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Review Article

Cognitive Bias Modification and Eating Disorders in the Elderly: A Brief Review

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Abstract

The current paper provides a brief overview of the occurrence of eating disorders (EDs) among older adults, and older females in particular. We discuss the medical risks associated with EDs in advanced age and provide an overview of studies investigating recent prevalence rates. We highlight the limited research focusing on predictive and etiological factors contributing to EDs among older adults, as well as the lack of investigation into the relationship between cognitive biases and ED onset/maintenance in the elderly. Finally, we discuss the evidence supporting the role of cognitive biases in EDs and suggest methods of cognitive bias assessment and cognitive bias modification as tools to further our understanding of EDs in advanced age.

Keywords: Eating disorder; Older adult; Cognitive bias; Cognitive bias modification

Abbreviations

ED: Eating Disorder

Introduction

Eating disorders (EDs) are characterized by a serious disturbance in eating behavior and a preoccupation with food, body image and weight. Eating pathology is generally considered to affect female adolescents and young adults, however, there has been increasing evidence for the continuation, recurrence and onset of EDs among older individuals [1,2]. Given the morbidity and mortality risks associated with EDs [3], and the increasing demographic shift towards an older population [2], the identification and treatment of EDs among the elderly is a critical area of investigation. Here we briefly review the literature on EDs in advanced age, highlight the importance of investigating cognitive factors related to EDs and make recommendations for the use of cognitive bias assessment and modification programs targeting eating pathology among the elderly.

Eating Disorders in Old Age

EDs are associated with significant health consequences and the highest mortality rates of any psychiatric disorder [3]. In old age these risks are exacerbated due to increased vulnerability to cardiac arrhythmias and arrest [4] and the increased mortality rates related to dieting and low weight [5]. Additionally, EDs in old age are associated with increased risk for osteopenia, osteoporosis and compromised immune response [2,4,6]. Finally, cognitive impairments related to reduced caloric intake may be increased among older individuals [7].

Prevalence reports for EDs among older females have only recently been investigated, and vary between studies. In a Canadian sample, Gadalla et al., [8] reported that disordered eating was present in 2.6% of women aged 50-64 years old, and in 1.8% of women over 65 years old. Mangweth-Mazek et al., [9] surveyed 475 Austrian women aged 60-70 years old found that 3.8% met diagnostic criteria for an ED and 4.4% reported single symptoms corresponding to an ED. More recently, in American samples, Thompson & Bardone-Cone [10] reported a 6% rate for EDs among a community group of 97 women (aged 65-90 years old), Gagne et al., [11] found that 13% of their internet-based sample (1849 women over 50 years old) endorsed ED symptoms, and Midlarsky et al., [12] found that 11.84% of a sample of 245 women aged 60-90 years old met criteria for an ED. Variance between the prevalence reports above may stem from multiple factors including demographic and socio-cultural sample differences, but are likely also influenced by the limited knowledge concerning factors that contribute to, and are exhibited with, EDs among older adults.

There is conflicting evidence as to the degree to which the etiology of EDs in advanced age overlaps with manifestation of eating pathologies in younger populations. While there is a significant relationship between body dissatisfaction and risk for EDs in young adults [13-16], as well as evidence that body dissatisfaction remains stable across the lifespan [9,17-19], there has been inconsistent evidence as to the role that body dissatisfaction plays in the occurrence of EDs later in life [20]. Furthermore, in a study that investigated the relationship between concerns about aging and a drive for thinness, the authors found a direct correlation between apprehension about the effects of aging on appearance and preoccupation with weight, diet and exercise [18]. Conversely, other studies investigating predictors of eating pathology have found greater consistency among factors contributing to ED onset and maintenance across the lifespan. For example, Midlarsky et al., [21] found that, similar to younger samples, eating pathology in women 60-90 years old was predicted by socio-cultural pressures to be thin, maladaptive perfectionism, and depression.

Cognitive Bias and Eating Disorders

One area that has been under-investigated, with respect to the etiology of EDs in older adults, is the role of cognitive biases. Existing models of EDs suggest that attention and interpretation biases towards food and body shape information play a central role

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in the development and maintenance of pathological eating behavior [22-25]. Within an experimental setting, cognitive biases involve preferential processing of salient stimuli (e.g., food, body shape information and negative self-assessment) over neutral cues [26]. This preferential processing is largely outside of conscious control and influences subsequent behavior (e.g., food consumption) and thoughts (e.g., body dissatisfaction [27,28]). Cognitive biases among younger individuals with EDs have been found in studies using the modified Stroop task [29-35], the dichotic listening task [36], and the dot probe task [38,39]. These biases have been found to occur both among individuals meeting clinical threshold for EDs [32,37,39] and those at risk for an ED [27,40,41]. While the studies listed above have served to establish the role of biased cognition in the manifestation and maintenance of EDs in younger populations, the degree to which cognitive biases contribute to EDs later in life is unknown. Delineating this relationship will be critical in both furthering our understanding of EDs in advanced age as well as informing current (e.g., cognitive behavioral therapy) and new (e.g., cognitive bias modification, see below) treatment techniques. Furthermore, there are advantages associated with examining biased cognition as a means of understanding EDs across the lifespan. For example, methods aimed at assessing attention and interpretation bias typically rely on objective measurements based on reaction times. As such, when taking into account slowed motor responses, they are less subject to age-related confounds that can be associated with self-report measures (e.g., age related decreases in appetite, changes in energy etc.).

With respect to treatment, knowledge regarding the impact of cognitive biases on EDs has recently led to the development of cognitive bias modification techniques that have shown promise in the reduction of ED related symptoms. Cognitive bias modification relies on computerized training programs to alter patterns of attention (e.g., the dot-probe task and tasks requiring speeded responses away from negative information) and interpretive biases (e.g., presentation of ambiguous scenarios where a positive interpretation is reinforced) associated with different forms of psychopathology [42-44]. Reductions in symptom severity have been observed post-cognitive bias modification training among individuals suffering from depression [45], anxiety [46] and addiction [47]. Based on these promising results, cognitive bias modification paradigms have recently been tested to address eating pathology in younger populations [48-52]. Findings include improvement in appearance satisfaction among female undergraduate students with EDs [48,49] decreases in negative interpretations of social stimuli [51] and potential reductions in food avoidance behaviors in anorexia nervosa [52]. Although cognitive bias modification has not been investigated among older adults with EDs, Murphey et al., [53] published a study investigating the feasibility of administering a computer-based cognitive bias modification paradigm aimed at improving positive affect for a group of 77 community-based older adults aged 60-80 years. The study showed high compliance with an overall increase in the vividness of positive prospective imagery following cognitive bias modification training in the test group. Murphey et al.'s results are important given potential concerns about the applicability of cognitive bias modification techniques to older adults, including comfort with computerized interventions and cognitive suitability. Ultimately, the cost-effective and automatized nature of these interventions may have important implications for the treatment of eating disorders in general, and specific applications to older populations.

Conclusion

In conclusion, although EDs are generally considered a disorder of female youth, recent studies have demonstrated that prevalence rates for EDs in older populations are comparable to other stages of life. Furthermore, these rates are likely to increase with the projected rise in frequency of EDs within the general population, and with the increase in the older demographic. Given the significant health and mortality risks associated with EDs, and the increase in these risks when EDs occur in old age, research focusing on furthering our understanding of EDs later in life is critical. For example, cognitive biases are considered to be an important factor contributing to ED onset and maintenance, but have yet to be researched among older adults. Furthering our understanding of the relationship between cognitive bias and EDs in advanced age may have important implications for the creation of developmentally appropriate treatment and assessment techniques.

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