Purpose:

This study was conducted in accordance with the Declaration of Helsinki. Ethical approval was granted in all countries (UK and Ireland, UCL Research Ethics Committee, project 17127/001; India, Schizophrenia Research Foundation [SCARF], SRF-DC/18/OCT-2020; Brazil, Federal University of São Paulo [UNIFESP] and CONEPE, process no. 4895729 and Federal University of Rio de Janeiro Institute of Psychiatry , ID 57019616.5.1001.5263; Hong Kong, University of Hong Kong, reference no. EA2004006).

The vCST protocol was developed by adapting the existing group CST manual, informed by stakeholder consultations with four groups: people living with dementia; caregivers of people living with dementia; service managers; and CST group facilitators who had previously run vCST groups.

Results

Twenty participants across four focus groups took part in the consultation. Each focus group lasted approximately 90 minutes and was facilitated by two researchers. Group one was attended by three people living with dementia from the same third-sector organisation in the south-west of England. An additional individual session was conducted by the researcher with a fourth person with dementia from a different third-sector organisation in the north of England. All four had attended in-person group CST sessions before the first UK national COVID-19 lockdown, before switching to virtual CST groups midway through the intervention.

Group two was attended by four caregivers of people living with dementia. Three were recruited from a third-sector organisation in the south-east of England and one from a third sector organisation in the south-west of England. Only one caregiver had cared for a person living with dementia who had previously attended vCST before.

Group three was attended by eight vCST facilitators. One was from Hong Kong team and all others were from England. All were working in third-sector dementia organisations and had facilitated vCST sessions online previously.

Group four was attended by four service managers recruited from third-sector dementia organisations across England - one of whom worked for a service that had already implemented vCST sessions. The key ideas relating to each of the CFIR domains are outlined in Table 1.

The vCST protocol developed through stakeholder consultation follows the 14-session plan outlined in the group CST

Table 1

Stakeholders	Key Questions	Key Ideas
CFIR domain: “Intervention”		

Stakeholders	Key Questions	Key Ideas
CFIR domain "Individual"		
CFIR Domain: "Process"		

Continued

Table 1

Stakeholders	Key Questions	Key Ideas
CFIR Domain: "Process" (continued)		

Table 2

The video conferencing platform Zoom was chosen to deliver the sessions, as most people had experience with and preferred this platform. To support participants to access the sessions, a "How to use Zoom" guide was created, which should be sent to participants before the group. Participants should also be offered a one-to-one session on Zoom prior to attending the group to give them experience with using the platform, alongside additional telephone support as required. Participants should be advised to use a laptop or tablet and not a mobile phone to access the sessions, as the smaller screen of a mobile phone does not allow multiple participants to be viewed. Sessions should be set in "Gallery view" so that all participants are on screen simultaneously.

Each group should run with two facilitators, one to lead on delivering the content and one to provide practical and other types of support as required. Reminder emails with the Zoom link should be sent to all participants the day before each session. Participants should be asked to sign into the session 10–15 minutes before the start time, to allow sessions to begin punctually and to allow time for the second facilitator to contact any participants who have not attended on time.

If a participant is unable to access Zoom independently, the person living with dementia should identify a named caregiver with both of their consent who would support them to access the sessions and be contacted for any technical support. Any caregivers involved in giving support should be advised not to attend the sessions, but to be nearby (ie, in the next room) for the duration of the session in case they need to give technical support to the participant.

Field-testing took place across 10 groups in Brazil, Hong Kong, India, Ireland, and the UK. In Brazil a Postdoctoral Researcher, a Clinical Psychology student and a Gerontologist facilitated the sessions in a university setting. Three facilitators in Hong Kong and two in Ireland were Occupational Therapists in a university and care service setting respectively. In India, a Research Assistant and a Psychiatrist facilitated the sessions in a non-governmental organisation. In the UK, four facilitators were Trainee Clinical Psychologists, and one was a psychology PhD student, all based in a university. Facilitators were trained in CST, and were provided with guidelines for vCST delivery which had been developed from the focus group findings.[29] All 15 facilitators were contacted, and feedback was received from 14.

vCST participant demographics are not outlined in this paper, as this was a feld-testing study. However all participants met the inclusion criteria for group CST, which comprises:

1. Meeting the ICD-10 criteria for dementia.
2. Having mild to moderate dementia (confrmed by the person with dementia and their caregiver or rated on the Clinical Dementia Rating Scale).[30]
3. Having suffcient hearing and vision to follow conversation and comment on visual material.

4. Having the ability to participate in a group for 1 hour.
5. Additionally for vCST, participants needed access to technology, and the ability to use video conferencing software, or a caregiver who could support.

images as stimuli. Some facilitators adapted the “Current Affairs” section to include newspaper headlines, articles and images instead of videos. One facilitator reported that they had adapted the team quiz in Session 14 to an individual quiz, as they found it was harder for participants to confer in teams over Zoom.

In Ireland, the facilitators fed back that participants had enjoyed the exercise videos from “Physical Games” so much, they incorporated physical activity into the warm-up of each session. Facilitators in Hong Kong made use of online resources and websites to provide multisensory stimulation, including a virtual tour of an art gallery for “Being Creative”, or the use of street view in Google Maps to go for a “virtual walk” around a city or neighbourhood for “Orientation”. Other activities were carried out that were similar in aims and delivery to the suggested activities, such as creating an “odd one out” game in the “Categorising Objects” session or listing as many words as possible from a category beginning with the same letter in the “Word Association” session. In India, groups took part in chair yoga during the “Physical Games” session and, based on the suggestion from a caregiver, participants were encouraged to wear traditional clothes in the last session to celebrate the cultural and ethnic diversity of the group, which promoted conversation amongst the group. In Brazil, the “Being Creative” session coincided with Mothering Sunday, so the activities were themed around motherhood. These new activities demonstrate the flexibility that CST facilitators can employ when planning sessions.

The majority of facilitators reiterated the importance of a trial session using videoconferencing technology for participants and caregivers, anda second facilitator to support participants join sessions and address any issues with technology. Caregivers were required to support with technology and, in some cases, with more complicated activities. In India, where participants only had access to tablet computers, it was recommended that groups comprised of three participants

Table 3

Choices for Main Activities	Resources Required	Delivery Notes
Session 1: Physical games		

Choices for Main Activities	Resources Required	Delivery Notes
Session 4: Food		

Choices for Main Activities	Resources Required	Delivery Notes
Session 10: Orientation		
Session 11: Using Money		
Session 12: Numbers games		

Table 3

Choices for Main Activities	Resources Required	Delivery Notes
Session 13: Word games		
Session 14: Team quiz		

Future Research

Reporting of results from ongoing RCTs is required to establish the efficacy of vCST and to establish feasibility and acceptability, and the impact on different dementia populations. Trials of face-to-face CST groups have demonstrated benefits on mood and quality of life, and it is necessary to examine if these benefits remain when the intervention is delivered virtually. Future research could also measure the facilitators' fidelity to the vCST protocol. Fidelity to an intervention increases the reliability and validity of the data as all participants are more likely to receive the same intervention. Data on participant engagement in vCST sessions could also be explored, which would help to inform if the vCST protocol needs to be adjusted further, for example if people living with dementia are not able to engage in 45 to 60-minute session. Participant self-report measures may not be an accurate indicator of engagement, so observational data could be collected through the development of a coding system for researchers to use when watching video recordings of sessions, or by using eye-tracking technology to assess eye movements which can correlate with participant attention.[37]

Conclusion

Overall, a 14-session vCST protocol developed in this study was feasible and acceptable as a psychosocial, e-health intervention for people living with dementia. We therefore recommend that vCST is offered as an intervention across dementia services to increase access to a CST programme for those who are otherwise unable to access CST in-person, for reasons including health, mobility, and transport problems. This is especially important when services are not able to offer in-person CST due to social distancing needs during current and future pandemics. vCST may not replace in-person

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