

## Chronic Dieting: An Uncharted Territory in the Dieting Research Literature

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### Commentary

Chronic dieting, a long-term nutritional condition characterized by repeated and unsuccessful attempts to lose weight through voluntary restrictive dietary practices [1,2], has emerged as a significant public health concern in the last decades, paralleling the epidemic rise in obesity. In the United Kingdom, approximately 45% of women and 25% of men may have been on a diet in the past year, while globally an estimated 40% to 60% of the adult population exhibit some form of dieting behaviour [3-5]. Despite its growing prevalence, chronic dieting remains a largely understudied and undefined phenomenon, lacking an in-depth understanding of its underlying behavioural and physiological mechanisms and long-term physical and mental health consequences. This commentary aims to address the critical gaps in the existing research literature and advocate for a more comprehensive approach to understanding and addressing chronic dieting.

Worldwide, the incidence of obesity has nearly tripled since the 1970s, with approximately more than 1.9 billion adults currently being classified as overweight by the World Health Organization [6], with a consequence for other health related issues and their treatment. This global obesity crisis has led to an accelerated increase of dieting practices and restrictive eating behaviours in the general population [3, 4]. The obesogenic environment in Western societies, characterized by an abundance of energy-dense, processed foods and sedentary lifestyles, has played a key role in shaping individuals' food choices and escalating weight concerns [7]. The pervasive availability and accessibility of high-calorie, low-nutrient foods, coupled with marketing strategies promoting unhealthy eating habits, have contributed to poor weight regulation [8], while the stigma associated with excess weight has increased anxiety over body image and weight loss [9]. As a result, some individuals are led to feeling overwhelmed and resort to severe, chronic dietary restraint or poorly evidenced methods as a means of regaining control over their food choices and body weight [10].

Numerous diets have been proposed and investigated in the

literature to counter the effects of weight dysregulation and rising obesity rates [11]. Traditional weight control, hypocaloric diets, as well as more recent high protein, ketogenic and fasting diets, although extensively researched, are limited in long-term efficacy [12] with 80-95% of dieters experiencing total weight regain, or further increases beyond initial body weight, in the following 5 years [3, 4, 13]. Furthermore, whilst dieting is often perceived as advantageous to achieve an ideal body image and improve long-term health and well-being, it can lead to an adverse cycle of weight regain, perpetuating yo-yo dieting, disordered eating behaviors and a number of adverse physical and mental health consequences [14, 15, 16]. These disturbances range from an increased risk of cardiometabolic diseases, suppressed immunity and severe hormonal disturbances, to the development of depression, anxiety and clinical eating disorders [17].

Our understanding of the pathophysiology underlying chronic dieting is limited. Chronic dieting is often associated with low energy availability (LEA), a long-term condition that occurs when an individual's energy intake is insufficient to meet their energy expenditure [18]. LEA can lead to a range of physical health problems, including impaired bone health, reproductive dysfunction, and compromised immune function [19]. The majority of research in LEA has focused on athletes and specifically the clinical conditions of the female athlete triad and the relative energy deficiency in sport (RED-S), limiting our understanding of the pathophysiology of recurrent, restrictive eating [20, 21]. There is a lack of evidence on the effects of chronic dieting and the prevalence of LEA in the general population, hindering our knowledge and in-depth comprehension of the associated physiological maladaptation's to chronic dieting and their effects on mental health and wellbeing in the general public.

Chronic dieting does not merely affect the physical or mental health of individuals engaging in this restrictive type of eating [22], but it is also considered a complex 'behavioural' disorder with far-reaching consequences, including body dissatisfac-

tion, eating restraint, and unhealthy weight control behaviours [23]. Individuals who identify as chronic dieters, regardless of their actual body weight status, often experience notable body image disturbances, characterized by a distorted perception of their body shape and size [24] and persistent fear of weight gain and re-gain [25]. These body and weight concerns can lead to excessive preoccupation with food, body weight, and body shape, further fuelling chronic, extreme dieting behaviours and disordered eating [18]. In some cases, such chronic dieting can lead to the development of clinically disordered eating manifestations and eating disorders, such as purging, excessive exercise, binge eating and bulimia nervosa, with severe physical and psychological health consequences [26, 20]. Nevertheless, our understanding of chronic dieting and the complex interplay between dieting, body image and mood disturbances, and eating disorders is incomplete and there is insufficient evidence on the exact ‘position’ of chronic dieting on the continuum of disordered eating to clinical eating disorders. Moreover, there is a lack of research and understanding on the relationship between the adverse physiological adaptations to chronic dieting and their contribution to mental health disturbances. Understanding the distinctions between chronic recurring dieting, disordered eating, and clinical eating disorders is critical in comprehending the complexities of dieting behaviour and its implications for the individuals' physical and psychological well-being. However, importantly, while chronic restrictive dieting is a form of disordered eating, engaging in a diet does not inevitably lead to the development of disturbed eating behaviours [2]. Research suggests that food restriction itself does not necessarily result in individuals becoming disordered eaters [27]. Hence, understanding the ethology behind the development or not of chronic dieting to clinical eating disorders and their comorbidities is of utmost importance.

While there exists a historical backdrop to chronic dieting, marked by its recognition as a syndrome in the 1980s, the conspicuous gap in the literature and the lack of understanding of its consequences is partly attributed to the limitations and heterogeneity in the methodological approaches followed in the literature [1,28]. Specifically, chronic dieting remains notably absent and understudied as a possible disordered eating manifestation and a prodrome to clinical eating disorders development, indicating a critical void in our understanding. Moreover, a significant limitation in the literature is the lack of homogeneity in the terms and definitions being used for dieting. In 1975 Herman & Mack defined dieting as the intentional and sustained restriction of caloric intake for the purpose of weight loss or weight maintenance [29]. More than a decade later, Heatherton et al. (1988) [30] highlighted the different measures of dietary restraint and identified distinct types of individuals engaged in dieting behaviours, lacking however a uniform presentation of chronic dieting. Around the same time period, Herman & Polivy (1970-80) proposed a new definition introducing the term ‘restrained eating’, defined as a cycle of restriction and indulgence in overeating, driven by the stresses and demands of chronic dieting. Finally, Lowe in the 1990s proposed the Three-factor model of Dieting with three distinct dieting types: 1) individuals who actively participate in current weight loss efforts to suppress their weight, 2) individuals who frequently or chronically engage in dieting attempts, indicating a persistent pattern of seeking weight control, and 3) individuals who practice restrained eating to prevent excessive food consumption [31]. By delineating these three types of dieting, the model offered valuable insights into the complexity and

diversity of dieting behaviours, while increasing the heterogeneity in our definition and diagnosis of chronic dieting. The aforementioned lack of consistency in the definition of chronic dieting is accentuated by the varying measurement and assessment tools, methodologies, and sample characteristics reported in the literature, further contributing to the diverse findings reported in the field of chronic dieting [28]. For instance, studies assessing dietary restraint using different questionnaires such as the Restraint Scale (RS), the Dutch Eating Behaviours Questionnaire (DEBQ), the Eating Inventory/Three-Factor Eating Questionnaire (EI), and the Current Dieting Questionnaire (CDQ), yield varying outcomes and negatively affect our understanding of the characteristics and predictors of chronic dieting [28, 32, 33]. Furthermore, studies exploring the relationship between restrained eating and actual caloric restriction have been noted to use different methodological approaches, from laboratory measurements to dietary logs to interviews, and often produce diverse, conflicting results [34], further challenging our unified research approach and in-depth understanding of chronic dieting.

Chronic dieting represents a significant public health concern and yet to date, it has not been methodologically and concisely explored and placed on the spectrum of eating pathologies. Due to its contribution and potential predictive power to the development of mental health disturbances and/or clinical eating disorders, its presence cannot be dismissed and ought to be further researched. Considering these gaps, this commentary aims to shed light on the multifaceted nature of chronic dieting. By delving into its historical context, exploring its manifestations, and critiquing existing methodological approaches, we seek to underscore the urgent need for a comprehensive examination of this complex condition. Chronic dieting demands a nuanced, interdisciplinary approach that integrates behavioral, metabolic, and physiological perspectives. This commentary seeks not only to highlight these gaps but also to pave the way for future research endeavors, aiming to bridge the existing gaps in understanding this prevalent yet overlooked phenomenon. Future studies should focus on investigating the prevalence and effects of chronic dieting on varying age, gender and socioeconomic status groups, while incorporating uniform and sound methodological approaches to delineate the specific etiological drivers and causal long-term effects on physical and mental health and public health economic cost.

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