The Pharmaceutical and Psychological Treatments for Eating Disorders

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Eating disorders are becoming increasingly prevalent in today's society, especially amongst adolescent girls. This paper examines factors influencing the development of eating disorders as well as the detrimental psychological and physical effects of eating disorders. A literature review analyzes the effectiveness of existing psychological and pharmaceutical treatments. Cognitive Behavioral Therapy (CBT) stands out as the most effective first-line approach, focusing on transforming distorted thoughts associated with disordered eating. Within CBT, two variations have been identified: CBT-Eb, tailored for those with underlying psychological conditions, and CBT-Ef, effective for individuals without concurrent mental health issues. CBT-Ef targets patients with eating disorders without additional psychopathology. In cases where CBT yields limited improvement, Interpersonal Psychotherapy (IPT) emerges as an effective second-line treatment, delving deeper into analyzing interpersonal relationships that may be influencing one's connection with food. For pharmaceutical treatment, lisdexamfetamine and SSRIs have shown to be effective in treating eating disorders, but are limited as they target comorbidities. Further research is needed to examine such factors as well as the effectiveness of psychotherapeutic treatment plans.

Keywords: Eating Disorders, Psychological Treatments for Eating Disorders, Pharmaceutical and Psychological Treatments for Eating Disorders, Cognitive Behavioral Therapy, Interpersonal Psychotherapy

Introduction

In current society, individuals are constantly exposed to excessive glorification of body ideals and beauty standards, contributing to lowered self-esteem and confidence regarding one's physical appearance [1]. In fact, the global eating disorder prevalence has increased from 3.5% in 2003 to 7.8% in 2018 [2]. Previous research has shown the rise of social media use is associated with increased rates of disordered eating amongst users, mostly adolescent girls. The overall lifetime prevalence of eating disorders is 8.6% in females and 4.07% in males [2].

The rise in the prevalence of eating disorders can be understood by analyzing the risk factors that increase the likelihood of disordered eating. Such risk factors include sociocultural and environmental aspects to form a complex combination that may influence an individual's eating habits [1]. Moreover, individuals with a family history of disordered eating are significantly more likely to develop eating disorders themselves [2]. Sociocultural factors include excessive exposure to elements such as societal expectations to achieve an ideal body image and unhealthy media portrayal of glorified beauty standards make individuals prone to develop disordered eating to achieve their ideal physicality [1]. Finally, psychological factors, such as lack of stress relief, low self-esteem and perfectionism can increase the likelihood of developing eating disorders [1]. Ultimately, environmental, sociocultural, and genetic factors influence the behavior and the ultimate treatment of the individual.

The Diagnostic and Statistical Manual of Eating Disorders, Fifth Edition (DSM-5) includes several eating disorders: anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED) and eating disorder not otherwise specified (EDNOS) [3]. Diagnostic criteria for AN include restriction of nutrition requirements, leading to significantly low body weight associated with a fear of weight gain and disturbance regarding one's body shape. In the DSM-5, amenorrhea has been removed from the diagnostic criteria for AN. Amenorrhea, short for functional hypothalamic amenorrhea (FHA), is a menstruation disorder affecting women of childbearing age [4]. The cause of this disorder may be a combination of multiple factors, including excessive physical activity, nutrient deficiencies, severe stress, and lack of energy [4]. Essentially, such factors lead to a blockage of the secretion of gonadotropin-releasing hormone (GnRH) in the hypothalamus, resulting in abnormalities in the secretion of tropic hormones and eventually decreasing estrogen levels in the female body [4]. This then leads to an absence of ovulation and eventually the entire menstruation cycle. Thus, individuals with AN experience amenorrhea due to the lack of nutrients in the body to maintain healthy menstrual cycles [4]. However, the removal of amenorrhea as a core diagnostic criterion is due to findings that have shown there are no psychological differ-

Table 1 Eating Disorders

	Eating behaviours	Body weight	Body image	Binge eating occurrence	Overcompensating behaviors
Anorexia Nervosa	**Severe restriction**	**Underweight (Below 18.5 BMI)**	**Overevaluation (seeing oneself as overweight despite being underweight)**	**No**	**Yes**
Bulimia Nervosa	**Irregular (binge eating)**	**Normal weight, but can vary**	**Overevaluation (fluctuation of feeling underweight or overweight)**	**Yes**	**Yes**
Binge Eating Disorder	**Irregular (binge eating)**	**Overweight (Above 25 BMI)**	**Overevaluation (distress about body weight)**	**Yes**	**No**
Arfid	**Severe restriction**	**Can range from underweight to overweight**	**No**	**No**	**No**

ences between individuals with eating disorders who experience amenorrhea and do not experience it[5]. However, the presence of amenorrhea may still be used to describe the clinical severity of an individual with AN. Diagnostic criteria for BN include binge eating episodes within a 2-hour period associated with a sense of lack of control during the period. Additional criteria include overcompensating behaviors subsequent to binge episodes, inappropriate use of laxatives, as well as excessive self-evaluation of body image and weight[5]. Last, the worldwide prevalence of binge eating disorder is around 0.6-1.8% in adult women and around 0.3-0.7% in adult men in the years 2018-2020[6]. The frequency of binge episodes and overcompensating behaviors for BN and binge eating in BED has been lowered to once a week[2]. Diagnostic criteria for BED include losing a sense of control during a binge eating episode, eating substantial amounts of food when not physically hungry, as well as eating alone due to feelings of embarrassment[6]. The criteria associated such binging episodes with feelings of guilt and disgust after binge episodes. The distinguishing factor between BED and BN is that individuals with BED do not experience overcompensating behaviours such as purging or excessive exercise after a binge episode. Avoidant/Restrictive Food Intake Disorder (ARFID) that limits an individual's food intake due to anxious thoughts regarding the color, taste, texture, or smell of food[1]. ARFID is not result of distorted body image that is common is AN, BN, and BED. Individuals with ARFID develop specific behavioural and eating habits due to their restrictions on what foods they feel comfortable to eat[1].

The comorbidities and complex diagnostic criteria for eating disorders can make treatment plans complicated and different for every individual. This paper analyzes existing studies conducted on the available pharmaceutical and psychological treatment plans for eating disorders and aims to determine the factors that make treatment plans successful.

Discussion

Impacts of Social Media on the Development of Eating Disorders

Individuals with an eating disorder commonly experience additional psychological conditions; a survey conducted by The National Eating Disorders Association observed that 56% of those with AN, 79% of those with BED and 95% of those with BN experience a co-occurring disorder. These co-occurring conditions, or comorbidities, create a need for more complex treatment plans for patients[7]. One explanation for comorbidities is the detrimental impacts of body dysmorphia (an overevaluation of one's perceived flaws in body image) which may be influenced by unrealistic expectations that individuals are exposed to online[8]. With the use of social media, researchers observe higher risks of psychological phenomena amongst active

users, including social isolation, motivation issues, and physical strains such as sleep interference and body tension[8]. Social media allows individuals to present a desirable representation of themselves, using photo editing apps such as Facetune to create an unrealistic image of themselves that conforms to beauty standards[9]. This form of hyper-awareness of one's image to others can lead to self-objectification. Self-objectification can be defined as the ignoring of one's personality and true individualities and viewing oneself as merely a body[10]. Researchers suggest that this is due to users being more focused on what an observer perceives of them, therefore increasing the likelihood of self-objectification with greater social media usage[11]. Therefore, the heightened consciousness of a user's perception of what they look like in real life compared to what they look like to others can lead to anxiety[11].

This self-objectification and constant comparisons between desired looks and reality lead to concerns about body image. This causes individuals to feel distressed about their physical appearance, including feelings of shame and disappointment as well as distorted perceptions of their bodies, also known as body dysmorphia[8]. Moreover, trends on social media that draw attention toward certain physical expectations are an additional element that can worsen an individual's body image concerns[12]. One example is the "thin ideal" which associates thinness with beauty. This has been identified as a significant risk factor in the development of any form of body image concerns as well as potentially forming disordered eating habits and excessive exercise[11]. Previous studies have shown that consistent exposure to "thinspiration" content, or glorification of being thin is inspirational, showed significant effects on one's perception of their body image, eventually leading to a ban on "thinspiration" content in 2012. Subsequent to that, "fitspiration", or glorification of being fit and inspirational, normalizes excessive exercise to reach the goal of maintaining leanness as well as a level of muscularity and athleticness[12], such content draws even more attention to particular body parts and physical traits, like toned and fit arms and flat stomach with abs that lead to more hyper-awareness from followers about their own physical appearances, commonly contributing to disordered eating to reach their perception of meeting such beauty standards. Thus, social media provides a forum where such beauty ideals are easily broadcasted, reinforcing expectations that contribute to body image concerns, including the higher risks of disordered eating[12].

The comorbidities can be represented through an iceberg phenomenon (Figure 1), referred to in Freud's theory of the mind. The iceberg serves as a visual representation of the understanding that only a small portion of our feelings and perspectives are conscious and visible, as observed on the tip of the iceberg[13]. A significant fragment of our mentality is subconscious and therefore not visible to simple observations and visible behaviors. Similarly, those who suffer from disordered eating as well as other psychological illnesses clearly fit this model. The tip of the iceberg above the surface of the water represents the symptoms of eating disorders: this may include behaviors such as restricted eating for those suffering from anorexia, purging behaviors for those with bulimia, and binge eating episodes for those suffering from BED[6]. On the other hand, the part of the iceberg under the surface of the water may reveal other psychological issues that result in disordered eating. Such issues could include familial concerns, relationship conflicts, believing that one is never good enough, and other self-degrading thoughts. Ultimately, these thoughts feed into disordered eating habits that are more noticeable and visible in a person's behavior[14].

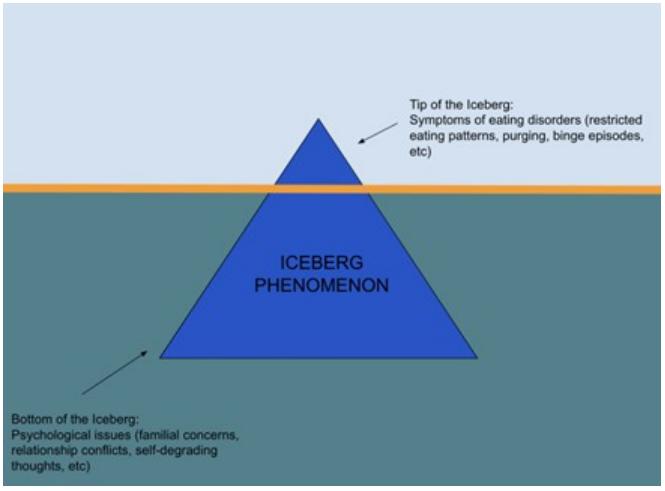

Fig. 1 Iceberg Phenomenon

Thus, the presence of comorbidities and the influences of social media contribute to and worsen eating disorders. The need for complex and specific treatment plans as therapies not only needs eating disorder symptoms and behaviors but also needs to address any symptoms and behaviors associated with other mental health conditions.

Impacts of Eating Disorders on The Body (Eg. Hormonal Impacts/Muscle Degradation)

The impacts of eating disorders not only affect an individual's psychological perception but also severely deteriorate the human body in various aspects. For example, prolonged food restriction, a characteristic of anorexia nervosa, can lead to malnutrition as a result of lack of sufficient diet. This can in turn lead to physical health complications such as bone density loss, hormonal imbalance, and in some cases, reproductive issues[15]. On top of these restrictive dietary patterns, individuals with anorexia nervosa may also engage in overcompensating behaviors. This includes over-exercising to compensate for feelings of guilt when eating due to the common value of favoring the sense of control when

under-eating [7].

Physical complications are also seen in individuals with bulimia nervosa. In BN, eating patterns mimic those of individuals with AN, but also include episodes of binge eating followed by self-induced vomiting or use of laxatives [2]. Because of this pattern, individuals with BN may experience electrolyte imbalances, cardiovascular issues, teeth degradation, and gastrointestinal issues [7]. Of important note is that the cycle of binging and purging often allows individuals with BN to maintain a healthy body weight despite experiencing a severe eating disorder (BMI 20-25) [16].

Individuals with BED also experience binge eating episodes but do not engage in compensatory behaviors, such as purging and over-exercising [17]. BED complications include a high risk for cardiovascular diseases, including obesity, diabetes, and high blood sugar levels [6]. Individuals with BED also often experience significant social impairments and decreased quality of life. These combined symptoms and behaviors of BED result in the condition frequently going undiagnosed and untreated, further worsening symptoms [6].

These three types of eating disorders share similar characteristics in the way that they detrimentally affect a patient's psychological and physical state through present differently. Individuals with eating disorders experience poor nutrition and diet due to the inability to develop balanced eating habits due to underlying issues [14].

How Existing Pharmaceutical Treatments Help Eating Disorders

Despite numerous clinical trials and drug development, there remains a lack of eating disorder-specific pharmaceutical treatments. However, some pharmaceutical treatments used to treat anxiety and depression disorders have proven to be effective in alleviating the psychological symptoms of eating disorders [18]. For example, Lisdexamfetamine, a stimulant medication, is found to be effective in combating binge-eating behavior for patients, specifically those who suffer from obesity due to the binge-eating cycle. A placebo-controlled study conducted on fifty participants with BED was given 20-70 mg/day of lisdexamfetamine or placebo to test the effectiveness of the treatment of BED [19]. The results of the study showed a significant reduction in binge eating episodes per week as well as BMI [19].

Another form of pharmaceutical treatment that displayed remission and effectiveness for patients suffering from BED is selective serotonin reuptake inhibitors (SSRIs) [14]. SSRIs are also the most common selective antidepressants to treat patients suffering from depression [14]. SSRIs increase levels of serotonin, a neurotransmitter that carries signals between neurons in the brain. It is effective in blocking the reuptake of serotonin into neurons, which allows for more serotonin to be transmitted between the neurons. This significantly increases feelings of euphoria and combats depressive episodes in individuals [14]. However, it was observed that despite the effectiveness of SSRIs on patients suffering from depression specifically, it did not have significant effects on reducing depressive episodes for those suffering from BED; it simply reduced binge eating episodes [18]. This may be due to psychological phenomena that are specific to BED that cannot be pharmaceutically treated with SSRIs, such as feelings of lack of control during a binge episode.

How Existing Psychological Treatment Helps Eating Disorders

Psychological treatment is regarded to be an effective form of treatment for combatting the emotional, cognitive, and behavioral aspects of eating disorders [20]. Cognitive Behavioural Therapy (CBT) focuses on positively analyzing overwhelming current events rather than focusing on past events [21]. It directly focuses on changing an individual's distorted thoughts on body image and diet to address the maladaptive behaviors [21]. As previously mentioned, individuals suffering from BED disorder commonly display cycles of over and under restriction, essentially putting themselves through a pattern of extreme diets and binge eating due to disordered thoughts on body image and eating habits [7]. CBT works to combat this pattern by promoting more structured eating habits and having more flexible diets without severe restrictions [22].

CBT treatment plans can be tailored depending on the individual and their needs. A previous study analyzed the effectiveness of two forms of CBT by observing participants' attitudes toward body image and overall mental health. In this study, one treatment plan focused on promoting healthier eating habits through exposure to body image content while the other treatment plan focused on motivation and did not expose the individual to body image content [23]. The study found that those who were more reluctant to change disordered eating habits before treatment responded better to treatment with no exposure to body image content in follow-up consultations [23]. Additionally, the study also observed that individuals who are reluctant to change are likely to respond positively to motivation-centric treatment [23].

CBT has also been enhanced to two forms of treatment (CBT-E). The first form (CBT-Ef) addresses eating disorder psychopathology while the second form (CBT-Eb) also addresses other underlying psychological issues including mood intolerance and low self-esteem [24]. A previous study was conducted on 154 patients with an eating disorder diagnosed by the DSM-IV criteria to observe the effectiveness of CBT-E [24]. Participants were also randomly selected into two treatment groups to observe the effectiveness of CBT-Ef and CBT-Eb [24]. The study found that by the 60-week follow-up after treatment, 45.6% of participants from both treatment groups in total reported no episodes of binge/purge episodes, suggesting that CBT-E is more effective than the traditional CBT plan [24]. Between the

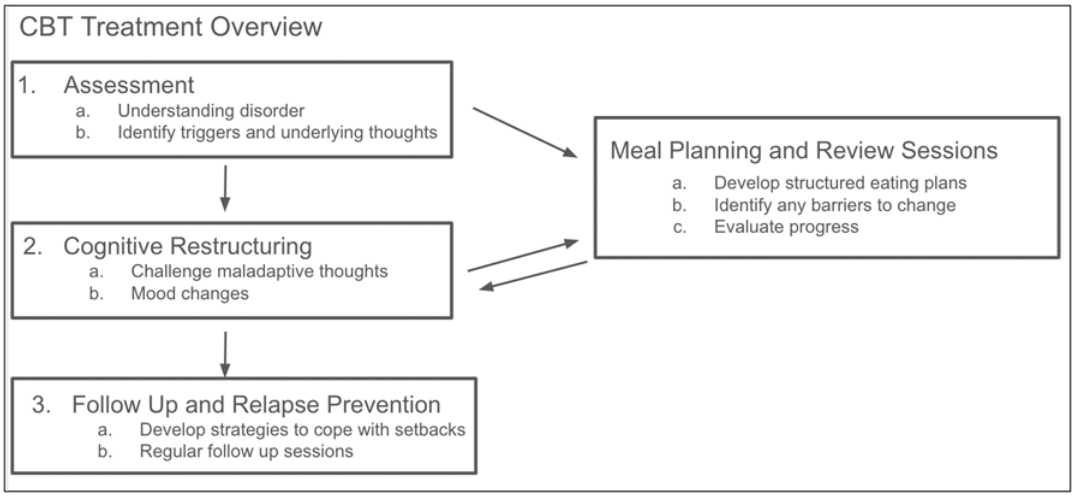

Fig. 2 Schematic Representation of CBT for eating disorders.

two forms of CBT-E, the study observed that patients experiencing additional psychopathology found CBT-Eb to be more effective as it addressed such underlying issues, while those who did not experience additional psychopathology found CBT-Ef to be more effective[24].

An alternative to traditional CBT is guided self-help CBT (CBTgsh), which provides minimal specialist care for individuals with an eating disorder. Though individuals treated with CBTgsh do not frequently meet a therapist, they engage with a guided self-help manual that promotes healthier eating habits through encouraging self-monitoring. A therapist's role in CBTgsh is to help individuals adhere to the treatment and explain the significance of CBTgsh. Previous findings show significant success rates of CBTgsh with long-term follow-ups showing 64% abstinence rates amongst the participants[22]. Thus, CBTgsh is found to be effective for individuals with BED with minimal additional concerns regarding body image and weight issues.

Another form of psychological treatment is interpersonal psychotherapy (IPT). IPT focuses on identifying the interpersonal problem that addresses issues in lack of intimacy, relationship conflicts, major life changes, grief, and life goals[18]. Unlike CBT, IPT focuses on supporting more personal and deeper interpersonal connections in order to replace maladaptive behaviors rather than focusing on combating disordered eating habits[15]. For individuals with BED, it is observed that binge eating episodes often develop as coping mechanisms for stressful environments, leading to social isolation. IPT allows Individuals with BED to find better solutions to cope with such stressful situations rather than turning to a binge episode as a coping mechanism. Studies show that IPT has been more effective amongst individuals with more severe symptoms and low self-esteem. Amongst individuals with BN, a previous study observed significant improvements when engaged with IPT when the first-line treatment of CBT had no major effect[18]. Additionally, a previous study observed that IPT takes around 8 to 12 months longer than CBT to have a significant effect on a patient's recovery process[7]. Though IPT takes a longer duration to have an observational effect on an individual's recovery, it may still be a significant form of treatment for those who need more attention and help with underlying relationship factors that may be influencing the individual's eating patterns.

Both CBT and IPT have been found to be effective in treating eating disorders. However, most support that CBT is regarded as the first-line treatment due to its rapid effectiveness as it focuses on building a healthier diet plan. IPT maintains itself as the second-line treatment if CBT were to fail as it targets deeper interpersonal concerns that may be impacting an individual's continued disordered eating[18].

Conclusion

It is crucial to understand the complexities in diagnosis, symptoms, and treatment for eating disorders. Every individual has a unique background and factors that lead to disordered eating; therefore, it is important to carefully analyze the reason for their lack of healthy eating habits in order to treat both psychological and physical damage eating disorders can cause (Reas & Grilo, 2021). From the analysis of previous studies, it can be concluded that CBT is the most effective first-line treatment as it focuses on changing one's thoughts about issues directly related to disordered eating. Within CBT, CBT-Eb is more effective with those with underlying psychological conditions while others who do not experience other mental issues find CBT-Ef to be effective. For those who do not see any improvements with CBT, IPT serves as an effective second-line treatment as it goes deeper into analyzing interpersonal relationships that

may be further influencing one's relationship with food. For pharmaceutical treatments, lisdexamfetamine and SSRIs have shown effectiveness in reducing binge eating episodes for those with BED, but effectiveness is limited as they target comorbidities. Therefore, further research is needed to conclude whether pharmaceutical, psychological, or psychotherapeutic treatment is the most efficient in treating eating disorders.

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