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Binge Eating in Children and Adolescents: A Comprehensive Review

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ABSTRACT

Binge eating, characterized by episodes of uncontrolled consumption of large amounts of food, is a significant clinical and public health concern among children and adolescents. Although traditionally regarded as an adult condition, accumulating evidence shows that binge eating and binge-eating disorder (BED) also affect younger populations. This paper explores the prevalence, risk factors, psychological and physiological correlates, diagnosis, complications, treatments, and prevention strategies of binge eating in pediatric populations. Relevant literature and recent studies are reviewed to understand clinical features and inform future research and clinical practice.

Key Words : Binge eating disorder, Children, Adolescents, Food, Public health

INTRODUCTION

Binge eating in children and adolescents represents a complex intersection of developmental biology and psychological distress. While historically viewed as an adult pathology, recent clinical evidence suggests that "Loss of Control" (LOC) eating is a distinct and prevalent phenomenon in youth. Unlike adult diagnosis, which often focuses on the sheer volume of food consumed, pediatric diagnosis prioritizes the subjective experience of being unable to stop eating. This behavior often serves as a maladaptive emotional regulation strategy, where the child uses food to self-soothe or numb feelings of anxiety, depression, or social isolation. Because children are in a critical state of neurological development, these patterns can quickly become ingrained in the brain's reward circuitry, specifically involving dopamine pathways that mirror those seen in substance use disorders.

The etiology of pediatric binge eating is multifaceted, involving a "perfect storm" of genetic predisposition, environmental triggers, and societal pressures. Children who experience weight-related teasing or live in homes with high levels of family conflict are at significantly higher risk. Furthermore, there is a paradoxical relationship between restrictive dieting and bingeing; adolescents who attempt to follow rigid, low-calorie diets often trigger a physiological and psychological rebound, leading to the "deprivation-binge" cycle. This cycle is not only psychologically damaging but also leads to severe physiological complications, including early-onset metabolic syndrome, insulin resistance, and Type 2 diabetes.

Effective treatment and prevention require a shift away from traditional weight-loss models, which can inadvertently exacerbate the problem. Instead, clinicians are increasingly turning to Family-Based Treatment (FBT) and Cognitive Behavioral Therapy (CBT) adapted for younger populations. These interventions focus on building emotional resilience, improving interpersonal relationships, and fostering "intuitive eating"—the ability to respond to internal hunger and fullness cues rather than external emotional triggers. Early intervention is paramount, as addressing these behaviors in childhood can prevent the transition into chronic Binge-Eating Disorder (BED) and associated comorbidities in adulthood, ultimately promoting a healthier long-term relationship

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with food and body image.

Eating disorders represent a group of psychiatric conditions where abnormal eating behaviors significantly impact health and quality of life. Among these, binge eating is increasingly recognized in children and adolescents (under 18 years), often under-diagnosed and mistaken for typical overeating or behavioral problems. According to diagnostic criteria, binge eating involves consuming a large amount of food in a discrete time period with a sense of loss of control, without regular compensatory behaviors (e.g., vomiting) seen in bulimia nervosa (American Psychiatric Association, DSM-5) (First, 2013).

Historically, research on pediatric binge eating was limited; however, emerging studies indicate that BED in youth has prevalence estimates comparable to anorexia nervosa and bulimia nervosa, necessitating increased clinical attention and targeted interventions (Kjeldbjerg and Clausen, 2023).

Prevalence:

General Population:

The statistical landscape of pediatric binge eating has been clarified by recent large-scale research, most notably the 2023 meta-analysis by Kjeldbjerg and Clausen. This study established that Binge-Eating Disorder (BED) affects approximately 1.32% of children and adolescents, a figure that places its prevalence on par with better-known conditions like anorexia nervosa and bulimia nervosa. However, the data also reveals a much larger "subclinical" population, with roughly 3.0% of youth experiencing loss-of-control (LOC) eating without meeting the full frequency or duration requirements for a BED diagnosis. These subclinical forms are particularly significant because they often serve as "precursor" behaviors; children who report a sense of being unable to stop eating—even if the amount of food is not objectively massive—are at a substantially higher risk of developing full-syndrome BED and metabolic complications as they age.

The wide variation in prevalence estimates across different studies often stems from the assessment methods used, as young children frequently struggle to articulate the internal experience of "losing control." While general population estimates hover around 1–3%, these numbers escalate dramatically in specific cohorts, such as youth with higher body mass indices (BMI), where prevalence can reach upwards of 26% to 31%.

Furthermore, the clinical significance of these numbers is underscored by neurobiological evidence showing that even subclinical LOC eating is associated with structural brain differences in regions responsible for reward processing and inhibitory control, such as the orbital frontal cortex. Consequently, the high prevalence of subclinical symptoms suggests a critical window for early intervention, where identifying disordered eating patterns before they reach full diagnostic severity could fundamentally alter a child's developmental and metabolic trajectory.

Associated with Obesity:

Children and adolescents with overweight or obesity show significantly higher rates of binge eating and loss-of-control (LOC) eating—around 26.3% overall, with 22.2% for binge eating and 31.2% for LOC eating in some samples (He *et al.*, 2017). These findings underscore the importance of assessing binge eating in youth presenting with overweight or obesity. The link between pediatric obesity and binge eating is robust and bidirectional, creating a high-risk cycle that complicates both physical and psychological health. Studies indicate that while binge eating affects roughly 1% to 3% of the general youth population, these rates surge to 22% to 31% among children and adolescents who are overweight or have obesity. This disparity is often driven by the "Weight Stigma-Restriction" cycle: youth with higher body weights frequently experience weight-based teasing or societal pressure to diet, which leads to intense dietary restraint (Bohon, 2019).

Because binge eating (unlike bulimia) involves no compensatory behaviors like purging, the excess caloric intake directly contributes to rapid weight gain and increased adiposity, which in turn worsens metabolic health and reinforces the social stigma that triggered the behavior in the first place. In simple terms, binge eating is particularly difficult for a child's body because there is no "undo" button for the large amount of food consumed. Unlike other eating disorders where a person might try to get rid of the calories through purging or excessive exercise, binge eating involves only the intake phase. This leads to a consistent and significant surplus of calories that the body stores as fat. As a result, children often experience rapid weight gain and an increase in body fat (adiposity), which places an immediate strain on their growing systems. This physical change isn't just about appearance; it creates internal health problems like high blood sugar or cholesterol, making it harder for the body

to function correctly.

This physical change then feeds back into a painful social cycle. When a child gains weight quickly, they often face more teasing, bullying, or judgment from others—even from well-meaning adults. This social stigma makes the child feel even worse about themselves, creating a deep sense of shame and sadness. Because the child has already learned to use food to cope with bad feelings, this increased emotional pain often leads to more binge eating. What starts as a way to handle stress ends up creating more stress, trapping the child in a loop where the physical consequences of the behavior make the psychological triggers even stronger.

Sex and Age Differences:

The gender distribution of binge eating in pediatric populations reveals a shifting landscape that evolves with age. In early childhood, boys and girls experience "loss-of-control" eating at roughly equal rates; however, a distinct divergence typically emerges as they enter adolescence. For girls, the prevalence of binge eating increases sharply alongside the onset of puberty, often fueled by an internalization of societal "thin-ideal" pressures and a higher frequency of restrictive dieting. In contrast, while boys also experience binge eating, they are less likely to be represented in clinical data. This is frequently due to a gendered perception of eating disorders as "female" conditions, which can lead to a diagnosis gap. Furthermore, boys often mask binge eating under the guise of "bulking up" for athletic performance, or they may use food to cope with weight-based teasing, which is a particularly potent trigger for males.

The disparity in reporting is also heavily influenced by the specific population being studied. In community-based surveys, where students are screened anonymously, the gap between genders is often surprisingly narrow, suggesting that many boys are struggling in silence without seeking professional help. In clinical settings, however, girls are much more likely to be referred for treatment, creating the appearance of a larger gender divide than actually exists in the general population. Ultimately, while girls remain the group at highest risk for developing full-syndrome Binge-Eating Disorder, the psychological distress and metabolic consequences are equally severe for boys, necessitating gender-sensitive screening tools that can identify disordered eating even when it doesn't fit the traditional clinical profile.

Most studies report that binge eating is more common in girls than boys, although the difference varies with age and sample type. Adolescence appears to be a peak period for onset, roughly between early teens and late adolescence, reflecting both developmental and psychosocial influences (Via and Contreras-Rodríguez, 2023).

Risk Factors and Correlates:

Biological and Neurodevelopmental Factors:

Neurodevelopmental mechanisms underlying binge eating are not fully established but may involve interactions between brain reward pathways, self-regulation circuitry, appetite hormones (e.g., ghrelin, leptin), and stress response systems. The first peak in prevalence during adolescence suggests that hormonal changes and brain maturation may play a role (Via and Contreras-Rodríguez, 2023).

Psychological and Emotional Factors:

The psychological framework of pediatric binge eating is built upon a reinforcing cycle of negative emotions and poor self-perception. When these youths face stressors, such as academic pressure or social rejection, they may lack the emotional maturity to process these feelings. Consequently, they turn to "emotional eating" to provide immediate, albeit temporary, neurological relief. This "numbing" effect of food creates a powerful behavioral reinforcement; the brain learns that calorie-dense food is the fastest way to escape emotional pain, leading to a repetitive cycle where food is used as a primary coping mechanism.

Loss of control eating, stress, negative affect, depressive symptoms, and body dissatisfaction are strongly linked to binge eating behaviors. Emotional eating—using food to cope with strong emotions—is often reported among youth with binge eating, even when objective quantities of food are not dramatically large (Marcus and Kalarchian, 2023).

Sociocultural Influences:

Environmental and social factors include dieting behaviors, weight teasing, negative body image, peer pressure, and societal emphasis on thinness or appearance. Family dynamics, parenting styles, and modeling of eating behaviors also shape children's relationships with food and eating patterns.

Within the home, family dynamics and parenting

styles play a critical role in shaping a child's internal "food compass." Parents who model chronic dieting or express high levels of dissatisfaction with their own bodies inadvertently teach their children that body weight is a primary source of anxiety. Furthermore, parenting styles that are either overly restrictive—such as banning certain "bad" foods—or highly pressured can backfire by making those forbidden foods more desirable and increasing the likelihood of secretive bingeing.[2] Conversely, a chaotic eating environment without structured, shared meals can deprive a child of the opportunity to observe healthy, regulated eating patterns. By framing food as a reward, a punishment, or a source of conflict, the family environment can unintentionally transform eating from a rhythmic biological necessity into a complex emotional battlefield, reinforcing the very patterns that lead to binge-eating disorder.

Obesity and Weight Concerns:

Obesity and binge eating in youth are interlinked. Those with overweight/obesity often show more severe binge eating and psychological distress. This bidirectional relationship complicates both the understanding and management of BED in young populations (He *et al.*, 2017). Children who are overweight or have obesity are much more likely to experience "loss of control" when eating compared to their peers. This happens because these children often face extra pressure from society, such as bullying or being told they need to go on a strict diet. When a child tries to restrict their food or feels ashamed of their body, it creates a massive amount of stress. Eventually, that stress "boils over," leading to a binge episode where the child eats a large amount of food very quickly to try and feel better or numb the emotional pain.

Clinical Presentation and Diagnosis:

Diagnostic Challenges:

The DSM-5 criteria for BED are applicable to pediatric populations but require careful adaptation. Children may show loss of control eating without meeting adult criteria for large quantities, yet the psychological distress and functional impairment can be significant. Researchers suggest that loss of control is more critical than objective food quantity for identifying problematic eating in children (Marcus and Kalarchian, 2023).

Symptoms and Signs:

Typical clinical features include: episodic consumption of food beyond hunger with a sense of inability to stop; eating in secret due to embarrassment; eating rapidly or until uncomfortably full; emotional triggers like sadness, stress, or boredom; distress or guilt after binge episodes. These behaviors often co-occur with mood disorders, anxiety, and low self-esteem.

Comorbidities:

Psychiatric comorbidities including depression, anxiety disorders, and substance use are common in youth with binge eating. Physical health consequences include increased risk of obesity, metabolic syndrome, and related conditions, especially when binge eating persists over time (Via and Contreras-Rodríguez, 2023).

The most common companions are depression and anxiety. A young person might feel a deep sense of sadness or a constant "nervous" feeling about school or friends. Because food provides a quick burst of comfort or distraction, they use binge eating to try and quiet those loud, painful feelings. However, once the binge is over, the feelings of guilt and shame often make the depression or anxiety even worse, creating a cycle that is very hard to break without help.

As these children get older, the risk for substance use also increases. This happens because the brain's "reward center"—the part that feels good when we eat or do something fun—can become less sensitive over time. Children who are naturally more impulsive may find it much harder to stop themselves when they feel the urge to binge. Because these issues are so tangled together, treating just the eating behavior usually isn't enough; doctors have to help the child manage their anxiety, mood, and impulsivity all at the same time to truly help them heal.

Consequences and Complications:

Psychological Impact: Binge eating is linked to significant emotional distress, social impairment, and reduced quality of life. It has a profound impact on a child's daily life, far beyond just their physical health. Because these episodes are often shrouded in secrecy, children carry a heavy burden of guilt and shame, which leads to intense emotional distress.[1] This emotional weight can make them feel "broken" or different from their peers, deeply damaging their self-esteem. Socially, the impairment is significant; a child might avoid birthday parties, sleepovers, or school events because they are

afraid of being around food or feel embarrassed about their body. This isolation can lead to loneliness and a feeling that they don't fit in anywhere.

The overall quality of life suffers as the child's world begins to shrink around their eating habits. Instead of focusing on hobbies, sports, or learning, their mental energy is consumed by thoughts of the next binge or the regret of the last one. They may struggle to concentrate in class or lose interest in activities they once loved.[2] Physically, they might feel sluggish or uncomfortable in their own skin, which makes simple joys like playing outside feel like a chore. Over time, this combination of social withdrawal and constant negative self-talk can lead to a dark cycle where the child feels trapped. Without the right support, the joy and spontaneity of childhood are replaced by a heavy focus on food and body image.

Adolescents with BED show increased internalizing symptoms, such as anxiety and depression, and may engage in maladaptive coping strategies. Severe cases are associated with suicidal ideation and self-harm behavior, particularly when compounded by societal weight stigma and poor body image (Marzilli *et al.*, 2018).

Physical Health Risks:

Binge eating can have serious effects on a young person's body because it forces their systems to handle a sudden, overwhelming amount of energy and sugar. This frequent "overloading" can lead to rapid weight gain and increased body fat, which puts stress on the heart and joints. Internally, the body may struggle to manage blood sugar levels, increasing the risk of developing Type 2 diabetes and high blood pressure even at a young age. Many children also experience digestive issues, such as stomach pain or acid reflux, and may feel constantly tired or sluggish. Because their bodies are still growing, these metabolic changes can have long-lasting effects, making it harder for them to maintain a healthy physical balance as they move into adulthood

Repeated binge eating episodes contribute to weight gain, insulin resistance, dyslipidemia, and later risk of type 2 diabetes and cardiovascular disease. Although many youth with binge eating do not have obesity at initial presentation, the behavior increases long-term metabolic risk.

Functional Impairments:

Academic performance, social relationships, and family functioning can be disrupted. Children may avoid eating in social situations due to embarrassment or hide food, affecting normal development and interaction with peers.

Screening and Assessment:

Screening in Pediatric Settings:

Early identification begins with routine screening by pediatricians, school counselors, or mental health professionals. Validated questionnaires adapted for youth, clinical interviews, and parental reports enhance detection of binge eating and associated distress.

Differential Diagnosis:

It is crucial to distinguish between normative overeating and clinically significant binge eating, especially in growing children where caloric intake varies naturally.

Role of Healthcare Providers:

Pediatricians and primary care providers should be trained to recognize signs of eating disorders and refer to appropriate specialists. Effective screening tools include questionnaires assessing loss of control, emotional eating, and compensatory behaviors.

Treatment Approaches:

Psychological Interventions:

Psychotherapy is central to treatment. Cognitive-behavioral therapy (CBT) adapted for adolescents shows the best evidence for reducing binge episodes and improving coping skills. Family-based therapies also address family dynamics and eating patterns.

Nutritional Counseling:

Registered dietitians work with youths to establish regular eating patterns, balanced nutrition, and healthy attitudes toward food. Education focuses on mindful eating and normalization of meal structure.

Integrated Care:

A multidisciplinary team—pediatrician, psychologist, dietitian, and family therapist—offers comprehensive care, recognizing the interplay of emotional, behavioral, and physical factors.

Prevention Strategies:

School and Community Programs:

School-based programs promoting healthy eating habits, body positivity, and stress management can prevent

disordered eating. Education about balanced diets and moderation reduces stigmatized views of food.

Family and Parental Role:

Parents play a key role in shaping children's eating behavior. Supportive environments that model healthy relationships with food and body image are protective against binge eating. Avoiding weight-focused language and emphasizing balanced nutrition improve outcomes.

Public Health Initiatives:

Public health policies that reduce availability and marketing of ultra-processed and high-sugar foods to children are likely to reduce binge eating triggers. Nutrition education campaigns and access to physical activity further support healthy lifestyles.

Future Directions and Research Gaps:

Despite growing research, significant gaps remain in understanding the neurodevelopmental mechanisms, longitudinal outcomes, and optimal intervention strategies for pediatric binge eating. Large-scale, diverse population studies are needed, as most research has historically focused on Western cohorts. Additionally, culturally adapted prevention and treatment programs should be developed and evaluated in different sociocultural contexts.

Conclusion:

Binge eating is a complex, multifactorial condition affecting a notable minority of children and adolescents. It is associated with significant psychological distress, physical health risks, and functional impairments. Early diagnosis, evidence-based treatments, and preventive strategies are essential to mitigate long-term consequences. Continued research and integrated clinical care will improve outcomes for affected youth.

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