

Review Article

Comparing Olanzapine with Placebo in Patients with Anorexia Nervosa for Increasing BMI and Weight Gain

Jalal Jbara¹, Hedyeh Shaabani^{1,*}, Ekaterine Cherkezishvili¹,
Siavash Hosseinpour Chermahini²

¹School of Health Sciences, The University of Georgia, Tbilisi, Georgia

²School of Science and Technology, The University of Georgia, Tbilisi, Georgia

Abstract

Anorexia nervosa is an eating disorder characterized by exceptionally low body weight and a feeling of disgust toward food. In addition, it causes complications for the affected person as it affects their immunity, weakens them quickly, makes them sick and malnourished. The commonly known treatment for anorexia nervosa is psychological treatment using methods such as CBT and MANTRA. With the introduction of pharmacological medications, the aim of this review is now to determine whether olanzapine is effective compared to placebo in increasing BMI and weight gain. It was found that olanzapine had a large increase in BMI compared to placebo [$F(1, 20) = 6.64, p = 0.018$] and that it significantly reduced depression and anxiety. Further studies found that olanzapine patients gained weight more quickly and reached their BMI goals more quickly than patients taking a placebo. On the other hand, a contradictory result was found, namely that there was no significant difference between olanzapine and placebo in terms of weight recovery and psychological, depressive and anxiety symptoms. It is concluded that reliance on pharmacological therapies should be minimized until new evidence emerges and that psychotherapies such as CBT and MANTRA should be relied upon primarily to increase BMI in patients with anorexia nervosa.

Keywords

Anorexia Nervosa, Olanzapine, Body Mass Index, Weight Gain

1. Introduction & Objectives

The eating disorder termed Anorexia nervosa is a disease which mainly causes people with this condition to have exceptionally low body weight, as well as disgust to food. This disorder leads to complications for the person having it by affecting their immunity, making it decline rapidly, making them ill and making them malnourished. Often, anorexia patients are very conscious of their weight and attempt to control it in a way that is harmful to their health. Methods that

are used by them are vomiting and working out a lot. One of the highest mortality rates among psychiatric disorders is Anorexia nervosa [1]. It causes physical complications that include amenorrhea, osteopenia, hypophosphatemia, and eroding tooth enamel [2]. There are many options of treatment for Anorexia but in this study, we will focus on the pharmacological drug olanzapine and how it affects weight gain. Typically, anorexia is treated psychologically, such as: Cog-

*Corresponding author: hediehshaabani@icloud.com (Hedyeh Shaabani)

Received: 8 January 2024; **Accepted:** 19 January 2024; **Published:** 7 March 2024



Copyright: © The Author(s), 2023. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

nitive behavioral therapy (CBT), which is used to prevent relapse once the patient has increased their weight to a healthy level so that they do not engage in anorexic behavior again [3]. While MANTRA on the other hand focuses on identifying the different factors that make people trapped in anorexic behaviors and following it by helping them to look for ways that helps them to cope and transform their thinking and behaviors. The first line of treatment for those with anorexia, according to BMJ best practice, is nutritional rehabilitation and supplements. After that, psychotherapy is an option as a subsequent step. It is what has traditionally been done, but with the development of pharmacologic therapy, there has been less investigation into whether medications like olanzapine and others can replace psychological therapies in the treatment of anorexia nervosa. This knowledge has assisted in directing this research in the appropriate direction [4]. As a result, this study helps determine whether olanzapine is an effective medication for helping anorexia patients gain weight. Finding out if olanzapine helps anorexic patients gain weight is crucial because anorexia is one of the most dangerous psychiatric disorders and affects a significant proportion of women. The third most prevalent chronic condition among teenagers is anorexia [5]. Those with anorexia can greatly enhance their quality of life by learning the answer to this question.

2. Methods

There were 78 articles found by searching the words “anorexia” or “anorexia nervosa” and “olanzapine” in the PubMed database. The search was then limited to full-text results, clinical trials, randomized clinical trials, and human species in English. About 15 results were collected and 5 were selected. With the limited search for systemic reviews, finally ended up focusing on 4 articles.

3. Results

The following conclusions were drawn from the sources that were examined. Patients with anorexia exhibit severe hypophagia and intense physical activity, according to the first study. The goal of this study was to see whether olanzapine can reduce these traits in rats before testing it on anorexic patients. It was discovered that it lowers activity levels in anorexia nervosa patients compared to anorexia nervosa patients who are not receiving treatment, though it has no impact on body weight or leptin levels [6]. In the second research, olanzapine-treated and placebo-treated groups of anorexic individuals were compared. In comparison to the placebo group, the olanzapine group displayed a larger increase in BMI [$F(1, 20) = 6.64, p = 0.018$]. Improvement of psychological symptoms was the other factor being examined, and neither group showed a significant difference [7]. The third study's objective was the same as that of the second. Although there was no improvement in psychological symp-

toms, the group receiving olanzapine experienced a higher increase in BMI than the placebo group ($0.259 [SD = 0.051]$ compared to $0.095 [SD = 0.053]$ per month) [8]. In the fourth trial, olanzapine-treated anorexic patients underwent a 6-week test period before their baseline BMI and symptom levels were compared. It revealed that olanzapine greatly reduced anxiety, depression, and increased weight gain [9]. In the fifth research, Anorexia patients were formed into two groups; one received olanzapine along with day hospital treatment, and the other received a placebo along with day hospital treatment. The group receiving olanzapine gained weight more quickly than the placebo group did, reached BMI targets more quickly, and experienced less symptoms [10]. The final study is a meta-analysis of the randomized controlled trials that have been conducted to examine various pharmacologic treatments for anorexia nervosa. Out of the eight studies that were examined, it was discovered that five included BMI data and that there was no clear differentiation between olanzapine and a placebo for weight recovery. There was no apparent result for the psychological, depressive, or anxiety symptoms [11].

4. Discussion

As was clear from the findings, olanzapine has been shown to have some impact on increasing BMI and gaining weight in past studies. But, as of 2020 with the meta-analysis study, olanzapine was showing no discernible difference from placebo treatments. One of the first study's strengths was that it used olanzapine (5 mg/kg) for three straight months. Its limitation was that only hyperactive anorexia nervosa patients were used as subjects, and their levels of activity were not varied [6]. The fact that the second study was double-blind and that was a strength. A limitation was that 26% of the participants dropped out of the 8-week experiment, which might have impacted the study's findings [7]. A strength of the third study was that it was similarly conducted in a randomized, double-blind manner. As for its weaknesses, it included 96% women and only 4% men [8]. For the fifth trial, it was a double-blind, placebo-controlled study, which made it difficult for anyone to be biased or manipulate the outcomes. The flexible dose approach utilized in this study is its drawback since different outcomes would have been observed if the dosage had been stable rather than adjustable [10].

5. Conclusion

This study set out with the aim of assessing the importance of Olanzapine with Placebo in Patients with Anorexia nervosa for Increasing BMI and Weight Gain. There are many options of treatment for Anorexia Nervosa, but in this study, focused on the pharmacological drug olanzapine and Placebo and how they affect weight gain. Anorexia nervosa is treated psychologically, like CBT and MANTRA which are used for relapse prevention as patients have raised their weight to a healthy

level. In summary, neither BMI nor weight gain are significantly affected by taking olanzapine. Olanzapine was found to have a very negligible effect on weight gain in BMI. Therefore, it is recommended that clinical and public health practices focus primarily on psychotherapies such as CBT and MANTRA to treat anorexia nervosa and increase the BMI of these individuals.

Author Contributions

The idea of the article was by Hedyeh Shaabani and Jalal Jbara. The literature search and data analysis were done by Hedyeh Shaabani, Jalal Jbara and Dr. Ekaterine Cherkezishvili. The article was critically revised by Dr. Ekaterine Cherkezishvili and Prof. Siavash Hosseinpour Chermahini.

Conflicts of Interest

The authors declare no conflict of interest.

References

- [1] Morris J, Twaddle S. Anorexia nervosa. *BMJ*. 2007; 334(7599): 894-898. <https://doi.org/10.1136/bmj.39171.616840.be>
- [2] Monteleone P, Brambilla F. Multiple Comorbidities in People with Eating Disorders. *Comorbidity of Mental and Physical Disorders*. 2014; 179: 66-80. <https://doi.org/10.1159/000365532>
- [3] American Psychological Association. What Is Cognitive Behavioral Therapy? *American Psychological Association*. <https://www.apa.org/ptsd-guideline/patients-and-families/cognitive-behavioral>. Published 2017
- [4] Attia E, Walsh BT. Log in | BMJ Best Practice. bestpractice.bmj.com. Published 2021. <https://bestpractice.bmj.com/topics/en-gb/440/pdf/440/Anorexia%20nervosa.pdf>
- [5] Eating Disorder Coalition. *Eating Disorders Are Treatable*. <http://eatingdisorderscoalition.org.s208556.gridserver.com/cookie/uploads/file/Eating%20Disorders%20Fact%20Sheet.pdf>
- [6] Hillebrand JG, van Elburg AA, Kas MJH, van Engeland H, Adan RAH. Olanzapine Reduces Physical Activity in Rats Exposed to Activity-Based Anorexia: Possible Implications for Treatment of Anorexia Nervosa? *Biological Psychiatry*. 2005; 58(8): 651-657. <https://doi.org/10.1016/j.biopsych.2005.04.008>
- [7] Attia E, Kaplan AS, Walsh BT, et al. Olanzapine versus placebo for out-patients with anorexia nervosa. *Psychological Medicine*. 2011; 41(10): 2177-2182. <https://doi.org/10.1017/s0033291711000390>
- [8] Attia E, Steinglass JE, Walsh BT, et al. Olanzapine Versus Placebo in Adult Outpatients with Anorexia Nervosa: A Randomized Clinical Trial. *American Journal of Psychiatry*. 2019; 176(6): 449-456. <https://doi.org/10.1176/appi.ajp.2018.18101125>
- [9] Barbarich NC, McConaha CW, Gaskill J, et al. An open trial of olanzapine in anorexia nervosa. *The Journal of Clinical Psychiatry*. 2004; 65(11): 1480-1482. <https://doi.org/10.4088/jcp.v65n1106>
- [10] Bissada H, Tasca GA, Barber AM, Bradwejn J. Olanzapine in the Treatment of Low Body Weight and Obsessive Thinking in Women with Anorexia Nervosa: A Randomized, Double-Blind, Placebo-Controlled Trial. *American Journal of Psychiatry*. 2008; 165(10): 1281-1288. <https://doi.org/10.1176/appi.ajp.2008.07121900>
- [11] Cassioli E, Sensi C, Mannucci E, Ricca V, Rotella F. Pharmacological treatment of acute-phase anorexia nervosa: Evidence from randomized controlled trials. *Journal of Psychopharmacology*. 2020; 34(8): 864-873. <https://doi.org/10.1177/0269881120920453>