THE YOGIC INSIGHT

ISSN No.: 2582-9076
Vol.: 2
Pp: 77-93

YOGA THERAPY IN EATING DISORDER: A MINI REVIEW

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ABSTRACT

Eating disorders are one of the most common psychological/psychosomatic disorders that cause many problems for physical health, mental functioning and quality of life. Eating disorder is identified by severe chaotic eating behaviors and includes anorexia nervosa and bulimia nervosa. The use of complementary medicine, such as yoga, has always been of interest to researchers in clinical sciences and has been proposed as a new approach to the treatment of eating disorders. Yoga essentially means connectivity and continuity. Through mind- and body-based techniques, yoga can be effective in the achievement of therapy goals in feeding and eating patients. The data for the present review study was collected through a search in electronic resources and databases. The search for relevant articles and studies was performed on the internet in relevant websites and scientific/ research journals using a number of keywords. This study will address yoga therapy and its relationship with and effects on eating disorders after a review of the definition, classification, epidemiology and pathophysiology of different types of eating disorders. The results showed that eating disorders are caused by emotional disorders and stress and, essentially, by subjective factors. Many people achieve relaxation and body, soul and mind balance with yoga. This practice makes it more possible to fight eating disorders. Thus, Yoga creates self-confidence and a positive feeling about one's body and appearance. Yoga has a holistic attitude toward human-beings and provides different, continuous and simple techniques for humans' health, development, preparation and balance and is thus effective in improving nutrition and eating disorders.

KEYWORDS: Eating disorder, Meditation, Nutrition disorders, Yoga

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INTRODUCTION

Individuals with restrictive eating disorders present with co-morbid psychiatric disorders and many attempt to control symptoms using strenuous exercises that increase caloric expenditure. Yoga offers a safe avenue for the engagement in physical activity while providing an outlet for disease-associated symptoms.

Yoga has been shown previously to be equal or superior to other aerobic activities in improving a number of outcomes such as attention, alertness and energy expenditure, associated with chronic conditions (e.g., chronic renal failure, multiple sclerosis, schizophrenia, etc.) [1].

Yoga is an intervention that addresses movement, breathing, and awareness of bodily sensations; it helps to increase awareness of internal states and reorganize physiological responses connected to symptoms. Originating in India, it is a practice designed to create a sense of well-being, improve self-confidence and efficiency, increase attentiveness, and provide an optimistic outlook [2]. Comprised of physical and mental health, yoga improves the body's sense of embodiment and interception. A lack of interceptive awareness is a key characteristic of anorexia nervosa and bulimia nervosa [3].

One aspect of the eight-limbed yoga philosophy involves specific postures called asanas, through which attention is focused inward and the practitioner transcends the mind-body divide in an attempt to experience the true self or soul [4]. There has been increasing interest regarding the therapeutic benefits of yoga to prevent or treat many medical conditions, as well as mental health disorders [5]. A psychological and physical benefit that may be derived from the practice of such mind-body activities has been studied in healthy high school students [6, 7]. Preliminary work suggests yoga to be of benefit for anxiety, depression and general eating disorder symptoms [8].

Studies exploring yoga in the eating disorder population have been few and carried out primarily in adults, but have shown improvement in depression and anxiety [9,10]. Other studies in adolescents have included the effect of yoga on quality of life, and health outcomes and adherence in teenagers with hemophilia and asthma [11, 12].The only randomized controlled trial that assessed the impact of yoga on

eating disorder outcomes found that yoga treatment decreased weight and shape concerns [13].

TYPES OF EATING DISORDERS

The definition provided by the American Psychology Association for eating disorders, which is also included in the DSM-V, is currently the most common definition. Eating disorders are categorized as Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder and Feeding and Eating Disorders in Infancy or Early Childhood, namely Pica, Rumination Disorder and Feeding Disorder of Infancy or Early Childhood.

1 **ANOREXIA NERVOSA:** The term anorexia refers to the loss of appetite, and nervosa shows that anorexia has occurred for emotional reasons. This terminology is somewhat incorrect, since many people with anorexia nervosa do not lose their appetite or interest in food, rarely experience the loss of appetite, and even then, often in the advanced stages of their disorder. Anorexia is self-starvation and resistance against having the normal minimum weight. People with anorexia nervosa have mental preoccupations about food and exhibit depression and poor social relations. The main features of anorexia nervosa are: (1) Resistance against maintaining a minimum weight and a sustained energy intake limitation; (2) Phobia of obesity; and [14]. A false belief about one's own body, such that even excessive slimness is considered obese. The main difference in the fifth edition of DSM over the fourth edition is that the cessation of menstruation (or amenorrhea) is no longer required for this diagnosis to be made [14]. An impaired body image is the main feature of anorexia nervosa. The family members of people with this disorder suffer extensive disappointment. The main problem in people with this disorder is an intense psychological development crisis, and hatred is a very popular attitude among these individuals [15]. DSM-V differentiates between two types of anorexia nervosa: 1) Restrictive, in which self-starvation is not accompanied by purging, and food intake is limited and exercise is relentless and obsessive for at least three months;

2 **BINGE EATING/PURGING**: In which the individual regularly self-induces vomiting or takes laxatives, and these acts should last for at least three months [14]. Bulimia Nervosa In this disorder, the individual fears weight gain and has a distorted image of own body. The main feature of bulimia nervosa is regular and frequent periods of binge eating followed by periods of fasting or purging. The main cause of bulimia nervosa is concern about the weight and body, which may begin following a period of dieting. Bulimia nervosa is a type of disorder associated with western cultural ideals about a trimmed body and eating and nutrition patterns [14]. According to DSM-V, the main features of bulimia nervosa are: (1) Periods of binge eating with a relatively high frequency (at least once a week) and lasting for at least three months; (2) Compensatory behaviours following binge eating to prevent weight gain (vomiting and misuse of laxatives or emetics; (3) Weight is as low as in anorexia nervosa; (4) The patient has a phobia of obesity and constantly desires a slimmer body or meets both of these items. People with bulimia nervosa are divided into two types. The purging type forces themselves to throw up what they have just eaten by vomiting or taking laxatives or diuretics. The non-purging type tries to balance what they have eaten by excessive exercise or fasting. According to the DSM-V, two important features differentiate anorexia nervosa from bulimia nervosa. The first feature concerns body image. People with anorexia nervosa have a highly-distorted image of their body size and imagine themselves obese even when approaching chronic starvation. In contrast, people with bulimia nervosa have a precise image of their body, but they still worry about weight gain. The second feature concerns the amount of weight lost. People with anorexia nervosa weigh very much below their height and statue standard, while many people with bulimia nervosa have moderate or above-moderate weight.

3 **BINGE EATING DISORDER (BED)**: Binge Eating Disorder (BED) refers to frequent episodes of binge eating. Overeating in one sitting is a feature of BED. This disorder is a milder version of bulimia nervosa, but unlike it, has no compensatory behaviors (purging, exercise and fasting), and the difference between this disorder and anorexia nervosa is that there is no weight loss in this one. Meanwhile, the main feature of all these three disorders is poor eating

patterns [14]. The criteria for BED include: (A) Frequent binge eating episodes, identified with (1) Eating on different occasions (for instance, every two hours); (2) The lack of control over eating during the episode. (B) Episodes of BED are associated with at least three of the following cases: (1) Abnormally fast eating; (2) Eating until feeling uncomfortably full; (3) Overeating when not feeling hungry; (4) Eating when alone out of embarrassment over the amount eaten. C) Being clearly upset about binge eating; (D) Binge eating at least once a week for three months [16].

FEEDING AND EATING DISORDERS OF INFANCY OR EARLY CHILDHOOD

These disorders include persistent symptoms of inadequate intake of food, frequent regurgitation, repeated mastication or swallowing non-food substances. The DSM-V refers to three feeding and eating disorders in this age group: Pica, Rumination Disorder and Feeding Disorder of Infancy or Early Childhood.

1 **PICA**: Pica is a continuous eating of non-nutritious items for at least one month. Eating non-food substances after the age of 18 months is usually considered abnormal. Pica usually begins at 12 to 24 months of age and its incidence reduces with age. Specifically, small children tend to eat paint, chalk, yarn, hair and cloth, while older children tend to eat soil, animal stool, stone and paper. The disorder may be clinically benign or dangerous depending on the type of substance eaten. The most serious complications of pica include lead poisoning, intestinal parasites, anemia, zinc deficiency and severe iron deficiency.

2 **RUMINATION DISORDER:** According to the DSM-V, rumination disorder is the frequent regurgitation of foods already chewed in children or infants following a period of normal functioning. The signs should last for at least one month. This disorder generally begins after the age of three months, and the food may be re-swallowed or spat out after it is thrown up. Ruminating infants try to return the food into their mouth and appear to enjoy these efforts. Rumination is a rare disorder that seems to be more common between the ages of three months and one year and among mentally-challenged children and adults. Psychodynamic views on the etiology of rumination have proposed turmoil in the mother-child

relationship as a potential cause of this disorder. The mothers of these infants are often immature and engaged in marital conflicts and do not pay much attention to their children. Behavioral interventions such as pouring a few drops of lemon juice in the infant's mouth during rumination may be effective in reducing this behaviour. This method appears to be the quickest and most effective method for eliminating rumination within three to five days.

3 **FEEDING DISORDER:** According to the DSM-V, this disorder is the persistent inability to eat adequately, which leads to the lack of significant weight gain or a significant weight loss over one month. This disorder begins before the age of six years [17].

STUDY OUTCOMES

The following sub-sections present each study and corresponding results grouped by ed risk or protective factors, and symptoms.

ED SYMPTOMS AND CHARACTERISTICS OF YOGA PRACTITIONERS: Findings from cross-sectional studies on yoga practitioners' E D - related characteristics are mixed. Daubenmire (2005) found adult female yoga practitioners to be less likely to engage in disordered eating than were their non-yoga practicing counterparts. Yoga and Pilates practitioners considered as a single group were found to engage in some forms of weight management. The small sample of male practitioners in this study was found to engage in significantly more unhealthy weight management behaviors (e.g., fasting, laxative use) and binge eating than were female participants (Neunmark-Sztainer et al., 2010). Gender differences are difficult to explain given the lack of comparable studies. It is possible that males and females respond differently to yoga, or plausible that men who participate in yoga and Pilates may be at increased risk for EDs. These questions require further study.

ED SYMPTOMS AND YOGA INTERVENTIONS: Some pre–posttest studies of yoga interventions suggest that yoga has no effect on ED symptoms. Mitchell et al. (2007) reported no difference in caloric restraint or binge eating behaviors between body-dissatisfied females treated with a yoga intervention and their untreated counter parts. Bulimia symptoms also persisted among a sample of eating-disordered females despite

their participation in a yoga ED prevention program (Cook-Cottone et al., 2008). Other research suggests that completion of a preventative yoga program for fifth-grade females without EDs was associated with pre – post decreases in bulimia symptoms (Cook-Cottone et al., 2010; Scime & Cook-Cottone, 2008). Two RCTs support the therapeutic utility of yoga for individuals with existing ED symptoms. McIver et al. (2009) randomly assigned a community sample of women with self-reported BED to an unspecified yoga condition (n = 45) or a wait-list control group (n = 45). An assessment of ED outcomes occurred before and after participants completed 12 weeks of once weekly, 1-hour yoga sessions. Those in the intervention group reported significantly less binge eating following the yoga treatment, compared with baseline, and improvement was sustained at 3-month follow-up. No change was observed for the wait-list control group throughout the course of the study. Carei et al. (2009) examined the effects of a yoga intervention for individuals with clinical-level EDs. Fifty young adults (93% female) with a diagnosis of AN, BN, or EDNOS were recruited from outpatient ED treatment programs through which they continued receiving weekly nutritional counseling and physical examinations. Participants were randomly assigned to a yoga group (n = 24) or a wait-list control group (n = 26). The yoga intervention involved 60 minutes of Viniyoga instruction 2 times per week for 8 weeks. ED outcome data were collected at baseline, 9 weeks, and 12 weeks. ED symptoms, depression, and anxiety significantly decreased from baseline to 9 weeks for both groups. The yoga group reported continued reductions in ED symptoms at 12 weeks and controls reported an increase in symptoms. Preoccupation with food was measured before and after each yoga session. These data were combined for both groups after the wait-list controls received the yoga intervention. Preoccupation with food significantly decreased for the entire sample after each yoga session, compared with presession ratings.

ED PROTECTIVE FACTORS: Research supports the notion of maximizing protective factors, such as self - competence and self - esteem, to mitigate the effects of ED risk (O'Dea, &Abraham, 2000; Peck & Lightsey, 2008; Stice, 2002). Several studies suggest that a yoga - based intervention for ED served as a protective factor for fifth - grade girls, who reported significant improvements in self - competence (Cook - Cottone et al., 2010) and physical and social self - concepts after completion of this program

(Cook - Cottone et al., 2010; Scime & Cook - Cottone, 2008) Emotion regulation is also considered a protective factor against EDs given that ED symptoms are thought to be coping strategies for tolerating negative affect (Soukup, Be il e r, & Terrell, 1998; Stice, 2002). The ability to self-regulate affect may be a functional alternative to disordered eating. Findings from the 6-day yoga workshop (Dale et al., 2009) revealed that workshop completion was associated with improved emotion regulation and reduced affect problems among participants with a history of ED's.

BODY DISSATISFACTION: Negative body image has consistently been identified as a risk and maintenance factor for EDs (Stice, 2002). It often triggers dieting, which has causal implications for pathological eating. ED prevention and treatment efforts often aim to improve body satisfaction (Littleton & Ollendick, 2003). Nine studies have considered whether body image concerns are differentially related to engagement in yoga versus other forms of physical activity, as well as why individuals select particular forms of exercise.

Zajac and Schier (2011) surveyed adult female yoga (type unspecified) and aerobics practitioners in Poland (yoga, n = 30; aerobics, n = 40) and Canada (yoga, n = 30; aerobics, n = 38) to assess body image distress and motivation for exercising by using a cross-sectional design. Participants were recruited from yoga studios and fitness centers. Comparisons of Polish and Canadian yoga and aerobics practitioners revealed that Polish yoga practitioners had significantly lower average body image distress scores than did polish aerobics practitioners and Canadian yoga or aerobics practitioners. Canadian yoga0 practitioners had comparatively but not significantly lower body image distress ratings than did their aerobics-practicing counterparts. Correlational analyses found that yoga practitioners were less motivated by weight management and more motivated by health/stress management than were aerobics practitioners, regardless of nationality.

Daubenmier (2005) used a cross-sectional design to compare body image ratings among yoga practitioners (n = 51), aerobics practitioners (n = 45), and those who did neither yoga nor aerobics (n = 51). Participants were asked to complete surveys regarding their physical activity and ED characteristics. Yoga practitioners

reported engaging in an average of 300 minutes of Iyengar or Ashtanga yoga per week for approximately 6 years. Aerobics practitioners participated in 45- to 60-minute step classes for roughly 6 years. Yoga practitioners were found to have higher levels of body satisfaction than any of the other participants, and more yoga experience was associated with higher body satisfaction.

Dittman and Freedman (2009) assessed whether the association between yoga practice and ED risk factors is influenced by motivation for practicing. This cross-sectional study surveyed female yoga practitioners about their reasons for doing yoga and their experience of ED factors. Participants reported practicing an unspecified amount of various types of yoga at least 1 time per week. They were classified as having spiritual (n = 99) or physical/appearance motivations (n = 30). The overall sample exhibited high levels (scores > 3 on a 1–5, low–high Likert scale) of body satisfaction. Spiritually motivated practitioners reported higher levels of body satisfaction than did those with physical motivations. Many participants in this sample were experienced practitioners with practice histories ranging from 4 to 40 years (average = 12 years).

Other research suggests that type of yoga practiced is important (Delaney & Anthis, 2010). Distinct schools of yoga are thought to differentially emphasize elements of yoga practice and philosophy, with some forms of yoga being characterized by fast movements synchronized with breath (e. g. ,Vinyasa) and others by postures being held for longer periods of time (e.g., Hatha).

Participants reported yoga practices ranging from 207 to 253 minutes per week and had practiced for 6.64 to 9.57 years. Those in the medium and high mind–body groups reported higher levels of body awareness and body part satisfaction, compared with those in the low mind–body group, with differences between the medium and low groups being statistically significant. It is unclear why high mind–body yoga was associated with slightly less body satisfaction compared with medium mind–body yoga. The small group size and the coding of class type using class descriptions rather than direct observation of classes decreased the ability to detect meaningful effects.

Although these studies suggest that yoga practitioners are relatively satisfied with their bodies, it is unclear whether yoga practice or other extraneous variables may be responsible for these effects. A longitudinal study of diet, exercise, and related outcome variables (Project Eating and Activity in Teens and Young Adults III) found female yoga/Pilates practitioners and non-practitioners to be equally dissatisfied with their bodies, after controlling for body mass index (BMI) and physical activity level (Neumark-Sztainer et al., 2010). Participants were grouped based on whether they reported participating in yoga and/or Pilates at least 1 time per week (practitioners, n = 274; non-practitioners, n = 2,013). Practitioners were predominantly female (81%) and practiced an average of 122 minutes of unspecified forms of yoga/Pilates per week. Considering yoga and Pilate's practitioners together is problematic, however, because they are distinct practices (Kristal, 2009).

Several longitudinal studies of yoga-based interventions have also been conducted. A multi-component ED prevention program involving 8 to 12 weekly sessions of Hatha yoga (45 minutes long), psycho-education, journaling, and group discussion has been the subject of several pre–post intervention evaluations. The first found that fifth-grade females (n = 45) recruited from public schools in western New York reported significantly lower levels of body dissatisfaction following 10 weeks of the program (Scime et al., 2006). This finding was replicated in a sample of fifth-grade females that included minority (n = 25) and White participants (n = 25) matched on the basis of BMI and socioeconomic status (Cook-Cottone et al., 2010). These findings were supported by a study in which outcomes of intervention participants (n = 75) were compared with those of untreated controls (n = 69). Significant pre- to posttest decreases in body dissatisfaction were also found when an 8-week version of the program was used as relapse prevention for ED outpatients (N = 24) recruited from local ED treatment providers (Cook-Cottone et al., 2008).

Mitchell et al. (2007) recruited a sample of college women to explore the impact of yoga on body image and other ED outcomes. Women dissatisfied with their bodies were randomly assigned to 1 of 3 groups: integral yoga (n = 33), cognitive dissonance discussion (n = 30), or no treatment (n = 30). The yoga and cognitive dissonance groups met 1 time per week for 6 weeks, for 45 minutes each. Participants completed

a variety of pre- and post-intervention measures. Significantly lower body dissatisfaction scores were reported for the dissonance group compared with the no-treatment controls. No significant body dissatisfaction decreases were found for the yoga group relative to the dissonance and control groups.

DRIVE FOR THINNESS: ED inventories typically measure drive for thinness, or the motivation to lose weight, because this factor predicts ED risk and relates to the two key features of AN and BN: fear of gaining weight and behaviors intended to prevent weight gain (APA, 2000; Garner, 1991; Tylka, 2004). Five longitudinal studies compared levels of drive for thinness before and after yoga interventions. Four studies reported completion of a yoga program to be associated with significant pre to post intervention reductions in drive for thinness among samples of fifth-grade White and minority girls (Cook-Cottone et al., 2010; Scime et al., 2006; Scime & Cook-Cottone, 2008), and adult females with EDs (Cook-Cottone et al., 2008). Yoga treated participants were less susceptible to the media influences thought to encourage individuals to strive to attain an unrealistic physique (Fredrickson & Roberts, 1997; Scime et al., 2006). Drive for thinness was unchanged from pre- to posttest among fifth-grade girls who did not complete the program (Scime & Cook-Cottone, 2008). Mitchell et al. (2007) found that drive for thinness scores increased from pre- to posttest among untreated control participants and decreased for yoga-treated participants; however, these differential response patterns were not statistically significant. Only dissonance-treated participants exhibited a significant pre-post reduction in drive for thinness.

BODY AND EMOTIONAL AWARENESS: The extreme eating and exercising behaviors that mark EDs require individuals to ignore internal cues such as hunger, satiety, fatigue, and associated affect. Not surprisingly, alexithymia (impaired emotion recognition), poor interoceptive awareness, and poor body awareness and responsiveness correlate with ED behaviors and attitudes (Daubenmier, 2005; Myers & Crowther, 2008; Taylor, Parker, Bagby, & Bourkes, 1996).

Five studies explored associations between yoga and ED related mind–body disconnectedness. Dittmann and Freedman (2009) reported that yoga practitioners

have high levels of body awareness and responsiveness. Yoga practitioners exhibited high levels of intuitive eating indicative of their awareness and responsiveness to hunger and satiety. Yoga practitioners were also found to have higher levels of body awareness and responsiveness than did nonpractitioners (Daubenmier, 2005).

Delaney and Anthis (2010) detected significantly higher levels of body awareness among yoga practitioners whose practices place a moderate as opposed to a low level of emphasis on the mind–body relationship. The type of yoga influenced the relationship between yoga practice and body awareness. Dittmann and Freedman (2009) found yoga practitioners' motivation for practicing to be important. Specifically, practitioners with spiritual motivations for doing yoga had greater body awareness, body responsiveness, and intuitive eating compared with those with appearance-related motivations.

Longitudinal studies suggest a relationship between yoga practice and body awareness. Dale et al. (2009) administered a 6-day Forrest yoga workshop (1,170 minutes of yoga instruction supplemented with cooking classes, nutrition education, and group discussion) to a group of 5 adult females with a history of ED. Interoceptive awareness and other ED outcomes were measured before and after the workshop. Reported postintervention levels of interception were significantly higher compared with baseline reports. The fact that this workshop entailed multiple components and no comparison group renders it difficult to discern whether improvements were attributable to yoga or to another aspect of the intervention.

Mitchell et al. (2007) reported statistically significant improvement in the related construct of alexithymia for the dissonance group in their study. However, only non-significant change was detected for those assigned to the yoga intervention and control groups.

DISCUSSION

This review suggests a number of potential benefits of yoga practice and yoga interventions for individuals with EDs and their correlates. Given the absence of a pattern of worsening symptoms or adverse effects for known risk and protective factors, yoga may be safe for most with regard to EDs. It is important to interpret

these findings with caution given the substantial variation in study quality/rigor, design, participant characteristics, and variations in types and dosage of yoga. There is considerable need for additional, high-quality research that provides specific information about the forms of yoga practiced and dosage effects.

Most yoga interventions were associated with fewer ED risk factors and symptoms, such as body dissatisfaction, drive for thinness, media influence, poor interoception, bulimic behaviors, binge eating, and food preoccupation (Carei et al., 2010; Cook-Cottone et al., 2008; Cook-Cottone et al., 2010; Dale et al., 2009; McIver et al., 2009; Scime & Cook-Cottone, 2008; Scime et al., 2006) and higher levels of ED protective factors, including self-competence, positive physical and social self-concepts, and emotion regulation (Cook-Cottone et al., 2010; Dale et al., 2009; Scime & Cook-Cottone, 2008). Findings from several controlled studies suggested yoga interventions are preferred to no treatment (Carei et al., 2010; McIver et al., 2009; Scime & Cook-Cottone, 2008). One study reported no significant effects of yoga on ED measures (Mitchell et al., 2007). A comparatively low dosage of yoga was administered, however, suggesting that a minimum dosage of practice may be necessary for yoga to be beneficial.

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