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BRIEF REPORT

"Bulking and cutting" among a national sample of Canadian adolescents and young adults

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Abstract

Purpose First, to characterize the prevalence and incidence of "bulk" and "cut" cycles among Canadian adolescents and young adults. Second, to determine the associations between bulk and cut cycle engagement and drive for muscularity and eating disorder and muscle dysmorphia psychopathology.

Methods Data were from the Canadian Study of Adolescent Health Behaviors (2021; $N = 2762$), a national study of Canadian adolescents and young adults aged 16–30 years ($M = 22.9$, SD = 3.9). Prevalence and mean incidence of bulk and cut cycles in both the past 12 months and 30 days were estimated. Modified Poisson regressions were estimated to determine the associations between bulk and cut cycle engagement and levels of drive for muscularity and eating disorder and muscle dysmorphia psychopathology.

Results The sample comprised of 53.5% women, 38.4% men, and 8.1% transgender/gender non-conforming (TGNC) individuals. Nearly half (48.9%) of men and one in five women (21.2%) and TGNC (21.9%) participants reported bulk and cut cycles in the past 12 months. TGNC participants and women reported a greater mean number of bulk and cut cycles completed compared to men. Engagement in bulk and cut cycles was associated with stronger drive for muscularity across the sample, and more severe eating disorder and muscle dysmorphia psychopathology among men and women.

Conclusion Findings underscore the common incidence and accompanying psychopathology of bulk and cut cycles among a community sample of adolescents and young adults in Canada, indicating the need for future research, as well as clinical and public health efforts.

Level of evidence Level V, cross-sectional descriptive study.

Keywords Muscularity · Eating disorders · Muscle dysmorphia · Bulking · Cutting · Canadians · Adolescents · Young adults

Introduction

Alongside well-established eating disorder presentations, recent and increasing evidence has introduced a novel variant—muscularity-oriented disordered eating and weight-control behaviors—into our clinical lexicon. Characterized by attempts to increase lean muscle mass and reduce body fat, muscularity-oriented disordered eating and weight-control behaviors may include excessive exercising and weight lifting, high protein intake, "bulk" and "cut" cycles,

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intermittent fasting, appearance- and performance-enhancing drug and substance use, and "cheat meals" [1]. There is growing recognition of the overlap between muscularity-oriented disordered eating and weight-control behaviors and drive for muscularity (i.e., striving for muscle mass), eating disorder psychopathology, and muscle dysmorphia psychopathology [2]. These are important concepts given they may precipitate and perpetuate one's engagement in muscularity-oriented disordered eating and weight-control behaviors [2, 3]. However, little research has empirically investigated unique behaviors, including "bulk" and "cut" cycles, and their psychological correlates.

In keeping with a body ideal that is both high in muscularity and low in adiposity, bulk and cut cycles are described as the dietary method of alternating between periods of caloric surplus (bulking phase), with a particular focus on protein consumption, and caloric restriction (cutting phase) for the dual purpose of optimizing lean muscle mass and reducing adiposity [1]. In the bulking phase, the caloric surplus is often marked by intense focus on specific intake rules (e.g., eating a particular amount of protein per body weight and timing the intake of food) with the intention of either increasing muscle density or muscle leanness [1]. To compensate for any body fat gained during the bulking phase, the subsequent cutting phase is the process of restricting food and caloric intake with the specific intention of reducing body fat and enhancing muscle definition [1]. Importantly, the cutting phase may slow muscle development due to calorie restriction. Thus, individuals are typically motivated to return to the bulking phase, potentially perpetuating a maladaptive cycle [1].

Engagement in muscularity-oriented disordered eating and weight-control behaviors (i.e., bulk and cut cycles) is particularly common among adolescents and young adults, as well as varies by gender [3, 4]. This is largely driven by the high prevalence of body dissatisfaction across these age groups [5]. With this context in mind, engagement in bulk and cut cycles across genders may have different purposes. For example, cisgender adolescents and young adults may use bulk and cut cycles to achieve specific body ideals, including one that is characterized by bulk muscularity and leanness for boys and men [3], and one that is fit and toned among girls and women [6]. In addition, among boys and men, greater proximity to the male muscular ideal, achieved through engaging in bulk and cut cycles, may function to communicate adherence to masculine norms [7]. Indeed, adolescents and young adults are particularly susceptible to pressures to adhere to specific gender norms [8], consistent with the gender intensification hypothesis [9]. Among transgender and gender non-confirming individuals, body ideals vary, and engagement in disordered eating and weight-control behaviors may be precipitated by body dissatisfaction based on gender incongruence, particularly in response to pubertal changes [10, 11].

To date, no research has explored and characterized engagement in bulk and cut cycles in the community, particularly as it relates to key psychological constructs, such as drive for muscularity, a major factor contributing to muscularity-oriented disordered eating and weight-control behaviors [12], as well as both eating disorder and muscle dysmorphia psychopathology. Therefore, the exploratory aims of this study were to, first, establish the prevalence of bulk and cut cycles across genders, and second, to delineate the associations between engagement in bulk and cut cycles and drive for muscularity, and eating disorder and muscle dysmorphia psychopathology among a national sample of Canadian adolescents and young adults.

Methods

Data were drawn from the Canadian Study of Adolescent Health Behaviors, a national study of Canadian adolescents and young adults. Participants ($N = 2762$) were recruited online using Instagram and Snapchat advertisements from November to December 2021. To participate in the study, individuals had to be between the ages of 16 and 30 years, currently living in Canada, and able to read English. Participants completed an online survey via Qualtrics and were able to enter to win one of two Apple iPads or one of 20 $25 Starbucks gift cards as compensation for their participation. Informed consent was gathered from all participants. Ethics approval was obtained from the Health Sciences Research Ethics Board at the University of Toronto (#41707), which allowed for participants 16 years and older to provide informed consent.

Measures

Engagement in bulk and cut cycles over both the past 12 months and 30 days was assessed using the question, "Over the [past 12 months/30 days], have you engaged in a "bulk" and "cut" cycle (i.e., cycling between caloric overconsumption and caloric underconsumption)?" Response option included "no" (0) and "yes" (1). Completed number of bulk and cut cycles over both the past 12 months and 30 days was assessed using the question, "Over the [past 12 months/30 days], roughly how many times did you engage in a "bulk" and "cut" cycle?" One bulk and cut cycle was defined for participants as including "the period of caloric overconsumption and caloric underconsumption." Only participants who reported engaging in bulk and cut cycles in the past 12 months or 30 days were asked to quantify the number of cycles.

Drive for muscularity was measured using the Drive for Muscularity Scale (DMS) [13]. The DMS score is derived from the sum of the 15 items. Cronbach's α for the DMS was sound for men (0.85), women (0.88), and TGNC (0.89) participants.

Eating disorder psychopathology was measured using the Eating Disorder Examination Global (EDE-Q) 6.0 Global Score [14]. The EDE-Q Global Score was determined from the mean score of four subscales (i.e., Dietary Restraint, Eating Concerns, Weight Concerns, and Shape Concerns). Cronbach's α for the Global Score was excellent for men (0.92), women (0.96), and TGNC (0.95) participants.

Muscle dysmorphia psychopathology was measured using the Muscle Dysmorphic Disorder Inventory (MDDI) [15]. The MDDI total score was determined from the sum of all items. Cronbach's α for the MDDI total score was acceptable for men (0.80), women (0.73), and TGNC (0.75) participants.

Demographic variables included self-reported race/ethnicity, sexual identity, and highest education completed. Sex assigned at birth ("What sex were you assigned at birth on your original birth certificate?") and current gender identity ("What is your current gender identity?") were also assessed. A three-category gender variable (cisgender woman; cisgender man; transgender/gender non-conforming individual) was created for analytic purposes. For the remainder of this manuscript, women refers to cisgender women and men refers to cisgender men.

Statistical analysis

Prevalence of engagement in bulk and cut cycles was determined using frequencies (percentages) and differences between genders were examined using Chi-square tests. A one-way ANOVA was used to determine gender differences in the number of times individuals engaged in a bulk and cut cycle over both the past 12 months and 30 days. Multiple modified Poisson regression models using robust error variance [16] were estimated and adjusted rate ratios (ARR) and 95% confidence intervals (CI) were used to determine the association between the presence (1) or absence (0) of engagement in a bulk and cut cycle (both past 12 months and past 30 days) and drive for muscularity, and eating disorder and muscle dysmorphia psychopathology, while adjusting for the potential confounding demographic variables. All analyses were stratified by gender given differing levels of engagement and purpose of muscularity-oriented eating and weight-control behaviors across genders [1, 10]. Statistical significance was defined as two-sided $p < 0.05$ and all analyses were conducted using Stata 17.

Results

Among the sample of 2762 participants, the mean age was 22.9 (SD = 3.9), 53.5% identified as women, 62.5% identified as White, and 58.8% identified as heterosexual. The prevalence of engagement in any bulk and cut cycle was significantly higher among men compared to women and TGNC participants. For example, nearly half of men (48.9%), compared to about one in five women (21.2%) and TGNC (21.9%) participants, reported any bulk and cut cycle engagement in the past 12 months ($p < 0.001$). Similarly, 22.9% of men, compared to 12.0% of women and 9.8% of TGNC participants, reported any bulk and cut cycle engagement in the past 30 days ($p < 0.001$). Conversely, the mean number of completed bulk and cut cycles in both the past 12 months and 30 days was highest among TGNC participants compared to women and men (Fig. 1). For example, TGNC participants reported nearly 15 ($M = 14.7$, SD = 53.1) completed bulk and cut cycles in the past 12 months compared to 11.8 (SD = 37.9) among women and 2.8 (SD = 5.8) among men ($p < 0.001$). This pattern was similar for number of completed bulk and cut cycles in the past 30 days with TGNC participants reporting 4.4 (SD = 6.6) completed cycles compared to 4.2 (SD = 7.0) among women and 1.7 (SD = 3.5) among men ($p < 0.001$).

Results from regression analyses show significant associations between any engagement in bulk and cut cycles and drive for muscularity, and eating disorder and muscle dysmorphia psychopathology (Table 1). Regarding drive for muscularity, engagement in bulk and cut cycles in both the past 12 months and 30 days was positively associated with significantly higher DMS scores among women, men, and TGNC participants. Regarding eating disorder psychopathology, engagement in bulk and cut cycles in both the past 12 months and 30 days was positively associated with significantly higher EDE-Q Global Score among women and men. Finally, regarding muscle dysmorphia psychopathology, engagement in bulk and cut cycles in both the past 12 months and 30 days was positively associated with significantly higher MDDI scores among women and men. Only engagement in bulk and cut cycles in the past 12 months was positively associated with significantly higher MDDI score among TGNC participants.

Discussion

The findings from this study are among the first to describe the engagement in bulk and cut cycles among a diverse, national sample of Canadian adolescents and young adults.

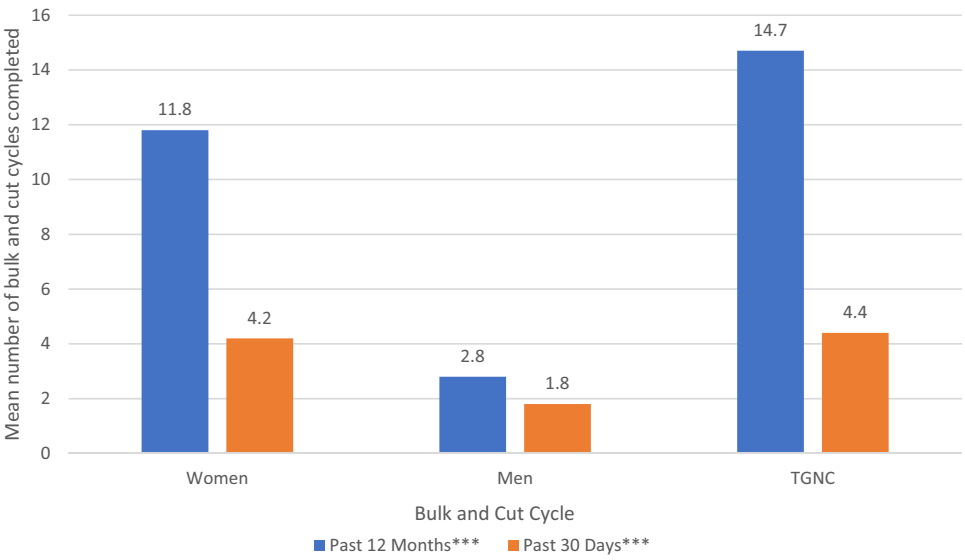

Fig. 1 Mean number of bulk and cut cycles completed in the past 12 months and 30 days by gender. Two separate one-way ANOVAs were used to determine the differences between gender (***$p < 0.001$)

Table 1 Associations between bulk and cut cycle engagement and drive for muscularity, and eating disorder and muscle dysmorphia psychopathology in the Canadian Study of Adolescent Health Behaviors ($N = 2762$)

	Bulk and cut, past 12 months		Bulk and cut, past 30 days[a]	
	ARR (95% CI)[b]	*p*	ARR (95% CI)[b]	*p*
Women ($N = 1477$)				
DMS	1.27 (1.24–1.29)	< 0.001	1.25 (1.22–1.28)	< 0.001
EDE-Q	1.21 (1.12–1.31)	< 0.001	1.25 (1.14–1.37)	< 0.001
MDDI	1.17 (1.14–1.19)	< 0.001	1.19 (1.16–1.22)	< 0.001
Men ($n = 1061$)				
DMS	1.18 (1.16–1.19)	< 0.001	1.14 (1.12–1.16)	< 0.001
EDE-Q	1.11 (1.01–1.23)	0.039	1.25 (1.12–1.40)	< 0.001
MDDI	1.12 (1.09–1.14)	< 0.001	1.10 (1.07–1.12)	< 0.001
TGNC ($n = 224$)				
DMS	1.30 (1.23–1.38)	< 0.001	1.29 (1.20–1.39)	< 0.001
EDE-Q	1.03 (0.82–1.29)	0.781	1.04 (0.77–1.39)	0.805
MDDI	1.08 (1.02–1.15)	0.015	1.08 (1.00–1.17)	0.060

Each cell represents the abbreviated outputs of modified Poisson regression models with robust error variance estimating the association between bulk and cut cycle engagement as the independent variable and drive for muscularity and eating disorder and muscle dysmorphia psychopathology as the dependent variables

ARR adjusted rate ratio, *CI* confidence interval, *TGNC* transgender/gender non-conforming, *EDE-Q* Eating Disorder Examination Questionnaire, *MDDI* Muscle Dysmorphic Disorder Inventory, *DMS* Drive for Muscularity

[a]Includes all those who did (1) and did not (0) report bulk and cut cycle engagement in the past 30 days

[b]Adjusted for race/ethnicity, sexual identity, and highest education completed

Findings revealed that the prevalence of any bulk and cut cycle engagement in both the past 12 months and 30 days among men was nearly double that of women and TGNC participants, with nearly half of men reporting engagement in the past 12 months. Conversely, however, the mean number of completed bulk and cut cycles was significantly higher among TGNC participants and women when compared to men.

Given the conceptualization of bulk and cut cycles as part of muscularity-oriented eating and weight-control behaviors, with an emphasis on men's engagement in these behaviors as a result of the pervasiveness of the muscular body ideal [1, 2], it is consistent that men reported a greater prevalence of overall engagement bulk and cut cycles. However, the finding that TGNC participants and women reported a greater number of completed bulk and cut cycles is unique. While speculative, it may be that TGNC participants and women are utilizing bulk and cut cycles akin to traditional dieting practices (i.e., alternating between restrictive and non-restrictive dieting) or bulk and cut cycles are more comparable to binge and purge cycles. Certainly, it is possible that some participants may have construed "periods of overconsumption and subsequent underconsumption of calories" in line with unplanned binge episodes, resulting in them reporting on compensatory efforts to restrict food intake. This interpretation may have resulted in an overestimation of the number of times one did in fact engage in a true bulk and cut cycle. However, this interpretation deviates from the commonly held practice in fitness communities that engagement in bulking and cutting should be done less frequently to optimize benefits (e.g., increased musculature and decreased body adiposity). For example, the bulk cycle can range from 1 to 6 months and the cut cycle can range from 2 to 4 months [17, 18].

With this context in mind, it appears that men's engagement in bulk and cut cycles (i.e., an average of three per year) generally aligns with the overall intended conceptualization of bulk and cut cycles as promoted by the fitness industry. That is, for the purposes of achieving a muscular and lean body to align with body ideals, through prolonged periods of bulking to increase muscle mass followed by prolonged periods of cutting to reduce superfluous body fat to increase leanness, with little impact to muscle mass. Women, however, may be more compelled to engage in shorter bulk and cut cycles, resulting in a greater number of total completed cycles, to ensure that they do not deviate from the fit and toned body ideal and gain too much muscle and body fat. Finally, the greater number of completed bulk and cut cycles among TGNC participants may be evidence of an overall greater level of disordered eating to align with gender-specific body ideals, which prior research has documented to be higher overall among this population [9].

While the prevalence and incidence of engagement in bulk and cut cycles differs between men, women, and TGNC participants, this behavior was similarly associated, in terms of directionality and effect size, with drive for muscularity and eating disorder and muscle dysmorphia psychopathology. First, engagement in bulk and cut cycles both in the past 12 months and 30 days was associated with greater drive for muscularity among men, women, and TGNC participants. This finding supports the intended purpose of bulk and cut cycles focused on increasing lean muscle mass via dietary manipulation [1]. While the effect sizes were higher among TGNC participants and women, it should be noted that the mean score for drive for muscularity was significantly higher among men. That is, men generally reported a greater drive for muscularity across the sample, which may have suppressed the effect size slightly.

Second, engagement in bulk and cut cycles both in the past 12 months and 30 days was associated with greater eating disorder and muscle dysmorphia psychopathology among men and women, while only associated with greater muscle dysmorphia psychopathology among TGNC participants in the past 12 months. Indeed, these are important findings given that they support a commonly held notion in the eating disorders and muscle dysmorphia literatures that engagement in bulk and cut cycles, categorized with muscularity-oriented eating and weight-control behaviors, is connected with greater psychopathology [1, 2].

Implications

The findings from this study have important implications for research and clinical and public health professionals. Given the high prevalence of engagement in bulk and cut cycles found in this study, additional research is needed to further corroborate and characterize the presentation of this behavior in the general population. Specifically, qualitative analyses may be helpful in further delineating the purpose of engagement, as well as the process one goes through to engage in bulk and cut cycles (i.e., where they learn about this behavior, how do they track their engagement, etc.) [19]. Additionally, while engagement in a complete bulk and cut cycle traditionally lasts longer than 30 days, our investigation of this behavioral phenomenon within the past 30 days was intended to capture fluctuations and refine measurement, since the characteristics of these behaviors are still being established. Future research can use the methods and findings from this study to inform further inquiry.

Clinical and public health professionals should be aware of the common nature of engagement in bulk and cut cycles within the community, particularly given that engagement appears to be more aligned with traditional conceptualizations of dieting behaviors among TGNC participants and women, and is associated with greater drive for muscularity among men, women, and TGNC participants, which may be a risk factor for additional muscularity-oriented behaviors (e.g., appearance- and performance-enhancing drugs and substances) [12]. Furthermore, engagement in this dietary behavior is associated with greater eating disorder and muscle dysmorphia psychopathology, particularly among men and women, indicating greater need for prevention, assessment, and intervention on the micro- and macro-levels to ensure the health and wellbeing of young people. It should also be underscored that the consistent and repetitive cycling between overconsumption and underconsumption of caloric intake, and subsequent weight cycling, may have deleterious health effects, including potential metabolic and cardiovascular risks [20].

Of particular importance is the awareness that traditional assessment tools may not capture contemporary diet-related behaviors (i.e., bulk and cut cycles), underscoring the need for clinicians to inquire about these behaviors among people with eating disorders and muscle dysmorphia. Finally, it should be noted that the data were collected during the COVID-19 pandemic and reference periods, particularly the past 12 months, included periods of lockdowns (i.e., the closure of gyms) in Canada. This may have impacted participants' ability to engage in muscularity-oriented behaviors. For example, attending gyms and fitness centers to "bulk up" during the bulking phase. Future research is needed to better understand engagement in bulk and cut cycles as the population continues to adapt to the effects of the COVID-19 pandemic.

Limitations and strengths

These implications should be contextualized by several key limitations. First, participants were recruited via a nonprobability sampling method, which may limit generalizability

of the findings to the Canadian population. However, participants were demographically diverse, represented all 13 provinces and territories in Canada, and were gathered via two commonly used social media outlets within Canada [21] without the use of specific adverting targeting features. Second, all items are based on self-report, which may introduce reporting and recall bias, and interpretation of the bulk and cut items may have varied among participants. Third, the data are cross-sectional, precluding casual inferences. Fourth, while we were able to conduct our analyses across genders, we were required to collapse TGNC individuals to one category due to insufficient cell sizes for several gender identities. Certainly, there may be nuances between TGNC identities (i.e., trans men vs. trans women) that should be further explored and delineated in future research. Finally, engagement in bulk and cut cycles among athletes was not assessed. This may be an important area of future research given different sports require changes in body weight for competition (i.e., wrestling). Strengths of the study include the large, national, and diverse sample of Canadian adolescents and young adults.

Conclusion

Engagement in bulk and cut cycles is common among a large sample of Canadian adolescents and young adults, with nearly half of men and one in five women and TGNC participants sampled reporting engagement in the past 12 months. Engagement in bulk and cut cycles was associated with drive for muscularity among all participants, and eating disorder and muscle dysmorphia psychopathology among men and women. Findings have important implications for future research and clinical and public health efforts.

What is already known on this subject?

Muscularity-oriented eating and weight-control behaviors have recently garnered research and clinical interest within the eating disorder field. However, little research has investigated specific eating-related behaviors, including "bulk" and "cut" cycles, among a community sample of participants, particularly as it relates to endorsement of drive for muscularity and eating disorder and muscle dysmorphia psychopathology.

What this study adds?

Nearly half of men and one in five women and transgender/gender non-conforming participants, reported engaging in at least one bulk and cut cycle in the previous 12 months at the time of study. Patterns of association were found between engagement in bulk and cut cycles and greater endorsement of drive for muscularity and eating disorder and muscle dysmorphia psychopathology. Findings add to a nescient yet growing literature on muscularity-oriented eating and weight-control behaviors and highlight the need for more research and clinical and public health efforts to address this potentially harmful eating behavior.

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Author contributions KTG: conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, visualization, writing—original draft, and writing—review and editing; MLC: conceptualization, and writing—review and editing; EP: conceptualization, and writing—review and editing; RFR: conceptualization, and writing—review and editing; SBM: conceptualization, and writing—review and editing; JMN: conceptualization, and writing—review and editing.

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Availability of data and materials Data may be made available upon reasonable request.

Code availability Not applicable.

Declarations

Conflict of interest All authors declare no conflicts of interest.

Research involving human participants The Canadian Study of Adolescent Health Behaviors was approved by the Health Sciences Research Ethics Board at the University of Toronto (#41707).

Informed consent Informed consent was obtained from all individual participants included in the study.

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