Risk Factors for Relapse In Anorexia Nervosa and Bulimia Nervosa

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1. Introduction

Anorexia Nervosa (AN) and Bulimia Nervosa (BN) were the two main eating disorders before the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) fifth edition was published (Davis, Walsh, Schebendach, Glasofer, & Steinglass 2020, p. 686; Timko, DeFilipp & Dakanali, 2019, p. 1). Individuals with AN may engage in practices related to fasting and delay of eating, whereas individuals with BN may engage in behaviors related to binge-eating, misuse of laxatives, self-induced vomiting, or fasting (Davis et al., 2020, p. 686; Timko et al., 2019, p. 1). Both are, by definition, characterized by an excessive concern with weight and shape, and individuals suffering from either disorder may make several maladaptive attempts to manage weight and shape, such as engaging in excessive exercises (Davis et al., 2020, p. 686; Timko et al., 2019, p. 1). These attempts may have long-term consequences and can furthermore result in medical complications down the line (Møhl, 2019, p. 34). While hurting their body is not the primary focus of individuals with AN or BN, weight loss, body image, and regaining control is (Møhl, 2019, p. 34).

Research suggests that women are more likely to develop AN and BN than men, and although eating disorders are frequently associated with women, many sufferers who experience eating disorders are also men (Timko et al., 2019, p. 1). The ratio of female to male patients with eating disorders was found to be one to five in a study by Valente et al. (2017) who sought to better understand the prevalence of eating disorders between the sexes (Valente, Girolamo, Forlani, Biondini, Scudellari, De Ronchi & Atti, 2017, p. 707). According to Valente et al.'s study, binge eating disorders are more prevalent in men, whereas AN and BN are prevalent in women (Valente et al., 2017, p. 707). According to a study conducted by Timko et al. in 2019, the average age at which AN and BN typically begin is during adolescence for both males and females (Timko et al., 2019, p. 4). However, the study also revealed that after the onset of puberty, the risk of developing these disorders remains stable for males but increases to 50% for females (Timko et al., 2019, p. 3). In cases where individuals with AN or BN experience the onset of their disorder during puberty and present as underweight for their age, it may affect their sexual and developmental history, potentially leading to latent effects (Davis et al., 2020, p. 686; Timko et al., 2019, p. 1).

This chapter provides a comprehensive overview of AN and BN, starting with a historical perspective to understand how these eating disorders were perceived and interpreted. While exploring the historical context offers insights into the origins of eating disorders, it is equally important to consider the current understanding of the issue. Advances in medicine have enhanced our comprehension of the biological, psychological, and sociocultural factors that contribute to the development of eating disorders (Caparrotta & Ghaffari, 2006, p. 175), which will be further examined in the state-of-the-art section of this chapter.

The state-of-the-art section will present and discuss recent theoretical frameworks, analyzing their strengths and weaknesses. Moreover, the diagnostic criteria for AN and BN have evolved over time, placing greater emphasis on psychological and behavioral symptoms. The chapter will delve into the diagnostic criteria and compare the previous DSM-IV edition with the more recent DSM-5 edition. Despite these advancements, there is still much to be accomplished in terms of treatment and prevention of eating disorders. Various treatment options have been developed and will be discussed, evaluating their effectiveness in terms of relapse rates and readmission rates. Lastly, based on a systematic review, recommendations will be provided for future research focused on relapse prevention strategies and methods.

2. 15th Century to the 20th Century - A Historical Perspective On Anorexia Nervosa and Bulimia Nervosa

Our understanding of eating disorders has largely been derived from individual case studies, particularly in the early stages of research. In these early accounts, the focus was primarily on the visible indications of weight loss (Caparrotta & Ghaffari, 2006, p. 175). As time progressed, descriptions and narratives portraying physicians' encounters with women experiencing severe weight loss and starvation became more prevalent and detailed, particularly in the 15th century. These case studies from the 15th century provided elaborate depictions of the physical body and outward manifestations of weight loss (Caparrotta & Ghaffari, 2006, p. 175). These descriptions often resembled storytelling, characterized by intricate details and occasional use of metaphors. To illustrate, here is an example of a case study documenting a woman presumed to be suffering from AN.

> *"A Young Woman thus affected, her clothes scarcely hanging together on her anatomy, her pulse slow and slack, her temperature two degrees below the normal mean, her bowel closed, her hair like that of a corpse – dry and lustreless – her face and limbs ashy and cold, her hollow eyes the only vivid thing about her – this wan creature whose daily food may lay on a crownpiece, will be busy – yet on what funds God only knows* (Caparrotta & Ghaffari, 2006, p. 175)."

In Caparrotta & Ghaffari (2006) analyses of this excerpt from a case study, they stress that the storytelling of this woman is very detailed, with exhaustive descriptions of her appearance, clothes, hair, face, and eyes, amongst other parts of her. This case study is also supplemented with the intricate use of metaphors, describing her hair as "like that of a corpse." These descriptions indicated that eating disorders were primarily seen as physical in nature rather than psychopathological (Caparrotta & Ghaffari, 2006, p. 175; Silverman, 1997, p. 4). The second noticeable thing about this quote from the case study is the insertion or reference to God. The religious influence on eating disorders has long been recognized (Silverman, 1997, p. 3; Caparrotta & Ghaffari, 2006, p. 177).

In the 15th and 16th century, eating disorders had a dual image. First of all, starvation was understood as a purification of the body and a renunciation of gluttony. Caparrotta & Ghaffari and Vedul-Kjelsås & Götestam (2004) state that self starvation was highly praised as an essential conduit to a higher spiritual life (Caparrotta & Ghaffari, 2006, p. 177; Vedul-Kjelsås & Götestam, 2004, p. 2369). This leads to self-starvation, becoming a well-established and acceptable ritual (Caparrotta & Ghaffari, 2006, p. 177; Vedul-Kjelsås & Götestam, 2004, p. 2369). Circling back to the duality, while it was in some ways glorified and praised, in its most extreme forms, self-starvation could also be perceived as a possession by demonic forces (Caparrotta & Ghaffari, 2006, p. 177). The treatment regimen included recommendations for further fasting and incessant praying (Caparrotta & Ghaffari, 2006, p. 175). Self-starvation was arguably seen as an attempt to reach spiritual perfection, and live according to higher moral and religious standards (Vedul-Kjelsås & Götestam, 2004, p. 2369). Individuals attempting to reach spiritual divinity and perfection, were notably given a status change, and regarded almost as saints. These saints would be placed on a pedestal and praised for their efforts (Vedul-Kjelsås & Götestam, 2004, p. 2369).

With the Age of Enlightenment's emergence, reason and knowledge became fundamental societal values. This meant that religious values took a backseat in society, with the same saints being praised for their aim to reach spiritual perfection through self-starvation, now falling from grace and being regarded as medical patients (Vedul-Kjelsås & Götestam, 2004, p. 2370). In the 19th century, two separate physicians, William Gull and Ernest-Charles Lasègue, would become the first people to describe and publish reports of AN (Russell, 1997, p. 13; Silverman, 1997, p. 3; Vedul-Kjelsås & Götestam, 2004, p. 2370). AN would be described containing the following symptoms: severe weight loss, amenorrhea, constipation, and motor restlessness (Vedul-Kjelsås & Götestam, 2004, p. 2370). Both Lasègue and Gull provided significant contributions to the understanding of the same disorder, although their reports differed in their focus and recommendations (Silverman, 1997, p. 5). Lasègue's contribution to the understanding of the disorder was significant due to his focus on its psychopathology (Silverman, 1997, p. 5). He proposed a hypothesis that the restlessness observed in patients could be linked to anxious behaviors, potentially stemming from judgments imposed by their family and loved ones (Silverman, 1997, p. 5). On the other hand, Gull's report emphasized treatment and dietary suggestions. He recommended a specific diet consisting of milk, eggs, fish, cream, soup, and chicken, to be fed to the patients at regular intervals (Silverman, 1997, p. 5). It was William Gull who coined the term "Anorexia Nervosa" in the 19th century (Silverman, 1997, p. 4).

The 20th century would contain sporadic reports of patients binge eating and vomiting (Vedul-Kjelsås & Götestam, 2004, p. 2370). These symptoms were initially assessed to be related to a neurotic form of anorexia, but it was not until the 1970s that a symptomatic map was drawn for BN. Clinicians would report women who would binge eat and subsequently vomit, who would misuse laxatives, and who made a continuous and relentless effort to lose weight (Vedul-Kjelsås & Götestam, 2004, p. 2370). These symptoms clearly stood out from AN, which prompted the idea that this may be a different disorder of its own rather than a subcategory of AN (Russell, 1997, p. 19; Vedul-Kjelsås & Götestam, 2004, p. 2370; Woodside & Twose, 2004, p. 3). In 1979, Gerald Russell would coin the diagnosis of Bulimia Nervosa (Russell, 1997, p. 20; Vedul-Kjelsås & Götestam, 2004, p. 2370; Woodside & Twose, 2004, p. 1).

3. State of the art

While the historical setting provides insight into the causes of eating disorders, it is important to also take into account the viewpoint that is prevalent now. This section will discuss eating disorders in relation to the bio-psycho-social model as a theoretical model. This section will use the model as a way to understand how some trajectories may lead to an individual developing an eating disorder.

3.1 The Bio-Psycho-Social Model

According to Caparrotta & Ghaffari, 2006, a new range of theories and knowledge emerged in the 21st century. It gradually evolved from concentrating solely on the physical appearance of eating disorders to a more comprehensive multi-modal model. One of our current understandings of the etiology of eating disorders can be explained through the Bio-Psycho-Social (BPS) model.

The BPS model was introduced by G.I. Engel in 1980. Engel's inspiration for the model stemmed from the limitations of the biomedical model, which primarily focused on a factor-analytical approach within the field of medicine (George & Engel, 1980, p. 535). Engel argued that the biomedical model failed to encompass the multidimensional impact of culture, cognition, behavior, and life experiences on the development and maintenance of patients' illnesses and disorders (George & Engel, 1980, p. 535). In contrast, the BPS model adopts a systems theoretical approach, aiming to describe individuals based on a hierarchical framework of functions (George & Engel, 1980, p. 535; Møhl & Jensen, 2017, p. 43).

These functions serve to provide a comprehensive understanding of individuals, spanning from the atomic and molecular functions that comprise the human body's tissues to the functioning of organ systems and the nervous system (George & Engel, 1980, p. 535; Møhl & Jensen, 2017, p. 43). All these structural and functional elements of the human body form the foundation for an individual's behavioral patterns, as well as their experiences, relationships, and interactions within their community, culture, and society at large (Møhl & Jensen, 2017, p. 43).

The BPS model provides a framework for understanding the development of eating disorders. This model suggests that eating disorders are the result of multiple factors, including genetics, biology, social influences, family dynamics, and cultural factors (Møhl & Jensen, 2017, p. 490). It's important to note that each of these factors can impact individuals differently, with some acting as risk factors and others as resilience factors. According to the BPS model, potential risk factors include genetic conditions, low birthweight, attachment issues, limited mentalization abilities, personality traits such as perfectionism and obsession, low self-esteem, experiences of trauma, and dysfunctional family relationships (Møhl & Jensen, 2017, p. 490). The interplay among these factors, with some exerting more significant influences than others, can contribute to a genetic vulnerability and ultimately lead to the development of an eating disorder (Møhl & Jensen, 2017, p. 490).

There are several strengths and limitations to the BPS model that are important to discuss. According to Møhl & Jensen, 2017, the model's advantages and strengths lie in its educational and all-encompassing approach to diverse perspectives, emphasizing the need to consider social and behavioral factors in treating illnesses (Møhl & Jensen, 2017, p. 43). In areas such as psychiatry, the biopsychosocial model provides a broader framework that reconciles mental illness's biological and psychodynamic perspectives, with this resulting in its widespread adoption (Møhl & Jensen, 2017, p. 43). However, the model's inclusiveness has also been criticized as being unscientific and fluffy in some regards, lacking the analytical understanding that requires breaking down the world into several components and boxes (Møhl & Jensen, 2017, p. 43). Thus the aim of the model becomes a double-edged sword, a model where its strength in some areas becomes its weakness in others.

4. Diagnosing Anorexia Nervosa and Bulimia Nervosa

This section will focus on the diagnostic criterias and boundaries of AN and BN. There will first of all be a brief discussion of the two diagnoses as according to the DSM-5 and the ICD-11, consisting of a short comparison between the two. Following this, a more indepth review and presentation will follow of the diagnostic criteria of both AN and BN as according to the DSM-5. Lastly, each diagnostic section will contain a short discussion of the changes made, from the previous edition of the DSM-IV to the current edition of the DSM-5.

4.1 Overview of the DSM-5 and The ICD-11

A diagnosis of BN or AN is typically made by a mental health professional, such as a psychiatrist, psychologist, or clinician, using the diagnostic criteria outlined in either the Diagnostic and Statistical Manual of Mental Disorders, the fifth edition of the American psychiatric association (APA), commonly abbreviated as the DSM-5, or by the International Classification of Diseases, 11th revision by the World Health Organization (WHO) commonly abbreviated as the ICD-11 (Møhl & Jensen, 2017, p. 479).

In terms of prevalence of use, the DSM-5 is the only classification used in the United States of America, and more prevalently used by researchers, whereas the ICD-11 is more comprehensive and more commonly used by psychiatrist (First, Gaebel, Maj, Stein, Kogan, Saunders & Reed, 2021, p. 46; Engelhardt, Föcker, Bühren, Dahmen, Becker, Weber & Hebebrand, 2021, p.1081). Nonetheless, the diagnostic criteria for AN are broadly similar between DSM-5 and the ICD-11, with both requiring a significant restriction of energy intake, intense fear of gaining weight, and disturbance in the way body weight or shape to be experienced, in order to receive the diagnosis (First et al., 2021, p. 46; Engelhardt et al., 2021, p.1081).

The criteria for BN are also similar between the DSM-5 and the ICD-11, requiring recurrent episodes of binge eating and inappropriate compensatory behaviors to prevent weight gain (First et al., 2021, p. 46; Engelhardt et al., 2019, p. 1082). There is, however, one key difference in the diagnostic criteria between the DSM-5 and the ICD-11 for BN. In order for an individual to receive the diagnosis of BN, the DSM-5 specifies a minimum frequency of once a week for three months for *both* binge eating and compensatory behaviors, whereas the ICD-11 only requires this frequency for binge eating, (First et al., 2021, p. 47; Engelhardt et al., 2019, p. 1082).

Diagnostic criteria for AN are similar between the two classifications, while criteria for BN also align except for the frequency requirement of binge eating and compensatory behaviors. Therefore, it can be argued that the differences in the diagnostic criteria between the DSM-5 and the ICD-11 in diagnosing AN and BN are relatively minor and primarily involve differences in frequency of symptoms.

4.2 DSM-5 Diagnostic Criteria for Anorexia Nervosa

This section will present the diagnostic criteria for AN as they are defined by the DSM-5. Additionally, each review of the diagnostic criteria will include a brief presentation of any modification made during the transition from the DSM-IV to the DSM-5. The changes to the DSM-5 have been included to highlight the ongoing understanding of eating disorders and their diagnostic boundaries. The DSM-5 diagnostic criteria for AN are outlined in Table 1.

DSM-5 diagnostic criteria A for AN refers to the first of several criteria that must be met in order to receive a diagnosis according to the DSM-5 (Møhl & Jensen, 2017, p. 483). Criteria A reflects the understanding that the individual must have a significantly body weight, below average for their age and height, typically defined as a BMI of less than 18.5 or less than 85% of their expected weight (APA, 2013; Call, Walsh & Attia, 2013, p. 533). Additionally, the individual must present with a persistent and severe restriction of food intake (Møhl & Jensen, 2017, p. 483). This restriction has to have led to their weight loss or the individual may use the restriction as a method of preventing weight gain (Call, Walsh & Attia, 2013, p. 533). This is done to rule out any other medical complications or conditions, which may explain their weight loss. This means that the weight loss has to have been deliberate.

The previous edition of the DSM-IV lacked a clear definition of significantly low body weight, resulting in confusion among clinicians. It recommended classifying individuals weighing less than 85% of their average weight as significantly low weight. However, many clinicians misinterpreted this to mean individuals must weigh less than 85% of average body weight to meet the criteria for AN. The DSM-5 rectified this misunderstanding by clarifying that low weight refers to being below minimally average weight for adults or less than minimally expected weight for children and adolescents. Severity is now determined based on body mass index (BMI) derived from World Health Organization (WHO) categories. Mild is defined as a BMI of 17 or above, moderate as a BMI of 16-16.99, severe as a BMI of 15-15.99, and extreme as a BMI below 15.

Table 1: DSM-5 Diagnostic Criteria for Anorexia Nervosa

DSM-5
Disorder Class: Feeding and Eating Disorders
A. Restriction of energy intake relative to requirements, leading to a significant low body weight in the context of the age, sex, developmental trajectory, and physical health (less than minimally normal/expected[1]).
B. Intense fear of gaining weight or becoming fat or persistent behavior that interferes with weight gain.
C. Disturbed by one's body weight or shape, self-worth influenced by body weight or shape, or persistent lack of recognition of seriousness of low bodyweight.
Specified whether:
Restricting type: During the last 3 months has not regularly engaged in binge-eating or purging[2]
Binge-eating/purging type: During the last 3 months has regularly engaged in binge-eating or purging
Partial remission: After full criteria met, low body weight has not been met for sustained period, BUT at least one of the following two criteria still met: Intense fear of gaining weight/becoming obese or behavior that interferes with weight gain OR Disturbed by weight and shape.
Full remission: After full criteria met, none of the criteria met for a sustained period of time.

(Substance Abuse and Mental Health Services Administration (US), n.d.)

[1] Severity is based on body mass index (BMI) derived from World Health Organization categories for thinness in adults; corresponding percentiles should be used for children and adolescents: Mild: BMI greater than or equal to 17 kg/m2, Moderate: BMI 16–16.99 kg/m2, Severe: BMI 15–15.99 kg/m2, Extreme: BMI less than 15 kg/m2.

[2] Purging is self-induced vomiting or misuse of laxatives, diuretics, or enemas.

Individuals with AN may exhibit intense fear or behavior that interferes with weight gain, which is another key criterion in the diagnosis of the disorder according to the DSM-5. This is what's reflected in criterion B of the DSM-5 diagnostic criteria for AN. This criterion further specifies that the individual must have an intense fear of gaining weight or becoming fat, or exhibit persistent behavior that interferes with weight gain, even when their body weight is already significantly low (Møhl & Jensen, 2017, p. 482). This fear or behavior is not due to a distorted body image, which is addressed in Criterion C, but rather a genuine fear of gaining weight (Møhl & Jensen, 2017, p. 482). Some common examples of behaviors that interfere with weight gain may include excessive exercise, fasting, or self-induced vomiting (Møhl & Jensen, 2017, p. 482). Additionally, individuals with AN may avoid certain foods or food groups, engage in restrictive dieting routines, or experience intense anxiety or guilt around eating (Møhl & Jensen, 2017, p. 482).

The transition from the DSM-IV to the DSM-5 came with a modification regarding criterion B. This modification came from the assumption that individuals had to deliberately express a fear around weight and shape gain. However, several clinicians advocated for display of behavior to be included in their assessment (Call, Walsh & Attia, 2013, p. 534). Thus, this criterion was modified so that individuals no longer had to explicitly verbalize a fear of weight gain (Call, Walsh & Attia, 2013, p. 534). Here behavior related to display of anxious behavior in regards to food and eating was seen as sufficient for meeting the criterion (Call, Walsh & Attia, 2013, p. 534).

Furthermore, this modification is especially significant as it takes the weight off younger patients, who may struggle to verbalize their emotions or motivations for restrictive eating behavior (Call, Walsh & Attia, 2013, p. 534). However, the proposal that younger individuals may be assessed for an eating disorder, has been seen as highly controversial. More specially, that children under 12 should have the option to be assessed (Woodside & Twose, 2004, p. 11). This is because some experts are ambivalent about whether young children have the cognitive ability to exhibit anorectic behaviors, while others argue that evidence suggests these illnesses may occur in increasingly younger boys and girls (Woodside & Twose, 2004, p. 11). The proposed revisions, in regards to children, would then focus on the presence of a morbid fear of food and fatness and a failure to achieve typical developmental milestones (Woodside & Twose, 2004, p. 11).

Individuals with anorexia nervosa commonly experience a distorted perception of their body weight and shape, resulting in a preoccupation with their appearance and engaging in behaviors to control it (Møhl & Jensen, 2017, p. 482). This perception distortion is described in criterion C of the DSM-5 diagnostic criteria for anorexia nervosa. According to this criterion, individuals with anorexia nervosa perceive their body weight or shape inaccurately, often considering themselves overweight despite being significantly underweight (Møhl & Jensen, 2017, p. 482). They may dedicate an excessive amount of time to thinking about their body weight or shape and engaging in behaviors to manage it (Møhl & Jensen, 2017, p. 482). Furthermore, individuals with anorexia nervosa may have a distorted body image, perceiving themselves as larger than their actual size. They may also harbor a fear of gaining weight or becoming larger in relation to their eating habits, and this fear can generate significant anxiety for them (Møhl & Jensen, 2017, p. 482).

In the transition to the DSM-5, a criterion known as criterion D, which required the absence of at least three consecutive menstrual cycles for diagnosing AN in menstruating females, was eliminated (Call, Walsh & Attia, 2013, p. 534). This change allows women who meet all other AN criteria, regardless of regular or irregular periods, to be diagnosed with AN (Call, Walsh & Attia, 2013, p. 534). Research indicated that women with AN who maintain menstrual activity do not differ clinically from those who do not menstruate (Call, Walsh & Attia, 2013, p. 534). The removal of this criterion also benefits other groups. It allows women undergoing hormone therapy during their gender transition, including those who take exogenous hormones, to be considered for AN diagnosis (Call, Walsh & Attia, 2013, p. 534). It is also significant for adolescents who have not yet reached menstruation, addressing the debate on whether they should be diagnosed. Lastly, this modification is important for men, as it enables them to be assessed and diagnosed with AN. (Call, Walsh & Attia, 2013, p. 534).

4.3 DSM-5 Diagnostic Criteria for Bulimia Nervosa

This section will present the diagnostic criteria for BN as they are defined by the DSM-5. Additionally, each presentation of the diagnostic criteria will include a brief presentation of any modification made during the transition from the DSM-IV to the DSM-5. The changes to the DSM-5 have been included to highlight the ongoing understanding of eating disorders and their diagnostic boundaries. The DSM-5 diagnostic criteria for BN are outlined in Table 2.

DSM-5 diagnostic criteria A for BN refers to the first of several criteria that must be met in order to receive a diagnosis of bulimia nervosa (Møhl & Jensen, 2017, p. 483). Criterion A for the diagnosis consists of two subsections. The first subsection requires the individual to have recurrent episodes of binge eating (Møhl & Jensen, 2017, p. 483). This means they consume a significantly larger amount of food compared to what most people would eat in a similar time period and circumstances, specifically within a two-hour period (Møhl & Jensen, 2017, p. 483). The second subsection states that during these episodes, the individual lacks a sense of control over their eating (Møhl & Jensen, 2017, p. 483). They experience a feeling of being unable to stop eating or regulate the amount or type of food they consume (Møhl & Jensen, 2017, p. 483).

Individuals with BN may engage in various compensatory behaviors to prevent weight gain following recurrent episodes of binge eating. The DSM-5 diagnostic criteria B and C reflects this, and is the second criterion required for a diagnosis of this disorder. Under this criteria compensatory behavior is defined as behaviors aimed at compensating for the calories consumed during the binge and can include vomiting, laxative or diuretic use, fasting, excessive exercise, or other methods (Møhl & Jensen, 2017, p. 483). These behaviors are often done in secret and can become ritualized or habitual, leading to a cycle of binging and purging (Møhl & Jensen, 2017, p. 483). While these behaviors may provide temporary relief from the anxiety or guilt associated with binge eating, they can have serious physical and psychological consequences over time (Møhl & Jensen, 2017, p. 483). Criteria C supplements criteria B and specifies the compensatory behavior must be present for at least three months in order to receive the diagnosis of BN (Møhl & Jensen, 2017, p. 483).

Table 2: DSM-5 Diagnostic Criteria for Bulimia Nervosa

DSM-5
Disorder Class: Feeding and Eating Disorders
A. Recurrent episodes of binge eating, as characterized by both: 1. Eating, within any 2-hour period, an amount of food that is definitively larger than what most individuals would eat in a similar period of time under similar circumstances. 2. A feeling that one cannot stop eating or control what or how much one is eating.
B. Recurrent inappropriate compensatory behaviors in order to prevent weight gain such as self-induced vomiting; misuse of laxatives, diuretics, or other medications; fasting or excessive exercise.
C. The binge eating and inappropriate compensatory behaviors occur, on average, at least once a week for 3 months.
D. Self-evaluation is unjustifiability influenced by body shape and weight.
E. The disturbance does not occur exclusively during episodes of AN.
Specify if: Partial remission: After full criteria were previously met, *some but not all* of the criteria have been met for a sustained period of time. Full remission: After full criteria were previously met, *none* of the criteria have been met for a sustained period of time.
Current severity[3]: Mild: An average of 1–3 episodes of inappropriate compensatory behaviors per week. Moderate: An average of 4–7 episodes of inappropriate compensatory behaviors per week. Severe: An average of 8–13 episodes of inappropriate compensatory behaviors per week. Extreme: An average of 14 or more episodes of inappropriate compensatory behaviors per week.

(Substance Abuse and Mental Health Services Administration (US), n.d.)

[3] The level of severity may be increased to reflect other symptoms and the degree of functional disability.

During the transition from the DSM-IV to the DSM-5, two modifications were made concerning the diagnostic criteria C of BN. The DSM-IV previously stated that both binge eating episodes and compensatory behaviors must have occurred, on average, at least two times per week for three months (Call, Walsh & Attia, 2013, p. 534). While this may seem like a minor adjustment to the current criteria, the change of frequency of binge episodes and compensatory behavior was rooted in research (Call, Walsh & Attia, 2013, p. 534). Research found that individuals who exhibit binge episodes and compensatory behavior once per week do not differ significantly in a clinical picture or treatment response from those who exhibit the behavior at least twice weekly (Call, Walsh & Attia, 2013, p. 534). Changing the diagnostic criteria by reducing the threshold for the behavior, meant that fewer individuals would be diagnosed with another specified feeding or eating disorder, and allowed for an increase in individuals to be diagnosed with BN, thus resulting in more targeted treatment opportunities (Call, Walsh & Attia, 2013, p. 534).

The DSM-IV and the DSM-5 further differentiated between subtypes of BN. According to the DSM-IV, two subtypes of BN could be found (Call, Walsh & Attia, 2013, p. 534). These subtypes were the purging type and the non-purging type. Individuals with a purging subtype of BN were characterized by frequently engaging in vomiting, laxative misuse, diuretic misuse, or enema misuse (Call, Walsh & Attia, 2013, p. 534). Individuals with a non-purging type would frequently engage in fasting or excessive exercise only (Call, Walsh & Attia, 2013, p. 534). However, in the transition to the DSM-5, these subtypes were removed, based on the evidence that they did not, in a significant manner, differ in their course or response to treatment (Call, Walsh & Attia, 2013, p. 534).

Circling back to the diagnostic criteria, individuals with BN may exhibit an unduly influenced self-evaluation, particularly in relation to their body shape and weight (Møhl & Jensen, 2017, p. 483). This is reflected in the DSM-5 diagnostic criteria D, which is the fourth criterion required for a diagnosis of this disorder. Criterion D states that the individual's self-evaluation is unduly influenced by body shape and weight (Møhl & Jensen, 2017, p. 483). Specifically, the individual places an excessive emphasis on their body shape and weight in their self-evaluation, which leads to a sense of self-worth being heavily dependent on their weight and shape (Møhl & Jensen, 2017, p. 483).

Lastly, criterion E pertains to the symptoms of binge eating and inappropriate compensatory behaviors. These symptoms are distinct from those observed in AN, which are typically associated with periods of restricted eating and low body weight (Møhl & Jensen, 2017, p. 483). In other words, individuals who regularly engage in binge eating and compensatory behaviors, but do not meet the criteria for AN due to insufficient food restriction leading to low body weight, may be diagnosed with BN instead (Møhl & Jensen, 2017, p. 483). While individuals with AN may also experience episodes of binge eating and compensatory behaviors, the frequency and severity of these episodes may differ from those observed in BN (Møhl & Jensen, 2017, p. 483).

5. Challenges and Considerations in Treating Anorexia Nervosa and Bulimia Nervosa: Building Alliances and Post-Discharge Care

Treating AN and BN can be challenging and may require an experienced clinician. The treatment options available may depend on several factors related to either BMI, severity of disorder, medical complications or comorbidities, and lastly the patient's motivation for treatment (Møhl & Jensen, 2017, p. 492). Typically, a multimodal treatment option may be necessary, combining weight restoration with therapeutic, medical, or nutritional efforts (Møhl & Jensen, 2017, p. 492).

Evaluating disorder severity is the initial step upon admission (Møhl & Jensen, 2017, p. 493). High-severity cases may require inpatient treatment, involving hospitalization at specialized units or psychiatric facilities (Herpertz-Dahlmann, Schwarte, Krei, Egberts, Warnke, Wewetzer & Dempfle, 2014, p. 1227; Møhl & Jensen, 2017, p. 493). Patients with a BMI below 13, rapid weight loss, or severe mental health issues endangering themselves are categorized as high severity (Møhl & Jensen, 2017, p. 493). It's important to note that this extreme scenario is uncommon and not representative of the majority of cases. However, some patients may necessitate intensive intervention due to ambivalence toward recovery (Møhl & Jensen, 2017, p. 493). Such individuals may experience anger, frustration, or distress about receiving treatment, requiring more support than can be provided by family and friends in outpatient settings (Møhl & Jensen, 2017, p. 493). Experienced staff and clinicians can offer the necessary level of support.

The success of any treatment for patients with AN or BN may largely depend on the establishment of a strong therapeutic alliance between the clinicians and the patient (Møhl & Jensen, 2017, p. 493). Treatment should, in the initial phase, focus on building trust and a mutual understanding from both the patient and the clinician on shared goals, motivations, and realistic achievements (Møhl & Jensen, 2017, p. 493). From the clinicians, an understanding of the function and role of the eating disorder to the patient is of utmost importance (Møhl & Jensen, 2017, p. 493). It is important to understand that the behavior may have, at some point, been meaningful and helpful for the patient, especially at the origin of their eating disorder (Møhl & Jensen, 2017, p. 488).

From the perspective of the individual with the eating disorder, it may in some sense, have been viewed as a "crutch" to help the individual through that time in their life (Møhl & Jensen, 2017, p. 488). This is due to the fact that restrictive eating, over-eating, or vomiting may each have a regulating effect on the individual (Møhl & Jensen, 2017, p. 88). Complex or intense emotions that a person may not be able to control in any other way can be regulated by controlling their own behavior, should they experience a lack of control in their external environment (Møhl & Jensen, 2017, p. 89). This can lead to the development of maladaptive coping strategies, such as restriction, delay of eating, binge eating, or vomiting, further down the line (Møhl & Jensen, 2017, p. 489). Furthermore, methods relating to eating disorder behaviors may be viewed, again from the perspective of the individual with an eating disorder, as a form of self-care or aid to relieve them of severe or extreme personal distress and improve their feelings of control (Claes & Muehlenkamp, 2016, p. 4). This should be brought up by the clinician to show an understanding of its significance and function to the individual (Claes & Muehlenkamp, 2016, p. 4).

After treatment, some eating disorder patients may be vulnerable to complications or relapse (Møhl & Jensen, 2017, p. 493). Discharge from weight restoration treatment is particularly challenging for AN patients (Møhl & Jensen, 2017, p. 493). Those who reach a healthy weight for their age and height may feel conflicted about ongoing recovery (Møhl & Jensen, 2017, p. 493). This ambivalence arises from their previous association of low weight with identity and comfort (Møhl & Jensen, 2017, p. 493). Hence, continuing treatment post-discharge is strongly recommended, fostering a new narrative for patients' identity and self-perception (Møhl & Jensen, 2017, p. 493).

5.2 Treatment Options and Remission Rates in Anorexia Nervosa and Bulimia Nervosa

While treatment options may vary and may consist of weight restoration with therapeutic, medical, or dietary efforts, the treatment outcomes may also depend on the patient's motivation for therapy, severity, medical issues or comorbidities, BMI, and other factors. Preceding a discussion on the efficiency and treatment rate on various treatment options, will include a definition of remission and relapse of AN and BN. Different treatment options are available for individuals seeking recovery from their eating disorders, albeit with varying degrees of success, relapse, and readmission rates. Some of the more common options will be discussed in this section, followed by an evaluation of their efficiency. Lastly, a brief discussion presenting a possible explanation as to the high relapse rates.

Starting with a definition of remission from AN and BN. First of all, according to the DSM-5, remission from AN can be defined in terms of either a complete or partial remission. Partial remission is defined as meeting all the criteria for AN, except that the individual is at an average weight for their age and height but still engages in restrictive behaviors, binge eating, or purging behaviors, albeit less frequently than once a week (APA, 2013). Complete remission is the absence of all the diagnostic criteria for AN (APA, 2013). Moving on to a definition of remission for BN can, in similar terms, be defined in terms of either partial or complete remission. Partial remission is the absence of binge eating and purging behaviors for at least one week but less than three months (APA, 2013). Complete remission is the absence of all the diagnostic criteria for BN for at least three months (APA, 2013). The DSM-5 specifies that remission must represent a significant change from the individual's previous illness and functioning in both disorders.

Recovery is rarely linear and may for some individuals require multiple attempts of treatment (Lindgren, Enmark, Bohman & Lundström, 2015, p. 866). Recovery may be a back and forth process, going between progress and relapse (Lindgren et al., 2015, p. 866). Therefore, it is relevant to define relapse. According to the DSM-5, relapse is defined for individuals with AN as a return to a significant restriction of food intake or other behaviors characteristic (APA, 2013). Similarly, the DSM-5 defines relapse for individuals with BN as a return to binge eating and purging behaviors that define the disorder after a period of recovery, partial or complete remission (APA, 2013).

Moving on to discuss treatment options, one of the abovementioned treatment options for patients is inpatient treatment. Inpatient treatment is typically used for adolescents with moderately-to-severe illnesses or disorders (Herpertz-Dahlmann et al., 2014, p. 1227). There are several strengths and weaknesses, when it comes to treatments focusing on weight restoration. One of the advantages is that several studies have noted that complete weight restoration at point of discharge results in better recovery outcomes for patients long term. Several studies have found that, among inpatients and day hospital patients, those who lost less weight in the first month after admission had a greater likelihood of maintaining a normal BMI, six and 12 months after discharge (Avnon, Orkaby, Hadas, Berger, Brunstein Klomek & Fennig, 2018, p. 646; Golden, Cheng, Kapphahn, Buckelew, Machen, Kreiter & Garber, 2021, p. 1; Herpertz-Dahlmann et al., 2014, p. 1227). Thus, full weight restoration has become the goal for many treatment facilities.

On the other hand, inpatient treatment remains costly, and the risks of relapse and readmissions remain high (Herpertz-Dahlmann et al., 2014, p. 1227). According to Avnon et al, 2018, and Golden et al, 2021, have proposed in their analysis that rapid inpatient weight gain, using high calorie refeeding treatment, may be associated with the high rehospitalization rates (Avnon et al., 2018, p. 646; Golden et al., 2021, p. 6). In regards to patients with AN specifically, this argument would be consistent with Møhl & Jensens, 2017, understanding of how some patients with AN, may tie their low weight status to their sense of identity and self. Thus, losing that during refeeding, may lead to ambivalence about continuing recovery following discharge (Avnon et al., 2018, p. 646; Golden et al., 2021, p. 6; Møhl & Jensen, 2017, p. 493).

Furthermore, Avnon et al (2018) found that up to 34% of AN patients required rehospitalization, within a year of being released from rapid refeeding treatment (Avnon et al., 2018, p. 646). The findings of several other studies, which estimate that between 20 to 45% of young adults and adolescents with AN or BN will require readmission to a specialized eating disorder units within the first year of follow-up, are consistent with Avnon's study and readmission rate (Avnon et al., 2018, p. 646; Golden et al., 2021, p. 6). This suggests that a significant proportion of young adults and adolescents with AN or BN may experience relapse or ongoing difficulties with their eating disorder after being discharged from specialized treatment, which may require additional support and intervention.

Another study by Fennig et al (2017) aimed to identify and compare changes in core thoughts and perceptions, in post-remission adults with AN after inpatient treatment. The study measured thoughts and perceptions related to body dissatisfaction, drive for thinness, weight concern, and shape concern, and found that the weight restoration, did not significantly modify core anorexic thoughts and perceptions (Fennig, Brunstein Klomek, Shahar, Sarel‐Michnik & Hadas, 2017, p. 204). A decrease in the overall severity of symptoms associated with eating disorders, including restraint and eating concerns were observed, although this may be attributed to the treatment framework (Fennig et al., 2017, p. 204). The severity of depression scores amongst the patients significantly declined, although it persisted within the pathological range (Fennig et al., 2017, p. 204). However, there was a troubling increase in suicidal ideation, which was not linked to a corresponding rise in depressive symptoms (Fennig et al., 2017, p. 204).

The study noted that changes in core beliefs may be crucial for recovering and preventing relapse in post-remission AN patients (Fennig et al., 2017, p. 205). Thus, Fennig et al hypothesized that one possible explanation as to why relapse rates consistently stay high amongst studies of weight restoration may be viewed in terms of a possible gap between physical and psychological recovery. Some patients may experience a psychological recovery lag following weight recovery, impacting their recovery journey (Fennig et al., 2017, p. 205). Addressing and closing the gap may be crucial in recovering individuals with eating disorders related to AN or BN and preventing later onset relapse following discharge from treatment.

Several studies have also evaluated the success rate behind other treatment options. Day-patient treatment is often preferred for treating eating disorders due to its cost-effectiveness and lower rates of relapse and readmission (Herpertz-Dahlmann et al., 2014, p. 1227). The lower rates of relapse may be due to the fact that day-patient treatments ease the transition from hospital to home (Herpertz-Dahlmann et al., 2014, p. 1227). One study by Herpertz-Dahlmann et al (2014) found that day-patient treatment for adolescents with a short-term duration of illness was as effective as inpatient treatment, in terms of relapse and remission rates. The study concluded by stating, that day patients' treatment may be considered as safe, and a less costly alternative to inpatient treatment for individuals with either a moderate severity, or a short term duration of illness (Herpertz-Dahlmann et al., 2014, p. 1227; Golden et al., 2021, p. 1).

7. Conclusion

This chapter started off with a presentation of an historical review of BN and AN, looking more closely at how eating disorders were perceived and understood through centuries. Understanding the history of these disorders can help us understand where they came from and how they have evolved over time. Historical reviews and analysis can provide important insights into the cultural and social influences and how they contribute to the development of some eating disorders. For example, certain cultural and societal pressures may contribute to the development of these disorders, and understanding these risk factors can help us develop prevention strategies. Furthermore, understanding the history of these disorders can also inform treatment approaches. As reviewed in the abovementioned section, early treatments for AN focused on dietary recommendation, as means of weight restoration, whereas more recent treatments may focus on addressing the underlying psychological factors and their function and significance to the individual, as well as building trust and a therapeutic alliance.

While laying the historical framework provided insight into the causes of eating disorders, it is important to also take into account the viewpoint that is prevalent now. The biological, psychological, and societal elements that contribute to the emergence of eating disorders were presented in the state of the art under the bio-psycho-social model. Here some of the more recent theoretical understandings were outlined, along with a discussion of the models strengths and weaknesses. The model emphasizes the interaction and influences of several factors, related to areas such as social, cultural, familial, intrapsychic and interrelational. The historical perspectives and the recent understanding of the disorders have helped provide a clearer understanding of the presentation of the disorder. This has laid the foundation for shaping the diagnostic criteria and boundaries for AN and BN. The diagnostic criterias for both disorders have been presented and reviewed as they are defined by the DSM-5. Treating AN and BN remains challenging and options for treatment, alongside their effectiveness as measured by the rates of relapse and readmission have been reviewed and presented. The potential treatments vary according to the patient's motivation for therapy, severity, medical issues or comorbidities, BMI, and other factors. Typically, weight restoration together with therapeutic, medicinal, or dietary efforts may necessitate a multimodal therapy solution.

8. Aim and Considerations Of The Systematic Review

The aim of section eight and nine is to briefly introduce and describe some of the considerations made in the making of the following systematic review. Here, the aim of the systematic review will be presented, followed by a more in depth presentation into the process of choosing a systematic review as the most relevant method for the thesis question, as well as discuss how certain terms, such as relapse and remission, have been defined in the systematic review. Lastly, the systematic review will be presented in an article format.

8.1 Aim of systematic review

A concern throughout the above chapter, was the high relapse rates and readmission rates, for individuals with AN and BN, after discharge from treatment. After being discharged from treatment, there are several factors that may increase the risk of relapse. Other studies, such as that of Avnon et al. have found that a longer hospital stay, the presence of psychiatric comorbidities, purging behavior, an earlier age of onset, age at admission, duration of illness, degree of malnutrition, family issues, perceptual body image distortion, and body dissatisfaction are all possible risk factors for relapse (Avnon et al., 2018, p. 646). However, Avnon et al. argue that due to variations in sample characteristics, follow-up periods, and varying definitions of relapse and remission, research on the occurrence of relapse has yielded inconsistent results (Avnon et al., 2018, p. 646).

A key interest has always been, what can lead an individual to relapse? The aim of the following systematic review, is built upon that interest to better understand the course of relapse, and how to strengthen prevention methods and strategies, and help individuals in their journey to full remission. Avnon et al recommend further research into the risk of relapse in AN and BN, as it is necessary to gain a better understanding of the factors that contribute to relapse and to develop effective interventions to prevent relapse (Avnon et al., 2018, p. 650). With more consistent and comprehensive research, healthcare professionals can better inform treatment plans and provide more personalized care to individuals with these disorders, ultimately leading to improved outcomes and quality of life for patients (Avnon et al., 2018, p. 650). On this ground, the systematic review aims to examine and answer the following hypothesis: What are some of the risk factors for relapse in individuals who are in post-remission recovery from AN or BN?

9. Systematic review as a Methodological Choice

Systematic reviews differ from other types of literature reviews, such as scoping reviews, narrative reviews, or simple literature reviews. What sets systematic reviews apart is their use of primary research studies and a rigorous evaluation and selection process, which includes clearly defined inclusion and exclusion criteria (Pollock & Berge, 2018, p. 139). Furthermore, before a systematic review is conducted, researchers will typically review databases and prior research on the topic, to get an awareness of what has already been done and what new research is needed (Pollock & Berge, 2018, p. 138). For the systematic review, databases such as PsychInfo and PubMed were used to review what kinds of research topics and questions had been reviewed and collected in previous systematic reviews. Drawing inspiration from the recommendation of previous systematic reviews and finding out what is missing or needs more knowledge or research on, is especially important, as it is to make sure that each systematic review contributes with something new (Pollock & Berge, 2018, p. 139).

Lastly, the research question must address what is important for a larger group or organization (Pollock & Berge, 2018, p. 142f). Thus, the research question must have a higher priority (Pollock & Berge, 2018, p. 142f). If a research question is of low priority, due to it concerning or affecting a minority of the population, or financial difficulties may be related to the intervention, then further research can be wasteful (Pollock & Berge, 2018, p. 143). Research into risk factors for relapse can be argued to be of high priority, as a means of addressing the high relapse and readmission rates. It can furthermore serve to help clinicians better support their patients who are seeking treatment for their eating disorder. Thus knowledge collected for this systematic review can lead to a better understanding of the relevant factors leading up to or causing the relapse in patients with AN or BN. Identifying a number of variables predictive of relapse in AN and BN can result in improving both acute and relapse prevention interventions. This knowledge can therefore strengthen treatment plans and relapse prevention strategies for patients in remission.

9.1 Defining Diagnosis, Relapse, and Remission

It was a requirement for the systematic review, that studies would include participants with a diagnosis of AN or BN, as well as having received, on at least one occasion, treatment for AN or BN. During the screening process of the systematic review, it became increasingly clear that relapse and remission for AN and BN may be defined, in different terms.

The two primary methods of defining relapse and remission, may be done, in accordance with either the ICD-11 or the DSM-5. Because 11 of the studies included in the systematic review utilized the DSM-5 diagnostic criteria for both AN and BN, as well as for defining relapse and remission, it was deemed necessary to adopt the same criteria for consistency purposes. Therefore, defining both diagnosis and the terms relapse and remission according to the DSM-5 criteria was deemed relevant. Only two studies in the systematic review used the ICD diagnostic criteria, and definition of relapse and remission, but as it has been argued in the section ‘’Overview of the DSM-5 and the ICD-11’’, the differences in the diagnostic criteria between the DSM and the ICD in diagnosing AN and BN are relatively minor and primarily involve differences in frequency of symptoms. Therefore, these studies were not deemed exclusionary. Two studies did not provide a clear definition of AN or BN, nor a definition of relapse or remission, as according to a diagnostic manual. Both studies did however note that a diagnosis of AN and BN were required for their participants, thus, these studies were not excluded.

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Risk Factors for Relapse In Anorexia Nervosa and Bulimia Nervosa: A Systematic Review

Risk Factors Associated with Relapse in Anorexia Nervosa and Bulimia Nervosa: A Systematic Review

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ABSTRACT

Background: The aim of this systematic review is to explore the risk factors associated with relapse, in individuals who have been discharged from treatment for either anorexia nervosa or bulimia nervosa. This systematic review will look at sample characteristics, timing of relapse, rate of relapse, and risk factors associated with relapse.

Method: A systematic review was conducted, gathering studies from two databases such as PsychInfo and PubMed. 850 articles were screened, and a total of 15 studies were included in the present review.

Results: This review examined sample characteristics of included studies, and found a majority of studies focusing on post-remission women with anorexia nervosa or bulimia nervosa. The timing of relapse varied across studies, with some individuals experiencing relapse shortly after discharge and others within the first year. Factors associated with relapse were categorized into the following clusters: perception of body and body image, emotional distress and identity disruption, illness duration and onset, and mental health comorbidities. Risk factors related to perception of body and body image included body overestimation, drive for thinness, body avoidance, and body checking, while risk factors related to emotional distress and identity disruption were related to identity issues and a sense of being stuck in the illness. Illness duration and onset factors, such as longer duration and younger onset of illness, were associated with a higher risk of relapse. Comorbidity with anxiety and depression also increased the likelihood of relapse.

Conclusion: This study reviewed existing research on relapse risk factors in eating disorders, particularly anorexia nervosa and bulimia nervosa. It identifies cognitive, identity, duration, and comorbidity factors as potential risks. However, more research is needed to better support individuals in their recovery after treatment and achieving full remission.

Keywords: Relapse, Anorexia Nervosa, Bulimia Nervosa, Risk Factors, Predictors

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1. INTRODUCTION

Anorexia nervosa (AN) and bulimia nervosa (BN) are both eating disorders characterized by disturbances in eating behavior and body image perception. Both disorders are often associated with underlying psychological factors, such as low self-esteem, perfectionism, body dissatisfaction, and distorted body image (Boehm, Finke, Tam, Fittig, Scholz, Gantchev, Ehrlich, 2016, p. 1319; Levinson, Sala, Fewell, Brosof, Fournier & Lenze, 2018, p. 36). Individuals with AN and BN are intensely preoccupied with their weight, shape, and overall appearance. They may engage in excessive exercise or engage in rituals related to food and body image (Levinson et al, 2018, p. 40) People with both disorders have an intense fear of gaining weight, even if they are already underweight or have a normal body weight (Møhl & Jensen, 2017, p. 482). This fear drives their behaviors and leads to restrictive eating or purging. Both anorexia nervosa and bulimia nervosa can lead to severe physical health complications (Møhl, 2019, p. 34).

In the short term, inpatient treatment for AN is effective in helping patients regain a healthy weight (El Ghoch, Calugi, Chignola, Bazzani & Dalle Grave, 2016, p. 194). Nevertheless, a significant portion of patients experience a return of symptoms after leaving the hospital, especially within the initial year (El Ghoch et al, 2016, p. 196). This inability to sustain the progress made during hospitalization has sparked interest in discovering factors linked to relapse, with the aim of developing more successful long-term treatments (El Ghoch et al, 2016, p. 196). Currently, several factors that may be connected to relapse following inpatient treatment have been recognized (Berends, Boonstra & Van Elburg, 2018, p.445). In a 2018 review on relapse in anorexia nervosa, Berends et al. provided a summary of factors associated with relapse in AN. They found in their analysis that weight and shape concern were prominent factors (Berends et al., 2018, p. 453). They argued that these types of concerns may be understood in terms of cognitive distortions, and that patients at discharge of treatment, should be informed of the influence these distortions may present in terms of their continued recovery (Berends et al., 2018, p. 453). Berends et al. furthermore found comorbidity related to obsessions and compulsions to be significant factors, and patients with these comorbidities may be more susceptible to relapse (Berends et al., 2018, p. 453).

Berends et al. conducted a review that specifically examined relapse factors associated with AN. However, it remains unclear whether these same risk factors are applicable to other eating disorders, such as BN. Another review conducted by Khalsa et al. in 2017 also focused on relapse factors, and they recommended further research to determine whether the risk factors for relapse in AN are similar to or different from those of BN (Khalsa, Portnoff, McCurdy-McKinnon & Feusner, 2017, p. 9). Here Khalsa proposes that understanding the commonalities and differences between these two eating disorders could provide valuable insights into their underlying mechanisms (Khalsa et al., 2017, p. 9).

Furthermore, identifying shared risk factors between AN and BN could have significant implications for treatment approaches. If similar factors contribute to relapse in both disorders, interventions targeting these common vulnerabilities could be developed, potentially leading to more effective and tailored treatments for both AN and BN (Khalsa et al., 2017, p. 9). According to Khalsa's recommendation, distinct risk factors could highlight the need for targeted interventions specific to each disorder, recognizing the unique challenges and triggers associated with AN and BN (Khalsa et al., 2017, p. 9). Lastly, studying the risk factors for relapse in AN and BN could contribute to the development of preventive strategies (Khalsa et al., 2017, p. 9). If certain factors consistently predict relapse in both disorders, early identification and targeted interventions could be implemented to reduce the risk and enhance long-term recovery outcomes (Khalsa et al., 2017, p. 9). Understanding the similarities and differences between AN and BN in terms of relapse risk factors would therefore provide valuable insights for clinicians, researchers, and individuals affected by these eating disorders (Khalsa et al., 2017, p. 9).

This systematic review aims to identify relapse risk factors in individuals with AN and BN. It will analyze recent scientific evidence from the past ten years, focusing on sample characteristics, timing and rate of relapse, and associated risk factors. The objective is to better comprehend the similarities and differences between these eating disorders and contribute to preventive strategies. The review addresses the hypothesis: What are the risk factors contributing to relapse in individuals with AN or BN after treatment? By gathering knowledge on this topic, a deeper understanding of relevant factors leading to relapse in patients with AN or BN can be gained, ultimately improving relapse prevention strategies for those in remission.

2. METHOD

2.1 LITTERATUR REVIEW

This systematic review was done following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. A literature screening was performed in February of 2023, using the following two databases PsycInfo and Pubmed, to identify and retrieve peer-reviewed studies published between ten years, 2013 - 2023. The literature screening aimed to research and assess the number of available studies that examined factors leading to relapse in post-remission adults and adolescents with an eating disorder. The search string for PsycInfo consisted of the following keywords: (Anorexia Nervosa) OR (Bulimia Nervosa) AND (Relapse) with the following index terms: (Anorexia Nervosa) OR (Bulimia Nervosa) AND (Relapse). On Pubmed, the following mesh terms were used as a search string: (Anorexia Nervosa) OR (Bulimia Nervosa) AND (Relapses). The results from the abovementioned databases were exported and imported to the online literature review program known as "Rayyan"—Rayyan as a systematic review program aided in the screening process's efficiency. The program used easy-to-use and efficient keyboard shortcuts to include and exclude studies and store them for easy future access. In addition, was the option available to add exclusion and inclusion criteria in the form of keywords. A single individual performed the collection and screening process of the studies. As such, the risks of bias will be discussed under limitation in more depth.

2.3 INCLUSION CRITERIA

The following inclusion criteria were for the studies used in this systematic review: (1) Studies had to be peer-review, (2) Studies had to be written in either of the following languages, Norwegian, Danish, or English, (3) Studies had to be no older than ten years old, published between 2013 - 2023, (4) Studies utilized a qualitative or quantitative methodology, (5) Participant had to be either men or women, and could be from the adolescent stage and upwards. Studies involving adolescents and adults will be largely focused on, as BN and AN, can manifest during the adolescent years (Timko et al., 2019, p. 4). Lastly, (6) Participants had to have received a diagnosis of AN or BN, as according to a diagnostic manual, and furthermore, have treatment for either AN or BN on at least one occasion.

2.4 EXCLUSION CRITERIA

The following exclusion criteria were for the studies used in this systematic review: (1) Participants with a self diagnosis of AN or BN, (2) Studies including participants with a history of childhood trauma, (3) Studies with a large pool of participants from a minority population, LGBT community, or a specific religious background (4) Participants with comorbid or other coexisting eating disorders. Studies including adolescents with childhood trauma or those from LGBT communities or other minority backgrounds have been excluded. This decision was made because trauma experienced during childhood or as a minority may complicate the interpretation of relapse, making it unclear whether it is a result of the trauma or a complication during the recovery process following treatment discharge (Ross-Nash & Brochu, 2020, p. 1; APA, 2019, p. 2).

It is, however, important to note that eating disorders can be influenced by or develop as a result of childhood trauma (Ross-Nash & Brochu, 2020, p. 1). Furthermore, studies containing individuals with a comorbidity of other eating disorders, have been excluded. Comorbid anxiety disorder and depressive disorders were not seen as exclusionary in this review, as it is known that these commonly co-occur with eating disorders, and it is difficult to reliably disentangle these disorders from the symptoms of AN and BN (Davis et al., 2020, p. 684). However, participants with other coexisting eating disorders unrelated to AN or BN, such as binge eating disorders, have been found as exclusionary.

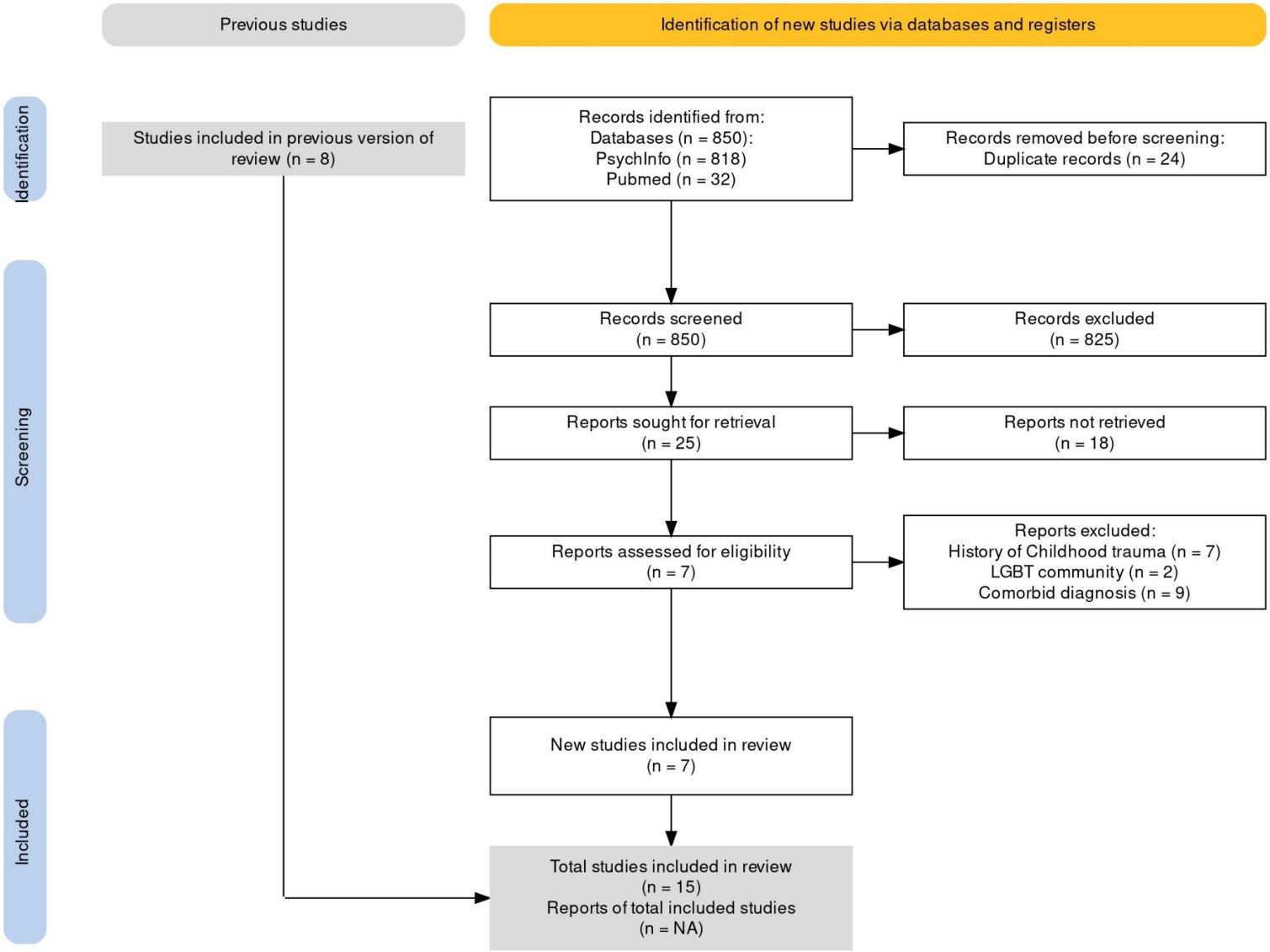

Figure 1: PRISMA Flow Chart. Source template: Haddaway, N. R., Page, M. J., Pritchard, C. C., & McGuinness, L. A.(2022)

TABLE 3 - REVIEW OF INCLUDED STUDIES

Author(s)	Objective	Study Design	Nationality and Sample (N[1])	Definition of Relapse and Remission	Mean age (SD) in years	Discharged from treatment	Mean (Follow up) Duration	Relapse Rates (n)	Relapse Range in Months	Risk Factors associated with Relapse
(1) Boehm, Finke, Tam, Fittig, Scholz, Gantchev, Ehrlich (2016)	Examine perceptual body image distortion (BPI) in adolescents with AN[2].	Cohort Study	German N= 76 Women	Defined by ICD-10	15.84 (SD=2.03) Range 10-18 yrs	Inpatient	3 yrs	(N=19)	1-44	Overestimation of body size was shown by 85.3 % of the patients
(2) Branley-Bell & Talbot (2021).	Examine the importance of perceived control for recovery of AN and BN[3]	Semi-Structured interviews	UK N= 58 98% Women	N/A[4]	30.86 yrs (SD = 11.12) Range 16-65 yrs	N/A	10 weeks	(N = 37)	1-2	Loss of Control Return to habitual Behavior
(3) Bryan, Macdonald, Cardi, Rowlands, Ambwani, Arcelus, & Treasure (2022)	Adults with AN, transitioning from intensive eating disorder treatment settings to their community.	Semi-Structured interviews	UK N= 23 87% Women	Defined by DSM-5	24.78 (SD= 7.99) Range 17-33 yrs	Inpatient	10 months	(N= 15)	10-13	Experience of lack of identity formation outside of AN
(4) Davis, Walsh, Schebendach, Glasofer, & Steinglass (2020)	Habit strength in individuals with AN	Correlation Study	American N = 69 Women	Defined by DSM-5	23.65 (SD= 9.64) Range 13-48 yrs	Inpatient	1 week	N/A	<1	Habit Strength related to restrictive eating, compensatory behavior, delay of eating, and eating rituals around the table
(5) El Ghoch, Calugi, Chignola, Bazzani & Dalle Grave (2016)	Follow up on weight maintenance in adults with AN	Follow up study	Italian N=54 Women	Defined by DSM-5	24.9 (SD= 7.1) Range 18-50yrs	Inpatient	1 yr	(N=28)	1	Young onset of illness Anxiety comorbidity

[1] *N= Sample size, patients with Anorexia Nervosa or Bulimia Nervosa*
[2] *AN= Anorexia Nervosa*
[3] *BN= Bulimia Nervosa*
[4] *N/A= Not Applicable. Information is not available or otherwise unspecified*

(6) Fennig, Brunstein Klomek, Shahar, Sarel‐Michnik & Hadas (2017).	Identify and compare changes in core thoughts and perceptions, in post-remission adults with AN	Cohort Study	Israel N=44 93% Women	Defined by DSM-5	14.80 (SD= 1.73) Range 11-18 yrs	Inpatient	N/A	(N=13)	N/A	Persistent drive for thinness and misperception of body
(7) Franko, Tabri, Keshaviah, Murray, Herzog, Thomas & Eddy (2018)	Identify predictors of long-term recovery in AN and BN	Longitudinal study	American N=176 Women	Defined by DSM-5	24.8 years (SD=N/A) Range 13–45 yrs	Outpatient	22 yrs	(N=63)	N/A	Comorbid diagnosis of depression, experiences of longer duration of illness
(8) Glasofer, Muratore, Attia, Wu, Wang, Minkoff & Steinglass (2020)	Identify predictors of longitudinal outcome in patients with AN	Longitudinal study	American N=168 98% Women	Defined by DSM-5	26.02 (SD= 8.20) Range 14-64 yrs	Inpatient	5 yrs	(N=18)	1-12	Higher trait anxiety Long duration of illness
(9) Jonker, Glashouwer & de Jong (2022)	Examine the relevance of punishment sensitivity as a factor in the persistence of AN	Longitudinal study	Dutch N=69 97% Women	Defined by DSM-5	15.55 (SD=1.70) Range 12-22yrs	Inpatient	1 yr	(N=34)	1-12	Heightened levels of punishment sensitivity
(10) Levinson, Brosof, Ma, Fewell, & Lenze (2017)	Examine fear of food post-remission adults diagnosed with AN and BN.	Cohort Study	American N=168 94.6% Women	N/A	26.27 (SD= 9.44) Range 14-59 yrs	Inpatient	1 month	(N=125)	1	Experiences of anxiety about eating, feared concerns about eating, or a persistent drive for thinness
(11) Levinson, Sala, Fewell, Brosof, Fournier & Lenze (2018)	Identify and compare changes in mealtime cognitions, in adults diagnosed with AN and BN.	Ecological momentary assessment study	American N=66 97% Women	Defined by DSM-5	24.98 (SD = 7.31) Range= 14-41	Outpatient	1 month	(N=49)	1	Higher worry about weight gain predicting compensatory behaviors; Body checking Feelings of fatness Excessive exercising Drive for thinness

(12) Lindgren, Enmark, Bohman & Lundström (2015)	Understand the process of recovery from the perspective of young adult women with previous history of BN	Narrative Interview	Swedish N= 5 Women	Defined by DSM-5	24 (SD= N/A) Range 23-26 yrs	N/A	N/A	N/A	N/A	Feeling stuck in illness, loss of identity, and loss of control.
(13) Marzola, Martini, Brustolin & Abbate-Daga (2021)	Identify predictors of clinical outcome in patients with AN	Cross-Sectional Study	Italian N = 169 93.4% Women	Defined by DSM-5	31.7 (SD= 9.4) Range 16-55 yrs	Inpatient	N/A	(N=46)	N/A	Anxious comorbidity Young onset of illness
(14) Meule, Schrambke, Furst Loredo, Schlegl, Naab & Voderholzer (2021)	Follow up on the treatment outcomes in adolescents with AN	Follow up study	German N= 142	Defined by ICD-10	15.4 years (SD= 1.37) Range= 12-18	Inpatient	1 yr	(N=29)	4-12	Young onset of illness
(15) Olmsted, MacDonald, McFarlane, Trottier & Colton (2015)	Identify predictors of rapid relapse following treatment for BN	Follow up study	Canada N=116 Women	Defined by DSM-5	26.7 (SD= 9.9) Range= N/A	Outpatient	6 months	(N=32)	1-6	Body avoidance Body Checking

3.RESULTS

Figure 1 of the PRISMA Flow Diagram shows that the total amount collected from PsycInfo and Pubmed consisted of 850 articles. Articles were preliminary screened by their titles and abstract. Following the preliminary process, 25 articles were sought for retrieval. Articles sought for retrieval were screened following the inclusion and exclusion criteria, where ten articles ended up excluded. In the end, 15 articles were assessed for eligibility and included in the systematic review.

3.1 SAMPLE CHARACTERISTICS

Sample characteristics of all included studies are shown in Table 3. All studies examined the clinical outcome of patients discharged from treatment for either AN or BN. Three of the included studies were either follow-up studies (5,14,15) or longitudinal studies (7,8,9) following the same sample of individuals over a more extended period. All of the included studies had a majority sample of women, with seven of the included studies (1,4,5,7,12,14,15) including all women participants. The (mean) age of participants ranged from 14.80 to 31.7 years. Fourteen of the studies were conducted in Western countries, such as the USA (4,7,8,10,11), Germany (1,14), United Kingdom (2,3), Italy (5,13), Netherlands (9), Sweden (12), Canada (15). One study was conducted in a Middle Eastern Country, such as Israel (6).

3.2 TIMING OF RELAPSE

Timing of relapse of all included studies are shown in Table 3. 11 of the included 15 studies reporting the period of occurrence of relapse, although with substantial variability. Six of the included studies (2,4,5,10,11,15) reported an occurrence of relapse within the first month after discharge from treatment. Four (3,8,9,14) of the studies reported an occurrence of relapse within the first year of discharge, and one study (1) found participants with experiences of relapse ranging between the first month and up to after a year after discharge. These findings highlight the variability in the timing of relapse occurrence after discharge from treatment. Some individuals experienced relapse shortly after discharge from treatment, while others relapsed within the first year or within a broader timeframe ranging from the first month to after a year after discharge.

3.3 RATE OF RELAPSE

The relapse rate of the participants is presented in Table 3, which further categorizes the studies based on whether participants were from inpatient or outpatient treatment programs. Among the included studies, ten (1, 3, 4, 5, 6, 8, 9, 10, 13, 14) involved participants from inpatient treatment programs, while three (7, 11, 15) included participants from outpatient programs. Two studies (2,12) did not specify the participants' treatment program. Therefore, the majority of the studies consisted of participants from inpatient treatment programs. In terms of relapse rates, 33.29% of patients who received inpatient treatment experienced relapse after discharge. Furthermore, 40.22% of patients who received outpatient treatment relapsed after discharge.

3.4 FACTORS ASSOCIATED WITH RELAPSE

The preliminary analysis of the studies included a thorough review of the studies' methodology, results, and conclusions. After the initial analysis, four overarching clusters emerged as the most relevant to present and discussed. The clusters are as follows:

1. Perception of Body and Body Image
2. Emotional Distress and Identity Disruption
3. Illness Duration and Onset
4. Mental Health Comorbidities

Each central cluster includes 2-4 themes. Each theme is relevant to understanding individuals' experience of being in post-remission from a treatment related to their eating disorder and the events and aspects leading to their subsequent relapse. Each major cluster, and the sub themes can be seen in Table 4. A more in depth discussion will follow, analyzing each cluster and subthemes based upon how many of the included studies mentioned them as relevant risk factors for relapse, and in what they did influence the individual's recovery after discharge from treatment.

Tabel 4: Clusters and Subthemes Related to Relapse Factors

Perception of Body and Body Image	Body Overestimation Drive for Thinness Body Avoidance and Body Checking Habit Strength
Emotional Distress and Identity Disruption	Feeling stuck in Illness Loss of Identity Loss of Control
Illness Duration and Onset	Duration and Onset of Illness
Mental Health Comorbidities	Anxious Comorbidities Depression Comorbidities

3.4.1 PERCEPTION OF BODY AND BODY IMAGE

Five of the included studies for this systematic review identified maladaptive perceptions of the body as a significant factor associated with relapse for some individuals with AN and BN. Individuals struggling with issues related to body overestimation, a relentless drive for thinness, and engagement with body checking and body avoidance had more experiences with relapses after discharge from treatment.

3.4.1.1 BODY OVERESTIMATION

Body overestimation, as self-reported by individuals with AN after weight restoration treatment, was found to be prevalent (Boehm et al., 2016, p. 1322). Boehm et al. 's (2016) study revealed that body overestimation significantly hindered the recovery process in individuals post-remission from an eating disorder. Approximately 85.3% of the sample reported their weight as higher than objectively assessed, indicating body overestimation, and 25% of the sample relapsed due to misperceptions of body image after discharge (Boehm et al., 2016, p. 1323). Thus, self-reported misperception of the body may serve as a risk factor for relapse in post-remission adult patients with AN.

3.4.1.2 DRIVE FOR THINNESS

Three of the included studies found a persistent drive for thinness in post-remission adults with AN and BN. These findings came from studies conducted by by Levinson et al (2017), Levinson et al (2018) and Fenning et al (2018) who found that among their sample who relapsed, a specific relationship between anxiety about eating, feared concerns about eating, and drive for thinness one month after discharge from treatment (Fennig et al., 2017, p. 204; Levinson, Brosof, Ma, Fewell, & Lenze, 2017, p.50; Levinson et al., 2018, p. 40). When assessed by Levinson et al. (2017) the drive for thinness was not found to be related to general anxiety or negative affect, nor to general eating and weight concerns (Levinson et al., 2017, p. 50). However, Levinson et al. (2018) discovered that body checking and anxieties about gaining weight predicted a later drive with thinness (Levinson et al, 2018, p. 40). Levinson et al (2017) noted that their finding was especially significant, as an elevated drive for thinness might therefore indicate a more severe psychopathology in individuals with AN. Fenning et al supplemented that statement, by noting that this could furthermore be related to persistent symptoms of BN (Fennig et al., 2017, p. 204; Levinson et al., 2017, p. 50). Drive for thinness might be associated with potential future relapses in individuals with either AN or BN.

3.4.1.3 BODY AVOIDANCE AND BODY CHECKING

Following weight restoration treatment, post-remission individuals with AN and BN were found to engage in body-checking activities and body avoidance. Results from a study by Olmsted et al (2015) found that almost 39% of their sample would engage in body avoidance at the beginning of treatment, increasing slightly to almost 40% after treatment (Olmsted, MacDonald, McFarlane, Trottier & Colton, 2015, p. 338). Slow to respond to treatment, regularly engaged in body avoidance, and body checking were variables consistently found in the individuals with BN who relapsed post-treatment (Olmsted et al., 2015, p. 338). Similarly to the finding from Olmsted, body checking was found to predict and lead to compensatory behaviors in the study by Levinson et al (2018). According to their study, results suggest that thoughts relating to either weight or shape concerns may lead to above mentioned compensatory behaviors such as preoccupation with thinness, and body checking in individuals with AN and BN (Levinson et al., 2018, p. 40). These thoughts and behaviors may build upon each other and serve as a risk factor for a later onset relapse.

3.4.2 EMOTIONAL DISTRESS AND IDENTITY DISRUPTION

Five of the included studies for this systematic review found themes connecting identity with illness to the risk of relapse. Strong ties between identity and illness were some of the experiences noted by individuals who had completed treatment and were discharged. Individuals who reported ambivalence about continued recovery related to identity issues were at higher risk of experiencing relapse later on.

3.4.2.1 HABIT STRENGTH

Two studies measured the influence of habitual behavior related to an AN and BN, and its influence in the risk of relapse. In the study by David et al, habit strength refers to the frequency in which an action related to their eating disorder has been repeated (Davis et al., 2020, p. 686). These actions, or habits, could be related to domains such as restrictive eating, compensatory behavior, delay of eating, and eating rituals around the table (Davis et al., 2020, p. 686). The findings from Davis et al's study indicated that high levels of habit strength established early in adolescence may contribute to AN severity and duration (Davis et al., 2020, p. 686). This finding is agreeable with the findings from a study by Branley-Bell and Talbot (2021), who found that habitual behavior established early in AN and BN may play a significant role in the persistence and relapse of illness (Branley-Bell & Talbot, 2021, p. 5; Davis et al., 2020, p. 688).

3.4.2.2 FEELING STUCK IN ILLNESS

Two studies found that women in post-remission from BN felt stuck in their eating disorder, perceiving it as part of their identity (Bryan, Macdonald, Cardi, Rowlands, Ambwani, Arcelus, & Treasure, 2022, p.3; Lindgren et al., 2015, p. 863f). Lindgren et al found that women who, specifically, had a longer duration of illness were more likely to have accepted and integrated their eating disorder as part of their identity (Lindgren et al., 2015, p. 863f). These women's description of ambivalence about their continued recovery was similar to the findings from a study by Bryan et al (2022), who also had participants with BN describing how their eating disorder was connected to a sense of comfort and predictability, leading to hesitation in continuing their recovery (Bryan et al., 2022, p.3; Lindgren et al., 2015, p. 863f).

3.4.2.2 LOSS OF IDENTITY

In a similar vein to the previous paragraph, two studies conducted by Bryan et al. and Lindgren et al. examined the experiences of women with BN and their relationship between their eating disorder and identity. These studies revealed that some women with BN expressed ambivalence towards change, as their recovery was linked to a painful loss of identity (Bryan et al., 2022, p. 6; Lindgren et al., 2015, p. 886). Lindgren et al. noted that while some women expressed a strong desire to move away from their illness, they also described periods of feeling a loss of control and fear of losing their identity (Lindgren et al., 2015, p. 886). Both studies found that establishing a new identity separate from their illness meant relinquishing the familiarity and sense of security associated with the disorder. This process was particularly challenging, leading to relapse episodes for some women (Bryan et al., 2022, p. 6; Lindgren et al., 2015, p. 886).

3.4.2.4 LOSS OF CONTROL

In their study, Branley-Bell and Talbot (2021) also investigated how control relates to recovery in individuals with AN and BN. They found that individuals who perceived less control were more likely to turn to previous eating disorder behaviors as a coping mechanism (Branley-Bell & Talbot, 2021, p. 5). Specifically, a lack of external control led to a shift in focus towards internal control (Branley-Bell & Talbot, 2021, p. 5). Both individuals with AN and BN who experienced a loss of control in their external environment regained control by returning to familiar patterns and behaviors (Branley-Bell & Talbot, 2021, p. 5). Additionally, individuals who relapsed after their discharge identified a loss of control in their external environment as a significant factor contributing to their relapse.

3.4.3 ILLNESS DURATION AND ONSET

Five of the included studies for this systematic review found factors, such as duration of illness and onset of illness, related to the risk of relapse. Here it has been found that a longer duration of illness and/or a younger onset of illness to be associated with a higher likelihood of experiencing relapse after discharge.

3.4.3.1 DURATION AND ONSET OF ILLNESS

Three studies, including Marzola et al. (2021, p. 3), Muele et al. (2021, p. 175), and El Ghoch et al. (2016, p. 196), consistently found that individuals with anorexia nervosa (AN) who developed the illness at a young age had more unsuccessful treatment experiences related to their eating disorders. These findings align with another of the included studies by Franko et al. (2018, p. 186), which revealed that a longer duration of illness resulting from an early onset, as well as more clinically significant symptoms of AN and BN throughout the study, increased the likelihood of relapse. Furthermore, Glasofer et al. (2020, p. 4) discovered that a longer duration of illness was significantly associated with a more rapid rate of weight loss during follow-up. These findings suggest that individuals with a chronic history of illness are at a higher risk of relapse over time, indicating a relationship between illness duration and relapse vulnerability.

3.4.4 MENTAL HEALTH COMORBIDITIES

Five of the included studies for this systematic review found comorbidity disorders associated with an elevated risk of relapse. Individuals with comorbidities related to major depressive disorders or anxiety were found to have more experiences with relapsing after discharge from treatment.

3.4.4.1 ANXIOUS COMORBIDITIES

Four of the included studies found a relationship between comorbidity with an eating disorder, and an elevated risk of relapse. The study by Glasofer et al. (2020) revealed that individuals with AN and anxious traits were more likely to have unfavorable treatment outcomes following discharge (Glasofer, Muratore, Attia, Wu, Wang, Minkof & Steinglass, 2020, p. 6). These findings align with the studies conducted by El Ghoch (2016) and Jonker et al. (2022), which indicated that specific personality traits, such as anxiety and punishment sensitivity, could contribute to a longer duration of AN (El Ghoch et al., 2016, p. 196; Jonker, Glashouwer & de Jong, 2022, p. 700). Furthermore, Marzola et al. (2021) found that individuals with a longer duration and a chronic history of AN exhibited significantly higher levels of comorbid anxiety compared to those with a shorter duration history (Marzola et al., 2021, p. 3). These findings suggest that individuals with comorbid anxiety-related conditions are at a heightened risk of experiencing relapse in the future.

3.4.4.2 DEPRESSIVE COMORBIDITIES

Comorbidity with depression can be high in individuals with an eating disorder. One study by Franko et al (2018) found that comorbidity with major depression was particularly detrimental in the recovery process of individuals with AN (Franko et al., 2018, p. 183). A comorbid diagnosis of major depression at the start of the study strongly predicted having a diagnosis of AN at the follow-up (Franko et al., 2018, p. 186). Results thus indicate that the combination of depression and AN makes an individual more likely to experience relapse after discharge from treatment, or that the interaction of the two disorders makes an individual much less likely to be able to benefit from treatment or experience difficulties recovering.

4. DISCUSSION

The aim of this systematic review was to identify risk factors for relapse in individuals diagnosed with AN and BN by screening and analyzing relevant studies. This review summarizes the included 15 studies by examining relevant risk factors for relapse in AN and BN; amongst those body overestimation, drive for thinness, body avoidance and body checking, habit strength, feeling stuck in illness, loss of identity, loss of control, duration and onset of illness, anxious comorbidities and lastly depression comorbidities. In this discussion the following aspects will be addressed; sample characteristics, timing of relapse, rate of relapse, and lastly, an in depth discussion of the different clusters of factors associated with relapse in AN and BN.

4.1 SAMPLE CHARACTERISTICS

The systematic review included eight studies where the majority of participants were women, with the remaining seven of the studies consisting exclusively of female individuals. This can spark a discussion of the prevalence of eating disorders in men and women. Sex differences in eating disorders between men and women has been an area of interest for several recent studies. While eating disorders are often considered female disorders, many sufferers are male (Valente et al., 2017, p. 707). According to a study by Valente et al. (2017), which aimed better to understand the prevalence of eating disorders in sexes, found the ratio between women and men to be one to five, although noting an increasing proportion of male

patients over the years (Valente et al., 2017, p. 707). Valente et al. found furthermore that the most frequent eating disorder in men relates to binge eating disorders, while in women, AN and BN prevailed as the most common (Valente et al., 2017, p. 707). Valente et al. statement that women have a higher likelihood of having AN and BN, might explain the high prevalence of women in the studies included for this systematic review. Valente argues further that while there is a standardized use of clinical and psychometric evaluating tools for eating disorders, male presentation of eating disorders symptoms and comorbidities may differ from female presentation (Valente et al., 2017, p. 707). Thus, the sex differences in eating disorder presentation may affect our current prevalence between men and women (Valente et al., 2017, p. 707).

Based on the studies included in this review, four of them identified a limitation in their research regarding the generalizability of their findings. When a study lacks generalizability, it means that the results and conclusions may not be applicable to a broad range of individuals and may only be relevant to a limited population (Timko et al., 2019, p. 1). For instance, Valente's study highlighted a higher prevalence of BN and AN in women. However, it can be debated whether this gender difference is influenced by the limited representation of males in the studies and their generalizability to eating disorders. One of the included studies, conducted by Bryan et al. (2020), pointed out the lack of male representation in their sample as a significant limitation. They emphasized the need for further research on the presentation of eating disorders in males. Bryan et al. argued that gaining a better and more comprehensive understanding of male representation could lead to improved and tailored support for male patients after they are discharged from treatment (Bryan et al., 2020, p. 7).

In this systematic review, the participants' ages ranged from 14.80 to 31.7 years, indicating that the age range for AN and BN can be quite wide, with onset potentially occurring during adolescence. This finding aligns with certain studies included in the review, which suggest that AN and BN often begin in the adolescent stage of development (Boehm et al., 2016, p. 1319; Fenning et al., 2017, p. 200). Some of the reviewed studies, such as those by Boehm et al. and Fenning et al. (2017), emphasize the importance of studying adolescents with eating disorders. Fenning et al. argue that by examining how adolescents respond to treatment, researchers can determine if there are any differences compared to adults (Fenning et al., 2017, p. 201). However, they also acknowledge several limitations in treating adolescents, including the influence of various factors such as family dynamics, living situations, and

financial constraints, which may contribute to the complexity of treatment outcomes (Fenning et al., 2017, p. 201). It would be interesting for future research to investigate how different age groups respond to treatment and determine if the responses are similar or different.

Similarly, Boehm et al. stressed the importance of focusing on the adolescent population in their study. They aimed to examine whether the perception of body image and weight gain patterns during inpatient treatment can predict the long-term physical, psychological, and social adjustment of individuals with AN (Boehm et al., 2016, p. 1320). The study's analysis revealed that enhancing early weight gain, such as through high-calorie refeeding, could be a promising target for future intervention studies (Boehm et al., 2016, p. 1320). This suggests that strategies aimed at achieving adequate and timely weight gain early in treatment might have positive effects on the long-term outcomes of AN patients (Boehm et al., 2016, p. 1320).

In addition, it is important to note that some of the studies included in the review found that the mean age of participants extended into their thirties. This suggests that certain individuals had a prolonged duration of illness, which could potentially influence their experiences with relapse. Several of the included studies observed that a longer duration of illness was associated with an increased likelihood of relapse later on (El Ghoch et al., 2016, p. 196; Franko et al., 2018, p. 186; Glasofer et al., 2020, p. 4; Marzola et al., 2021, p. 3; Muele et al., 2021, p. 175). This may imply that some individuals in the studies had been living with their illness for a long time, potentially leading to a higher chance of relapse. The studies found that a longer duration of illness was associated with an increased risk of relapse. This suggests that there may be a connection between the chronicity of the illness and the likelihood of experiencing relapse.

4.2 TIMING OF RELAPSE

The findings regarding the timing of relapse suggest that different individuals experience relapse at various points after completing their treatment. Some individuals relapsing shortly after leaving treatment, while others experiencing relapse within the first year, or within a broader timeframe that ranged from the first month to a year after discharge. One of the included studies reported that participants who gained an average of 73% of their total weight increase within the first 28 days had better long-term treatment outcomes in terms of physical, psychological, and psychosocial adjustment (Boehm, 2016, p. 1323).

Boehm et al. also found that higher early weight gain within the first month of treatment predicted improved treatment outcomes (Boehm, 2016, p. 1323). Similarly, Avnon et al. conducted a study in 2018 and reported that patients who avoided re-hospitalization within the first year after discharge had a significantly reduced risk of relapse (Avnon et al., 2018, p. 646). Avnon et al. discovered that individuals who maintained their weight during the first month after discharge were more likely to have a normal BMI in the subsequent six and twelve months (Avnon et al., 2018, p. 646). These findings indicate that the initial month following discharge may be crucial in predicting recovery outcomes.

4.3 RATE OF RELAPSE

The relapse rates in this systematic review were categorized into two groups: those who relapsed after discharge from inpatient treatment and those who relapsed after discharge from outpatient treatment. The findings revealed that 33,29% of participants from the included studies experienced relapse after inpatient discharge, although there was variation in timing. Moreover, 40,22% of participants from the included studies experienced relapse after outpatient discharge. It is important to note that only three studies included outpatient participants, while 10 studies included inpatient participants, leading to a potential bias in the results. Consequently, any conclusions drawn from these relapse rates should be approached with caution, as the variability in the severity of disorders among the participants may have influenced the relapse rates. This emphasizes and acknowledges the variability and complexity behind relapse rates, and that a further need for additional research to investigate relapse rates among different patient groups.

4.3 RISK FACTORS ASSOCIATED WITH RELAPSE

An overview of all factors significantly associated with a higher risk of relapse led to the formation of the following clusters: perception of body and body image, emotional distress and identity disruption, illness duration and onset, and mental health comorbidities. In terms of specific risk factors related to risk for relapse, the following risk factors were identified: Body overestimation, drive for thinness, body avoidance and body checking, habit strength, feeling stuck in illness, loss of identity, loss of control, duration, and onset of illness, anxious comorbidities and depression comorbidities.

Some risk factors identified in the included studies were related to body overestimation, drive for thinness, body avoidance, body checking, and habit strength. It can be argued that these risk factors are associated with cognitive aspects, making them potential cognitive risk factors. This correlation was also observed in a study by Fenning et al., where patients still exhibited cognitive distortions even after discharge from treatment (Fenning et al., 2017, p. 204). Fenning et al. highlighted the possibility of a discrepancy between physical, cognitive, and psychological recovery in their study (Fenning et al., 2017, p. 204). They further emphasized the importance of informing patients about the potential impact of these cognitive distortions on their recovery (Fenning et al., 2017, p. 204). To adequately prepare patients for continued care and prevent relapse, future research should focus on addressing both psychological and cognitive aspects (Fenning et al., 2017, p. 204).

Furthermore, the presence of relapse-related risk factors associated with clusters such as illness duration and onset, such as the duration of illness, along with emotional distress and identity disruption linked to loss of identity, may suggest that individuals with a prolonged illness duration may overlap with those whose disorder has become intertwined with their sense of identity and self-perception. In a study by Lindgren et al. (2015), their analysis revealed that women with extensive experience of their disorder described having developed a bond or connection with their illness (Lindgren et al., 2015, p. 863f). Additionally, some women with a connection to their eating disorder, who indicated ambivalence about change, did so because their recovery was linked to a painful loss of identity, according to a study by Bryan et al. (2015). Although some women expressed a great wish to put their sickness behind them, they would also speak of times when they felt worried about losing their identity (Bryan et al., 2022, p. 6). This may further indicate that patients with a longer duration of illness may need a more intensive or extended form of treatment.

4.4 STRENGTH AND LIMITATIONS

This systematic review possesses several notable strengths. Firstly, it extensively incorporates follow-up and longitudinal studies, which hold particular significance. By tracking individuals with an early onset of illness into adulthood and observing their experiences with relapse, this review goes beyond capturing a single moment in time. It also facilitates the identification of any noteworthy developments or changes in the characteristics of these individuals, providing crucial insights into their recovery journey.

Another strength lies in the contribution this systematic review makes to the understanding of risk factors associated with relapse in two prevalent eating disorders. Despite its limitations, this review successfully identifies multiple risk factors for relapse in individuals undergoing post-remission recovery from an eating disorder related to AN and BN.

There are also several limitations to this review that need to be addressed. This systematic review was conducted by a single individual. Therefore, there may be a risk of bias that can have influenced the screening and assessment of the studies included. More specifically, there is a risk that some articles were excluded, they may have been relevant to include.

Second of all, the inclusion criteria specified that the studies had to involve participants with either AN or BN, while excluding those examining treatment outcomes or relapse risk factors in other eating disorders such as binge eating disorder or unspecified eating disorders. It is important to note that while AN and BN are common eating disorders, this review's findings primarily pertain to risk factors specific to these two disorders. As a result, the value of this systematic review may be primarily relevant to clinicians treating, or individuals affected by, AN and BN. Further research is necessary to gain a better understanding of relapse risk factors in other eating disorders and determine their similarities or differences.

One additional limitation of this systematic review is the exclusion of individuals with a history of childhood trauma from participating in the studies. Although multiple studies have highlighted that individuals with childhood trauma are more susceptible to developing eating disorders (Monteleone, Cascino, Pellegrino, Ruzzi, Patriciello, Marone & Maj, 2019, p. 111; Ross-Nash & Brochu, 2020, p. 1), the review excluded them due to the difficulty in determining whether a relapse occurred as a result of the trauma or as a complication of the eating disorder recovery process after treatment (Ross-Nash & Brochu, 2020, p. 1; APA, 2019, p. 2). However, while attempts were made to exclude individuals with childhood trauma, their exclusion was contingent on the studies explicitly stating the exclusion or inclusion of such participants. Consequently, studies that did not disclose the presence of childhood trauma in their participants might have been inadvertently included. This raises the question of whether the reported risk factors alone can account for relapse or if the influence of other traumas could have affected specific individuals.

A further limitation to be discussed is the lack of diversity in this systematic review, primarily characterized by a majority of women included in the literature. This review reveals a limitation in terms of male participants, which has several implications. While sex differences between men and women regarding eating disorders have been acknowledged earlier, the extent to which risk factors are similar or different remains poorly understood (Valente et al., 2017, p. 707). This limitation primarily affects men and clinicians, as it may lead to some men going unnoticed and not receiving the necessary help in a timely manner. Consequently, studies with a predominantly female or exclusively female sample may face criticism for lacking generalizability. Notably, several studies included in this systematic review acknowledged the lack of diversity as a limitation (Bryan et al., 2020, p. 7; Fenning et al., 2017, p. 205; Franko et al., 2018, p. 187; Olmsted et al., 2015, p. 339).

5. FUTURE RESEARCH

The limitation of a lack of diversity in the sample, particularly the underrepresentation of men, has been previously mentioned. While this systematic review included both women and men in the inclusion criteria, women constituted a significant majority in several studies. Various factors contribute to the underrepresentation of men in eating disorder research, including limited awareness and detection (Coopey & Johnson, 2022, p. 1). Men's experiences with eating disorders may be difficult to detect, due to the challenges posed by societal norms and gendered expectations (Coopey & Johnson, 2022, p. 5; Valente et al., 2017, p. 707). The lack of representation of the male experience in eating disorders has implications for several groups, amongst them; men themselves, clinicians, and other healthcare professionals (Coopey & Johnson, 2022, p. 12; Valente et al., 2017, p. 707). Therefore, further exploration of risk factors for relapse in men, as well as individuals from other minority, religious, or sexual orientation backgrounds, would be of interest. Multiple studies have highlighted the underrepresentation of these groups in their research, emphasizing the need for more knowledge in these areas (Bryan et al., 2020, p. 7; Fenning et al., 2017, p. 205; Franko et al., 2018, p. 187; Olmsted et al., 2015, p. 339; Valente et al., 2017, p. 707).

6. CLINICAL IMPLICATIONS

This systematic review identified various potential risk factors associated with relapse after being discharged from treatment. These factors include an earlier age of onset, a longer duration of illness, and cognitive factors specifically related to body overestimation, drive for thinness, body avoidance, body checking, and habit strength, as well as several comorbidity influences, related to depression and anxiety. This review suggests that addressing individuals' cognitive processes may be crucial for optimizing their overall recovery and reducing the risk of relapse. By targeting these risk factors and vulnerable areas in certain individuals, and providing education at the time of discharge, it is possible to better prepare them for their ongoing recovery journey and mitigate the chances of relapse.

7. CONCLUSION

This study contributes to the existing literature by systematically gathering and analyzing empirical research on risk factors associated with relapse. The focus of the study is on eating disorders like anorexia nervosa and bulimia nervosa. The review highlights several risk factors that have been identified and explored, primarily in the realm of cognitive factors, as well as; perception of body and body image, emotional distress and identity disruption, illness duration and onset, and mental health comorbidities. However, given the complexity behind relapse, further research is needed to gain a deeper understanding of how to effectively support and assist individuals in their recovery journey after being discharged from treatment and achieving remission from their disorder.

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