

# A Critical Literature Review on Anorexia Nervosa

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## INTRODUCTION

Eating disorders are mental illnesses that have broad cognitive, emotional, and physical consequences. Although the types of eating disorders are wide-ranging, they generally consist of abnormal eating patterns that stem from body dissatisfaction and an unhealthy relationship with food. The behaviors involved in eating disorders, such as self-starvation or overeating, are typically uncontrollable, and the preoccupation with food dramatically impedes the individual's quality of life.

Three of the most studied eating disorders are anorexia nervosa, bulimia nervosa, and binge-eating disorder. These eating disorders have become increasingly common over the course of the 20<sup>th</sup> century, affecting women disproportionately more than men. The ratio of women to men suffering from anorexia nervosa or bulimia nervosa is 10:1, while the gender differential in binge-eating disorder is lower at a 2:1 ratio (Keel, 2016). As research on the subject has increased over time and provided a greater understanding of eating disorders, texts such as the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V)* by the American Psychiatric Association (2013) have been published to provide diagnostic criteria for these conditions. Diagnostic criteria allow for a more

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standardized measurement and treatment of eating disorders by the scientific community. Crossovers can occur in which patients transition from one eating disorder to another, such as from anorexia nervosa to bulimia nervosa (Keel, 2016). Eating disorders are also often associated with other mental illnesses, including depression and anxiety, which can necessitate various concurrent treatments.

Anorexia nervosa, one of the most prevalent eating disorders, is characterized by an excessively low weight due to intentional food restriction. This paper will examine the specific diagnostic criteria for anorexia regarding weight, behavior, and development, as well as its two restricting and binge-eating/purging subtypes. The epidemiology of this mental disorder will be analyzed, focusing on its increasing occurrence in adolescent females. The significant mental and physical health complications of anorexia nervosa will also be explored.

## **CORE CHARACTERISTICS**

Anorexia nervosa (AN) is described as purposefully starving oneself to the point of emaciation. In addition to food restriction, methods such as excessive exercise are used to maintain a smaller body size. This often stems from a debilitating fear of weight gain, which is primarily relevant to modern Western cultures like the United States that idealize thinness in women (Mitchell, 2009). Despite severe malnourishment, individuals with anorexia may continuously deny their condition and refuse treatment due to either delusion about their own state or the fear of becoming fat. Since anorexia disrupts the functioning of the endocrine system and females' ovarian cycles, it can affect women's fertility and lead to amenorrhea, which is the loss of the menstrual cycle. There

are two subtypes of anorexia nervosa: restricting and binge-purging. The restricting subtype (ANR) consists of extreme food restriction without binge-eating or purging, while the binge-eating/purging subtype (ANBP) involves frequent overeating followed by purging to lose weight. Both variations result in a low Body Mass Index (BMI) compared to the standard weight of an individual at the given age and height, which differentiates the ANBP from bulimia nervosa (Mitchell, 2009).

## DIAGNOSTIC CRITERIA

### *Diagnostic and Statistical Manual of Mental Disorders*

The DSM-V is the most updated version of the *Diagnostic and Statistical Manual of Mental Disorders*. It is used by scientists and healthcare professionals in the United States, as well as in other parts of the world, to classify and diagnose disorders. It is based on the consolidation of ongoing scientific research from many experts in their respective fields. The DSM-V categorizes anorexia nervosa under Feeding and Eating Disorders (American Psychiatric Association, 2013).

The criteria for diagnosing AN include limiting food or energy intake below what is necessary for proper development, which leads to suboptimal body weight and health. The patient's degree of thinness is labeled mild at a BMI of greater than or equal to 17 kg/m<sup>2</sup>, moderate at 16.99 to 16 kg/m<sup>2</sup>, severe at 15.99 to 15 kg/m<sup>2</sup>, and extreme at less than 15 kg/m<sup>2</sup>. The reasons for self-starvation are an intense fear of putting on weight and a distorted body image perception. In individuals with anorexia, body shape is typically tied directly to self-worth, causing feelings of disgust and self-loathing when their

weight is higher than what they deem acceptable. Moreover, the DSM-V distinguishes between the restricting subtype, in which binge-eating and purging are not present, versus the binge-eating/purging subtype, in which the person binge-eats then purges by inducing vomit or abusing substances like laxatives to prevent calorie absorption (American Psychiatric Association, 2013).

According to the DSM-V, a person must meet all of the criteria above to be clinically diagnosed with anorexia nervosa. However, individuals who meet some but not all of the criteria are determined to have “subthreshold” anorexia and can still receive treatment with a diagnosis of an Unspecified Feeding or Eating Disorder (UFED). The DSM-IV, which was the previous edition published in 1994, included the criterion that females experience an absence of at least three consecutive menstrual cycles. However, this criterion was not critical to diagnosing anorexia and, in fact, prevented proper diagnosis of women who failed to meet this single aspect. Hence, it was subsequently removed for the DSM-V (American Psychiatric Association, 2013).

### *International Classification of Diseases*

The International Classification of Diseases (ICD) works with the World Health Organization to provide diagnostic criteria for diseases, track international epidemiology, and maintain health through the United Nations System. The ICD-10 classifies anorexia nervosa under Mental, Behavioral and Neurodevelopmental disorders (World Health Organization, 2016).

The fundamental criteria for anorexia in both the DSM-V and the ICD-10 share the same foundations. However, one

notable difference is that the ICD-10 specifies that body weight must be more than 15% below expected weight or BMI must be less than 17.5. Consistent with the old DSM-IV, the ICD-10 still requires amenorrhea in females and diminished libido in males. An additional criterion is that prepubescent children must experience delayed puberty or permanently hindered growth of certain body parts like breasts in girls. Contrary to the DSM-V, the ICD-10 specifies a duration of 3 months without binge-eating or purging in the restricting type and 3 months of repeated episodes in the binge-eating/purging type (World Health Organization, 2016).

These differences between the DSM-V and ICD-10 demonstrate that eating disorders are complex and not yet fully understood. Research into their most pertinent standards is ongoing, so revisions are made to both manuals periodically. Standards are necessary in order for treatments to separate “normal” eating from disordered eating, despite that certain thresholds like BMI or durations set in the ICD may seem limiting and arbitrary.

## **EPIDEMIOLOGY**

### *Historical Epidemiology Trends*

Trends in the prevalence of anorexia nervosa are difficult to firmly establish because diagnostic criteria have changed since its identification in the 19<sup>th</sup> century (Hoek, 2016). In the early 20<sup>th</sup> century, there were many misconceptions about its cause, leading to ineffective treatments. However, it is likely that prevalence did indeed increase alongside the idealization of thinness in Western popular culture around the 1960s. Garner et al. (1980) studied the correlation between the average weights of Miss America Pageant contestants and the year from

1959 to 1978. They also examined the change in the body proportions of the pageant winners. Outcomes were that there was a steady decline in the average weight of the contestants each year, and an even greater decrease in the weights of the winners. Furthermore, beginning in 1970, the annual winners weighed significantly less than the rest of the contestants. Using a thorough statistical analysis, this study demonstrated that the women chosen to represent each state, and ultimately the country, in a popular beauty pageant have become skinnier over time, indicating a shift in the ideal body type. In addition, Garner et al. (1980) found that articles promoting diets in magazines targeted towards women increased drastically between 1959 and 1978. Evidently, society propagates diet culture and unrealistically skinny body standards through advertisement, print, film, and other mediums. This helps explain the increase in anorexia nervosa since the mid-20<sup>th</sup> century, as girls grow dissatisfied with their body and strive to attain the ideal of thinness encouraged by society.

### *Current Epidemiology*

#### Prevalence

Prevalence refers to the proportion of a population that has a specific disease at a certain point of time (*NIMH » What Is Prevalence?*, n.d.). The prevalence of anorexia nervosa continues to increase in modern countries like America. To determine the prevalence of anorexia nervosa in the United States based on the DSM-5 criteria, Udo and Grilo (2018) conducted diagnostic interviews on a nationally representative sample of 36,309 adults in the United States. They gathered data from the 2012–2013 National Epidemiologic Survey Alcohol and Related Conditions (NESARC-III), which used the Alcohol Use

Disorder and Associated Disabilities Interview Schedule-5 (AUDADIS-5) and self-reported heights and weights to determine both 12-month and lifetime prevalence of anorexia nervosa. The results were that the 12-month prevalence of anorexia was 0.05% and the lifetime prevalence was 0.80%. There is limited population-based data on the prevalence of eating disorders, making this study very valuable as it used the largest national sample of United States adults thus far. These prevalence rates indicate that millions of Americans will suffer from anorexia nervosa at some point in their lifetime.

### Age of Onset

In the same study, Udo and Grilo (2018) also discovered that the average age of onset for anorexia is 19.3 years old. This age corroborates the onset age of 18.9 that was found by the 2007 National Comorbidity Survey-Replication based on the DSM-IV using 2,980 respondents (Hudson et al., 2007). Similarly, Lucas et al. (1991) conducted a study on a population in Minnesota from 1935 to 1984 that showed the typical age of onset to be 15 to 19 years old, revealing that the period in which anorexia first develops has not changed much over time. Overall, adolescents are the most susceptible age group to developing anorexia nervosa.

### Incidence

Incidence is defined as the number of new cases of the disease in a population over a specific period of time (*Principles of Epidemiology*, 2020). Hoek (2006) conducted a meta-analysis on recent scientific literature about the incidence of eating disorders. He concluded that most reports on anorexia nervosa

grossly underestimate the incidence in the entire community because they are based solely on psychiatric clinical cases and hospitalizations, meaning many cases are left undocumented. The incidence rate of anorexia based on registered cases is 8 per 100,000 people per year, but it is very difficult to determine the true incidence rate that includes unreported cases. Thus, it can only be assumed that the actual incidence rate is a significantly higher figure.

### *Risk Factors*

#### Environmental Factors

Anorexia has been on the rise in adolescent women living in Western cultures, particularly due to sociocultural pressures to look thin. Very thin female bodies are often depicted as more beautiful and valuable. Furthermore, not only is extreme thinness desired, but fatter bodies are shamed and looked down upon in many cultures. Through the process of objectification, women's value is reduced to their physical appearance, resulting in lower self-worth when they are not able to achieve these unrealistic body standards (Keel, 2016).

Additionally, direct pressure from family members to maintain a low weight throughout childhood can increase the risk of anorexia later in life. Serra et al. (2021) conducted a meta-analysis on existing studies about the risk factors of anorexia nervosa and other related eating disorders. In this systematic review, researchers found that a strong risk factor for the development of anorexia was overbearing parents who were highly critical and hyper-focused on their child's weight. Unstable relationships with parents and a lack of parental affection were associated with childhood trauma, which further



increased the likelihood of physical and mental discontentment with oneself.

### Genetic Factors

The development of eating disorders arises from a complex interaction between genetics and the environment. Oftentimes, there is a generational cycle of disordered eating in youth whose parents suffered from eating disorders themselves. This situation is termed the “cycle of risk” by Bulik et al. (2005). Pregnant mothers with a history of anorexia might not gain enough weight or consume adequate nutrition throughout their pregnancy, even if they are recovered and in full remission. This frequently leads to preterm births, brain damage, and the impairment of other regulatory systems in the fetus. The baby may also be born into an environment that is more fixated on appearance and restrictive dieting. This will leave the child prone to chronic diseases including anorexia nervosa, thus perpetuating the genetic and environmental recipe for an eating disorder.

## **IMPORTANT COMPLICATIONS**

### *Comorbid Mental Disorders*

The prevalence of anxiety disorders and obsessive-compulsive disorders are much higher in people with anorexia nervosa than in the general population. These two mental disorders are typically comorbid with anorexia, meaning they simultaneously affect the individual but are not necessarily caused by each other. In Kaye et al. (2004), 97 participants with anorexia nervosa and 293 participants with both anorexia and bulimia were given the Structured Clinical Interview to measure “anxiety, perfectionism, and obsessionality.” They

then compared these results with those of women in the control group without any clinical diagnoses. The results showed that about two-thirds of the participants with anorexia nervosa had at least one lifetime anxiety disorder, such as obsessive-compulsive disorder or social phobia. Anxiety and OCD typically develop in childhood before anorexia, revealing that they may both be risk factors for eating disorders. Additionally, social phobia is the refusal to eat in front of others due to a fear of judgement or that others will try to increase their food intake. This prompts isolation and self-disgust, hindering daily life and relationships with others.

### *Cardiovascular Complications*

Heart diseases are found in around 80% of people suffering from eating disorders (Meczekalski et al., 2013). The most common cardiac complication related to malnutrition from anorexia nervosa is sinus bradycardia. This is a dangerous, possibly fatal form of arrhythmia in which the vagus nerve becomes overactive and slows heartrate to an abnormal level. Oxygen deprivation can cause slowed cognition, light-headedness, and even sudden death in anorexic patients. Hypotension and high total cholesterol are other typical problems related to the cardiovascular system (Meczekalski et al., 2013). Other health issues from anorexia like abnormal lipid concentration can also increase the risk of heart disease. Fortunately, a full recovery from anorexia allows lipid levels to return to normal and decreases the risk of linked cardiac irregularities.

### *Osteoporosis*

Osteoporosis is a medical condition in which bones are fragile and porous due to low bone mineral density (BMD) and low peak bone mass (PBM). Adolescence is a crucial period for bone metabolism, as well as for reaching peak BMD and PBM. However, the bones in teenagers with anorexia do not grow properly, leading to misaligned spines and hips. Obstructed bone metabolism is the result of inadequate nutrition, endocrine changes, and body composition (Meczekalski et al., 2013). Malnourishment from self-starvation is strongly connected to bone loss, low peak bone mass, and high bone marrow fat. Anorexia is also correlated with high cortisol and low growth hormone, which can prevent certain bone formation. Hypoestrogenism is the primary hormonal cause of osteoporosis. Furthermore, the lowered BMD tremendously increases the risk of bone fracture later in life and slows healing as well. These risks of fracture are long-term and remain high even after recovery in adulthood (Meczekalski et al., 2013).

Moreover, Idolazzi et al. (2016) investigated the effects of anorexia on bone metabolism specifically in females with amenorrhea and estrogen deficiency. They compared the laboratory tests of 81 anorexic women with the results of both healthy women and postmenopausal women with low estrogen. Researchers concluded that women with anorexia not only had increased bone resorption, but also lowered bone formation. This signifies that bone is broken down and absorbed by the body at a much faster rate than it can be replaced, leading to more breakage and osteoporosis.

## CONCLUSION

### *Summary*

Therefore, anorexia nervosa is a dangerous, multifaceted mental disorder that disrupts numerous areas of life, including mental, emotional, and physical realms. It can significantly reduce lifespan and be fatal if left untreated. It is characterized by deliberate self-starvation in an effort to reach an excessively low weight, along with other practices like overexercising. These behaviors stem from an intense fear of gaining weight and a distorted body perception.

The prevalence of anorexia has increased overall since the 1960s, particularly among adolescent girls in modern Western cultures due to the heightened ideal of thinness. In addition to environmental risk factors, genetics can also increase the likelihood of anorexia, such as a mother with a history of eating disorders.

Comorbid complications often arise with anorexia, such as anxiety disorders, obsessive-compulsive disorders, and social phobia. Physical ailments also occur, including cardiovascular diseases and osteoporosis. Although some health abnormalities linked to heart disease return to normal after a full recovery from anorexia, other diseases like osteoporosis can remain for a lifetime.

### *Recommendations*

Since the typical onset age of anorexia is around 19 years old, detection of risk factors should be made before this period. For example, teenage girls should be educated and warned about the unrealistic beauty standards promoted by social media and cultural norms. As a society, there should be a greater movement towards unfiltered, unedited bodies in the media. Furthermore, the stigma around mental disorders and seeking treatment for them should be eliminated.

People diagnosed with anorexia should receive either inpatient treatment, partial hospitalization, or outpatient treatment (Mitchell, 2009). This clinical care can be combined with psychotherapy, although medications have not been proven effective unless it is for comorbid diseases like anxiety. Due to the wide-reaching negative impacts of anorexia, it requires help from a team of medical professions, mental health counselors, and dieticians (Mitchell, 2009).

### *Further Research*

Currently, very few studies accurately report the incidence rate of anorexia because most are only based on registered clinical cases and hospitalizations. Thus, to prevent this substantial underestimation of incidence rates, more research must be conducted on both the number of undocumented cases and people who refuse treatment.

Most prevalence studies are also only conducted on cases within the health care system in small communities. There should be further investigation into the prevalence of anorexia in the general population using larger samples. More research should also be done about the prevalence of anorexia in other less represented populations like males, who are less likely to seek treatment and receive a diagnosis.

## REFERENCES

- American Psychiatric Association, & American Psychiatric Association (Eds.). (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed). American Psychiatric Association.
- Bulik, C. M., Reba, L., Siega-Riz, A.-M., & Reichborn-Kjennerud, T. (2005). Anorexia nervosa: Definition, epidemiology, and cycle of risk. *International Journal of Eating Disorders, 37*(S1), S2–S9.  
<https://doi.org/10.1002/eat.20107>
- Garner, D. M., Garfinkel, P. E., Schwartz, D., & Thompson, M. (1980). Cultural Expectations of Thinness in Women. *Psychological Reports, 47*(2), 483–491.  
<https://doi.org/10.2466/pr0.1980.47.2.483>
- Hoek, H. W. (2006). Incidence, prevalence and mortality of anorexia nervosa and other eating disorders. *Current Opinion in Psychiatry, 19*(4), 389–394.  
<https://doi.org/10.1097/01.yco.0000228759.95237.78>
- Hoek, H. W. (2016). Review of the worldwide epidemiology of eating disorders. *Current Opinion in Psychiatry, 29*(6), 336–339. <https://doi.org/10.1097/YCO.0000000000000282>
- Hudson, J. I., Hiripi, E., Pope, H. G., & Kessler, R. C. (2007). The Prevalence and Correlates of Eating Disorders in the National Comorbidity Survey Replication. *Biological*

- Psychiatry*, 61(3), 348–358.  
<https://doi.org/10.1016/j.biopsych.2006.03.040>
- Idolazzi, L., El Ghoch, M., Dalle Grave, R., Bazzani, P. V., Calugi, S., Fassio, S., Caimmi, C., Viapiana, O., Bertoldo, F., Braga, V., Rossini, M., & Gatti, D. (2018). Bone metabolism in patients with anorexia nervosa and amenorrhoea. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity*, 23(2), 255–261.  
<https://doi.org/10.1007/s40519-016-0337-x>
- Kaye, W. H., Bulik, C. M., Thornton, L., Barbarich, N., & Masters, K. (2004). Comorbidity of Anxiety Disorders With Anorexia and Bulimia Nervosa. *Am J Psychiatry*, 7.
- Keel, P. K. (2016). *Eating Disorders*. United Kingdom: Oxford University Press.
- Lucas, A. R., Beard, C. M., O'Fallon, W. M., & Kurland, L. T. (1991). 50-year trends in the incidence of anorexia nervosa in Rochester, Minn.: A population-based study. *The American Journal of Psychiatry*, 148(7), 917–922.  
<https://doi.org/10.1176/ajp.148.7.917>
- Meczekalski, B., Podfigurna-Stopa, A., & Katulski, K. (2013). Long-term consequences of anorexia nervosa. *Maturitas*, 75(3), 215–220.  
<https://doi.org/10.1016/j.maturitas.2013.04.014>
- Mitchell, J. E., & Peterson, C. B. (2020). Anorexia Nervosa. *New England Journal of Medicine*, 382(14), 1343–1351.  
<https://doi.org/10.1056/NEJMcp1803175>

NIMH » *What is Prevalence?* (n.d.). Retrieved September 24, 2021, from <https://www.nimh.nih.gov/health/statistics/what-is-prevalence>

*Principles of Epidemiology | Lesson 3 – Section 2.* (2020, May 11). <https://www.cdc.gov/csels/dsepd/ss1978/lesson3/section2.html>

Serra, R., Di Nicolantonio, C., Di Febo, R., De Crescenzo, F., Vanderlinden, J., Vrieze, E., Bruffaerts, R., Loredio, C., Pasquini, M., & Tarsitani, L. (2021). The transition from restrictive anorexia nervosa to bingeing and purging: A systematic review and meta-analysis. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity*. <https://doi.org/10.1007/s40519-021-01226-0>

Udo, T., & Grilo, C. M. (2018). Prevalence and Correlates of DSM-5–Defined Eating Disorders in a Nationally Representative Sample of U.S. Adults. *Biological Psychiatry*, *84*(5), 345–354. <https://doi.org/10.1016/j.biopsych.2018.03.014>

World Health Organization. (2016). *International statistical classification of diseases and related health problems* (10th ed.). <https://icd.who.int/browse10/2016/en>