, Seale E, Hammond N, Norris ML. Exploring the association between eating disorders and gender dysphoria in youth. *Eating Disorders*. 2017;25(4):310-317.
 21. Schaefer LM, Burke NL, Thompson JK, Dedrick RF, Heinberg LJ, Calogero RM, *et al.* Development and validation of the sociocultural attitudes towards appearance questionnaire-4 (SATAQ-4). *Psychological assessment*. 2015;27(1):54.
 22. Boehm JK, Qureshi F, Kubzansky LD. Psychological well-being in childhood and cardio metabolic risk in middle adulthood: Findings from the 1958 British Birth Cohort. *Psychological Science*. 2022;33(8):1199-1211.
 23. Gormally BM, Bridgette K, Emmi A, Schuerman D, Lopes PC. Female presence does not increase testosterone but still ameliorates sickness behaviour in male Japanese quail. *Royal Society Open Science*. 2022;9(5):220450.
 24. Zhang S, Li M, Guo Z. Effect of cannabidiol on schizophrenia based on randomized controlled trials: A meta-analysis. In *Annales Médico-psychologiques, revue psychiatrique*. September 2022;180(7):630-638. Elsevier Masson.
 25. Stoyel H, Slee A, Meyer C, Serpell L. A systematic review of risk factors for eating psychopathology in athletes: a critique of an etiological model. *European Eating Disorders Review*. 2020;28(1):3-25.
 26. Linardon J, Phillipou A, Castle D, Newton R, Harrison P, Castillo LL, *et al.* The relative associations of shape and weight over-evaluation, preoccupation, dissatisfaction, and fear of weight gain with measures of psychopathology: An extension study in individuals with anorexia nervosa. *Eating behaviour*. 2018;29:54-58
 27. Cheikh Ismail L, Osaili TM, Mohamad MN, Al Marzouqi A, Jarrar AH, Abu Jamous DO, *et al.* Eating habits and lifestyle during COVID-19 lockdown in the United Arab Emirates: A cross-sectional study. *Nutrients*. 2020;12(11):3314.
 28. Elliott H, Jones PJ, Schmidt U. Central symptoms predict posttreatment outcomes and clinical impairment in anorexia nervosa: A network analysis. *Clinical Psychological Science*. 2020;8(1):139-154.
 29. Cooper M, Reilly EE, Siegel JA, Coniglio K, Sadeh-Sharvit S, Pisetsky EM, *et al.* Eating disorders during the COVID-19 pandemic and quarantine: An overview of risks and recommendations for treatment and early intervention. *Eating disorders*. 2022;30(1):54-76.
 30. Mandelli L, Arminio A, Atti AR, De Ronchi D. Suicide attempts in eating disorder subtypes: a meta-analysis of the literature employing DSM-IV, DSM-5, or ICD-10 diagnostic criteria. *Psychological Medicine*. 2019;49(8):1237-1249.
 31. Thiebaut S, Godart N, Radon L, Courtet P, Guillaume SJLE. Crossed prevalence results between subtypes of eating disorder and bipolar disorder: A systematic review of the literature. *L'encephale*. 2019;45(1):60-73.
 32. Abaied JL, Wagner C, Breslend NL, Flynn M. Respiratory sinus arrhythmia as a predictor of eating disorder symptoms in college students: Moderation by responses to stress and parent psychological control. *Eating behaviours*. 2016;21:109-115.
 33. Ruiz EM, Gutiérrez-Rojas L. Comorbidity of bipolar disorder and eating disorders. *Revista de Psiquiatría y Salud Mental (English Edition)*. 2015 Oct 1;8(4):232-41.
 34. Kimmel MC, Ferguson EH, Zerwas S, Bulik CM, Meltzer-Brody S. Obstetric and gynecologic problems associated with eating disorders. *International journal of eating disorders*. 2016;49(3):260-275-345
 35. Keski-Rahkonen A, Mustelin L. Epidemiology of eating disorders in Europe: prevalence, incidence, comorbidity, course, consequences, and risk factors. *Current opinion in psychiatry*. 2016;29(6):340-315.
 36. Aldea M, Andre F, Marabelle A, Dogan S, Barlesi F, Soria JC. Overcoming resistance to tumor-targeted and immune-targeted therapies. *Cancer discovery*. 2021 Apr;11(4):874-99.
 37. Le Grange L. Decolonising the university curriculum: Leading article. *South African Journal of Higher Education*. 2016 Jan 1;30(2):1-2.
 38. Lade H, Kim JS. Bacterial targets of antibiotics in methicillin-resistant *Staphylococcus aureus*. *Antibiotics*. 2021 Apr 7;10(4):398.
 39. Anderson C, Hildreth JA, Howland L. Is the desire for status a fundamental human motive? A review of the empirical literature. *Psychological bulletin*. 2015 May;141(3):574.
 40. Hilbert D. Mathematical problems. In *Mathematics: People· Problems· Results*. Chapman and Hall/CRC. 2019 Aug 8. p. 273-278.
 41. Brewerton TD. Food addiction as a proxy for eating disorder and obesity severity, trauma history, PTSD symptoms, and comorbidity. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*. 2017 Jun;22:241-7.
 42. Hudson WH, Gensheimer J, Hashimoto M, Wieland A, Valanparambil RM, Li P, *et al.* Proliferating transitory T cells with an effector-like transcriptional signature emerge from PD-1+ stem-like CD8+ T cells during chronic infection. *Immunity*. 2019 Dec 17;51(6):1043-58.
 43. Hudson NW, Fraley RC. Volitional personality change. In *Personality development across the lifespan* 2017 Jan

- 1 (pp. 555-571). Academic Press.
44. Wagner G, Weitzman ML. Climate shock. In *Climate Shock* 2016 Apr 19. Princeton University Press.
 45. Rojas-Sánchez JC, Oyarzún S, Fu Y, Marty A, Vergnaud C, Gambarelli S, *et al.* Spin to charge conversion at room temperature by spin pumping into a new type of topological insulator: α -Sn films. *Physical review letters*. 2016 Mar 1;116(9):096602.
 46. Zerwas SC, Watson HJ, Hofmeier SM, Levine MD, Hamer RM, Crosby RD, *et al.* CBT4BN: a randomized controlled trial of online chat and face-to-face group therapy for bulimia nervosa. *Psychotherapy and psychosomatics*. 2016 Dec 7;86(1):47-53.
 47. Mustelin T, Ukadike KC. How retroviruses and retro transposons in our genome may contribute to autoimmunity in rheumatological conditions. *Frontiers in immunology*. 2020 Nov 13;11:593891.
 48. Mustelin T, Lood C, Giltiay NV. Sources of pathogenic nucleic acids in systemic lupus erythematosus. *Frontiers in immunology*. 2019 May 8;10:1028.
 49. Cone Edward, James Lambert. "How robots change the world; c2019.
 50. Shields GS, Sazma MA, McCullough AM, Yonelinas AP. The effects of acute stress on episodic memory: A meta-analysis and integrative review. *Psychological bulletin*. 2017 Jun;143(6):636.
 51. Mitchison D, Mond J. Epidemiology of eating disorders, eating disordered behaviour, and body image disturbance in males: a narrative review. *Journal of eating disorders*. 2015 Dec;3(1):1-9.
 52. Murray V, Hall DS, Dahn JR. A guide to full coin cell making for academic researchers. *Journal of the Electrochemical Society*. 2019;166(2):A329-33.
 53. Wenfei Zhu, Aiping Chi, Yuliang Sun. "Physical activity among older Chinese adults living in urban and rural areas: a review." *Journal of Sport and Health Science*. 2016;5(3):281-286.
 54. Chen Liang-Chieh, *et al.* "Encoder-decoder with atrous separable convolution for semantic image segmentation". *Proceedings of the European conference on computer vision (ECCV)*; c2018.
 55. Huang Honglin, *et al.* "Mechanisms of ROS regulation of plant development and stress responses." *Frontiers in plant science*. 2019;10:800.
 56. Shaw MN. *International law*. Cambridge university press; 2017 Sep 14.
 57. Myers SS, Smith MR, Guth S, Golden CD, Vaitla B, Mueller ND, *et al.* Climate change and global food systems: potential impacts on food security and under nutrition. *Annual review of public health*. 2017 Mar 20;38:259-77.
 58. Lopes MB. The 2017 World Health Organization classification of tumors of the pituitary gland: a summary. *Acta neuropathologica*. 2017 Oct;134:521-35.
 59. Lopes BC, Jaspal R. Understanding the mental health burden of COVID-19 in the United Kingdom. *Psychological Trauma: Theory, Research, Practice, and Policy*. 2020 Jul;12(5):465.
 60. French RD. *Antivivisection and medical science in Victorian society*. Princeton University Press; 2019 Mar 12.
 61. Miller KD, Nogueira L, Mariotto AB, Rowland JH, Yabroff KR, Alfano CM, *et al.* Cancer treatment and survivorship statistics, 2019. *CA: A cancer journal for clinicians*. 2019 Sep;69(5):363-85.
 62. Lara MA, Navarrete L, Nieto L, Le HN. Childhood abuse increases the risk of depressive and anxiety symptoms and history of suicidal behavior in Mexican pregnant women. *Brazilian Journal of Psychiatry*. 2015;37:203-210.
 63. Griffiths K, Michelutti N, Douglas MS, Smol JP. Reply to formal comment on Griffiths *et al.* (2017) submitted by Gajewski (2020). *Plos One*. 2021;16(8):e0254481
 64. Afghani J, Huelpuesch C, Schmitt-Kopplin P, Traidl-Hoffmann C, Reiger M, Mueller C. Enhanced access to the health-related skin metabolome by fast, reproducible and non-invasive WET PREP sampling. *Metabolites*. 2021;11(7):415.
 65. Fairweather-Schmidt AK, Lee C, Wade TD. A longitudinal study of midage women with indicators of disordered eating. *Developmental Psychology*. 2015;51(5):722.
 66. Harpin SB, Rossi A, Kim AK, Swanson LM. Behavioural impacts of a mindfulness pilot intervention for elementary school students. *Education*. 2016;137(2):149-156.
 67. Brooks SJ, Burch KH, Maiorana SA, Cocolas E, Schioth HB, Nilsson EK, *et al.* Psychological intervention with working memory training increases basal ganglia volume: A VBM study of inpatient treatment for methamphetamine use. *Neuro Image: Clinical*. 2016;12:478-491.
 68. Cunha AR, D'El-Rei J, Medeiros F, Umbelino B, Oigman W, Touyz RM, *et al.* Oral magnesium supplementation improves endothelial function and attenuates subclinical atherosclerosis in thiazide-treated hypertensive women. *Journal of Hypertension*. 2017;35(1):89-97.
 69. Scarf V, Catling C, Viney R, Homer C. Costing alternative birth settings for women at low risk of complications: A systematic review. *PloS one*. 2016;11(2):e0149463.
 70. Lavender JM, Shaw JA, Crosby RD, Feig EH, Mitchell JE, Crow SJ, *et al.* Associations between weight suppression and dimensions of eating disorder psychopathology in a multisite sample. *Journal of Psychiatric Research*. 2015;69:87-93.
 71. Bassi M, Delle Fave A, Cetin I, Melchiorri E, Pozzo M, Vescovelli F, *et al.* Psychological well-being and depression from pregnancy to postpartum among primiparous and multiparous women. *Journal of Reproductive and Infant Psychology*. 2017;35(2):183-195.
 72. Otto O, Rosendahl P, Mietke A, Golfier S, Herold C, Klauke D, *et al.* Real-time deformability cytometry: on-the-fly cell mechanical phenotyping. *Nature methods*. 2015 Mar;12(3):199-202.
 73. Galmiche M, Déchelotte P, Lambert G, Tavolacci MP. Prevalence of eating disorders over the 2000-2018 period: a systematic literature review. *The American journal of clinical nutrition*. 2019 May 1;109(5):1402-13.
 74. Semedo JD, Zandvakili A, Machens CK, Byron MY, Kohn A. Cortical areas interact through a communication subspace. *Neuron*. 2019 Apr 3;102(1):249-59.
 75. Matthews T, Lo AY, Byrne JA. Reconceptualising green infrastructure for climate change adaptation: Barriers to adoption and drivers for uptake by spatial planners. *Landscape and urban planning*. 2015 Jun 1;138:155-63.
 76. Linardon J, Cuijpers P, Carlbring P, Messer M, Fuller-Tyszkiewicz M. The efficacy of app-supported smartphone interventions for mental health problems: A meta-analysis of randomized controlled trials. *World Psychiatry*. 2019 Oct;18(3):325-36.
 77. Fitzsimmons-Craft EE, Balantekin KN, Eichen DM,

- Graham AK, Monterubio GE, Sadeh-Sharvit S, *et al.* Screening and offering online programs for eating disorders: Reach, pathology, and differences across eating disorder status groups at 28 US universities. *International Journal of Eating Disorders*. 2019 Oct;52(10):1125-36.
78. Safiri S, Kolahi AA, Smith E, Hill C, Bettampadi D, Mansournia MA, *et al.* Global, regional and national burden of osteoarthritis 1990-2017: A systematic analysis of the Global Burden of Disease Study 2017. *Annals of the rheumatic diseases*. 2020 Jun 1;79(6):819-28.
79. Nivette A, Ribeaud D, Murray A, Steinhoff A, Bechtiger L, Hepp U, *et al.* Non-compliance with COVID-19-related public health measures among young adults in Switzerland: Insights from a longitudinal cohort study. *Social science & medicine*. 2021 Jan 1;268:113370.
80. Murray A, Skene K, Haynes K. The circular economy: an interdisciplinary exploration of the concept and application in a global context. *Journal of business ethics*. 2017 Feb;140:369-80.
81. Magna M, Pisetsky DS. The role of cell death in the pathogenesis of SLE: Is pyroptosis the missing link?. *Scandinavian Journal of Immunology*. 2015 Sep;82(3):218-24.
82. Murray A, Skene K, Haynes K. The circular economy: an interdisciplinary exploration of the concept and application in a global context. *Journal of business ethics*. 2017 Feb;140:369-80.
83. Fardouly J, Willburger BK, Vartanian LR. Instagram use and young women's body image concerns and self-objectification: Testing mediational pathways. *New Media & Society*. 2018 Apr;20(4):1380-95.
84. Schuster SJ, Bishop MR, Tam CS, Waller EK, Borchmann P, McGuirk JP, *et al.* Tisagenlecleucel in adult relapsed or refractory diffuse large B-cell lymphoma. *New England Journal of Medicine*. 2019 Jan 3;380(1):45-56.
85. Krutsch V, Grechenig S, Loose O, Achenbach L, Zellner J, Striegel H, *et al.* Injury analysis in professional soccer by means of media reports—only severe injury types show high validity. *Open access journal of sports medicine*. 2020 Aug 7:123-31.