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Observational Study

Development of a protocol for videoconferencing-based exposure and response prevention treatment of obsessive-compulsive disorder during the COVID-19 pandemic

Sanjana Kathiravan, Subho Chakrabarti

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Abstract

BACKGROUND

The existing literature indicates that psychotherapeutic treatment, especially exposure and response prevention (ERP) is efficacious in treating obsessive-compulsive disorder (OCD). The coronavirus disease 2019 pandemic adversely impacted many patients with OCD and disrupted their usual treatment. Moreover, the pandemic forced a global switch to telemental health (TMH) services to maintain the standards and continuity of care. Consequently, clinicians are increasingly using TMH-based psychotherapeutic treatments to treat OCD. However, several challenges have made it difficult for them to implement these treatments in the changed circumstances imposed by the pandemic.

AIM

To describe the formulation, implementation, feasibility, and usefulness of videoconferencing-based ERP (VC-ERP) treatment for OCD during the coronavirus disease 2019 pandemic.

METHODS

This prospective, observational study was conducted in the psychiatric unit of a multi-specialty hospital in north India over 12 mo (July 2020-June 2021). All patients with OCD were assessed using the home-based TMH services of the department. The VC-ERP protocol for OCD was the outcome of weekly Zoom meetings with a group of clinicians involved in administering the treatment. After a systematic evaluation of the available treatment options, an initial protocol for delivering VC-ERP was developed. Guidelines for clinicians and educational materials for patients and their families were prepared. The protocol was implemented among patients with OCD attending the TMH services, and their progress was monitored. The weekly meetings were used to upgrade the protocol

to meet the needs of all stakeholders. Feasibility and efficacy outcomes were examined.

RESULTS

All patients were diagnosed with OCD as a primary or a comorbid condition according to the International Classification of Diseases, 10th version criteria. Out of 115 patients who attended the services during the study period, 37 were excluded from the final analysis. Of the remaining 78 patients, VC-ERP was initiated in 43 patients. Six patients dropped out, and three were hospitalized for inpatient ERP. Eleven patients have completed the full VC-ERP treatment. One patient completed the psychoeducation part of the protocol. VC-ERP is ongoing in 22 patients. The protocol for VC-ERP treatment was developed and upgraded online. A large proportion of the eligible patients ($n = 34/43$; 79%) actively engaged in the VC-ERP treatment. Drop-out rates were low ($n = 6/43$; 14%). Satisfaction with the treatment was adequate among patients, caregivers, and clinicians. Apart from hospitalization in 3 patients, there were no other adverse events. Hybrid care and stepped care approaches could be incorporated into the VC-ERP protocol. Therefore, the feasibility of VC-ERP treatment in terms of operational viability, service utilization, service engagement, need for additional in-person services, frequency of adverse events, and user satisfaction was adequate. The VC-ERP treatment was found to be efficacious in the 11 patients who had completed the full treatment. Significant reductions in symptoms and maintenance of treatment gains on follow-up were observed.

CONCLUSION

This study provided preliminary evidence for the feasibility and usefulness of VC-ERP in the treatment of OCD. The results suggest that VC-ERP can be a useful option in resource-constrained settings.

Key Words: Videoconferencing; Exposure and response prevention; Obsessive-compulsive disorder; Telemedicine; COVID-19

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Core Tip: The coronavirus disease 2019 pandemic adversely impacted many patients with obsessive-compulsive disorder (OCD), compelling clinicians to increasingly use telemental health-based options rather than conventional psychotherapeutic treatments for OCD. This study described the implementation of a videoconferencing-based exposure and response prevention treatment protocol developed by an online group of clinicians during the pandemic. On prospective follow-up, 34 patients had either completed or were undergoing the treatment. The preliminary results showed that videoconferencing-based exposure and response prevention was a feasible and efficacious mode of treatment and may be a useful option for OCD, even in low-resource settings.

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INTRODUCTION

The existing literature regarding the treatment of obsessive-compulsive disorder (OCD) indicates that exposure and response prevention (ERP) or cognitive behavior therapy (CBT) that includes ERP is more effective in treating OCD than any other control or active psychotherapeutic treatment[1-5]. Moreover, the evidence also suggests that ERP is more efficacious than medication treatment of OCD, and the gains from treatment last longer. Nevertheless, combined treatment with medications and psychotherapy is more effective for severe OCD and is commonly used in routine clinical practice. However, despite the availability of evidence-based and effective psychotherapeutic treatments, very few patients have ready access to them. The rates of treatment-seeking are low among patients due to poor awareness, stigma, and inadequate engagement. The provision of ERP is also hampered by the shortage of professionals trained in administering ERP and skepticism among clinicians about ERP. Other hurdles include the longer duration and greater costs of ERP and the need to travel long distances for treatment. It has been proposed that telemental health (TMH) treatments may help in overcoming many

of these limitations of conventional ERP[3,4,6-8].

TMH-based psychotherapy has been used to treat OCD for more than three decades[6-10]. The older forms of such TMH treatments for OCD included computerized CBT and telephone-based CBT with or without therapist support. These methods were followed by videoconferencing-based ERP (VC-ERP) or CBT, with the earliest trials of these interventions starting to appear by the 1990s. The latest development in this field has been the advent of online psychotherapeutic interventions including internet-based CBT, web-based self-help groups, virtual reality-based ERP, and smartphone-based interventions. The existing evidence shows that TMH-based ERP/CBT for OCD leads to significant symptom reduction and improved functioning[9,11-14]. Treatment gains are often maintained for several months[8,9,11-13]. These treatments are feasible, acceptable, and cost-effective[8,10,12,14,15]. There appears to be no difference in efficacy between the TMH-based and in-person treatments[6,9,11,13,14], but this is not a consistent finding[7,8,10,16]. However, the evidence for these findings is relatively scarce and hampered by methodological inadequacies among the constituent studies[7,8,11,13,14]. Moreover, there are concerns about technological obstacles such as connectivity, safety, privacy, and confidentiality[7,10,17]. Lastly, clinicians are particularly dissatisfied with the inadequate treatment alliance and dropouts in TMH treatments[6,9,16].

The onset of the coronavirus disease 2019 pandemic negatively affected many patients with OCD[18-21]. There was an increase in patients with new-onset OCD and exacerbation of symptoms in those already suffering from OCD. However, studies have differed in their estimation of the impact of the pandemic on OCD. It seems that around two-thirds of the patients have been unaffected, whereas about one-third of patients have worsened[22]. The delivery of in-person ERP was also adversely affected because of the disruption in mental health services during the pandemic. While some studies found that ERP services were curtailed or that clinicians found it difficult to adapt to the changed circumstances[19,23], others reported no difference between the pre-pandemic and post-pandemic phases[22]. Nevertheless, the forced switch to TMH-based services during the pandemic in several countries[24] has meant that many clinicians are using TMH-based rather than conventional ERP for OCD[22,23,25].

A major lacuna in the existing literature on TMH-based psychotherapy for OCD is that most of the studies have been conducted in Western countries[13,14]. This applies to studies of internet-based CBT, VC-ERP, and other online interventions. Only a few studies of these interventions from Japan[26,27], Korea[28], and the Middle East[29] could be identified. In general, research on the efficacy of TMH in the treatment of psychiatric disorders from developing countries is limited, and reviews of the subject have not included trials on TMH-based treatment of OCD[30-32]. Apart from the lack of evidence, cultural acceptability of TMH-based treatments, their efficacy, and engagement with these treatments are also quite different in these countries. The situation in India is similar. Though VC-based TMH services were used in India before the pandemic and there was an upsurge in these services during it, there were large gaps in the delivery of these services[33,34]. Controlled trials on TMH-based psychotherapy of OCD are not available. Therefore, a new beginning had to be made. This study described the formulation and implementation of VC-ERP treatment for OCD during the pandemic and its current status in terms of feasibility and usefulness.

MATERIALS AND METHODS

This report followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for reporting observational studies.

Setting

The VC-ERP protocol was developed in the psychiatric unit of a multi-specialty hospital in north India. Patients with OCD attending the unit were already being treated with in-person ERP mostly on an inpatient basis. Inpatient ERP was associated with good short-term outcomes, but the long-term outcomes were unclear because of the high dropout rate after discharge[35]. Similar outcomes for inpatient ERP had been reported from another Indian center[36]. The department had also been running a home-based TMH service on a smaller scale since September 2018. This service was used for VC-based follow-up of patients who had completed in-person ERP. Following the shutdown of the outpatient clinics in March 2020, the home-based TMH service was upgraded and scaled up to cater to all outpatients. The features of this service have been described elsewhere[37]. This expanded platform allowed the delivery of VC-ERP based on the treatment protocol for in-person ERP.

VC-ERP for OCD

The in-person ERP protocol was modified to allow it to be delivered through the VC platform using the Zoom software. The use of VC was supplemented by WhatsApp video calls and messaging, phone calls (landline or smartphones), and e-mail. Virtual prescriptions sent by WhatsApp messages were used to convey advice regarding investigations and medications. The use of multiple digital modes of patient-clinician communication was consonant with the hybrid model of care, which had been recommended particularly during the pandemic[38]. This improves the flexibility and versatility of TMH-based care

and maintains its continuity by switching between different modes when one of them fails.

The modified VC-ERP protocol was developed based on feedback from a weekly Zoom group of clinicians actively involved in VC-ERP treatment for OCD. The group consists mainly of trainee psychiatrists, (post-MD) senior residents, and a consultant psychiatrist. Apart from group supervision of the trainees administering the treatment, the activities undertaken by this group have included carrying out a detailed review of the literature on ERP for OCD, TMH-based treatment options, and VC-ERP for OCD. Standardized guidelines for VC-ERP were prepared, and clinicians adhered to these standards of care. Educational materials for patients and their families were also prepared. The final protocol for VC-ERP is shown in Tables 1 and 2.

Differences between VC and in-person ERP

The differences between ERP by VC or by in-person treatment and the difficulties encountered during VC-ERP were the primary focus of many group discussions. The consensus views on this aspect are included in Table 3. These considerations provided the basis for the modifications made in the VC-ERP treatment protocol.

Modifications in technique required for conducting VC-ERP

Introductory education sessions with the patients and their caregivers were felt to be essential to improve their understanding and motivation for ERP. Although detailed psychoeducation sessions were carried out as a part of the ERP later, during this phase the objective was to provide enough information to ensure patient and caregiver cooperation with the process of assessment[39]. The contents of the brief information leaflet used for this purpose are depicted in Table 2.

A structured procedure for assessment was used. The clinician-administered version of the Yale-Brown Obsessive Compulsive Scale (YBOCS) was used to screen for different obsessions/compulsions as well as to rate the severity of obsessive-compulsive symptoms. The YBOCS is the most commonly used instrument for this purpose because of its reliable psychometric properties[1,4,13]. Standardized procedures such as those by Hawton *et al*[40] were used to conduct the behavioral analysis in the ABC format (antecedents, behaviors, consequences). Subjective units of distress were used to rate the severity of behaviors and also construct an ascending hierarchy of problem behaviors. The construction of the hierarchy was a key step in the process of planning for VC-ERP. Inputs were actively solicited from patients and caregivers during this stage. They were asked to keep a daily record of symptoms for about a week to make the hierarchy as comprehensive as possible. Google sheets or WhatsApp messages that could be regularly updated were used for this purpose. The assessment process often took up to 2 wk, but a prolonged and comprehensive assessment had many advantages such as increasing awareness about symptoms among the patients and caregivers, reducing their distress, and acquainting them with the VC-ERP treatment to follow. Finally, the hierarchies made were continuously upgraded during treatment based on the new information provided by patients or caregivers. Therefore, the process of assessment continued throughout the treatment.

A five-step approach to VC-ERP was used. These five steps of ERP were based on standard protocols of ERP or CBT[1,39,41-43]. Benson's relaxation technique[44] was the preferred mode of teaching relaxation exercises. The only other modification was that "processing" was used instead of cognitive restructuring. Processing involved discussing the patients' experiences and understanding of ERP and how this matched their expectations of the treatment[13,42]. Processing also allowed for discussions on the reality of the patient's beliefs, explanations about neutralization strategies, and suggestions about using more adaptive coping strategies. Modifications to the other components of the ERP are summarized in Table 4.

Outcomes of VC-ERP

The main focus of this study was on the feasibility outcomes including operational viability, service utilization, service engagement, need for additional services, frequency of adverse events, and treatment satisfaction and treatment preferences among patients, caregivers, and clinicians. The information about treatment engagement and the dropout rate was obtained from the medical records of patients who were offered ERP and either consented or refused the treatment. For all other outcomes, only patients who had agreed to undertake ERP and those who had completed or were actively engaged in the treatment were included. Patients were not interviewed separately for this part. Rather, the information was obtained from their treatment records. Therefore, any patient with incomplete treatment records was excluded. For the efficacy outcomes, only the 11 patients who had completed the entire VC-ERP were considered. Pre- and post-treatment YBOCS scores were extracted from their records to determine the efficacy of VC-ERP treatment. Information about the maintenance of gains post-treatment over 13 mo was also extracted from the treatment records.

Statistical analysis

The sample was characterized by using frequencies, means, and standard deviations. Loss to follow-up at any time was considered a dropout. Pre- and post-treatment comparisons were carried out using the Wilcoxon signed rank test.

Table 1 The treatment protocol for videoconferencing-based exposure and response prevention treatment for obsessive-compulsive disorder

Components	Details
Detailed assessment	Establishing the diagnosis based on history and mental state examination Relevant investigations. Formulating a management plan consisting of medications and psychosocial treatment. The decision to start ERP was made following this assessment
Introductory psychoeducation ¹	Brief introductory education sessions with patients and designated caregivers with the help of a two-page written information leaflet for them
Standardized assessments	(1) YBOCS screening (2) YBOCS rating (3) Standardized behavioral analysis, <i>e.g.</i> , by Hawton <i>et al</i> [40] (4) Construction of ascending hierarchy of symptoms (according to the subjective units of distress on a 0%-100% scale)
Five-step ERP ²	Psychoeducation, symptom monitoring, relaxation exercises, exposure and response prevention, and processing
Conduct of VC sessions ³	All VC-ERP sessions were conducted at home, supervised by the clinician, and attended by the caregiver. WhatsApp messages or phone calls were used to convey advice regarding details of sessions, investigations, and medications
Additional strategies	Incorporation of additional techniques, <i>e.g.</i> , thought stopping with ERP for those with predominant obsessions
Relapse prevention	Continued follow-up through VC with constant re-emphasis on all components of the ERP. Booster sessions, if required upon completion of the initial VC-ERP treatment
Caregiver involvement	A family member designated as the primary caregiver was involved in the entire process of the VC-ERP treatment. The caregiver conducted homework sessions
Hybrid care	Hybrid treatment had two components (1) Employing a combination of VC-ERP sessions at home and in-person ERP sessions at the outpatient department (2) Employing multiple modes of patient-clinician communication such as VC, mail, text messages, and phones to augment in-person care

¹Details in Table 2.

²These five steps of exposure and response prevention (ERP) were based on standard protocols of ERP or cognitive behavior therapy[1,39,41-43]. Psychoeducation imparted more detailed information about obsessive-compulsive disorder (OCD) including a cognitive-behavioral model of OCD. Apart from providing basic information about OCD, it attempted to correct common misconceptions. Psychoeducation also involved providing a clear rationale for ERP, information about the components and procedure for ERP, conduct of videoconferencing-based ERP sessions, and how ERP was expected to help. Patients and caregivers were taught to objectively monitor symptoms, thoughts, and distress during sessions and during the course of treatment. Standard formats for monitoring during videoconferencing sessions were developed. Google sheets or text messages that could be regularly updated were exchanged between clinicians and patients. The clinician carried out his/her own assessments, and feedback about progress of treatment was provided to the patient. Relaxation exercises, preferably using Benson's relaxation technique[44] were taught. It involved muscle relaxation, deep breathing, and the use of relaxation as a coping strategy. It was used to reduce anxiety and improve motivation for treatment. Standard techniques of ERP were used with certain modifications as explained in Table 4. During processing, the patients' experience of the sessions was discussed to enhance their understanding of ERP, examining the reality of their beliefs, and discussing more adaptive ways of coping[13,42].

³More details in Table 4.

ERP: Exposure and response prevention; VC-ERP: Videoconferencing-based exposure and response prevention; YBOCS: Yale-Brown Obsessive-Compulsive Scale.

Ethical considerations

This observational study was a part of a larger study on home-based TMH services for all patients[37]. The protocol was approved by the institute's ethics committee. Due to the restrictions imposed by the pandemic, verbal informed consent over the phone was allowed. As explained above, data regarding outcomes were obtained only from patients who had verbally consented to undertake ERP and had actively engaged in the process of treatment. However, patients were not contacted or assessed separately to determine these outcomes. Rather, all data regarding outcomes were extracted from routine medical and treatment records. Patient identities have not been revealed. Therefore, written informed consent from patients was not obtained for information about treatment outcomes. All the methods followed the guidelines of the Declaration of Helsinki for medical research involving human subjects.

Table 2 Content of the brief introductory education session for videoconferencing-based exposure and response prevention treatment for obsessive-compulsive disorder

Content
1 What is OCD? What are obsessions and compulsions in OCD?
2 How common is OCD?
3 How does the patient feel while experiencing the symptoms of OCD?
4 Why do patients develop OCD?
5 What are the types of treatment available?
6 What is the role of medications in treating OCD?
7 What is ERP and how does it work?
8 What is the need for ERP?
9 How will the VC-ERP sessions be conducted?
10 How long will the treatment take?

ERP: Exposure and response prevention; OCD; Obsessive-compulsive disorder; VC-ERP: Videoconferencing-based ERP for OCD.

Table 3 Problems with videoconferencing-based exposure and response prevention treatment for obsessive-compulsive disorder and in-person and proposed solutions

	Difficulties with VC-ERP	Suggested solutions
Understanding and motivation of patients and caregivers	It was harder to explain the procedure to patients/caregivers. Motivation to engage in VC-ERP was often low. As a result, treatment engagement was variable	Early initiation of psychoeducation and the more frequent use of hybrid treatment
Difficulties faced during the assessment	The initial assessment took longer. Frequent interruptions due to poor network connectivity and the need to restart the process several times were common. Patients/caregivers often complained about the long period of assessment. Some patients became more anxious during the process	Educate patients/caregivers about the likely timeframes for assessment and treatment during the introductory psychoeducation sessions. Additional in-person sessions and administering benzodiazepines for short periods could help control anxiety
Conducting ERP sessions-patient-related and caregiver-related difficulties	These included variable cooperation, discomfort and hesitation, worry about confidentiality, indulging in neutralization strategies during sessions, preference for in-person visits, and problems with the timing and duration of the sessions	Shorter VC-ERP sessions (minimum of 30 min) and flexible scheduling of sessions (every 7-14 d). Ongoing education of patients and caregivers to ensure realistic expectations from VC-ERP
Conducting ERP sessions-clinician-related difficulties	Clinicians faced problems in sustaining their motivation, dealing with the additional burden of VC sessions and the need to adjust to a new medium	Training, supervision, and support for clinicians through regular group meetings
Technological difficulties	Poor connectivity, unavailability of proper equipment, user’s unfamiliarity with technology, and time constraints	Modifications to the ERP procedure to make it more compatible with VC
Disadvantages	Group members conducting VC-ERP sessions rated it about three times as difficult compared to in-person ERP because of the problems encountered	A structured treatment package incorporating modifications in the treatment, ongoing education, and support for all users
Advantages	Group members agreed that VC-ERP had advantages such as greater access, convenience of carrying out sessions at home, and lesser likelihood of late disengagement if motivation could be ensured	The consensus was that though conducting VC-ERP may be more difficult than in-person ERP, the basic procedures and their implementation were similar

ERP: Exposure and response prevention; VC-ERP: Videoconferencing-based exposure and response prevention.

RESULTS

Participants

During the period of this study (July 2020-June 2021), the home-based TMH service was used to treat 3442 new and 12126 old patients. Of these, 115 new patients (3%) had a diagnosis of OCD as a primary or a comorbid condition according to the International Classification of Diseases, 10th version criteria. During subsequent follow-up, 1 patient whose diagnosis was changed from OCD to personality disorder was excluded; 28 patients had dropped out of treatment, and details regarding the status of 8 patients were not available. Therefore, 78 patients were included in the final analysis.

Table 4 Modifications in technique required for conducting videoconferencing-based exposure and response prevention treatment for obsessive-compulsive disorder

VC-ERP components	Modifications made to the VC-ERP
Detailed psychoeducation	Carried out using manuals in English and the local language for clinicians, patients, and caregivers. The content was simple, brief, and provided clear explanations. Psychoeducation sessions continued throughout the treatment
Monitoring of symptoms and progress	Simultaneous monitoring was carried out by the patients, caregivers, and clinicians through VC sessions, Google sheets, or WhatsApp messages that were regularly updated. Constant feedback about the progress of treatment was provided to the patient
Relaxation exercises	Benson's relaxation technique was preferred because of its brief and simple format. Autogenic training or modified Jacobson's progressive muscular relaxation exercises were taught if required. Written instructions in English and the local language and audio-visual aids for teaching were available for clinicians, patients, and caregivers
Duration of VC-ERP sessions	Though prolonged exposure is the goal because of its greater efficacy, it was quite difficult to have VC sessions of more than 30 min. Thus, the minimum duration was set at 30 min with the opportunity to prolong the sessions according to the patient's convenience
Frequency of VC-ERP sessions	The frequency of sessions varied from weekly sessions to one session every 10-14 d. Flexibility was essential in deciding the duration and frequency of sessions. Several other factors were considered, particularly patient/caregiver preferences, the stage of ERP, the severity of symptoms, and the availability of clinicians
Supervision of VC-ERP sessions	The patient's camera was not only focused on the patient but also covered a significant portion of the room so that clinician could detect any surreptitious compulsions or neutralizing acts. The camera was never switched off during the sessions
Engaging patients during the VC-ERP sessions	Clinicians, patients, and caregivers were all actively involved during the VC-ERP sessions. Every effort was made to minimize distractions. Neutralizing acts were noted and discussed later during processing. The clinician engaged with the patients at regular intervals to make sure that they were focusing on the treatment and to check the level of anxiety during sessions. However, constant talking was avoided because this might distract the patient
Ensuring patients' tolerance of anxiety	Patient comfort with the level of exposure and their ability to tolerate anxiety was of overriding importance. They were never forced to engage in something that made them uncomfortable during the ERP sessions. Rather, each step was undertaken after proper education and fully ensuring the patient's agreement and cooperation
The slower pace of VC-ERP	VC-ERP was expected to progress at a much slower pace than in-person ERP. This was explained to the patients and caregivers and usually did not present a problem
Privacy and confidentiality	Privacy was essential, and patients were informed about the people present in the room (<i>e.g.</i> , technicians) when the session was being conducted. The patient was only accompanied by the designated caregiver at home. Any recording was done only with the patient's explicit consent. All material relating to the treatment was stored securely
Safety	Patients were required to be accompanied by caregivers during the sessions. Anxiety levels were constantly monitored, and sessions were terminated if the patient was uncomfortable. If there were other concerns about the safety of the patient (<i>e.g.</i> , risk of self-harm or violence), closer monitoring was instituted for such high-risk situations. Caregivers were also educated to manage such high-risk situations. For persisting safety concerns including symptom exacerbations during VC-ERP, patients and family members were helped to attend outpatient or emergency services
Treatment of comorbidities	Other modalities such as medications or occasionally ECT were used to treat primary or secondary comorbidities. The VC-ERP was adapted to meet the needs of patients with comorbid symptoms. Techniques utilized included temporarily suspending the sessions when comorbid symptoms increased, offering increased support at this time using the VC platform, promoting greater involvement of caregivers, and combining VC sessions with in-person sessions
Using hybrid modes of treatment	Hybrid care involved conducting some of the initial ERP sessions on an in-person basis and the later sessions by utilizing VC. Similarly, for each new step of the hierarchy, the initial session was an in-person one followed by VC sessions. This often mitigated the problems of poor understanding and variable motivation noted in exclusive VC-ERP treatment. Requests from patients and caregivers for in-person sessions were catered to as far as possible
Self-exposure	In exceptional instances when caregivers were not available, therapist-guided self-exposure was tried. A greater level of patient motivation was required for self-exposure and the pace of ERP was slower

ERP: Exposure and response prevention; VC-ERP: Videoconferencing-based exposure and response prevention. ECT: Electroconvulsive therapy.

Patient profiles

Out of 78 patients, 38 were men and 40 were women. In general, patients seen during the pandemic were more likely to be older, married, better educated, and from higher-income families living near the hospital[37]. However, many patients were barely literate, impoverished, and from distant, rural locations. Three patients had late-onset OCD. Twenty-one patients had a comorbid psychiatric illness. OCD as a primary condition included the following comorbidities: single depressive episode ($n = 6$), recurrent depressive disorder ($n = 4$), dysthymia ($n = 1$), agoraphobia ($n = 1$), hypochondriasis ($n = 1$), and impulse control disorder ($n = 1$). OCD as a secondary comorbidity was present in schizophrenia ($n = 3$), bipolar disorder ($n = 2$), dementia ($n = 1$), and traumatic brain injury ($n = 1$). Most patients were on pharmacological treatment for OCD and comorbid conditions.

VC-based ERP for OCD: feasibility, acceptability, and efficacy

Tables 5 and 6 provide these details.

VC-ERP was considered in the majority of patients with OCD, but because of different reasons only about half of them (55%) started VC-ERP. Of the 43 patients who started VC-ERP, 6 dropped out early and 3 had to be hospitalized for inpatient ERP. Thus, a large proportion of the eligible patients ($n = 33/43$; 77%) had completed the full treatment ($n = 11$) or were currently undergoing VC-ERP ($n = 22$). One patient improved following the initial sessions and did not have to complete the entire treatment. Hybrid treatment was more commonly used by many of these patients ($n = 20$) once the outpatient services resumed. Most patients and caregivers considered this to be a better option and preferred hybrid care.

Feasibility outcomes among the 34 patients engaged in VC-ERP showed that it was possible to implement the treatment in usual clinical settings. Drop-out rates were low ($n = 6/43$; 14%). Apart from the 3 patients (9%) with severe OCD who did not respond to VC-ERP and required hospitalization, there were no other adverse events. The number of patients treated with VC-ERP in a year was more than those who had received inpatient ERP for a year during the pre-pandemic period. Satisfaction with the treatment was adequate among patients, caregivers, and clinicians. Therefore, the feasibility of VC-ERP treatment in terms of operational viability, service utilization, service engagement, need for additional in-person services, frequency of adverse events, and user satisfaction was adequate.

The 11 patients who completed the entire treatment had moderate levels of OCD for several years. VC-ERP led to significant reductions in the YBOCS scores on completion. Treatment gains have been maintained in these patients on follow-up for a year after completing the VC-ERP. More than half of them (54%) had comorbid conditions, but this did not affect their improvement with VC-ERP.

DISCUSSION

TMH-based services are efficacious and suitable alternatives to in-person care and have proved to be particularly useful during the pandemic. By promoting ready access to psychiatric care, they can remove several barriers associated with conventional services, enhance satisfaction among users, and empower the underserved population from remote areas[24,31,32].

The efficacy, advantages, and disadvantages of VC-based ERP for OCD

Several reviews[6-10] and meta-analyses[11,13] of TMH-based treatments for OCD have found that VC-based treatment is useful, but they have only included a few trials of VC-ERP for OCD. Similarly, meta-analyses[25,45,46] and reviews[17,47-50] that have found VC-based treatments to be effective for psychiatric disorders have included a limited number of VC-ERP studies of OCD. This is not surprising because there are only three randomized-controlled trials (RCTs) of VC-ERP in OCD[51-53]. A fourth RCT of VC treatment for anxiety and mood disorders included 4 patients with OCD[54]. These RCTs have shown that VC-ERP is more efficacious than neutral or active control treatments and equal in efficacy to in-person ERP. Treatment gains are maintained for several months, and VC-ERP had a more positive impact on the treatment alliance and patient engagement. Open trials have similarly shown that VC-ERP is an effective, feasible, acceptable, and cost-saving treatment, which can be used to supplement in-person ERP[27,55-58]. However, the RCTs have small sample sizes and are of brief duration. Therefore, without properly conducted RCTs with non-inferiority or equivalence designs, the current evidence in favor of VC-ERP for OCD cannot be considered adequate[59].

Like other TMH-based treatments, VC-ERP has several advantages compared to in-person ERP[7,13,17,50,52]. It leads to wider dissemination of ERP and greater patient access to evidence-based ERP. Home-based ERP allows greater flexibility, greater involvement of family members in ERP, and more opportunities to address the negative attitudes or accommodations by the family. It can be cost-effective because it reduces travel costs and absence from work. Since patients receive treatment at home, the stigma associated with seeking psychiatric treatment is lessened. However, VC-ERP has its challenges. It is heavily dependent on external factors such as technological infrastructure, internet penetration and affordability, network connectivity, and the user's familiarity with technology. Patient and family motivation might be poor, forging effective treatment alliances may be difficult, and supervision and monitoring may not be optimal[50,52,56].

VC-based ERP for OCD vs internet-based CBT

Currently, there seems to be a greater emphasis on delivering online or internet-based ERP or CBT for OCD particularly in high-income countries[9]. The two types of treatment have their advantages and disadvantages. Internet-based CBT has a broader evidence base and the number of trials including RCTs is much more than those of VC-ERP[10,11-14]. Its efficacy is comparable to in-person CBT. Internet-based CBT is particularly useful as an initial option for mild or moderate OCD. Moreover, it is more readily accessible and offers a wider choice of techniques and varying levels of clinician assistance. The treatment is efficacious and cost-effective even with low levels of clinician support[15]. Moreover, greater levels of clinician support can help minimize dropouts, and treatment gains are usually

Table 5 Details of videoconferencing-based exposure and response prevention treatment for obsessive-compulsive disorder

Patients	Number	Comments/details
Patients with OCD attending the home-based TMH services during the study-period	115	This was 3% of all new outpatients and represented an increase in the number of such patients compared to the period before the pandemic
Patients available for analysis	78	ERP not considered ($n = 17$; 15%); improved with medications and did not require ERP ($n = 2$); refused ERP ($n = 3$); VC-ERP yet to be initiated ($n = 13$)
Patients in whom VC-ERP was initiated/early dropouts	43	Six patients dropped out from VC-ERP treatment. (Dropout rate 14%)
Improvement after initial treatment	1	One patient improved after initial psychoeducation and regular relaxation exercises and was not required to complete the entire VC-ERP treatment
Transition to hybrid care	20	Hybrid care became easier once the outpatient services resumed in December 2021
Transition to inpatient ERP	3	VC-ERP was followed by inpatient-based ERP because of severe OCD and non-response to VC-ERP.
Patients who have undergone/are undergoing VC-ERP	33	VC-ERP has been completed in 11 patients and is ongoing in 22 patients

ERP: Exposure and response prevention; OCD: Obsessive-compulsive disorder; VC-ERP: Videoconferencing-based exposure and response prevention; TMH: Telemental health.

Table 6 Efficacy of videoconferencing-based exposure and response prevention treatment for obsessive-compulsive disorder

Age	Sex	Marital status	Residence	Comorbidity	Duration of OCD	Baseline YBOCS score	YBOCS score at completion
Mean: 31.27 (SD: 9.65) yr, range: 22-56 yr	Men: 9; Women: 2	Single: 8; Married: 3	Urban: 9; Rural: 2	OCD primary disorder: 7 (depressive disorder: 2); OCD secondary disorder: 4 (schizophrenia: 3; bipolar disorder: 1)	Mean: 6.90 (SD: 6.48) yr, range: 1-25 yr	Mean: 25.45 (SD: 5.63), range: 17-36	Mean: 4.27 (SD: 4.22) [†] , range: 0-13

[†]Significant reduction in Yale-Brown Obsessive-Compulsive Scale scores; $Z = 2.936$; $P < 0.01$ (using the Wilcoxon signed rank test).

OCD: Obsessive-compulsive disorder; YBOCS: Yale-Brown Obsessive-Compulsive Scale; SD: Standard deviation.

enduring.

Despite these advantages, there is no difference in efficacy between VC-ERP and internet-based treatments[13]. Indeed, some of the evidence seems to indicate that VC-ERP may be more efficacious than internet-based treatments[45,60]. Moreover, VC-ERP resembles the “gold-standard” in-person ERP more closely than internet-based ERP[13,16,17,45,46]. Since VC-ERP is conducted at home, it has the advantage of greater convenience, more chances of the behavioral gains generalizing to natural settings, increased involvement of the family, and a better insight into the patient’s home environment[6,16,17,45,50]. Some reviews also suggest that VC-ERP is more suitable for those with severe OCD[8,9] and patients from remote locations[16,45-47,50], whereas internet-based treatments are more useful in milder OCD and for people with better access to the internet[8-10]. Lastly, the main advantage of VC-ERP seems to be the greater therapeutic contact it provides particularly in comparison to internet-based treatments with minimal therapist contact. There is considerable evidence to indicate that higher levels of therapeutic contact are associated with greater efficacy of TMH-based treatments for OCD[7,9,14,61,62].

The choice of VC-ERP in this study was influenced by these considerations along with the prior experience of in-person ERP in the department, the availability of a home-based platform for VC-ERP, and the unavailability of internet-based treatments.

Findings of the present study and its limitations

Being a preliminary report, this study had several obvious limitations. It was largely a descriptive account of the development and implementation of VC-ERP for OCD from a relatively under-resourced setting. The number of patients who had completed the treatment was very small, and all data related to the efficacy of VC-ERP are therefore prone to a high risk of bias. This risk is increased further because patients were not randomized to VC-ERP treatment, and there was no control group. A selection bias toward better-motivated patients is also possible. Since this was a naturalistic observational study, it was not possible to control for confounding factors such as the effect of pharmacological treatment or comorbid conditions.

Nevertheless, some of the findings were encouraging and could have some implications for further efforts in this area. The principal focus of this study was to describe the process of developing a protocol for VC-ERP treatment of OCD during the pandemic. Due to the restrictions imposed by the pandemic the entire process of development and subsequent implementation had to be carried out online. The primary aim of the study was to examine the operational viability and feasibility of conducting VC-ERP according to the treatment protocol developed in this study. The examination of these outcomes among 34 patients who had completed the treatment or were actively engaged in it indicated that the VC-ERP protocol was a feasible and viable means of treating OCD.

The VC-ERP treatment provided access to a larger number of patients who could benefit from ERP. Dropout rates were low and adverse events were relatively rare. The treatment was acceptable to patients, caregivers, and clinicians, and the levels of satisfaction were adequate. Since this was a naturalistic observation study among patients from routine care settings, these results can be generalized to other patients from similar clinical settings. Moreover, since the treatment was conducted in a low-resource setting of a developing country like India, these results could be particularly relevant for countries with similar resource constraints. Although the treatment was mostly conducted during the pandemic, the findings showed that it was feasible to implement the treatment even after the pandemic had subsided. Moreover, such naturalistic studies also fulfil the pressing need to conduct VC-ERP trials for OCD in real-world settings[9,16,60].

Its findings corresponded to the recent studies of OCD, which indicated that VC-ERP may be equally effective in routine treatment settings[22,63,64]. The use of hybrid treatment both in terms of multiple platforms for hosting VC-ERP and combining it with in-person care offers a greater degree of flexibility and has the potential for greater effectiveness[15,16,38,45,50]. Similarly, this study found that hybrid care was considered to be more advantageous and preferred by patients, caregivers, and clinicians. Another unexpected gain of the VC-ERP treatment was the opportunity to incorporate stepped care into the treatment protocol. Stepped care refers to the use of low-intensity treatments such as internet-based CBT for patients with less severe OCD with the option to transition to more intensive treatments if the illness is more severe. It has been advocated for a long time but is being re-emphasized because of the wide range of TMH-based treatments currently available for OCD[7,9,13,14,16]. In this study patients with milder OCD improved after the initial sessions, while many with more severe OCD moved on to hybrid care, and a few with the most severe illnesses could move on to inpatient ERP when VC-ERP failed. This was consistent with the stepped care approach.

The findings regarding the efficacy of VC-ERP among 11 patients who had completed the full treatment were very preliminary and had several limitations that have been listed above. Nevertheless, they did suggest that the VC-ERP treatment of this study was an effective means of managing OCD in terms of significant symptom reduction and maintenance of gains post-treatment. The extent of improvement was similar to other Indian studies of inpatient ERP for OCD[35,36]. However, the long-term outcome of VC-ERP was likely to be better because of the improved treatment engagement and follow-up with the treatment. These results were also in line with much of the existing evidence on the efficacy of VC-ERP from RCTs[51-54] and open trials[27,55-58]. Lastly, the findings suggested that VC-ERP treatment could be useful for a population with moderately severe OCD and high rates of comorbidity. Though most of the evidence appears to indicate that VC-ERP is ineffective in treating comorbid depression[7,11,22], some studies have shown that it is equally effective in those with comorbid conditions[22,64].

CONCLUSION

In conclusion, the present study has shown that despite many barriers it is possible to develop a structured form of VC-ERP for OCD that is feasible and acceptable to the users. The findings, though preliminary, suggest that VC-ERP could be a viable option for the treatment of OCD in low- and middle-income countries where the treatment gap for OCD is greater and TMH services are relatively underdeveloped. However, much more will need to be done to improve this treatment and prove its efficacy before it can be integrated into the wider system of mental healthcare in these countries.

ARTICLE HIGHLIGHTS

Research background

The existing literature indicates that exposure and response prevention (ERP) is efficacious in treating obsessive-compulsive disorder (OCD). However, despite the availability of such effective psychotherapeutic treatments, very few patients have ready access to them. Telemental health (TMH) treatments may help in overcoming these limitations of conventional ERP.

Research motivation

The coronavirus disease 2019 pandemic adversely impacted many patients with OCD, compelling clinicians to increasingly use telemental health-based options rather than conventional psychotherapeutic treatments for OCD. However, research on the efficacy of TMH in the treatment of psychiatric disorders from developing countries is limited, and trials on TMH-based treatment of OCD are rare. This study from India described the formulation and implementation of videoconferencing-based ERP (VC-ERP) treatment for OCD during the pandemic and its current status in terms of feasibility and usefulness.

Research objectives

To describe the formulation of a treatment-protocol for VC-ERP developed by an online group of clinicians, to describe the implementation of the protocol, and to examine the feasibility and usefulness of the VC-ERP treatment for OCD during the pandemic and after it.

Research methods

This prospective, observational study was conducted in the psychiatric unit of a multi-specialty hospital in north India over 12 mo (July 2020-June 2021). All patients with OCD were assessed using the home-based TMH services of the department. The VC-ERP protocol for OCD was the outcome of weekly Zoom meetings with a group of clinicians involved in administering the treatment. The protocol was implemented among patients with OCD attending the TMH services and upgraded to meet their needs. Feasibility and efficacy outcomes were examined.

Research results

One hundred and fifteen patients with OCD attended the TMH services during the study period; 37 of these were excluded. Of the remaining 78 patients, VC-ERP was initiated in 43 patients. Six patients dropped out, and 3 patients were hospitalized for inpatient ERP. Eleven patients have completed the full VC-ERP treatment. One patient improved following the initial sessions and did not have to complete the entire treatment. VC-ERP is ongoing in 22 patients. The feasibility of VC-ERP treatment in terms of operational viability, service utilization, service engagement, need for additional in-person services, frequency of adverse events, and user satisfaction was adequate. Significant reductions in symptoms and maintenance of treatment gains on follow-up were observed in 11 patients who completed the entire treatment.

Research conclusions

This study provided preliminary evidence for the feasibility and usefulness of VC-ERP in the treatment of OCD. It suggested that VC-ERP could be a viable option for the treatment of OCD in low- and middle-income countries with a greater treatment gap for OCD and underdeveloped TMH services.

Research perspectives

Further research is needed to improve the VC-ERP treatment and prove its efficacy before it can be integrated into the wider system of mental healthcare.

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FOOTNOTES

Author contributions: Kathiravan S and Chakrabarti S were involved in preparing the study protocol and conducting the review of the literature; Kathiravan S collected the data about patient treatment; Kathiravan S and Chakrabarti S were both involved in analyzing the data and preparing the manuscript; All authors have approved the final version of the manuscript for submission.

Institutional review board statement: This observational study was a part of a larger study on home-based TMH services for all patients[37]. The protocol was approved by the institute's ethics committee. Due to the restrictions imposed by the pandemic, verbal informed consent over the phone was allowed. Copies of the approval from the ethics committee have been uploaded.

Informed consent statement: This observational study was a part of a larger study on home-based TMH services for all patients[37]. The protocol was approved by the institute's ethics committee. Due to the restrictions imposed by the pandemic, verbal informed consent over the phone was allowed. As explained above, data regarding outcomes were

obtained only from patients who had verbally consented to undertake exposure and response prevention and had actively engaged in the process of treatment. However, patients were not contacted or assessed separately to determine these outcomes. Rather, all data regarding outcomes were extracted from routine medical and treatment records. Patient identities have not been revealed. Therefore, written informed consent from patients was not obtained for information about treatment outcomes. All the methods followed the guidelines of the Declaration of Helsinki for medical research involving human subjects.

Conflict-of-interest statement: None of the authors have any potential conflicts of interest to report. Details have been provided in the conflict-of-interest statement format.

Data sharing statement: Data regarding the study are available from the corresponding author (subhochd@yahoo.com) upon reasonable request.

STROBE statement: The authors have read the STROBE Statement—checklist of items, and the manuscript was prepared and revised according to the STROBE Statement—checklist of items. The checklist has been included.

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