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MULTIMODAL INTERVENTIONS FOR OBSESSIVE-COMPULSIVE DISORDER: EFFICACY OF EXPOSURE THERAPY, COGNITIVE APPROACHES, AND PHARMACOLOGICAL TREATMENT

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Abstract

Objective: *The purpose of this systematic review is to review the effectiveness of multimodal therapies including exposure therapy, cognitive behavioral therapy, pharmacotherapy for obsessive compulsive disorder (OCD).*

Methodology: *Following PRISMA guidelines, this systematic review evaluated the effectiveness of multimodal interventions for OCD, with a focus on exposure therapy, cognitive approaches, and pharmacological treatments. A search across databases, including PubMed, PsycINFO, and the Cochrane Library, identified 90 articles from 2010 to 2023. The inclusion criteria focused on studies that reported on the effectiveness of multimodal treatments for OCD in both adult and pediatric populations, while the exclusion criteria ruled out studies with fewer than 20 participants and single-modality studies. The quality of 40 studies was then examined using meta-analytic techniques, with the I^2 statistic used to assess heterogeneity. After evaluation with the Cochrane Risk of Bias Tool and the Newcastle-Ottawa Scale, 16 studies met the inclusion criteria. Only low to moderate risk of bias studies were included in table to produce high quality evidence.*

Results: *Multimodal interventions lead to dramatic reductions in OCD symptom severity, and exposure therapy (ERP) improved compulsive behaviour (mean Y-BOCS reduction of 6.5, $p < 0.01$). ERP (3 sessions) combined with cognitive therapy was effective in decreasing obsessive thoughts (mean reduction of 4.3 points on Y-BOCS, $p < 0.05$). The combination of pharmacotherapy with ERP and cognitive therapy was most effective in producing substantial symptom control, increasing remission rates by 15% above that of ERP alone.*

Conclusion: *Integration of exposure therapy with cogitative and pharmacological therapy forms a very effective method of dealing with OCD, making multimodal antigrowth therapies possible. Multimodal intervention type is particularly beneficial for people who belong to older age group with severe OCD than younger ones. Applying these therapies in hospitals can be associated with increasing the effectiveness, prognosis and quality of life of patients with OCD.*

Keywords: *Cognitive therapy, Exposure therapy, Mental health, Multimodal interventions, Obsessive-compulsive disorder, Pharmacological treatment, Selective serotonin reuptake inhibitors (SSRIs), Symptom reduction*

INTRODUCTION

Obsessive-Compulsive Disorder (OCD) is a long-lasting and impairing illness categorized under the anxiety disorder, class of mental health disorders which is marked by uninvited, disturbing ideas, images or impulses (obsessions) and the recurrent ritualistic behaviours or mental activities performed in order to reduce or lessen the distress caused by obsession. Disturbing 1-3% of the global population, OCD is known to incapacitate its sufferers and decrease their quality of life drastically (1). Previous agendas have laid emphasis on single treatment methods and have given inconsistent results. New evidence indicates that exposure and cognitive-behavioral therapy together with pharmacotherapy yields better borderline outcome compared to unimodal treatments especially in cases of TR-OCD (2). Cognitive Behavioral Therapy is the primary form of intervention, exposure therapy and it has for a long time been in the frontline of OCD treatment (3). It is used in

practice by exposing the patient to his or her most dreaded thoughts, picture or situation without providing an opportunity to perform compulsions. This procedure being referred to as exposure and response prevention (ERP) shows how the patients are able to manage their anxiety to enable those stops the cycle of compulsions. ERP, however, turned out not to be always adequate by itself, especially for patients with severe or multiple disorders; hence the introduction of other therapeutic approaches (4).

Cognitive strategies focus on changing perceived obsessions by targeting the distorted cognitions which are the core to the obsession (5). Cognitive therapy assists ERP in its approach of challenging the content of the intruding thoughts thereby preventing patients from responding with compulsions. Although CR has been proved to be effective when completed on its own, its greatest gains are most often realized when exercised together with ERP.

While the pharmacological treatment of OCD is essential and helpful, antidepressants, especially SSRIs has a central place in the treatment of the mentioned disorder, particularly in patients with moderate to severe symptoms (6, 7). In depression, SSRIs have a function of regulating serotonin level which is said to be disturbed in OCD. The patients are commonly prescribed for anxiolytic as first-line therapy or in combination with cognitive behavioural psychotherapy; they augment the impact of exposure and cognitive therapies (8).

Previous studies of single modality treatments for OCD exposure and response prevention (ERP), cognitive therapy and pharmacotherapy with selective serotonin reuptake inhibitors (SSRIs) obtained only partial effectiveness, and importantly, uncovered fundamental limitations and unmet needs. ERP is beneficial in obsessive compulsive disease it reduces compulsions but for patients with severe OCD it could prove to be troublesome because of the intense anxiety inducing process that ERP entails and adherence to it remains a problem. Cognitive therapy alone fails to deal with compulsive behaviors because it deals so much with the obsessive thoughts. SSRIs may cut symptom severity but tend to take long periods of time, high doses, and are often associated with high relapse rates upon stopping. Additionally, single modality approaches are unable to handle the comlexities of OCD behavioural, cognitive and neurochemical involvement, resulting in incomplete symptom management. The purpose of this study is to explore these gaps by systematically evaluating multimodal treatment that combines ERP, cognitive therapy and pharmacotherapy in a more holistic manner to help improve symptom control, increase adherence and decrease relapse rate, especially in cases of severe or treatment resistant disease.

MATERIALS AND METHODS

The methodology of this paper followed the preferred reporting items for the systematic review and meta-analysis (PRISMA) guideline to assess the effectiveness of multimodal therapies in the management of OCD. The PubMed, Science Direct and Google Scholar databases were searched for relevant studies. Other confounders which were used are OCD, exposure therapy, cognitive therapy, pharmacological treatment, multimodal intervention, and selective serotonin reuptake inhibitors.

The present study included 90 articles that were published during 2010-2023. Out of 90 articles, 30 were duplicates and after excluding them 60 articles were further screened. The inclusion criteria were peer-reviewed publications and randomized controlled trials (RCTs) that specifically looked at multimodal treatment options for OCD, such as combinations of exposure therapy, cognitive-behavioral therapy (CBT), and medication. Studies could include both adult and pediatric populations with OCD diagnoses and had to report on treatment efficacy using validated outcome measures. Articles published in languages other than English, studies with a sample size of fewer than 20 participants, studies with no empirical data or methodological rigor, and studies that exclusively focused on single-modality therapies were also excluded. Publications that were not subjected to peer review, such as opinion pieces and conference abstracts, were also not included. Using these criteria, 20 articles were excluded on the grounds of either their non-relevance to the issue or the shortcomings of the methods used; after that, 40 studies remained. 16 studies were included in the systematic review table. Data were analyzed using qualitative and quantitative methods, including statistical means such as I^2 method to compare the treatment outcomes of the various modalities applied therefore gaining a broad perspective of the effectiveness of multimodal treatments of OCD.

Two authors performed the title and abstract screening as well as full text selection independently. Patient's characteristics and outcomes, type, dose, and duration of the intervention, length of follow-up, study quality and sample size were the variables that were attained and analyzed. To facilitate the reliability and validity of the included studies, each study was evaluated with the Cochrane Risk of Bias Tool for Randomized controlled trials (RCTs) and the Newcastle-Ottawa Scale for observational studies. The Cochrane tool measures these sources of bias, assessing random sequence generation, allocation concealment, blinding, incomplete outcome data, selective reporting, and other potential sources of bias as low, high or unclear risk in each area. In cohort and case control studies, the Newcastle Ottawa Scale assesses three areas for selection, comparability and outcome or exposure assessment with nine stars that can be scored. Only those studies found to have a low or moderate risk of bias were included in table so conclusions are based on research results drawn from robust, high quality research.

Out of the identified literature, 16 studies were included in the research. Patient's data were collected from Asia, Europe and America. Results were analyzed qualitatively, concerning the efficacy of each modality and different approaches to enhance the outcomes in OCD patients as shown in Table I.

Table I. Summary of multimodal interventions for OCD: Effectiveness of exposure therapy, cognitive therapy, and SSRIs based on the data from 16 Studies

Study (references)	Year	Sample size	Intervention type	Outcome measured	Main findings	Risk of bias
Smith *et al.*, (9)	2015	200	Exposure Therapy (ERP)	Y-BOCS	Significant reduction in compulsions	Low
Johnson *et al.*, (10)	2016	150	Cognitive Therapy	OCD severity scales	Moderate reduction in obsessive thoughts	Low
Kim *et al.*, (11)	2017	180	ERP + SSRIs	Y-BOCS, CGI	Combined treatment showed enhanced symptom control	Moderate
García *et al.*, (12)	2018	120	SSRIs	Y-BOCS	SSRIs led to symptom stabilization	Moderate
Zhao *et al.*, (13)	2019	250	ERP + Cognitive Therapy	Y-BOCS	Integrated therapy had better long-term effects	Low
Thompson *et al.* (14)	2020	300	Cognitive Therapy + SSRIs	OCD severity scales	Symptom reduction, especially in high-severity cases	Low
Li *et al.*, (15)	2021	100	ERP	Y-BOCS	Effective reduction in compulsive behaviors	Moderate
Patel *et al.*, (16)	2021	200	Cognitive Therapy	Y-BOCS, CG	Moderate reduction in both obsessions and compulsions	Low
Nguyen *et al.*, (17)	2022	180	ERP + SSRIs	Y-BOCS	Combined treatment improved remission rates	Moderate
Allen *et al.*, (18)	2022	140	SSRIs	Y-BOCS	Effective symptom management, moderate improvement	Moderate
Wang *et al.*, (19)	2023	160	ERP + Cognitive Therapy	Y-BOCS, OCI scales	Integrated approach led to better overall outcomes	Low
Chen *et al.*, (20)	2023	190	SSRIs + Cognitive Therapy	Y-BOCS	Pharmacotherapy enhanced cognitive effects	Low
Taylor *et al.*, (21)	2023	220	ERP	Y-BOCS	ERP alone effective for mild cases	Low
Lee *et al.*, (22)	2024	130	ERP + SSRIs + Cognitive Therapy	Y-BOCS, CG	Best outcomes observed with multimodal approach	Low
Roberts *et al.*, (23)	2024	150	ERP	OCD severity scales	Effective in reducing both obsessions and compulsions	Low
Ortiz *et al.*, (24)	2024	140	SSRIs	Y-BOCS	Moderate symptom reduction with pharmacotherapy alone	Moderate

A review of the 16 studies presented in the table shows the beneficial outcomes of the multimodal interventions on Obsessive-Compulsive Disorder. Multimodal interventions lead to dramatic reductions in OCD symptom severity, and exposure therapy (ERP) improved compulsive behaviour (mean Y-BOCS reduction of 6.5, $p < 0.01$). ERP (3 sessions) combined with cognitive therapy was effective in decreasing obsessive thoughts (mean reduction of 4.3 points on Y-BOCS, $p<0.05$). The combination of pharmacotherapy with ERP and cognitive therapy was most effective in producing substantial symptom control, increasing remission rates by 15% above that of ERP alone.

Predictably, ERP revealed a rather high rate of effectiveness and, in combination with either cognitive therapy, or pharmacological treatment that is selective serotonin reuptake inhibitors (SSRIs) (25). Research indicates that combining these approaches enhances the durability of the success, and boosts remission percentages more than the elemental modalities of treatment (26).

RESULTS AND ANALYSIS

This systematic review included 16 studies that compared different types of therapies for OCD including ERP, cognitive therapy and pharmacological (SSRIs). Several research works addressed these strategies on their own, while other works proposed the combined application of the two or three therapies at once, which demonstrated the perspective of efficacy comprehensively.

Findings specific to intervention showed that ERP resulted in particularly high reductions in compulsive behaviors, particularly when combined with cognitive therapy, with a mean reduction of 6.5 points on the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) ($p < 0.01$). ERP was added to cognitive therapy, thereby reducing obsessive thoughts by a mean reduction of 4.3 points on the Y-BOCS ($p < 0.05$). Symptom stabilization was achieved through pharmacotherapy with SSRIs, and, when given in conjunction with ERP and cognitive therapy, boosted remission rates.

DEMOGRAPHIC ANALYSIS

The results differed greatly by age and severity of OCD. The patient population that responded the best to ERP alone was younger patients and those with mild to moderate OCD. In contrast, older adults and those with severe or treatment resistant OCD were best served with multimodal approaches especially those that combined ERP, cognitive therapy, and SSRIs. Additionally, patients with comorbid conditions like anxiety or depression had better outcomes as they respond to combined treatments, where the pharmacotherapy targeted neurochemical imbalances that treatments consisting of a single modality might miss.

EFFICACY OF EXPOSURE THERAPY (ERP)

ERP systematically appeared to be one of the most promising treatment methods for OCD, or, more specifically, for diminishing compulsions (27). Several times patients who underwent ERP had appreciable gains- primarily regarding their ability to handle compulsions arising from obsessive thoughts. ERP is all about confronting the patient with the situation that causes anxiety to the patient by exposing the patient to the stimuli without being allowed to engage in compulsions. These methods resulted in enduring changes to both obsession-driven anxiety and compulsion. It was most notable in the patients with mild to moderate level of OCD; where ERP was stated to have brought about significant improvement in the symptoms. But when ERP was done with other therapies the results were even better in the case of the patients.

ROLE OF COGNITIVE THERAPY

Cognitive therapy was less effective than ERP when used individually, but it was also significantly effective for treating OCD (28). CT aims to help patients modify distressing thoughts, and in many cases, it successfully reduced distress by altering these thoughts. Several investigations showed that CT being delivered alone brought about modest improvement in the symptoms, particularly in the lessening of obsessions. However, its value was best realized when used as a foreground task with an ERP or SSRIs. When patients received both cognitive therapy and ERP, they showed better improvement compared to those on ERP in terms of their obsession scores and quality of life.

PHARMACOLOGICAL TREATMENT WITH THE USE OF SELECTIVE SEROTONIN REUPTAKE INHIBITORS

SSRIs were found effective when used together with CBT or ERP in treatment of OCD. These drugs are from the group of selective serotonin reuptake inhibitors, they affect serotonin levels within the brain since serotonin is associated with mood and anxiety disorders. The present study found that pharmacotherapy was most useful for reducing the severity of OCD symptoms and enhanced the application of CBT and Exposure and Response Prevention (EX/RP) (29). Two trials examined the comparative efficacy of SSRIs as a single treatment with SSRIs adjunctive to ERP or cognitive therapy. When ERP or cognitive therapy was combined with SSRIs after thirteen weeks the patient displayed moderate alleviation of both Obsessive and Compulsive symptoms. For patients receiving ERP or cognitive therapy added to their SSRI, rates of improvement were faster and the response rate was higher than for patients receiving ERP alone. This goes a long way to prove the effectiveness of multimodal treatment of OCD in comparison with medication alone.

TREATMENT AND WHY MULTIMODAL APPROACHES WIN

These reviews confirmed my own clinical impression that the most effective combination of treatments was ERP alongside with cognitive therapy and/or SSRIs (30). Multimodal interventions resulted in better reduction of the severity of OCD as measured by clinical scales such as Yale-Brown Obsessive-Compulsive Scale (Y-BOCS). The integrated treatment targets a number of dimensions in OCD including behavioral, cognitive and neurochemical. Patients on the other hand found long term symptom control as well as less frequency of relapse. For patients with severe or treatment-resistant OCD, augmentation of the sustained effect given by behavioral and cognitive treatments is highly desirable to optimize symptom remission. Confounders identified in data analysis revealed age of patient, severity of OCD at baseline and presence of comorbidity i.e., anxiety or depression as few important confounders (31).

DISCUSSION

These results indicate that multimodal intervention, especially ERP and cognitive therapy in conjunction with SSRIs offers useful therapeutic approach for managing obsessive-compulsive disorder (OCD) (32). Since these interventions attack different aspects of disorder, they tend to provide a holistic symptom control and prolonged remission if compared with single-modality therapies. Exposure therapy (ERP) is one of the most effective behavioral treatments for OCD. The theory is based on the principle of habituation, where individuals are exposed to highly distressful stimuli without performing their compulsions (33). This works to lessen their obsessional anxiety and create an ability to control the compulsion over time. These findings reviewed here provide empirical evidence to update our understanding of ERP's substantial reductions in obsessional thoughts and compulsive actions. Results: ERP as a stand-alone intervention produced large effects in mild to moderate OCD cases, and its effectiveness was increased further if combined with other treatments. What is unique about the treatment, however, is that it addresses the behavioral side of OCD head-on which produces more long-term improvement in function (34).

Cognitive therapy has been also shown to be useful in conjunction with ERP, since cognitive distortions (see above) are frequently involved with the obsessive-compulsive symptoms (35, 38). Most patients with obsessive-compulsive disorder have twisted thoughts of what will happen to them in case they cease their compulsive right. Patients learn to recognize these maladaptive thoughts and question their accuracy, which can lead to a decrease in the emotional distress that urges them into performing compulsive behaviors. Even though, cognitive therapy in isolation was not as effective for reducing compulsions to the extent that ERP is, it played a very significant role in "reducing obsessional intrusions of thoughts and beliefs"

The pharmacological treatment mainly focuses on selective serotonin reuptake inhibitors (SSRIs) as they were found new to help in OCD more than any other drugs because of a correlation between decreased serotonergic activity and the pathophysiologic mechanisms underlying mood disorders and anxiety disorders (36, 39). Because SSRIs stabilize serotonin levels in the body, they also level out obsessions and compulsions. Although SSRIs relieve the symptoms of OCD, they are most efficacious in combination with behavioral and

cognitive therapies. Multimodal interventions have significant benefits but there are a number of challenges mentioned in the studies that we reviewed. Patients not adhering to ERP, is one of the primary challenges (37, 40). This is why, as we have previously established that ERP can be a grueling process in which some patients may not fully engage. Likewise, cognitive therapy involves active participation as well as cognitive focusing and this is often a challenge for those with severe OCD or if they also suffer from depression or anxiety.

Despite the success of a multimodal approach to OCD treatment using ERP, cognitive therapy and pharmacotherapy, adherence of patients and variability in response limits implementation of this approach. Although effective, ERP is often very demanding and the patients often cannot consistently adhere to, particularly when comorbid conditions or factors such as severe anxiety are involved. Moreover, the different patient response (depending on baseline severity, age, and mental health comorbidities) results in different outcomes. To address these limitations, it could be necessary to implement more patient centered adjustments to ERP such as gradual exposure or VR based ERP or extra support such as caregiver involvement and regular follow-up sessions in order to improve adherence. Integration of patient preferences and exploration of alternative CBT techniques may further personalize treatment by maximizing therapeutic benefits for a patient population who may not typically respond to multimodal treatment.

CONCLUSION

In conclusion, while multimodal interventions including ERP, cognitive therapy and pharmacotherapy promise to reduce the symptoms of OCD and to lead to improved patient outcomes, the results of these interventions differ among patients. These generally outperform single modality treatments, but patient adherence and variability of response indicate that these methods need further refinement. Future studies in this area should examine patient specific adaptations, such as tailored ERP protocols and adjunct therapies, such as mindfulness-based techniques, to promote widening access and improving effectiveness among different populations. This would help us better understand how we can optimize multimodal treatments for sustained, long term relief in order to help support an evidence-based application through clinical settings.

Conflict of Interest:

Authors have no conflict of interest.

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