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ORIGINAL ARTICLE

Clinicians' Perception of Virtual Reality Therapy in Treating Patients with Obsessive Compulsive Disorder: A Preliminary Study

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ABSTRAK

Realiti maya (VR) telah dicadangkan sebagai intervensi untuk kecelaruan keresahan berdasarkan konteks Barat. Walaupun keberkesanannya dapat dilihat, terdapat kekurangan kajian yang menggunakan VR sebagai intervensi, terutamanya untuk gangguan obsesif-kompulsif (OCD) khususnya di negara Asia. Oleh itu, kajian ini bertujuan untuk mengkaji apakah elemen yang diperlukan untuk mereka bentuk realiti maya dan kesesuaian VR sebagai intervensi dalam OCD untuk konteks tempatan. Untuk mencapai tujuan ini, enam ahli klinikal yang terdiri daripada tiga ahli psikologi klinikal dan tiga pakar psikiatri telah ditemubual. Mereka ditemubual menggunakan protokol temubual separa berstruktur yang berkaitan dengan pandangan mereka mengenai teknologi VR sebagai intervensi untuk pesakit OCD, dan elemen terapi tingkah laku kognitif (CBT) yang boleh digabungkan dalam VR. Penemuan kajian ini menunjukkan bahawa semua ahli klinikal bersetuju memasukkan CBT dalam VR sebagai sebahagian daripada intervensi untuk OCD bagi mengatasi isu logistik, sifat interaktif dalam persekitaran maya dan rasa kehadiran yang serupa dengan situasi kehidupan sebenar. Kesan sampingan VR juga perlu dikaji sebelum menggunakan intervensi baharu ini. Kesimpulannya, VR boleh digunakan sebagai intervensi untuk OCD. Penamaan intervensi CBT-VR ini boleh digunakan dalam perspektif Asia dengan mematuhi modul CBT yang sedia ada dan diubah suai mengikut konteks budaya.

Kata kunci: gangguan obsesif kompulsif, kualitatif, realiti maya, terapi tingkah laku

ABSTRACT

In the Western context, virtual reality (VR)-based treatments had been suggested

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as an intervention for anxiety disorder. Despite its potential efficacy, there is a lack of study which using VR as an intervention, especially for obsessive-compulsive disorder (OCD) in Asian countries. Therefore, the present study aimed to examine what elements are required to design VR and the suitability of VR as an intervention in OCD for the local context. To address this, six clinicians, consisting of three clinical psychologists and three psychiatrists, were interviewed. They were interviewed using a semi-structured interview protocol related to their perception on VR as an intervention for OCD patients, as well as the cognitive behaviour therapy (CBT) elements that can be incorporated in VR. The findings showed that all clinicians anonymously supported CBT to be augmented into VR as part of intervention for OCD to overcome logistics issues, the interactive nature of the virtual environment and the sense of presence similar to a real-life situation. The side effects of VR also need to be studied before employing these new interventions. In conclusion, VR can be used as an intervention for OCD. CBT-VR intervention can be applied in the Asian context by using similar CBT modules which should be modified according to cultural context.

Keywords: cognitive-behavioural therapy, obsessive-compulsive, qualitative, virtual reality

INTRODUCTION

Obsessive-compulsive disorder (OCD) is a chronic psychiatric disorder that has significant social and occupational consequences (Schruers et al. 2005). This disorder involves fears that are associated with contamination, doubts, orderliness, religion, morality, aggression or sexuality in terms of obsession. Compulsive behaviour involves either cleaning/washing, inspecting, counting and seeking reassurance to reduce anxiety and obsessions (Clark 2006).

Evidence has supported cognitive behavioural therapy (CBT) as the most effective treatment option for this disorder (Abramowitz et al. 2018; March 1995; Piacentini 1999). Despite its efficacy, Abramowitz et al. (2005) also highlighted a few limitations of CBT for OCD patients, including the possibility of patients dropping out in the middle of treatment due to the distressing nature of exposure elements and CBT will be less effective because of patients overvalued with their OCD thoughts or ideation. Furthermore, Boeldt et al. (2019) also described several limitations of exposure therapy, such as the limited stimuli that can be used and controlled in the treatment environment, especially in the hospital, while public exposure may jeopardise the confidentiality. Given with these deficiencies, it is necessary to investigate novel methods for circumventing the constraints associated with conventional CBT and exposure therapy.

To circumvent the limitations or

difficulties with exposure therapy, some researchers believe that a virtual reality (VR) system could be used to treat OCD patients (Cullen et al. 2021). Here, VR is defined as a computer-generated system that generates a three-dimensional environment interface capable of stimulating users' behaviour and perspectives in the present while engaging in the virtual environment (Li et al. 2017). The use of VR in the treatment of OCD had been shown to produce similar results in terms of inducing anxiety-provoking situations as in-vivo exposure (Kim et al. 2008; Laforest et al. 2016). In addition, recent studies had demonstrated the efficacy of using virtual environments as an adjunct therapy for OCD patients (Inozu et al. 2020; Laforest et al. 2016; St-Pierre-Delorme & O'Connor 2016) and most of these intervention are based on Western model, norm and cultural. Although extensive research has been carried out on either CBT or VR as treatment for OCD, no existing study shows the evidence of CBT being augmented with VR is a suitable treatment for OCD especially in Asian countries. It was stated that the use of VR in therapy can improve the ease, acceptance, and efficacy of anxiety treatment specially for OCD patients (Boeldt et al. 2019). Many impediments towards treatment seeking among OCD patients, such as logistic and financial barriers, stigma, shame, discrimination barriers, treatment perception and satisfaction barriers (Marques et al. 2010). Abramowitz et al. (2005) also highlighted the drawbacks of CBT and exposure response prevention (ERP) which caused a significant dropout rate, and ERP may not work for OCD patients with pure obsessions. Refusal to engage or continue ERP sessions due to exposure anxiety could decrease patients' motivation to pursue ERP and CBT (Al-Sharbati et al. 2014). It is crucial to determine the effective treatment in OCD, especially using VR as intervention since VR can be very useful for exposure therapy (Bush 2008). Thus, the purpose of this study was to ascertain the feasibility of using VR as an intervention for OCD patients in their local context. To achieve this, we conducted a qualitative study in which we interviewed clinicians about their perspectives on the use of VR technology for OCD patient treatment. Clinicians are the stakeholder groups with experience of treating OCD patients and will use the new intervention. Their working experience with OCD patients might encounter setbacks and difficulties which potentially aid in the development of VR interventions.

MATERIALS AND METHODS

This qualitative study was conducted as part of a larger project, the primary objective was to develop a new VR-based intervention programme for OCD patients. In-depth interviews were conducted with six clinicians (clinical psychologists and psychiatrists) to elicit their perspectives on VR as a novel intervention based on their experience in treating OCD patients. The Research and Ethical Committee of the Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, approved this qualitative research

under reference number FF-2021-206. All participants were briefed on the study's purpose and consented to participate in the study prior to the interview via a Google Form link.

Study Procedure

This study was conducted via the teleconferencing program Zoom for four months from May to August 2021. Zoom was chosen since it was very convenient for the participants, and due to restrictions of physical interactions during Covid-19 in Malaysia by the government. Six clinicians consisting of three psychiatrists and three clinical psychologists who were working in Klang Valley and were purposively sampled based on the following criteria: i) the ability to speak and understand Malay or English; and ii) experience in treating OCD patients. The notion of saturation point was used to determine the number of patients to be recruited (Mason 2010). The participants of this study were recruited through phone calls and short texts to six different clinicians that showed interest in joining this study.

Data Collection

This study conducts an interview protocol based on a ten structured questionnaire that was developed based on a review of the literature (Agee 2009) and clinical psychologist opinions (Brinkmann 2013), from which the ten questions for the interview were derived. Each interview was conducted in the presence of an expert and a minimum of two co-researchers. Each interview began with the researcher outlining the purpose of the study and interviewing the participants using a semi-structured questionnaire. A brief video about VR was projected onto the screen to show the therapists who had no experience with VR. Then, using semi-structured questions, their opinions on the VR as an intervention were elicited. Each participant's interview lasted approximately 45 to 60 minutes. Additional interviews were conducted when it was necessary to elicit additional information. The data were documented in field notes and audio recordings were made. Each day, debriefing sessions with the experts were held following the data collection sessions.

Data Analysis

Several rounds of theme analysis were used to examine the data (Braun & Clarke 2006; King et al. 2018) and Atlas.ti ver 9 Windows software was used for analysis and data management (ATLAS.ti Scientific Software Development GmbH). The initial stage involved the lead researcher reading the entire transcript and completing descriptive coding, which was later assessed by the study team (King et al. 2018). Following that, the researcher coded these on a descriptive level. The primary investigator went on to the interpretive level of coding after two transcripts, where a discussion was held and certain codes were renamed (Braun & Clarke 2006; King et al. 2018). The researcher listened and reviewed the content several times during the recording phase (Braun & Clarke

2006; King et al. 2018). The descriptive and interpretive coding procedure were continued until certain patterns emerged. Similar-meaning codes were grouped together, and themes and subthemes were created (Braun & Clarke 2006; King et al. 2018). The themes and subthemes were arranged according to their respective contents and then labelled (Braun & Clarke 2006; King et al. 2018). The data collection continued until the sixth interview, when the study team noticed a lack of new information and repetition in the responses of the participants. The research team was relieved when there is no new themes emerged once the data had reached saturation (Liamputtong & Ezzy 2005). The data analysis was circular, even though it followed a set of stages. The study team repeated the first steps and analysing the outcomes for several times (Braun & Clarke 2006; King et al. 2018; Liamputtong & Ezzy 2005). The study team also analysed, confirmed the coding and theme and subtheme of the creation processes. This was done to preserve the data analysis and study outcomes by ensuring the veracity of all interpretations (Cypress 2017). Themes were identified based on the two research questions: "How do clinicians feel about using VR to treat OCD" and "What are the elements of CBT needed to be adapted for VR", which will be discussed in the following section.

RESULT

Three clinical psychologists and psychiatrists with varying levels of experience participated in the study. The majority of the participants were females (*n*=5), and all of the clinicians were Malay. Based on Table 1, the respondents consisted of three clinical psychologists and three psychiatrists.

In order to answer two research questions, five theme were developed with ten sub-themes, as shown in Figure 1.

Table 1: Demographic Information

Participant	Gender	Education	Work experience	Settings	Specialisation
01 (Mrs. N)	Female	Master's in clinical psychology	< 10 years	Hospital based	Child and Adolescent Clinical Psychology
02 (Dr. R)	Male	MMed (Psych), Fellowship	> 10 years	Hospital based	Child and Adolescent Psychiatry
03 (Dr. F)	Female	MMed (Psych)	> 10 years	Hospital based	Psychiatry
04 (Dr. J)	Female	PhD	> 10 years	University	Anxiety-type Disorder, Clinical Psychology
05 (Mrs. I)	Female	Master's in clinical psychology	> 10 years	Hospital based	Clinical Psychology
06 (Dr. A)	Female	MMed (Psych)	> 10 years	University	Psychiatry

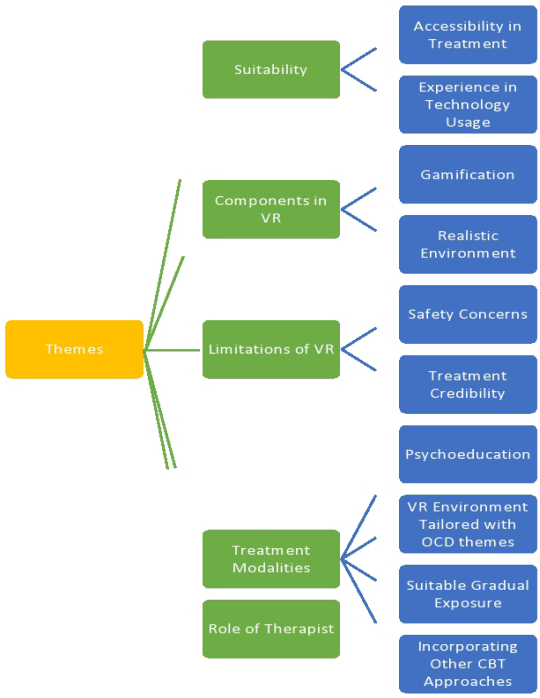

Figure 1: Themes and sub-themes for CBT-VR interventions for OCD

THEME 1: SUITABILITY

The clinicians highlighted several opinions on how VR can be suitable to be used as part of the treatment module and platform for OCD, including two subthemes; (i) accessibility of treatment and (ii) experience with technology.

Accessibility to Treatment

One participant/clinician stated that VR systems improve the accessibility of patients with better treatment to their disorder.

If you want to go to that place (hospital/clinic)) may need time to travel, need to move. And there may be financial issues we need to think about. And because of that, it will be a factor that will restrain us from being in such a situation (attending treatment). So with VR, this thing becomes easier. Because it's become more accessible without the logistics issues that we may face if we want to experience in real life. (Dr. A, Psychiatrist)

Meanwhile, according to another participant, the devices were purchasable in the market today for the patient to access the intervention and conduct their sessions easily at home.

If that thing (therapy session), for example, we want to do online, we can provide it. Even now, electroencephalogram (EEG) devices is cheap, you can do it for meditation and probably one day the glasses (VR gear) will be quite cheap, and you can take it home then online session, without having to do the real thing. (Dr. J, Clinical Psychologist)

Furthermore, VR offers some flexibility for therapy session by maintaining the scheduled session with or without the therapist. The usage of VR able to improve meeting sessions between patients and the clinicians. This may provide patients a continuation of the sessions at another time.

It's like KL, it's like in HTA (hospital), which we basically give this weekly session. We always call even a clinical psychologist for a weekly session. What can be done for the weekly session, I think we (psychiatrist) can do it for the weekly session. That's where we do the sessions like some other hours you know. During non-clinic period. (Dr. R, Psychiatrist)

Experience in Technology

According to the clinicians, VR can easily be accepted, as Malaysians are exposed to technology.

*The initial perception is favourable. Thus, hopefully, it will encourage them to attempt. It can increase the willingness to try and open up to that because Malaysia has been exposed to social media and a great deal of technology, so this can make them want to try it. I believe it will be beneficial. (*Mrs. N, Clinical Psychologist)

THEME 2: COMPONENTS OF VR

Clinicians described a range of possible components in VR that could influence the perceived appropriateness of VR. Two subthemes were grouped, including gamification and realistic environment.

Gamification

The clinicians mentioned that children and adolescents may be reluctant to attend conventional therapy due to developmental and cognitive issues. Games are able to stimulate patient interest and bridge the relationship between therapist and patients. Clinicians also expressed these engaging activities in VR therapy such as game can also divert patients' attention from their anxious or obsessive thinking, a way to express their emotions in a more comfortable way.

If it's a youngster, the teenager is closer to what we mean when we say you can make them play, make them happy, keep them from feeling nervous, and assist in therapy. Perhaps the requirement for game aspects will benefit patients who are youngsters or teenagers... (Dr. F, Psychiatrist)

sometimes some children, especially adolescents, refuse to join treatment (conventional treatment). So basically, it's not a treatment but informing them (children), it's a kind of exploring the game, playing the game. The game will also be kind of interesting if it can get the attention of the adolescent we want to engage with the VR. (Dr. R, Psychiatrist)

Realistic Environment

The clinicians viewed VR as it offered environments which were more realistic and user friendly. Real pictures and sound can be added in VR, because clinicians felt that it will help patients to overcome their fear.

Virtual reality can create a situation or picture that allows patients to move from one place to another place, and able to touch things (Dr. J, Clinical Psychologist)

Thus, incorporating parts of the community's culture may assist the patient to feel a sense of belonging to the VR environment. For instance, patients may choose to step into the water if the river is a typical Malaysian river. Thus, if the surrounding (in VR) is more akin to the real world, which patients typically encounter. This will aid in the externalisation of fear (in real life) (Mrs. I, Clinical Psychologist)

To begin, when discussing VR, it is necessary to understand the concept of presence. Thus, the increased level of presence. That is, the more present the patient is in the VR environment, the more effective the session will be. (Dr. A, Psychiatrist)

THEME 3: LIMITATIONS OF VR

Safety Concerns

Two clinicians stated certain risks of using VR as an intervention. Some of them expressed their concern that patients might experience health adverse effects from the usage of VR (e.g., discomfort feeling, phobia, distress):

We know that this treatment is one of the side effects or the area of weakness, it (treatment) makes people uncomfortable (Dr. J, Clinical Psychologist)

The second is that when he shakes his head, he believes he has tracking (movement in VR consistent with the real movement) and becomes a little dizzy as a result of the delay. He is not synonymous with his head movement. That has to be of higher quality, so he has the RAM to do what he needs to do for his movements to be consistent. As a result, he is experiencing less dizziness. (Dr. A, Psychiatrist)

Others stated that the suitability of VR as a treatment depended on patient's condition and the severity of their disorder.

Thus, after he is more stable, we initiate therapy (VR method) so that he can concentrate on the therapy while taking medicine. Thus, if you wish to say, therapy is the final resort. However, I usually take a step back and assess the seriousness. If the condition is mild to severe, you can begin merging (medicine and therapy). However, if the condition is severe, I initiate medication first, then continue with therapy when the patient is stable. That is my strategy. (Dr. A, Psychiatrist)

Treatment Credibility

Clinicians queried VR's reliability as a therapy for treating OCD patients. Some expressed their concern over the community's perspective regarding to confidentiality problems. Additionally, they pointed out that the use of VR may be attributed to entertainment rather than intervention, whereas other societies have a tough time in accepting novel treatments without evidence.

First of all, individuals (patients) will probably express concerns about security and confidentiality concerning these apps (VR), but this can be

regulated through legislation and additional efforts must be taken. (Dr. F, Psychiatrist)

I believe it is the community's belief. Perhaps this is a waste of time. Some people remember that this fun thing (VR) is not very helpful. (Dr. F, Psychiatrist)

If we don't have hard tools, they won't be as hard science. They (the Malaysian community) will look like "oh, this is just art" …(Dr. J, Clinical Psychologist)

THEME 4: TREATMENT MODALITIES

In terms of treatment modalities, the clinicians highlighted the need to adhere and modify CBT treatment modalities to suit the Malaysian context. VR treatment modalities can be tailored to OCD themes, psychoeducation, cultural graded exposure and incorporating treatments other than CBT approaches.

Psychoeducation

The clinicians stressed the importance of psychoeducation in the intervention. They highlighted the knowledge about their disorder and treatment planned by the clinicians should be incorporated into the VR intervention.

What is important to me is psychoeducation and also the deep breathing exercise. That means the components must be in the VR exposure. (Dr. A, Psychiatrist)

Psychoeducation is very important psycho educating the client about the err I mean the epidemiology of disorders, the risk factors, the frequency, the norm. If you want to normalise it, you will need the frequency information of the statistics, right? The prevalence rate is also what I mean. (Dr. J, Clinical Psychologist)

Moreover, one of the clinical psychologists not only viewed psychoeducation was necessary for patients, but the information should be delivered as simple as possible to ensure the patients understand their conditions.

So, I will look at the patient's level of understanding as well. If he can understand more, we will use words that are quite technical. But if not, maybe people say what. Simpler person. I will use simpler language. But just as this component of psychoeducation needs to be carried out in the language of the people says Layman's term (simple language) so that he again, is easy to understand. And easy for the patient to relate to himself. (Mrs. I, Clinical Psychologist)

Some clinicians expressed their opinion that patients should understand the treatment they might receive from the clinician or therapist, especially when using VR.

How explain to them is very important to reduce people's uncertainty feeling. What are the differences between the normal that the conventional way we have ever made? I think that can reduce their anxiety. Or answer their questions. Let them try first. Not related to people with OCD Program. But you know. The roads to use VR. It may help them. (Mrs. N, Clinical Psychologist)

Virtual Reality Environment should Tailor to OCD Themes

The clinicians highlighted that VR intervention should address patients' obsessive thoughts and compulsive behaviour according to their themes.

The reason we must educate patients first, VR is a form of exposure therapy for patients. So, he must anticipate that we will expose him to things that he has OCD thoughts. Examples of contamination, symmetric, he has a theme. So, we have to brief him first, we have to prepare him first. (Dr. A, Psychiatrist)

from there the patient will see that this compulsion is one of the things that people say perpetuate the problem. So if we want to stop, we have to stop the compulsion. So it makes things easier for the therapy to flow after that. (Mrs. I, Clinical Psychologist)

Suitable Gradual Exposure

Two clinicians mentioned that the intensity level of VR exposure should be considered, starting the exposure with something more relaxing. The intensity of the intervention should increase according to the patient's progress.

The intensity of that stimulus should start with something relaxing, so that he feels okay with the VR first, then you make other things, I don't think that would be an issue for kids and adolescence. (Dr. J, Clinical Psychologist)

From there I made a ladder. Which one is the most he is afraid the most and which one is the most he can't resist? (Mrs. I, Clinical Psychologist)

Moreover, one psychiatrist highlighted that the application of gamification would help patients to continue and adhere with the therapy session.

It's a game with scoring. He has a requirement to move forward. Then they started to make some thinking about themselves you know. (Dr R, Psychiatrist)

Incorporating treatment other than CBT approaches

A few of the clinicians suggested VR-CBT treatment should incorporate with medications, inclusion of acceptance of the illness (ACT intervention) and challenging cognitive distortion. One of the psychiatrists stressed that incorporating relaxation techniques in VR would help to boost the efficacy of the treatment.

For me, the combination of treatment is important. It's good for patients to combine both medication and psychotherapy. (Dr. F, Psychiatrist)
Certainly exposure alone is not enough without the CBT or ACT (acceptance). ACT component itself addresses thought. (Mrs. I, Clinical Psychologist)

If we expose the patient to things that he is afraid of. And then we help him to do breathing exercise relaxation techniques. Then we help him to modify his behavior on the things that they fear, then the effect of VR will last longer. (Dr. A, Psychiatrist)

THEME 5: ROLE OF THERAPIST

The role of the therapist during the

therapy sessions was discussed by the clinicians in terms of building an effective therapeutic alliance between the patients. Some of the clinicians viewed that therapist was needed in the VR therapy sessions to guide the patients.

Because with the use of VR, the therapist can guide the patient more easily. And maybe this will, what people say, affect the effective level of the therapy itself. (Mrs. I, Clinical Psychologist)

"Presence (Therapist) that could support, and our non-verbal behaviour that actually help patient to improve" (Dr. A, Psychiatrist).

DISCUSSION

As mentioned in the literature review, the critical component of an effective treatment plan for OCD patients is the patient's compliance with the treatment plan and the therapist's effectiveness (Abramowitz et al. 2002; Kraus et al. 2011). It was interesting to note that all clinicians in this study endorsed VR as a suitable intervention for OCD. They believed that using VR as an intervention can increase patients' accessibility to treatment and many patients were familiar with technology and social media. These findings further supported another finding where they stated therapists had an overall positive attitude toward VR (Lindner et al. 2019). Lindner and teams believed that this change of therapists' attitudes toward VR intervention may no longer pose a major roadblock in incorporating VR technology into routine therapeutic practice (Lindner et al. 2019). Anderson & Molloy (2020) believed that the incorporation of exposure therapy into VR systems could increase treatment accessibility, due to the low cost and widespread availability of VR devices. Virtual reality also allows for content that would be impossible to create in real life, as well as automated therapies that require fewer therapist resources (Geraets et al. 2021). Additionally, advancements in self-guided and automated VR enable patients to participate in psychotherapy sessions at home or anywhere while still achieving an effective outcome may increase the usage of VR as intervention (Donker et al. 2019; Freeman et al. 2018); Reynolds et al. 2022).

Another important finding was that all clinicians stressed the importance of incorporating gaming elements and a realistic environment into VR therapy. Gamification can be defined in a variety of ways depending on the context (Fleming et al. 2016), but in this context it refers to the process of incorporating "game" elements into non-gaming contexts with the goal of substituting for certain patterns or degrees of experiences and behaviour (Fleming et al. 2016; Lugmayr et al. 2017). The incorporation of gaming elements into VR exposure therapy may be beneficial as a mean of diverting patients' attention away from their illness or anxiety but toward the therapy sessions (Moroz & Calagiu 2018). Additionally, Faric et al. (2019) stated in their study that VR interventions should incorporate different challenge levels and continuous updates or progress to ensure active participation and map

the intervention's desired behaviour changes. This also had been supported by this result, that demonstrated the critical nature of VR interventions as a form of digital intervention that was enjoyable and fun for children and adolescents by incorporating gamified VR (Faric et al. 2019). Ridout et al. (2021) stated that when VR software was very immersive and properly built for therapeutic reasons, it can provide a safe and enjoyable way for adolescents in hospital to alleviate pain and anxiety. Furthermore, due to their high level of interest in VR among adolescents and their growing familiarity with technology, this trend indicates a support for using VR to address adolescents' particular health care delivery needs while in the hospital (Ridout et al. 2021).

The effectiveness of VR exposure therapy is contingent upon the participants' perception toward the virtual environment as being comparable to the real-world situations they encountered (Oskam 2005). This subject was discussed during the clinician interviews. They related the advantages of VR systems, which were capable of reproducing an environment or scenario from real life and embedding it within the VR system. According to Oskam (2005), the success of VR exposure therapy was determined by providing participants with realistic stimuli or environments that were similar to those encountered in real life and capable of eliciting strong emotions (anxiety) when confronted with the stimuli. For example, when viewing a house in VR, the house should feel real, not like some unidentifiable object (Oskam 2005). Thus, this matter emphasises the importance of setting the VR exposure therapy scenario in a Malaysian context and environment that participants are familiar with from their lives in order to increase the acceptability of participants.

It was important to note that, previous studies had discussed the development and the efficacy of VR, there was a need to take into consideration the problems associated with the VR system, which the clinicians had mentioned during the interviews. It is possible that patients might experience some negative side effects from participating in VR treatment, including physiological effects such as dizziness, cybersickness and body imbalance (Oh & Lee 2021; Sharples et al. 2008; Tychsen & Foeller 2020). When conducting a full immersive virtual environment, it was critical to consider in providing a fixed background virtual environment, which had been found to have lesser negative adverse effects than providing a moving background virtual environment (Park & Lee 2020).

Following to that, one of the most heatedly debated topics among the clinicians was whether VR therapy should follow the same treatment protocols as CBT. There is a critical requirement to psychologically educate patients on their treatment plan prior to engagement in VR therapy; additionally, this can assist patients in better understanding to their illnesses. As soon as an OCD diagnosis has been confirmed, it is critical that the first step is to educate patients about their disorder, including symptoms and

obsessive thoughts that contribute to the disorder's maintenance, treatment options, and behavioural models that can alleviate anxiety and help patients to resist the urge to engage in compulsive behaviour (Abramowitz 2006).

Subsequently, the elements of exposure will be regulated and implemented in the virtual world; therefore, it is critical to adhere to the themes faced by the patients in order to address their obsessive thoughts and compulsive behaviour. For instance, if patients are fearful of contamination, the virtual environment's design should incorporate elements linked with dread of dirt or cleanliness-related VR. This assertion was backed up by Hunt (2020), who stated that the presentation of OCD was universal and different OCD themes should be applied to varied ERP environments (Hunt 2020). Additionally, a study by Jalal et al. (2020) examined the use of a rubber hand to elicit fear of contamination with the patients' actual hand. Initially, a rubber hand was imitated using the participants' real hands, and they were conventionally exposed to fake faeces with no difference in results. However, following a five-minutes simulation exposure, they demonstrated distaste and a desire to wash their hands. This demonstrates that a setting which was built with identical to real scenario can elicit similar responses and emotional reactions, in accordance with the patient's OCD theme (Jalal et al. 2019).

The clinicians recommended that VR exposure therapy should be conducted gradually in accordance with the patient's hierarchy of phobias. Gradually exposing patients to fearful stimuli or anxiety-provoking situations may result in alterations in their thinking, behaviour, emotional and physical responses (Albakri et al. 2022; Boeldt et al. 2019). Exposure to each stimulus must be repeated, beginning with easier stimuli and progressing to more demanding stimuli. This could assist doctors in re-evaluating the occurrence of the feared stimuli and implementing modifications to alleviate the anxiety of unconditioned patients.

It was intriguing to observe the clinicians to discuss the therapist's role in VR treatment. To the author's knowledge, there was a dearth of material describing the therapist's role in CBT sessions with OCD patients. Although previous research had indicated that the therapeutic relationship between patients, therapists and the manner of treatment play crucial roles in prolonging the psychotherapy's effect (Lindgren et al. 2010). Therapists were viewed as a source of support and encouragement, as well as a source of trust and guidance during the therapy process. Chard & van Zalk (2022) believed that virtual therapists, might be similar to conventional therapists, which able to impact the outcomes of therapies. This also had been discussed by Lindner et al. (2020) in who found that even with the absence of a therapist from psychotherapy, the inclusion of automated and gamified elements may lead to successful therapy (Lindner et al. 2020). Thus, future research may wish to examine the role of the therapist more critically, particularly in

the context of the use of VR.

In conclusion, the results of this study indicated that VR was suitable medium of intervention to treat OCD patient due to familiarity of users in using technology, incorporation of CBT module as well as VR environment can be designed and tailored to religion, culture and norm that suitable for diverse age, gender or type of illnesses condition. An effective intervention is important to reduce OCD symptoms since OCD disorders are highly associated with public stigma (Ponzini & Steinman 2022). A study conducted in Hong Kong showed that immersive VR interventions were found to reduce public stigma (Yuen & Mak 2021). Since at this moment, there is scarce evidence of culturally adapted VR intervention that can be used to manage OCD symptoms. A study showed that real-life view VR tools provided a realistic setting for Chinese language learning, piqued students' curiosity in the electronically displayed destinations, reduced anxiety during presentations and enhanced their learning skill about the target culture (Xie et al. 2019). Finding from this review showed that applied VR in cultural heritage could be widely used to give customisable multimedia materials inside VR environments, resulting in a higher level of immersion and a sense of presence (Teeng et al. 2022). Therefore in designing an effective intervention, it is important to incorporate cultural and religious elements into VR interventions that are more suitable to Asia perspective which encompass diversity of socio-economic and environmental conditions as well as multi culture and ethnicity.

The generalisability of these results was subjected to certain limitations. First, majority of the clinicians' interview had limited expertise in VR technology itself; however, their experiences as practitioners and mental health care providers resulted in a novel conclusion. Additionally, the majority of the clinicians were Malay. There was no clinician of other ethnicities was available to be questioned. Secondly, small sample size which only consisted of six clinicians to participate in this study may influence the study's generalisability and rise the margin of error (Nayak, 2010). Further work needs to be done to determine the perception of suitable VR as intervention from Chinese, Indian and other ethnic as well as employ a large sample size. In addition, further research in collecting qualitative data from patients' perspectives about the incorporating VR system in the psychotherapy will be great, since they are major stakeholders which will be using the intervention to overcome their problem.

CONCLUSION

Obsessive compulsive disorder has a significant impact on our community. Virtual reality has begun to have an impact on and become integrated into the treatment management of mental disorders, including OCD. This integration of VR and exposure therapy was warranted in previous research involving other disorders such as social anxiety, phobia, and PTSD, and several

studies discussed the efficacy of the system on OCD patients. Through in-depth interviews with experienced clinicians, including a clinical psychologist and psychiatrist, the current study examined the potential uses of VR in OC therapy. Their perspectives have been synthesised and analysed to create several major themes in this study, which aims to comprehend the requirements for VR as an intervention for OCD patients. Clinicians have proposed that VR can be used to treat OCD patients due to its suitability for providing widespread accessibility to treatment and its components, such as gaming elements, that can entice patients, particularly children and adolescents, to engage with the intervention. Additionally, in order to adopt VR as an intervention, a few CBT elements, such as treatment modalities and the importance of psychoeducation prior to the start of the therapy session, needed to be incorporated into VR. It is also worth considering the therapist's role during the intervention, which may require future extension research. Regardless of clinicians' positive perspectives, it is critical to consider several limitations of VR, including the device's potential adverse effects following use and its credibility in treatment approaches. Virtual reality systems show great potential to become the new gold standard of treatment for OCD and significantly improve patients' quality of life. Additional research is needed to establish VR as an evidence-based treatment and to develop effective treatment modalities that address both the cognitive and behavioural aspects of the disorder in a way that is both useful to clinicians and therapists and beneficial to patients. The present studies support VR as suitable intervention for OCD patients which can lead to effective management for OCD that is able to reduce burden of care and increase quality of life and reduce time for psychotherapy appointment.

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