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Review of Topiramate Effect on Weight Loss

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ABSTRACT

The purpose of this study is to examine the effectiveness of topiramate in promoting weight loss among obese patients. The study was inspired by the fact that men and women, in addition to the stereotyped teenager are affected by eating disorders. The general scope of this paper will comprise of the evaluation of the effectiveness of topiramate in weight loss amongst obese patients. The research achieves this through a review of past literature. In sum, the reviewed studies found that the use of topiramate was associated with an increase in positive outcomes. Most of the positive outcomes were linked with weight reduction among overweight and obese patients. The review also revealed that the administration of the drug reduced the adverse effects with psychotic drugs, minimized food cravings, alcohol and smoking. Moreover, the combination of the drug with other antiepilepsy medications had more positive outcomes than when used as a monotherapy.



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INTRODUCTION

Fluoxetine is the only antidepressant authorized by the Food and Drug Administration for the treatment of bulimia nervosa (Khan and Brown, 2015). Additionally, there has been interest in topiramate which is normally used as an off-label in controlling purging and bingeing. Alternatively, Topiramate is used to enhance weight loss amongst individuals suffering from an eating disorder. Professionals are still uncertain as to why topiramate is effective, but they agree that the drug acts by promoting brain networks that have a calming and inhibitory effect over

stimulated brain networks. In the long run, topiramate targets and reduces cravings for food, alcohol, and cigarettes (Kushner, 2014). In this paper, the authors evaluate the effectiveness of topiramate in promoting weight loss among obese patients

MATERIALS AND METHODS

The methodology of the study involved an analysis of past research studies. To facilitate this process, the researcher formulated a review question which guided the search for past studies that answer the query. The researcher wrote the protocol and devised a search strategy. The keywords associated with the study were then searched on google scholar and all the relevant articles identified. Identical citations were removed irrelevant trials removed based on their titles and abstracts. Full copies of the studies were then downloaded, and irrelevant studies excluded. The results were then combined from all the identified studies.

RESULTS AND DISCUSSION

In one study undertaken to assess whether a combination of Phentermine-topiramate has any effect

on binge eating disorder, the researchers found a positive relationship between the combination therapy and a reduction in the participants body weight, frequency of binge-eating, body mass index, global clinical severity measurements, the psychopathology of eating disorder, as well as the symptoms of obsessive-compulsive disorder. Nevertheless, they noted one side effect of the combination therapy which included the experience of dysgeusia (Guerdjikova *et al.*, 2018). The same results are echoed in a study, where the authors reported that the positive relationship between intellectual disability as well as loss of weight was as a result of the use of topiramate. The study involved the measuring of the overall body weights of the participants at intervals of 1, 6, 12 and 18 months after the start of treatment with topiramate. The study findings indicted a significant reduction in the body weight up to the sixth month, and the participants attained a stabilized weight after a period of 12 months. The study concluded that the trends in weight loss in the course of administering TPM were subject to levels of an individual's intellectual. For instance, patients with intellectual disability (ID) were able to maintain the weight of their bodies when compared to those without (ID) (Iwaki *et al.*, 2018).

Topiramate also registered impressive results when used on patients suffering from schizophrenia, a disorder also characterized by binge eating. In one study, 90 schizophrenic patients were randomly selected to assess the effectiveness of topiramate in the reduction of symptoms of the disorder. The study sample reported a reduction in the weight gain among South Asia patients. The results imply that the administration of topiramate amongst schizophrenic patients is effective at reducing weight gain but there is a slight variation in the control of symptoms (Chandradasa *et al.*, 2017). A similar finding is reported in another study that examined the medication-assisted loss of weight ability in the prevention of diabetes as a baseline weighted Cardiometabolic Disease Staging score amongst sampled 3,040 obese and overweight study subjects. The study found that there were reduced numbers that was required to treat in order to prevent diabetes type 2 especially among those patients with higher risk scores (Guo and Garvey, 2017).

Moreover, topiramate is also highly effective in reducing weight in adolescent and young girls. A study conducted to determine the effectiveness of anticonvulsants (topiramate and zonisamide) in reducing childhood obesity found that the two drugs had a unique association with decreased body mass index of 1.3 to 4.1 that were dosed above 200mg and below 50 mg respectively in every six

months. These results suggest that zonisamide and topiramate are effective in losing weight in a pediatric psychopharmacological treatment even in scenarios where antipsychotics have been prescribed. (Shapiro *et al.*, 2016). A similar finding is reported in another study involving obese adolescents that recorded significant reductions in weight when topiramate was used together with an adjunct to modification of lifestyle therapy (Fox *et al.*, 2015). The same results are reflected in another study which investigated the effectiveness of administering topiramate alongside other psychotic drugs. The study found that co-treatment with topiramate-antipsychotic resulted in a significant reduction in weight among schizophrenic patients (Correll *et al.*, 2016).

The pharmacotherapy for obesity management is basically targeted at weight reduction, maintenance and the reduction of weight gain predisposing factors. Some of these factors are those that contribute to a reduction in body fat, those that affect cardiovascular disease, and those that play a central role in incidences associated with diabetes mellitus. One major medication that has always been used to reduce obesity includes fluoxetine and topiramate which are normally used as an antiepileptic. One study which assessed the eating behavior and loss of weight in morbid obesity sampled patients that were exposed to fluoxetine and topiramate noted that a combination uses of the two drugs represented a new approach that could be used in the management of eating disorders, especially before the patient undergoes bariatric surgery (Correll *et al.*, 2016). Nonetheless, another study warns against the use of monotherapy of topiramate since it is associated with elevated adverse events, some of which are life threatening. The study singles out diabetes type 2 patients who reported serious adverse events when they were exposed to topiramate treatment and advises the clinicians to desist from using topiramate monotherapy for reducing weight in type 2 diabetes (Guisado-Macías *et al.*, 2016).

Furthermore, topiramate is one type of drug that should be granted higher priority as a medicine of choice for the reduction of weight in obese patients presenting with an eating disorder. This argument can be supported by the findings of a study, whose objective was to establish whether patients in an ideal world who take topiramate for multiple indications experience any loss in weight. The study indicated that patients that were treated with topiramate lost an average of 5.6 pounds in a span of 7.8 months follow up periods (Paravattil *et al.*, 2016). A 92/213 which translates into 43.2% of the women

lost 5% of the weight of their body when compared to 163/554 translating into 29.4% of their male counterparts as observed in another study in 2016. (Kazerooni and Lim, 2016).

The overall response to a topiramate treatment varies from one patient to another. One major variable is the genetic attribution of topiramate to weight loss. A study conducted to determine the genetic variability in a large-scale candidate gene study reported that both INSR haplotype carriers as well as non-carriers lost 9.1% and 7% of their body weight and 9.5% and 7.3% of body weights respectively. The study also identified SNP contained in HNF1A which is linked to topiramate response and SPN contained in GRIA3 linked to non-pharmacologic response to treatment. The study concluded that the genetic variations in INSR and HNF1A genes had a greater likelihood to affect loss of weight amongst the overweight and obese patients that were subjected to topiramate treatment. In addition, the insulin action related genes were implicated in topiramate response modulations (Li *et al.*, 2016).

Other than its capacity to reduce weight amongst overweight and obese individuals, topiramate is also associated with greater improvements in the overall quality of life of obese and overweight patients. Scholarly work indicated that topiramate treatment registered an improvement in the quality of life amongst the treatment group when compared to those who were treated with a placebo. The study also noted that topiramate is accompanied by a modification in an individual's lifestyle. Hence, the overall effect is much greater than the administration of the drug in an inactive patient. Activity refers to an individual's involvement in physical exercises. Lifestyle change on the other hand connotes a reduction in binge eating habits, reduced cravings for alcohol as well as quitting cigarette smoking (Kolotkin *et al.*, 2015). The same findings of another study reported a significant positive outcome when phentermine and topiramate were combined in one therapy to reduce weight gain alongside engagement in physical activity. The study reported a consistent positive outcome for a period of 2 years when compared to the comparison group who were given placebo (Singh and Kumar, 2015). Similar findings are evident in another study that evaluated the benefits, efficacy as well as the potential adoption of topiramate as a treatment regimen for obese patients experiencing low back pain. In the course of a 12-week treatment with topiramate, the patient experienced prolonged pain relief as well as an overall reduction in their weight. These changes translated into an improvement in the func-

tionality of the patients' lower back (Gupta *et al.*, 2015). Patients who are experiencing migraine and have been discontinued from their therapy normally experience a drastic increase in their overall body mass index. One study that adopted topiramate in migraine discontinued individuals reported a positive outcome. The study reported that weight gain after migraine therapy discontinuation was a reversible process especially when treated by topiramate, which showed a clear return to normalcy after a period of 6 months of treatment (Verrotti *et al.*, 2015)

Majority of the antipsychotic drugs have detrimental side effects. These may range from excess weight gain to diabetes, cardiovascular disease, dyslipidemia or even obesity. A study that involved a meta-analysis of various body components comprising of change in the mass index of the body, deviations in the weight of the body alongside withdrawal resulting from multiple pharmacological ad-on was undertaken. The study found that both topiramate and metformin are highly effective add-on treatments when there is need to control weight gained as a result of the use of antipsychotic medicines (Zhuo *et al.*, 2018).

CONCLUSION

In conclusion, the use of topiramate is associated with an increase in positive outcomes, such as weight reduction among overweight and obese patients. The drug also has the ability to reduce craving for energy dense foods, which are associated with binge eating and lead to the development of an eating disorder. In addition, the drug is also effective in treating adolescent and teenage obesity amongst children. However, the drug has adverse effects when used as a monotherapy. It is thus recommended to be used in combination with other drugs such as metformin. Patients using the drug must also engage in physical activity to reduce the time required to reduce body weight. The findings also suggest that combined therapy can suppress the adverse effects of the drug when used as a monotherapy. Moreover, topiramate is also effective when used alongside other antipsychotic drugs. This is because some of the drugs used in the treatment of various mental disorders have side effects that include weight gain and obesity. It is therefore prudent to note that even though topiramate is used as an off-label medicine, it has a higher capacity to reduce body weight in obese people, children and adults. Hence, the drug should constitute one of the treatment regimens for obesity.

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