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SPOTLIGHT

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Eating disorder risk in rural US adolescents: What do we know and where do we go?

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Abstract

Adolescence is a vulnerable period for the development of eating disorders, but there are disparities in eating disorder risk among adolescents. One population that may be at increased risk but is vastly understudied, is adolescents residing in rural regions within the United States. Rural communities face many mental and physical health disparities; however, the literature on rural adolescent eating disorder risk is nearly nonexistent. In this paper we summarize the scant literature on disordered eating and eating disorder risk and prevalence among rural US adolescents. We also detail eating disorder risk factors that may have unique influence in this population, including socioeconomic status, food insecurity, healthcare access, body image, and weight stigma. Given the presence of numerous eating disorder risk factors, we speculate that rural adolescents may be a particularly vulnerable population for eating disorders and we propose critical next steps in research for understanding eating disorder risk among the understudied population of rural adolescents.

Public Significance: Rural adolescents may be at increased risk for eating disorders due to disproportionate burden of known risk factors, though this relationship remains understudied. We present a summary of the literature on prevalence and unique risk factors, proposing that this may be a high-risk population. We detail next steps for research to understand eating disorder risk in this population to inform future prevention, identification, and treatment efforts needed in this community.

KEYWORDS

adolescents, disordered eating, eating disorder, epidemiology, health disparities, prevention, rural health

1 | INTRODUCTION

Adolescence is a pivotal developmental period for disordered eating and eating disorders, given the physical and social changes that occur during this time (Markey, 2010; O'Dea & Abraham, 1999). However, there are known disparities in eating disorders, putting some adolescents at increased risk (Hooper et al., 2022), including those who experience food insecurity (Nagata et al., 2018; Pauls et al., 2022), adverse childhood experiences (Nagata et al., 2018; Pauls et al., 2022), and those who identify as sexual and gender minorities (Roberts et al., 2021). One population that may have elevated eating disorder risk is rural adolescents. While the definition of what constitutes a rural community varies, rural communities are generally characterized as areas with low population density located outside of metropolitan areas or cities (Long et al., 2021; Zahnd et al., 2022). Irrespective of the exact definition used, rural communities are shown

to face mental (Fontanella et al., 2015; Monnat & Rigg, 2016; Reiss, 2013) and physical health disparities (Ng & Kaye, 2015; Valentine et al., 2022; Ziller et al., 2019). However, adolescents from rural populations are an underserved and understudied population relative to disordered eating and eating disorder risk, and little is known about eating disorder risk among rural adolescents. Therefore, the objective of this paper is to summarize the evidence on the prevalence and unique risk factors of eating disorders among rural adolescents and outline critical future directions for research.

2 | PREVALENCE OF DISORDERED EATING AND EATING DISORDERS IN RURAL ADOLESCENTS

Little data exists on the prevalence of disordered eating (e.g., fasting, diet pill use, self-induced vomiting, binge eating, disordered muscle control behaviors, etc.) and eating disorders among rural US adolescents. To our knowledge, there are only two studies that assessed prevalence of disordered eating behaviors and eating disorder risk among rural adolescents in the US. One study of 1302 students from the Appalachian East Tennessee area found that 24.8% of female and 6.5% of male rural high school students screened as high risk for an eating disorder (as determined by the EAT-40), compared to 14.6% of females, and no males among the least rural communities surveyed in the study (Miller et al., 1999). These results therefore suggest that adolescents from rural communities may have elevated eating disorder risk relative to their urban-dwelling peers. The other known study found that in a population of 2629 high school girls from rural communities within the midwestern state of North Dakota, 11.8% of high school students used diet pills and 9.9% endorsed self-induced vomiting (Thompson et al., 2001). Comparatively, a study of a nationally representative sample of US high school students found that only 5.1% took diet pills, and 3.8% reported self-induced vomiting, further indicating that rural adolescents may be at increased risk compared to the general population of adolescents (Eichen et al., 2012). However, the two studies examining eating disorder risk in rural adolescents were limited to high school students from specific communities, and both were conducted nearly 30 years ago. Thus, results may no longer be valid, nor generalizable to other rural communities in the US. Furthermore, these studies did not assess other disordered eating behaviors such as restriction, binge eating, or muscle building behaviors, nor did they assess specific eating disorder diagnoses. They also did not assess factors such as sexual and gender identity or race/ethnicity. While outside the US context, two studies of rural Canadian adolescents have also reported high prevalence of disordered eating behaviors; specifically, over a quarter reported skipping meals for weight management (Groft et al., 2005), 14.2% reported binge eating (Jonat & Birmingham, 2004), 5.2% self-induced vomiting, and 5.5% using laxatives, diet pills, or diuretics. Furthermore, 17% of females and 8.3% of males screened as high risk for an eating disorder (as determined by the EAT-26). However, these studies are nearly 20 years old, and the prevalence of eating disorders has increased in the general population during this period (Galmiche et al., 2019; Romano et al., 2022), and results may not generalize to the United States. Taken together, there is a critical lack of current or sufficient data on the prevalence of either disordered eating or full-threshold eating disorders among US rural adolescents. Because the little available data suggest rural adolescents may be at increased risk for an eating disorder, high-quality and representative epidemiological data are urgently needed.

3 | UNIQUE RISK FACTORS

3.1 | Socioeconomic status and food insecurity

Despite the longstanding assumption that eating disorders are illnesses of affluence, eating disorders may actually be more common among those who are less socioeconomically advantaged (Mitchison & Hay, 2014; Romano et al., 2022). Several studies have also shown that lower socioeconomic status (SES) is associated with higher prevalence of disordered eating behaviors, including unhealthy weight control behaviors (e.g., fasting, skipping meals) (Larson et al., 2021), binge eating, and purging (Mitchison et al., 2014) among US adolescents. Rural children are 30% more likely to live in poverty compared to their urban counterparts (US Department of Agriculture Economic Research Service, 2022), and, therefore, may be at heightened eating disorder risk in part due to the increased likelihood for lower SES. Relatedly, food insecurity is also more common among rural populations compared to metropolitan areas (Coleman-Jensen et al., 2021), due in part to lower SES, but also driven by decreased food access. Food access may be a particularly salient factor in the potential relationship between food insecurity and eating disorder risk among rural adolescents, as rural communities are less likely to have access to full-service grocery stores that offer fresh fruits and vegetables and are therefore reliant on corner stores and other convenience stores that offer mostly shelf-stable and highly processed foods (Liese et al., 2007). Reduced food access due to geographical distance and healthful selection in stores may further contribute to or exacerbate food insecurity in this population, which may lead to disordered eating for a myriad of reasons (Hazzard et al., 2020). Indeed, food insecurity is consistently related to mental and physical health disparities (Dush, 2020; Shanafelt et al., 2016) including elevated eating disorder risk (Hazzard et al., 2020; Hooper et al., 2020; West et al., 2019). Accordingly, the increased likelihood of poverty, reduced food access, and overall higher levels of food insecurity among rural adolescents, may make rural adolescents particularly susceptible to eating disorders.

3.2 | Healthcare access

Rural populations are more likely to be medically underserved for numerous reasons, including affordability, distance to providers, lack of providers and services, and cultural perceptions that decrease

healthcare utilization (Douthit et al., 2015). Primary care providers are typically the first, and sometimes only, providers to see patients suffering with eating disorders (Sangvai, 2016), and this may be particularly true in rural communities where subspeciality services (i.e., adolescent medicine, gastroenterology, psychiatry) are lacking. However, primary care providers often are not trained in eating disorders and may fail to screen for eating disorders at all or may limit their screening to those who meet antiquated stereotypes about who is most likely to have an eating disorder (e.g., thin white girls) (Sonneville & Lipson, 2018). Furthermore, data suggest some primary care providers would choose not to screen for eating disorders when treatment pathways are unavailable (Wade et al., 2022). In rural populations, eating disorder treatment options are particularly scarce given the cost and the overall lack of available specialty care (Streatfeild et al., 2021). Although telehealth options have risen in recent years and may be a viable option in overcoming the scarcity of treatment options (Gorrell et al., 2022), there may be additional barriers for telehealth in rural communities that must be addressed first, including lack of internet providers servicing rural areas, unreliable internet or cellphone service at their home, or stigma-related concerns. Issues related to healthcare access in rural populations may lead to delayed diagnosis, which itself is associated with poorer long-term prognosis (Austin et al., 2021). Indeed, a study of Australian adolescents found that rural teens have more severe physical eating disorder symptoms, likely because they received care later in their illness than their more urban peers (Alman et al., 2014).

Although healthcare-related stigma is common in the United States, particularly behavioral or mental health, rural populations face unique pressures that may exaccerbate this stigma (Douthit et al., 2015). For example, rural patients often perceive their providers as neighbors and friends and are reluctant to share vulnerable information with providers with whom they are likely to see regularly in their communities (Brems et al., 2006). For adolescents, there could be the additional fear that the provider will share sensitive information with their parents given close community connections. Evidence also suggests that individuals from rural communities may be less likely to seek or accept treatment for mental health concerns like eating disorders, believing they can "fix" their own mental health issues and seeing mental health struggles as personal shortcomings (Willging et al., 2006). Indeed, an epidemiological study of eating disorder diagnoses and treatment among college students found those from less affluent backgrounds were less likely to perceive a need for treatment (Sonneville & Lipson, 2018). Therefore, rural adolescents may not only be less likely to perceive they need assistance, but may be less likely to seek treatment, be diagnosed, and have available treatment options when they do receive a diagnosis or perceive need for treatment.

3.3 | Body ideals, body image, and weight stigma

Rural adolescents have unique experiences of body image and weight stigma given the profound influence of culture on an individual's construction of body and appearance ideals (Markey, 2010). Like urban youth, rural adolescents' body and appearance ideals are heavily influenced by the media (Williams et al., 2008). However, rural communities may exert unique influences on adolescents as well. For example, rural populations place an emphasis on the ability to contribute to their community and many individuals do so by working labor-intensive jobs (e.g., farming, manufacturing) (McLaughlin & Coleman-Jensen, 2008). These jobs may lead to body ideals emphasizing more muscular physiques, though muscular ideals and disordered muscle building behaviors have not been explored in this population. Alternatively, an emphasis on appreciation of the body's ability to perform, regardless of physical appearance, could be protective against disordered eating (Linardon et al., 2022). Research that describes the characteristics and influences of body ideals within this community is needed.

Although research on body image in rural populations is lacking, the presence of weight stigma has been documented. Rural adolescents report experiences of weight-based teasing from peers (Williams et al., 2008), and rural adults report experiences of weight stigma in healthcare settings (Hughes et al., 2019). Weight stigma is common throughout the United States, but may be particularly harmful in rural communities for several reasons. First, the prevalence of higher body weight is more common in rural than urban areas, meaning individuals within rural communities likely experience disproportionate weight bias and discrimination (Johnson & Johnson, 2015). Next, evidence suggests that rural adolescents believe that having a larger body will lead to loss of belonging among peers and family, and a loss of functionality and productivity (Williams et al., 2008). Because of the importance of community and emphasis on productivity as a means of contributing to the community, the perceived consequences of higher weight may be particularly salient and severe in rural populations (Williams et al., 2008). Finally, rural adolescents report believing weight is highly malleable, that individuals hold blame for their weight, and that people should be forced to engage in activities to lose weight, suggesting they may see weight loss as easily achievable (Williams et al., 2008). Thus, rural adolescents may be particularly likely to experience and internalize weight stigma, thereby feeling compelled to attempt weight loss, and may be especially likely to use disordered eating behaviors to attempt weight loss or to cope with the distress of experiencing weight stigma (Ahorsu et al., 2020; Williams et al., 2008). Future research is needed to explore influences of body ideals and experiences of weight stigma among this population, including examining differences by source of information (e.g., peers, family, media, and health care).

3.4 | Other risk factors

Many other factors not discussed likely affect eating disorder risk among rural adolescents and warrant further investigation. For example, there is evidence that childhood sexual abuse is more strongly associated with self-induced vomiting for weight loss among rural adolescents than urban adolescents (Thompson et al., 2001). Furthermore, rates of substance use and substance use-associated mortality

are higher among rural than urban populations, which some theorize may be secondary to untreated mental health concerns and maladaptive coping mechanisms to difficult experiences (Rehder et al., 2021). Thus, substance use presents another potential risk factor for rural adolescents given it is strongly linked with disordered eating (Laghi et al., 2021; Pompili & Laghi, 2020). Importantly, health disparities among rural communities differentially impact people of color, LGBTQ+ individuals, and those experiencing poverty (James et al., 2017; Long et al., 2018; Rosenkrantz et al., 2017). Certain populations, such as American Indian/Native American people, may be both more likely to engage in disordered eating behaviors (Striegel-Moore et al., 2011) and to live in rural communities (US Department of Agriculture Economic Research Service, 2014). Thus, the effects of systemic inequities may be compounded for those carrying multiple socially marginalized identities, thereby likely increasing eating disorder risk (Beccia et al., 2019; Burke et al., 2020). This is likely true for indigenous populations both within and outside the United States (Hay & Carriage, 2012).

4 | CONCLUSIONS AND FUTURE DIRECTIONS

The research on eating disorder risk and prevalence among rural US adolescents is scant and outdated. Although this paper focused on rural US adolescents, many of the research gaps and factors discussed are likely applicable to rural communities outside of the United States. While some risk factors (e.g., healthcare access) likely apply to most rural settings, risk factors seen in rural communities in the United States may be rooted more in demographics than in geography, thereby limiting their applicability to non-US contexts. Our review of the literature suggests rural populations may be particularly vulnerable to developing eating disorders and may be at risk for underdiagnosis and undertreatment. Research examining the extent and severity of disordered eating among rural adolescents, as well as unique risk and protective factors within rural communities, is critically needed to inform prevention, identification, and treatment efforts. Specifically, large epidemiologic studies are needed to: assess and monitor prevalence of disordered eating in rural communities; examine if eating disorder risk is higher in rural communities compared to urban and suburban populations, as well as if there are differences in prevalences depending on the definition of rurality used; and examine if certain populations within rural communities are at especially increased risk (e.g., people of color, LGBTQ+, etc.), including examining risk within an intersectional framework. Although existing nationally representative studies of adolescents do not include disordered eating questions and/or do not assess rurality, it may be a feasible option to alter existing studies such as the Youth Risk Behavior Survey to reintroduce disordered eating questions and include direct information on participant rurality within the publicly available data set. In addition, because early intervention and specialty care are important prognostic indicators for recovery, research should also focus on establishing best practices for screening and referral in rural communities and identifying innovative approaches to increasing treatment accessibility within this population while addressing financial and geographical restrictions. Moreover, because of the numerous barriers for treatment, prevention is particularly important in rural adolescents. More research specifically examining eating disorder risk among rural adolescents is needed to clarify the unique risk and protective factors and mechanisms contributing to eating disorder risk in this population. Such research can then be used to inform the development of interventions, policies, and practices that effectively and efficiently prevent eating disorders in this population. Therefore, prevention-focused research in rural communities is needed to reduce the overall disease burden in this population and to prevent the progression of risk behaviors (i.e., dieting, disordered weight control behaviors) to full-threshold eating disorders. Given the well-established disparities in eating disorder symptoms, diagnosis, and treatment, research that uses an intersectional lens to examine unique eating disorder risk and protective factors among the understudied but likely high risk population of rural adolescents should be a public health priority.

AUTHOR CONTRIBUTIONS

Samantha L. Hahn: Conceptualization; writing – original draft; writing – review and editing. **C. Blair Burnette:** Writing – review and editing. **Kelley A. Borton:** Writing – review and editing. **Lisa Mitchell Carpenter:** Writing – review and editing. **Kendrin R. Sonneville:** Writing – review and editing. **Beth Bailey:** Writing – review and editing.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Because there was no primary data used in the present manuscript, no data is available.

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