

Automated Virtual Reality Cognitive Therapy (gameChange) on Inpatient Psychiatric Wards: a Qualitative Investigation of Staff and Patient Views Using the NASS Framework

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Abstract

Background: Automated VR therapy could allow a greater number of patients to receive evidence-based psychological therapy. The aim of the gameChange VR therapy is to help patients overcome anxious avoidance of everyday social situations. gameChange is being evaluated with outpatients, but it may also help inpatients prepare for discharge from psychiatric hospital.

Objective: We set out to explore the views of patients and staff on the provision of VR therapy on psychiatric wards.

Methods: Focus groups or individual interviews were conducted with 19 patients and 22 NHS staff in acute psychiatric wards. Questions were derived from the Nonadoption, Abandonment, and Challenges to the Scale-Up, Spread, and Sustainability framework. Expectations of VR therapy were discussed, participants were then given the opportunity to try out the gameChange VR therapy, before questions focused on opinions about the therapy and feasibility of adoption.

Results: There was great enthusiasm for the use of gameChange VR therapy on psychiatric wards. It was considered that gameChange could help build confidence, reduce anxiety, and 'bridge that gap' between hospital and discharge. However, it was reflected that the VR therapy may not suit everyone, especially if acutely unwell. VR on wards for entertainment and relaxation was also viewed positively. Participants were particularly impressed by the immersive quality of gameChange and the virtual coach. It was considered that a range of staff groups could support VR therapy delivery. Staff thought that implementation will be facilitated by having a lead staff member, having ongoing training accessible, and involving the multi-disciplinary team in decision-making for VR therapy use. The most significant barrier to implementation identified by patients and staff was practical: access to sufficient, private space to provide the therapy.

Conclusions: Patients and staff were keen for VR to be used on psychiatric wards. In general, patients and staff viewed automated VR therapy as possible to implement within current care provision, with few significant barriers other than constraints of space. Patients and staff thought of many further uses of VR on psychiatric wards. The value of VR therapy on psychiatric wards now requires systematic evaluation.

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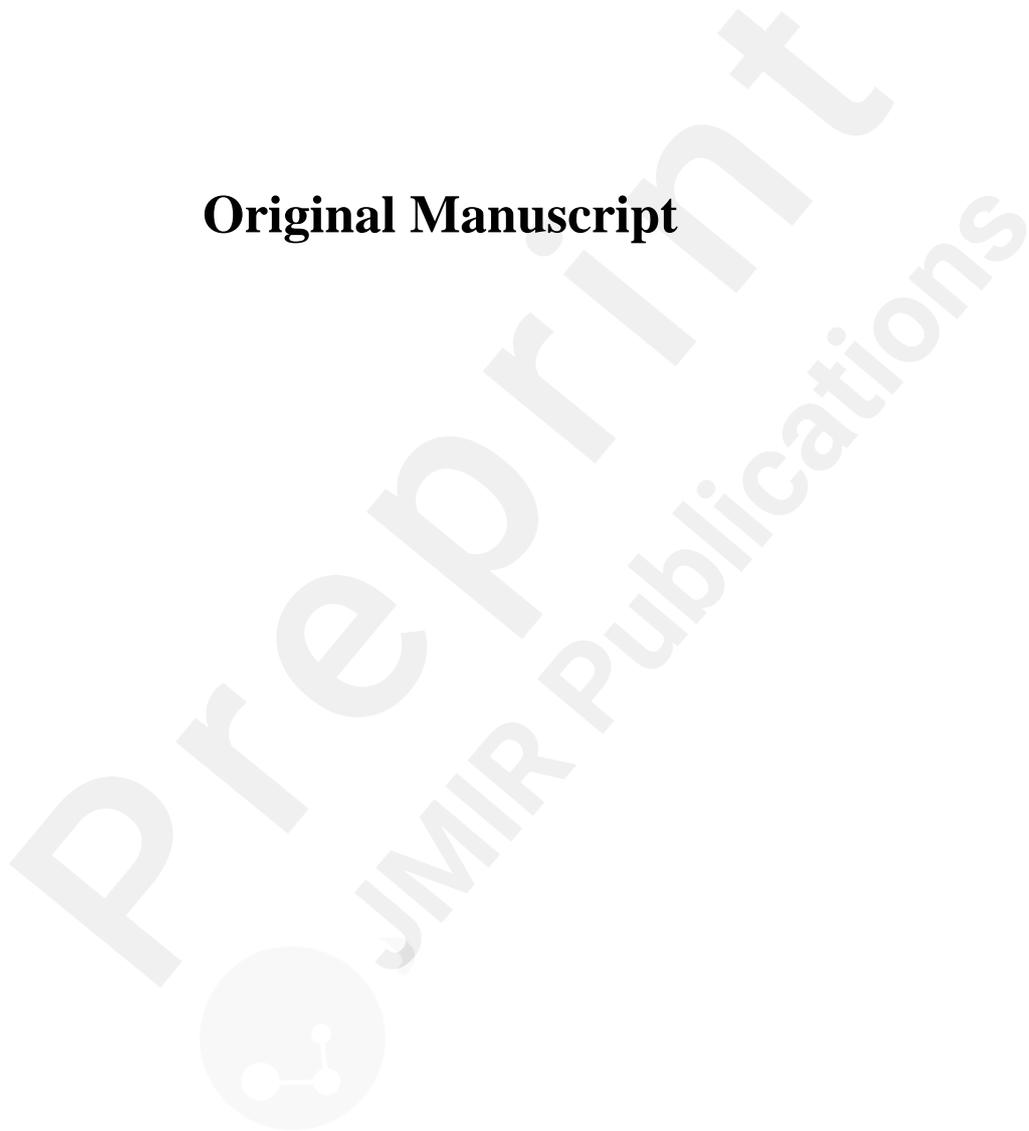
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Key words:

Virtual reality, automated, therapy, inpatient psychiatric care, implementation

Introduction

Virtual Reality (VR) has the potential to be used in the treatment of a range of mental health problems [1]. Aside from the evaluation of clinical effects, there also needs to be consideration of successful implementation into services. One setting where VR therapy may be particularly valuable is psychiatric hospital wards. Pressures on staff time can often lead to limited opportunities for patients to receive psychological interventions or other meaningful activities [2, 3]. Clinical symptoms may be reduced upon hospital discharge, but patients are often unprepared for return to the situations that they had found difficult before admission. VR can provide a safe and controlled setting for patients to practise being in everyday situations. We therefore set out to investigate how VR therapy is viewed by patients and staff in psychiatric hospitals [4]. The objectives were threefold. First, to obtain initial expectations of patients and staff about using VR headsets and, especially, VR psychological therapy. Second, to gain patient and staff views of an automated VR therapy (gameChange). gameChange is being evaluated principally with outpatients with psychosis [5]. In six sessions, the aim is to reduce agoraphobic avoidance by presenting graded VR simulations of common everyday situations (e.g. getting on a bus, going to a shop) [6, 7]. Patients are guided through the programme by a virtual coach. Third, to consider requirements for implementation. The study design was informed by the nonadoption, abandonment, and challenges to the scale-up, spread, and sustainability (NASSS) implementation framework for health care technologies [8]. Staff and patients were in a position to inform three of the framework's seven domains with regard to implementation of VR therapy: the condition and disorder that the therapy is designed to address, the intended adopters of VR therapy, and the organization. This is the first implementation study of automated VR therapy in inpatient settings.

Method

The gameChange Lived Experience Advisory Panel (LEAP), facilitated by the McPin Foundation, contributed to the development of the study. Details of this and other aspects of the study methodology are provided in the full study protocol [4].

Amendment to protocol

The study was set up before the COVID-19 pandemic. The first focus group was run on the 6th March 2020. It had been planned to go on to visit one or two inpatient wards at each of five NHS mental health trusts across England, totalling a minimum of 50 participants. However, access to wards, and travel across the country, became severely restricted. Therefore, we had to reduce the number of sites visited.

Participants

One acute inpatient ward in Nottinghamshire Healthcare NHS Foundation Trust and two acute inpatient wards in Oxford Health NHS Foundation Trust took part in the study. Staff working in either the delivery or management of clinical care on the wards were invited to take part. NHS patients staying on wards were recruited according to the following criteria:

Inclusion criteria:

- Participant is willing and able to give informed consent for participation in the study.
- Aged 18 years or above.
- Willing to consent to being audio recorded.

- Sufficient English language skills to participate in the focus group/interview.

Exclusion criteria:

- High levels of associated risk to self or others via participation in the study e.g. actively suicidal.
- Photo sensitive epilepsy (use of VR is not recommended for those with photo-sensitive epilepsy).

Procedure

The study had received ethical approval as part of a substantial amendment to the gameChange trial [5]. The trial received ethical approval from the NHS South Central - Oxford B Research Ethics Committee (19/SC/0075). Focus groups were the primary choice for data collection, but individual interviews were offered where a participant preferred or was unavailable at the time of the groups. Focus groups and interviews initially asked questions relating to expectations, before all participants briefly tried gameChange and then discussed their opinions on the therapy and its suitability for the ward.

Topic guide

The semi-structured topic guide was informed by the NASSS framework. Separate but similar topic guides were created for staff and patients. Study authors, including qualitative research experts, and the LEAP developed the first drafts of the patient topic guide, and both guides were piloted beforehand. The topic guide was reviewed after conducting the first focus group. No significant changes were made, though two questions were slightly rephrased (e.g. 'Who would you like to deliver VR therapy to you?' was changed to read 'If this were to be available on the ward, who would you like to be doing it with you?').

Analysis

Focus groups and individual interviews were audio recorded and transcribed verbatim. Field notes from each focus group and interview were also transcribed. Field notes recorded factors such as group dynamic and nonverbal cues to add context to the transcript of the audio recordings. Transcripts were not returned to participants for comment or correction.

A thematic analysis was performed [9] separately for staff and patient data, although similarities and differences between the analyses were then considered. All data were entered into NVivo [10] in order to provide a transparent audit trail. The transcribed data were read and re-read to ensure familiarity, before developing a preliminary coding framework that was discussed and adapted by the first author during supervision. A number of transcripts were double coded. An extract of the coding and reflexive log, with examples of adaptations made, can be viewed in the supplementary materials. Details regarding each code were recorded in memos in NVivo. Themes were derived from the data. Diverse cases and minor themes were considered, as breadth was considered as important as frequency.

LEAP involvement in the analysis

A summary of the analysis was sent to the LEAP for consideration in order to assess the validity of

the findings in an additional group. LEAP members showed considerable support for the findings. In particular, they highlighted the need to have treatments beyond medication, the potential for VR to be a helpful route to engaging patients who may otherwise not engage with ward activities, and the potential to have alternative VR scenarios and presentations of Nic. The importance of VR increasing access to psychological therapy, rather than being a substitute for any existing therapeutic activity was also emphasised. One LEAP member additionally underscored that limited private space to use the VR would likely be a significant challenge facing many wards.

Reflexivity

All patient focus groups were led by a doctoral student (PB) and co-facilitated by a clinical psychologist (SL, RD, or JJ). All interviews and staff focus groups were either led solely by PB or jointly by PB and one of the clinical psychologists. Consideration was given to how professional backgrounds may impact data collection and analysis. For example, existing knowledge, expectations, and hopes regarding VR therapy may have impacted how the focus groups were conducted. A reflexive log was kept, and to try to minimise these potential biases, the topic guide was closely adhered to, as this was created largely from the NASSS implementation framework rather than personal experience and expectations. Consideration was given to the gender and class of the facilitators, and that visible indicators of socio-economic status could impact participant engagement. Participants were frequently reminded that the aim of the study was to hear and learn from their views, and that the facilitators wanted participants to be as honest and open as possible about any concerns or criticisms they may have.

Results

In total, 19 patients (12 male, 7 female) and 22 members of ward staff (three male, 19 female) took part. Participants were from three wards across two NHS mental health trusts. There were seven patient interviews, and four patient focus groups (each with three patients), and three staff interviews, and four staff focus groups (each with 2-7 staff members). The numbers of staff and patients recruited from each ward were approximately equal. Participants were predominantly of White ethnicity, with ages ranging between 18 and 60 for the patient participant group and 21 and 60 for the staff participant group. The staff comprised nurses (including clinical leads), healthcare assistants, a deputy ward manager, a peer supporter, a ward clerk, activity coordinators, occupational therapists, and assistant psychologists. Although analysed separately to begin with, all themes were shared across staff and patient responses.

Desire for treatments beyond medication and the value of psychological therapy

Many patients described their dissatisfaction with medication being the primary form of treatment available on their ward and the lack of psychological therapy: 'how are we going to get better if we're just on meds?...I would really benefit from therapy at this point.' (participant 8); 'We just get filled with pills, there's no talking therapies or anything like that' (participant 3). This desire for treatment beyond medication led to a sentiment of being 'up for trying anything' (participant 1). Patients typically reported a positive view of psychological therapy and a desire for more to be available: 'more one to one therapy' (participant 9); 'I think talking's the way forward' (participant 11). There were some exceptions, however, with one individual saying 'I don't find talking helps' (participant 18) and another describing some negative past experiences with a psychologist and suggesting instead that their priority for recovery was seeking safe housing (participant 17). Notably, many patients were aware of resource limitations contributing to a lack of therapy provision: 'the room and the money is obviously not enough' (participant 2); 'they're under a lot of pressure, you see' (participant 15). Staff also reported positive views of psychological therapy, seeing it as an important treatment option for patients: 'it's always good to have more therapy (participant 3); 'the most helpful thing for [patients] to have' (participant 19). Some staff felt that even if therapy could not lead to large clinical improvements, it would nonetheless help patients to have a purpose while being on the ward and help to reduce boredom. There was acknowledgment from one staff group that the psychological perspective differs somewhat to the nursing point of view, but that both are important.

VR therapy sounds rational and helpful

Before trying it for themselves, patients and staff members reported positive expectations of gameChange. In particular, they felt that the use of technology, graded levels of difficulty within the programme, and the automation of the therapy, could all be beneficial. Several staff reported expecting the VR to be popular among patients and felt the therapy would likely help a lot of patients: "it makes perfect sense...it's definitely something that I think could be really useful...just giving them a bit more confidence' (participant 1). These views were also shared by patients: 'if someone struggles with walking down the street and they can do that in chunks and chunks and chunks and gradually build up, like, that's going to be great' (participant 11). Some patients did express concern, however. After hearing about the rationale of gameChange one patient stated 'sometimes I wonder whether highlighting these areas can make the issue a bigger thing' (participant 14).

Surpassing expectations

After trying the gameChange VR therapy for themselves many staff and patients reported feeling

surprised and impressed. In particular, there was considerable discussion by all participants of how surprisingly real the VR felt and how the experience was enjoyable. For instance, one staff member stated: 'That was really amazing...it does absorb you into it' (participant 11). Several participants said the VR had surpassed their expectations: 'It's better than I thought it would be' (staff member, participant 2); 'I was sceptical before coming in, but I get it now' (patient, participant 3). Several patients also expressed a desire to try more of it and thought it would be very popular on the wards: 'I think there would probably be a big line, a big queue, to use it daily I think, to be honest' (participant 4). Only one member of staff reported thinking the VR actually had a strong 'sense of unrealism' and that 'nothing much' had surprised them (participant 9).

VR therapy could help

The expectation that the gameChange VR therapy would be helpful was maintained after participants tried it. Patients felt that the gameChange therapy could help in a number of ways, including building confidence and reducing social anxiety ('I think it would be helpful to people with anxiety...I reckon it would help', participant 19), providing new perspectives and an escape from the ward on the ward ('I already feel as though I've been out today by just being in that experience, and I actually feel better than when I arrived, so it clearly can help', participant 1), and preparing for discharge ('it is going to help you to come out into society, out of the hospital, and back into society', participant 7). Staff shared patients' views that gameChange could help build confidence, reduce anxiety, and 'bridge that gap' (participant 2) between hospital and discharge, and also felt that the VR would be particularly helpful for patients who may typically engage less in therapeutic activities available on the ward, those who struggle with communication, and those who find it difficult to leave their bedrooms. One staff member who had seen some of the patients on the ward trying out the VR also noted: 'seeing them afterwards they seemed really pleased with themselves and it was that kind of sense of accomplishment that was really nice' (participant 17). Staff and patients acknowledged that the therapy would not suit everyone, however. For example, it was discussed that some patients may be too unwell to use the therapy, or feel it is not relevant to their needs: 'when [patients are] really unwell it's difficult...it would have to be, you know, picked up at the right time in their recovery for it to benefit them' (staff member, participant 8); 'initially you might not be at the stage to do any talking therapies' (patient, participant 3). Some patients also said that for themselves the therapy would not be of particular help, even if it would for others: 'Social situations as he said, brilliant, but like for self-harming...I can't see that helping in my situation'; (participant 2); 'It's not beneficial to me but it would be a massive help for others that are struggling' (participant 13).

Envisioning implementation

Where the VR could be physically located on the ward, who would support patients to use it, and which patients it might be offered to and when, was discussed. Staff and patients thought the VR needed to be stored away somewhere safe and secure, and that a quiet, private room would be needed for using VR for structured therapy interventions like gameChange. Wards varied as to whether such a space existed already. One staff member suggested that one option to overcome spacing challenges on the ward would be to have a 'dedicated space off the ward to use the [VR]' (participant 4), though this would require patients to be granted leave from the ward, which would not always be possible.

Regarding who would be present to support the patient to use VR, patients and staff stressed the importance of the member of staff being someone that the patient could trust and form a good therapeutic relationship with: 'someone you feel comfortable around' (patient, participant 5), 'it should be done with somebody that they've got that therapeutic relationship with' (staff member, participant 22). Unsurprisingly, staff spent longer considering which specific job roles may be most suited to using the VR with patients. Suggestions included assistant psychologists, healthcare

assistants, and occupational therapists. Two of the focus groups noted that it might be important to have staff that do not have to respond to PIT alarms for ensuring sessions aren't disrupted: 'If someone has got a VR headset on and all of a sudden this massive alarm is going off...the person facilitating has to run out of the room...that could be really disorientating, (participant 5). Although there was agreement that staff would be 'very much willing be trained in it' (participant 1) and would find it enjoyable to be able to 'see the benefits' of the treatment (participant 2), it was considered particularly important to ensure an 'opt in' system, where staff members could sign up to train in the VR if they wanted to but weren't required to if they felt it was not something they would like to do. It was also suggested, that to begin with, it may be helpful to have staff from outside the ward come and 'train the whole ward' (participant 1) or even to deliver the therapy to patients given external staff would be 'more competent and committed' and could then 'get the ward staff involved' (participant 2). When asked about the possibility of a peer professional – i.e. someone with lived experience of a mental health problem who has received training in providing psychological support and confidentiality – being present rather than a member of ward staff, patients saw this as a positive option: 'they'd be brilliant' (participant 2); 'they're then speaking from experience, aren't they' (participant 4).

Staff members also felt that if VR therapy were to be implemented on the wards, its use by individual patients would need to be discussed within the clinical team and then prescribed in line with the evidence base: 'It would have to form part of a care plan...it wouldn't be something that we just get out and go' (participant 11). In general, staff mostly felt that the therapy could fit well into existing ward routines: '[staff] set time aside to sort of have one-to-ones with patients...I think you could incorporate it into that hour' (participant 1); 'I take patients out for, like, community assessments and stuff...so the alternative could be doing this' (participant 12).

Concerns about having VR therapy on wards

Both staff and patients raised concerns regarding how VR therapy could be implemented on wards, though the specific concerns varied. Patients discussed whether VR would be seen as a burden by staff due to it needing constant supervision ('staff could see it as an imposition, because they're too busy taking people out on fag breaks', participant 3), the headsets getting broken or forgotten about ('it'd get broken', participant 16), the therapy becoming a substitute to enable further cuts to funding of existing psychological therapies ('I think the danger of course is that the technology becomes the substitute for government cuts or lack of funding' (participant 1) as well as needing to ensure patient data are kept secure and confidential (I would want to know that my data was secure', participant 8). One patient group also voiced concern that it could be embarrassing if you were doing something odd in the VR, which tied into desires for using it in a private space with a trusted member of staff. Staff members shared patients' concern about needing to consider how to look after the kit and prevent it from being broken: 'I could just see the equipment getting ruined' (participant 21). Staff also raised concerns around whether the headset might be overwhelming or overstimulating for some patients, and difficult for those with less spatial awareness.

Barriers and facilitators to implementation vision

Staff thought that having ongoing access to training, the involvement of a patient's multi-disciplinary team, and a mechanism for helping patients to continue to use the VR if discharged to the community in the middle of a set of sessions, would all be factors that would make it easier to ensure the successful implementation of VR therapy on psychiatric wards. Having a staff member lead the use of VR on the ward, who would, for example, be someone you 'can report back to with any concerns' (participant 1) and who would be responsible for maintaining the equipment was also raised as a facilitator. Additionally, staff and patients stressed the importance of introducing the VR in the right

way. Patients primarily spoke about this with regards to how it would be explained to users, for example, providing reassurance regarding its safety, and ‘explaining it has been developed with people with psychosis’ (participant 11) (the gameChange VR therapy had been developed with patients using a user-centred design process). Staff primarily considered how it should be explained to staff: ‘as much information as you could give...why it’s going to benefit, what you hope the outcome will be and basically that it could help create a calmer environment on the ward because that’s all we want’ (participant 8).

On the other hand, current barriers to the implementation of VR therapy on wards included staff shortages and the resultant reliance on bank staff, and the lack of appropriate space for using the VR on some of the wards, with existing private spaces either being too small, too noisy, or too infrequently available. There was contrast between members of staff within and between wards as to whether limits on staff time would be a problem. Some members of staff felt that the VR therapy would not add time pressure to staff roles as it could fit into existing routines, or that any additional time it would require would likely only bring about savings in time in the longer term, (‘I wouldn’t say the time is a constraint, no, no...if we’re spending more time engaging in therapy with someone that can only be a positive’ (participant 1), while others felt that pressures on staff time would be a greater challenge, and would, for example, ‘play a part in how frequently somebody could have a session’ (participant 16).

Improvements and potential

Several ways of improving the therapy were discussed. Patients and staff thought it would be beneficial to be able to vary the computer characters and, in particular, the virtual coach Nic, to the preferences of the user. One patient group also suggested that Nic could be presented as a peer professional, for example ‘a patient with your own characteristics that’s out in the community’ (participant 1), feeling that ‘if it’s presented as a peer supporter, even though it’s not real I think that would make you feel a little bit more relaxed’ (participant 3). A number of additional scenarios were also suggested, including a football stadium, a theatre, a courthouse, and a workplace. Having some simulated ward environments, such as the communal area and a ward round meeting were also suggested by several members of staff and patients: ‘[patients] can get really anxious about ward rounds...so I don’t know whether or not that could be something in future’ (staff member, participant 20); ‘a ward meeting where there’s loads of people’ (patient, participant 16). Other improvements suggested were having adaptations for individuals with audio or visual impairments and increasing the level of interactivity in the scenarios. Staff and patients also discussed a range of ideas for further uses of VR headsets. Relaxation and mindfulness exercises were frequently discussed in particular, with other suggestions including helping autistic people to practise eye contact, training of STOP anger management techniques, staff training on what it’s like to have certain psychotic experiences, patient assessment and diagnostics, treating PTSD, and treating obsessional thinking. As one patient stated: ‘there’s sort of endless possibilities’ (participant 1). Due to the limited resourcing many wards face it was also suggested that patients could use the VR headsets for gaming when available, which might then also help to reduce boredom on a ward.

Discussion

We report the first qualitative investigation of staff and patient views on the potential to use automated VR cognitive therapy on inpatient psychiatric wards. It was very clear that patients and staff have considerable enthusiasm for trying something new, especially a potentially effective psychological approach, and that participants were impressed by the potential of the automated VR therapy to help patients, while potentially overcoming some of the resourcing challenges that traditional therapies face. Although caveats were expressed, the enthusiasm bodes well for testing and implementing VR on psychiatric wards.

Separate coding frameworks were initially developed but there was considerable overlap and consensus between patient and staff views. Particularly striking was that nearly all participants felt positively surprised by aspects of gameChange, noting it surpassed their expectations, in particular with regards to how real it felt. Additionally, although staff and patients felt that on a patient's immediate arrival to the ward VR therapy may not be so appropriate, psychological therapy is certainly something that was desired by patients and considered by staff to be important for aiding recovery. Patients staying in hospital may often be thought of as being too unwell to benefit from psychological therapy, but this was not the view of the patients and staff from these wards.

Staff and patient participants both shared the belief that VR therapy could be very helpful and were keen to consider practical solutions concerning where and with whom it could be used. There was also variation in the discussion by staff and patients. Within the 'envisioning practicalities theme', staff considered in greater detail which professions might be able to feasibly deliver VR therapy, whereas patients understandably discussed in greater detail who they might feel most comfortable in having to support them. Interestingly, one of the patients' primary concerns centred on whether staff would be willing and have the time to use the VR with them, whereas many staff members did not raise this as a likely problem.

The topic guide covered three domains of the NASSS framework: the condition or illnesses that the technology is designed to help, the intended adopters of the technology, and the organisation where it would be implemented. With regards to the condition, the gameChange automated VR therapy is designed to help anyone who may feel anxious or lack confidence in entering everyday social situations. It is for agoraphobic type anxious avoidance, which occurs in two-thirds of patients with severe mental health conditions [11]. Patients and staff agreed that this would be a relevant treatment target for many individuals on the ward, but that factors such as severity of clinical symptoms might complicate successful use. Interestingly, wider applications of VR for patients on psychiatric wards were identified. With regards to the intended adopters, a crucial lesson from this study is the clear enthusiasm and positive feedback displayed by all participants. This is particularly of note given studies suggesting that acceptance by staff can often be the single most important determinant of whether new technologies succeed at a local level [8, 12]. However, it must also be recognised that the staff most likely to volunteer their time to take part in an interview may also be those who judge that they have time available or have the most interest in innovation. Self-selection is likely to bias feedback towards the positive. This potential bias may have been mitigated to a degree by running several focus groups in a regular staff meeting slot. However, it is also the case that most of the staff interviewed were not in senior decision-making roles for ward treatment provision. Regarding the NASS framework domain of organisation, most staff reported that their ward would have the capacity and motivation to take on the kind of change entailed by VR. It was judged that use of VR could fit into existing ward routines such as one to one time that staff have dedicated to spending directly with individual patients, though its use in conjunction with real-life practise in outdoor

settings may require careful planning.

A number of potential barriers for implementation were raised. Space to use the equipment may be a barrier in some wards. Staff did think that this barrier could be overcome, through adapting current spaces or making use of rooms off the ward. While staff time was not seen as a barrier when wards are working with usual capacities, times of staff shortages was discussed as a potential problem. This might mean that having staff external to the ward, such as peer professionals, dedicated to the delivery of VR therapy, in addition to training ward staff, could be the most feasible and popular method of implementing VR therapy. This also fits with recommendations within the NHS Long Term Plan to recruit a workforce of Peer Support Workers in acute settings [13,15].

Our experience is that people need to try VR to understand it fully; and this was the case in the current study. For implementation, a VR ward facilitator could ensure that as many staff as possible have the chance to try VR. When introducing the technology to patients, it will be helpful to address explicitly concerns raised by patients in this study, for example, by providing information on the safety of the equipment and who it was developed by. Resources such as workbooks and summary sheets of the therapy aim and rationale to help consolidate learning may also be useful. It was also notable that VR was seen as something that could be helpful in many different ways on a ward, including for games or mindfulness exercises.

There were several limitations to the study. Most significantly, due to the Covid-19 pandemic recruitment took place on only three acute psychiatric wards across two NHS mental health trusts, which may limit the generalisability of the findings. It is also likely that participants in implementation studies may represent a more highly motivated group who are less representative of the whole population [15]. Multiple stakeholder involvement is important for implementation research [16, 17], and there were too few staff participants (e.g. consultants, managers) who are typically involved in the strategic decision-making. It is also the case that this study did not consider all domains of the NASSS framework. For instance, it will also be valuable to consult individuals with detailed knowledge of the technology to consider supply, support, and future evolution. However, the results of this study indicate that VR has significant potential to be implemented on psychiatric wards.

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Competing interests

DF is a founder and non-executive board director of Oxford VR, a University of Oxford spin-out company, which is commercialising the gameChange VR therapy. DF holds equity in Oxford VR.

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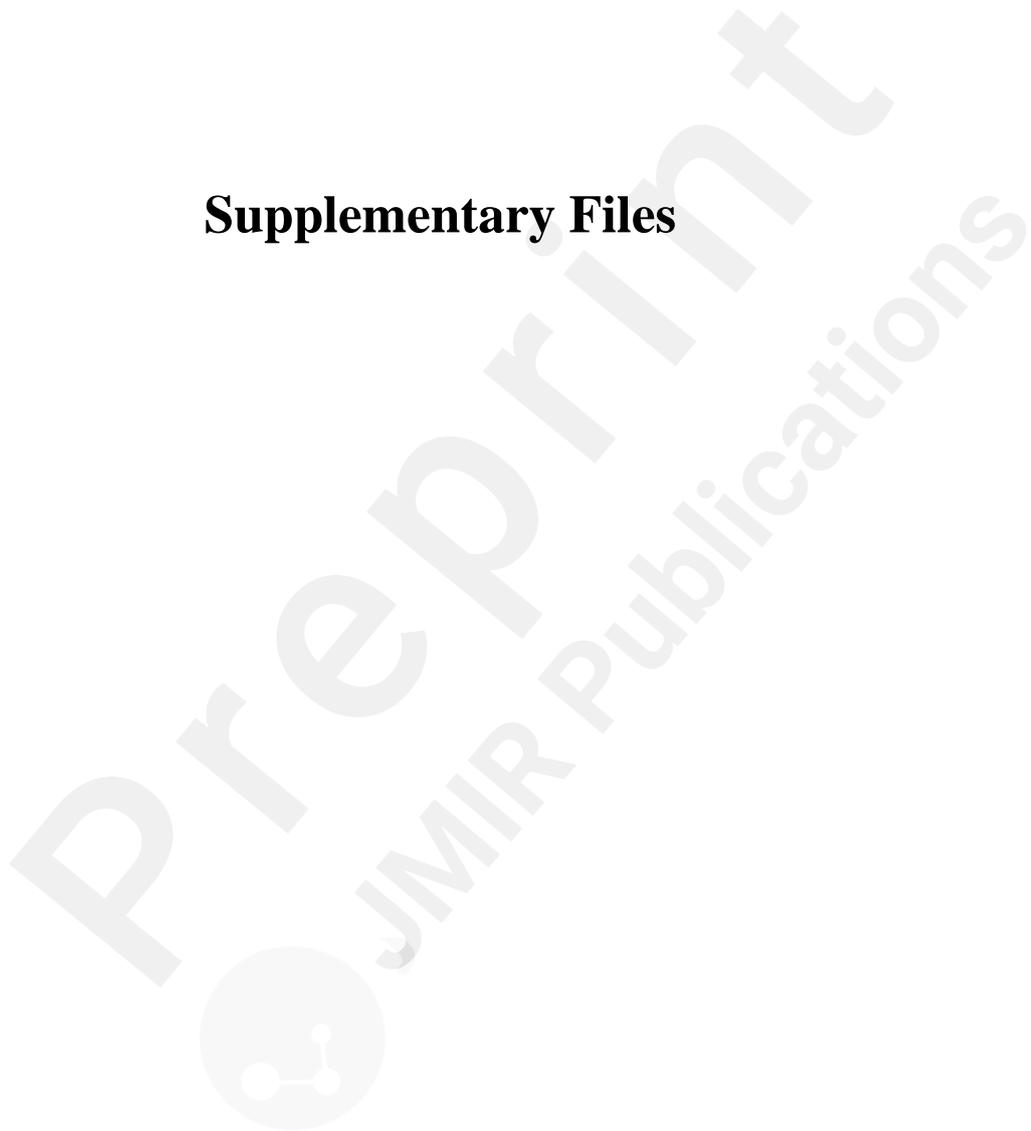
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Supplementary Files



Multimedia Appendixes

Extract from coding and reflexive log.

URL: <http://asset.jmir.pub/assets/91ac445ac95f47f4ba1263acb5eed5a9.pdf>