

Title: A Scoping Review of Remote Group-Based Psychological Interventions for People after Transient Ischemic Attack and Stroke

Author(s) and affiliation(s):

Jade Kettlewell
Centre for Academic Primary Care, University of Nottingham (corresponding author)
Jade.kettlewell2@nottingham.ac.uk
ORCID: 0000-0002-6713-4551

Eirini Kontou
Mental Health and Clinical Neurosciences, University of Nottingham, Institute of Mental Health, Nottinghamshire Healthcare NHS Foundation Trust
ORCID: 0000-0001-5837-9891

Abigail R. Lee
Mental Health and Clinical Neurosciences, Institute of Mental Health, University of Nottingham
ORCID: 0000-0003-2931-8111

Shirley Thomas
Injury, Recovery and Inflammation Sciences, School of Medicine, University of Nottingham
ORCID: 0000-0003-0704-9387

Naomi Thorpe
Library and Knowledge Services, Nottinghamshire Healthcare NHS Foundation Trust
ORCID: 0000-0002-4539-8564

Dana Wong
Department of Psychology, Counselling & Therapy, La Trobe University, Australia
ORCID: 0000-0001-9619-1929

Abstract:

Background

Mental health and quality of life are commonly affected following a stroke or Transient Ischemic Attack (TIA) diagnosis, although many people are discharged without clear information about its psychological impact. Evidence suggests psychological interventions can be successfully delivered via remote methods (e.g., videoconferencing, telephone). However, it is unclear whether such interventions are effective for people post-stroke/TIA. This scoping review aimed to identify current evidence for remote group-based psychological interventions for people following TIA and stroke.

Methods

Four electronic databases (MEDLINE, Embase, PsycINFO, Scopus) were searched for articles on online group psychological interventions post-TIA and stroke. Two reviewers independently screened titles, abstracts and full-texts, then two authors extracted data for included studies. A bespoke data extraction form was used to describe interventions, informed by TIDieR checklists.

Results

The search yielded 1333 studies, from which six were included in the review. Four were feasibility studies, one a randomised-controlled-trial and one a non-randomised study. All interventions targeted stroke survivors; no studies targeted people with TIA. Delivery methods included teleconferencing, videoconferencing, online platform (virtual multiuser world) and a hybrid approach using videoconferencing and face-to-face visits. Remote intervention components were delivered in the community or participants' homes. All studies included a mood measure. Improvement in mood and/or quality of life was reported across four studies.

Conclusions

More research is needed to explore and confirm potential benefits of remote delivery of group psychological interventions following stroke and TIA. Better reporting of implementation barriers/facilitators and more high-quality research is required to determine effectiveness of remote interventions.

Keywords: scoping review, TIA, minor stroke, psychological group intervention, remote intervention

1. Introduction

Following a stroke or Transient Ischemic Attack (TIA), people are often discharged without clear information about adapting to life and living with the long-term effects of the diagnosis, such as the psychological and cognitive impacts (Crocker et al., 2021). Mild cognitive difficulties are present in more than a third of TIA patients (Ganesh & Barber, 2022; van Rooij et al., 2016). Mental health is commonly affected following a stroke or TIA (Chun et al., 2020) and can have a negative impact on post-stroke outcomes including quality of life (Shek et al., 2021). A UK-wide survey of 670 people showed that 70% had long-term effects post-TIA, including memory loss (41%) and confusion (26%), and over 60% had symptoms of anxiety, panic attacks, and depression (Stroke Association, 2014). There is also considerable evidence to suggest that risk of recurrent stroke after TIA and minor stroke is up to 10% in the week following the event (Coull et al., 2004). Survivors of stroke regularly tell clinicians and researchers of the need to better address these impacts. For example, the Stroke Association and James Lind Alliance Stroke Priority Setting Partnership (2021) highlighted the need for up-to-date reviews of evidence discussing rehabilitation following stroke or TIA. A top priority research area was the psychological impact of stroke/TIA, and exploring what interventions best prevent psychological difficulties, support adjustment, and improve well-being. There was also an emphasis on delivery and cost-effectiveness of these interventions and improving accessibility for people affected by stroke.

Psychological interventions can include psychosocial, psychoeducational and psychotherapy interventions. Evidence for active face-to-face psychoeducational interventions is generally positive. We define psychoeducational as ‘an approach that involves offering information and mental health support to help people understand and better cope with a health condition’. Crocker et al. (2021) conducted a systematic review of randomized trials where an information intervention was delivered to stroke survivors, informal carers or both, with the aim of exploring whether active information provision helps individuals better manage their life post-stroke. Information was delivered actively in 22 studies, in the form of talks, demonstrations, meetings and telephone calls. Passive information was provided in 11 studies, through a leaflet, DVD, or personalized booklet. While the effects of passive information on survivors were uncertain or potentially harmful, the meta-analysis concluded that providing information more actively may improve knowledge of stroke and post-stroke care. The review also suggested active

information may reduce anxiety and depression and improve quality of life in stroke survivors receiving information. In addition, Cheng et al. (2014) conducted a systematic review of in-person psychosocial interventions which targeted stroke survivors and/or caregivers. Although this review only found a very small positive effect of the interventions on family functioning and caregiver wellbeing, it did show psychoeducation and social support contributed to fewer hospital readmissions and visits to stroke physicians within the first year following participation.

The COVID-19 pandemic impacted the ability of services to deliver face-to-face interventions, which highlighted the need for, and benefits of remote delivery in many populations. Remote interventions can deliver health care support and education via many forms, including videoconferencing, online message boards, telephone support, and email or text messages. Existing evidence suggests that online psychological interventions (e.g., videoconferencing) can effectively help adults diagnosed with common mental health difficulties such as depression and anxiety (Erbe et al., 2017). One key advantage of remote interventions is that they are not restricted geographically, thus improving access for stroke survivors who may have difficulties attending face-to-face sessions (e.g., due to limited access to transport, poor mobility, or fatigue). Facilitators to engaging with remote psychological interventions include having the appropriate technological skills and being able to clearly articulate emotions and thoughts online (i.e. not in person) (Erbe et al., 2017). However, not all individuals possess these skills and necessary equipment, such as those not confident using technology, which potentially limits their ability to participate.

Banbury et al. (2018) conducted a systematic review exploring psychoeducational, therapeutic, and educational group support for adults with chronic disease delivered through videoconferencing. Findings from the 17 included studies suggested these interventions led to improved health, mental health, and self-efficacy outcomes. While limitations of virtual group dynamics have been highlighted (e.g., participants feeling less connected), group experiences can be replicated in a virtual environment to enhance rapport building between participants (Banbury et al., 2018; Payne et al., 2020). However, it is not clear whether this approach would work in the stroke population, where tailoring of communication is more important (e.g., patients with aphasia and cognitive problems) and technological skills might present as a barrier for effective interactions.

Adapting post-stroke psychological interventions for remote delivery has the potential to overcome barriers of accessibility and provide services with cost-effective interventions. Although this is still a growing field, initial review of the literature has shown technology-based interventions can be feasible, with stroke survivors engaging and adhering to online psychological interventions, with high satisfaction rates (Shek et al., 2021). Research has explored the role of technology in delivering interventions aimed at improving cognitive, functional, and psychological effects of stroke (Lawson et al., 2020; Sarfo et al., 2018). Laver et al. (2020) explored whether remote rehabilitation (referred to as telerehabilitation) resulted in improved performance across daily activities and quality of life in stroke survivors when compared with face-to-face rehabilitation (Laver et al., 2020). Qualitative synthesis of the evidence showed that outcomes from telerehabilitation were similar to face-to-face interventions, and some studies reported telerehabilitation as less expensive than in-person support. However, the quality of included papers was low to moderate and information on cost-effectiveness was often missing. Laver et al. (2020) concluded that it is still unclear which stroke interventions are most suitable for telerehabilitation.

Establishing the evidence for whether and how traditional face-to-face psychological interventions can be effectively adapted for remote delivery is more important than ever in a pandemic-affected world, both for one-to-one and group programs. A comprehensive review of the evidence will help guide new intervention development and adaptation by indicating why previous remote interventions have, or have not been successful, which intervention elements and delivery methods they used, how outcomes were measured, and potential implementation barriers. Therefore, the aim of this scoping review was to identify the current evidence, intervention characteristics and outcomes of remote group-based psychological interventions for people after TIA and stroke. Within the context of the review, psychological includes the terms psychosocial, psychoeducation and psychotherapy and remote interventions are those which are *not* delivered face-to-face, but in a digital format (e.g., through web- or app-based methods or video call), or via the telephone, text messaging or email (i.e., synchronous or asynchronous).

2. Methods

This review followed the Arksey and O'Malley (2005) framework for conducting scoping reviews which recognizes the iterative nature of the process and the different stages of searching for relevant information to achieve broad results. A scoping review was chosen over a systematic review as the purpose was to identify and map the evidence for remote group-based psychoeducational interventions, rather than critically appraising or exploring the effectiveness of such interventions. A review protocol was not published prior to commencing this review.

Search strategy

A systematic literature search was undertaken according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guide (Tricco et al., 2018) (see Figure 1, PRISMA-ScR checklist in Supplementary File 1). The search had no publication date or language restrictions, and the following databases were searched from database inception to 22nd June 2023: Ovid Medline ALL (1946 to June 22, 2023), Ovid Embase (1974 to 2023 June 22), Ovid PsycInfo (1806 to June Week 3 2023), and Scopus Elsevier (1960 to June 2023).

[insert figure 1 here]

The search strategy was undertaken by an information specialist (N.T.) using a combination of free text terms (searching the title, abstract, and author keywords where available) and relevant database specific controlled vocabulary headings, as well as advanced search syntax (truncation, Boolean logic AND/OR, and proximity searching) to ensure all relevant studies were identified. The search terms included the following themes, with synonyms to describe each: psychotherapy, stroke, and remote delivery. Search strategy shown in Supplementary File 2.

Eligibility criteria

Inclusion and exclusion criteria were developed based on the specific review aim. Articles were included if they met the following criteria: 1) focused on group-based psychological interventions related to education, support and management strategies post TIA and stroke; 2) were administered remotely in any setting; 3) included adults (aged 18 years and over); 4) presented relevant information about

psychological interventions that could be extracted; 5) included these interventions as a standalone component or as part of a hybrid intervention (involving non-remote components); 6) any type of study design.

Studies were excluded if they: 1) did not have a component specifically designed for people with TIA and/or stroke; 2) did not have any outcomes related to emotional or psychosocial wellbeing (such as depression or anxiety) and quality of life; 3) focused only on the physical impact of TIA and stroke; 4) targeted cognition as the main component; 5) were a protocol or review; 6) focused on other participant groups (e.g., carers, family members, or healthcare professionals); 7) published in a language other than English (where a translated version is not possible to obtain).

Screening

References were imported into EndNote 20 reference software and duplicates removed. They were then imported into Rayyan web application (Ouzzani et al., 2016) for the screening of titles and abstracts. Screening was conducted by a team of four reviewers (A.R.L., E.K., J.K. and S.T.), whereby at least two reviewers independently scanned titles and abstracts for possible inclusion. Disagreements were resolved by a third reviewer (N.T.). Upon agreeing those for potential inclusion, full text was acquired (where possible) and reviewed prior to the final decision about whether to include them.

Data extraction

Data were extracted relating to aspects of study design, participant characteristics, details of the intervention, outcome measures and main results. A bespoke data extraction form was used, which was modelled on the TIDieR checklist (Hoffmann et al., 2014) and used in previous reviews (Kettlewell et al., 2019; Kontou et al., 2021), to ensure relevant and consistent data was extracted from the included studies. Data were extracted by two authors (J.K., A.L.).

3. Results

Study design and participant characteristics

The initial search retrieved 1333 articles, reduced to 916 following removal of duplicates (n=363) and non-English language papers (n=54). Six studies were included in the review. Figure 1 presents the

PRISMA flow diagram for study selection process. All reviewers agreed about which studies met the inclusion criteria. For three included studies we were able to access the full-text (Lee et al., 2023; Marshall et al., 2020; Taylor et al., 2009) and for the remaining three included studies, we were only able to access conference abstracts (Gregory et al., 2012; Huijbregts et al., 2010; Lawrence et al., 2023).

A summary of study characteristics is shown in Table 1. A total of 206 participants with stroke were recruited across the six studies. Four were feasibility studies (Lawrence et al., 2023; Lee et al., 2023; Marshall et al., 2020; Taylor et al., 2009), two of which employed a randomised controlled design (Lee et al., 2023; Marshall et al., 2020). One study was a wait-list randomised controlled trial (Huijbregts et al., 2010) and the other was a non-randomised study (Gregory et al., 2012). All studies recruited people with stroke. None of the studies recruited participants with TIA. One study only recruited individuals with aphasia caused by stroke (Marshall et al., 2020). Only one study stated that eligible participants needed to have internet access and be able to use the videoconferencing platform ‘Zoom’ (Lee et al., 2023).

Studies were conducted in the UK (n=3), Canada (n=2) and USA (n=1). Two studies recruited participants from community stroke groups (Gregory et al., 2012; Marshall et al., 2020), one via inpatient, outpatient, and secondary stroke prevention program (Taylor et al., 2009) and one from community stroke groups in different areas of the UK (REF). Information about participant numbers and demographics was well reported in the full-text studies (Marshall et al., 2020; Taylor et al., 2009) presenting information about age, gender, sample size, and time since stroke. Dropout rates (range 15-23%) were recorded for four studies, some more detailed than others with common reasons being health issues or other commitments.

Intervention details

A summary of intervention components is shown in Table 2. Three studies provided sufficient detail of their interventions, in accordance with the TIDieR checklist (Hoffmann et al., 2014). However, for the conference abstract only studies, there was limited information about the intervention components. There were five different interventions delivered across the studies. The first was a teleconference cognitive behavioural therapy program to self-manage mood (Gregory et al., 2012) – limited details

were provided about this program. The second was the Moving On after Stroke (MOST) intervention, a telehealth adapted group intervention that enables stroke survivors to self-manage their condition through education, group support, problem-solving strategies, goal setting, and exercise, which was delivered in two studies (Huijbregts et al., 2010; Taylor et al., 2009). The third was a remote support group via the EVA Park platform, a multiuser virtual world designed for people with aphasia, to stimulate amusement and conversation (Marshall et al., 2020). The fourth was a psychoeducational self-management intervention called 'HEADS:UP' informed by a Mindfulness Based Stress Reduction course, originally delivered face-to-face then adapted to be delivered remotely (named HEADS:UP Online) (Lawrence et al., 2023). The final intervention comprised the 'Improving Participation After Stroke Self-management programme: IPASS-TeleRehab (IPASS-TR)' delivered via Zoom, plus Motivational interviewing (MI) delivered in person and on Zoom (Lee et al., 2023).

The intervention period varied between studies, with one lasting six weeks (Lee et al., 2023), one lasting seven weeks (Gregory et al., 2012), two lasting nine weeks (Huijbregts et al., 2010; Taylor et al., 2009), and one lasting 6 months (Marshall et al., 2020). One study stated that 18 two-hour sessions were delivered over nine weeks (Taylor et al., 2009) and another stated that six weekly 90-minute sessions and five 30-minute sessions were provided over six weeks (Lee et al., 2023). Length of intervention period was not provided in one conference abstract (Lawrence et al., 2023). The mode of delivery differed between the studies. Two studies (Huijbregts et al., 2010; Lee et al., 2023) used a hybrid approach which involved videoconferencing and face-to-face delivery; one used teleconferencing (Gregory et al., 2012); two used videoconferencing (e.g. Zoom) (Lawrence et al., 2023; Taylor et al., 2009); and one used an online virtual world which was facilitated by trained coordinators (Marshall et al., 2020). One study tested the feasibility of delivering their intervention face-to-face and online via Zoom (Lawrence et al., 2023).

Detail about who delivered the intervention and training provided for facilitators (where applicable) varied across the included studies. The teleconference cognitive behavioural therapy intervention was facilitated by a stroke specialist nurse and a mental health nurse (Gregory et al., 2012). Information about training of these professionals was not provided. The videoconference MOST intervention was facilitated by two trained health professionals (Taylor et al., 2009). The MOST

facilitators participated in a one-hour training session with a telehealth advisor. Another study delivering the MOST intervention via a hybrid approach also trained two facilitators to provide the intervention to patients, however no specific information about training was provided (Huijbregts et al., 2010). For the EVA Park intervention, six group facilitators were recruited to lead one of the four intervention groups (Marshall et al., 2020); all had at least three years' experience leading community aphasia groups and received eight hours of facilitator training. The IPASS-TR intervention was co-facilitated by an occupational therapist and a stroke survivor; both received 4-5 hours of training (Lee et al., 2023). In the same study, MI sessions were delivered by an experienced rehabilitation psychologist.

Intervention group sizes varied between studies. One study delivered their teleconference intervention to a single group of 13 stroke survivors (Gregory et al., 2012), one delivered their videoconference intervention to a group of 12 stroke survivors plus caregivers (Taylor et al., 2009), one study did not detail the size of intervention groups (Huijbregts et al., 2010), one study delivered the online version of their intervention (HEADS:UP Online) to a group of nine stroke survivors (Lawrence et al., 2023) and one study reported an intervention group of six (Lee et al., 2023). One did not specifically state the number of participants per intervention group, but did allocate participants to four separate groups (Marshall et al., 2020).

Only one study provided details about modifications to the intervention to make it suitable for online delivery (Lee et al., 2023). One study (Taylor et al., 2009) added a dedicated site coordinator to help with equipment set up. Two studies measured fidelity (Lee et al., 2023; Marshall et al., 2020), by using a fidelity checklist and video recordings or observations of sessions.

Outcomes

A range of outcomes were used across the studies. A summary is shown in Table 3. Four were feasibility studies (Lawrence et al., 2023; Lee et al., 2023; Marshall et al., 2020; Taylor et al., 2009) and therefore the primary aims were specific to determining this. They included recruitment log, attendance rates, adverse events, attrition and measures specific to intervention. Three studies (Gregory et al., 2012; Huijbregts et al., 2010; Lee et al., 2023) included the Stroke Impact Scale (SIS) as an outcome measure.

All studies included a measure of mood. Five detailed specific measures of depression: one used the Generalized Anxiety Disorder Assessment (GAD-7) (Gregory et al., 2012), two used the Geriatric Depression Scale (GDS) (Huijbregts et al., 2010; Taylor et al., 2009) and two used the Patient Health Questionnaire-9 (PHQ-9) (Gregory et al., 2012), the Patient Health Questionnaire-8 (PHQ-8) (Lee et al., 2023). One study used the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) (Marshall et al., 2020). Three studies included a measure of quality of life: one used the EuroQol-5D (EQ5D) (Gregory et al., 2012), one used the Stroke and Aphasia Quality of Life-39 (SAQOL-39) measure (Marshall et al., 2020) and the final used the 8-item NeuroQol Satisfaction with Social Roles and Activities Scale (Lee et al., 2023). Three studies included measures linked to reintegration or social communication (Huijbregts et al., 2010; Marshall et al., 2020; Taylor et al., 2009).

Additional measures were more specific to components of the intervention. The study targeting participants with aphasia (Marshall et al., 2020) included measures of everyday communication (Communication Activities of Daily Living-1: CADL-1) and speech production/comprehension (Western Aphasia Battery-Revised: WAB-R). One study with an exercise component (Taylor et al., 2009) included measures of balance and mobility. Another study (Lee et al., 2023) included measures of self-management activation (Patient Activation Measure (PAM)) and self-efficacy (Participation Strategies Self-Efficacy Scale (PS-SES)).

Reporting of findings differed across the studies, depending largely on whether the full-text was available. The study delivering the MOST intervention reported significant improvements in depression levels (GDS) and exercise tolerance (6MWT) (Taylor et al., 2009). Another study reported improvements in quality of life and mental wellbeing (PHQ-9, GAD-7, EQ5D and SIS) scores after receiving the intervention (Gregory et al., 2012). It was not clear from the information available if these improvements were significant. One study targeting aphasia patients reported significant improvement in the WAB-R score (Marshall et al., 2020). The study by Huijbregts et al (2010) reported significant improvements in SIS scores. Three studies reported improvements in mood (Gregory et al., 2012; Lee et al., 2023; Taylor et al., 2009).

Three studies (Huijbregts et al., 2010; Lee et al., 2023; Taylor et al., 2009) reported qualitative findings. Taylor et al. conducted focus groups where participants were asked about their expectations and opinions of the program and impact the program had on them. Identified benefits of the MOST intervention (Taylor et al., 2009) were increased awareness of stroke, increased social support, and improved ability to cope. Participants also reported that the program helped them to accept and adapt to life changes. Issues/concerns were difficulty seeing remote participants accurately on the computer monitors. A second study delivering the MOST intervention (Huijbregts et al., 2010) identified several benefits through focus groups and interviews, including increased confidence, and change in health behavior. The third study conducted focus groups and interviews with participants to explore acceptability of the remote intervention and reported overall satisfaction with its content, delivery format and structure, with participants highlighting the benefit of group peer support (Lee et al., 2023). There was generally good acceptance of videoconferencing across all three studies, however there were some issues including disruption to the flow of group discussions.

4. Discussion

This scoping review summarized the current evidence base, intervention characteristics and outcomes of remote group-based psychological interventions for people after stroke. Our review identified a total of six studies that delivered remote group interventions to stroke survivors via telephone, video call or online virtual platforms. Overall, the positive findings from the small number of existing studies suggest that online psychological interventions post-stroke show promise and warrant further investigation. We did not identify any studies that delivered online group psychological interventions for TIA. This further highlights the need for more research in this priority area (Turner et al., 2018), to address the gap in exploring the psychological impact of TIA and the need to develop evidence-based interventions to support this population.

Different approaches to delivering remote group interventions were used in these four studies. Only one study used a hybrid approach (videoconferencing and face-to-face) and the other studies used remote methods only. Participants in the hybrid study (Huijbregts et al., 2010) expressed favorable opinions of the videoconferencing approach, which is corroborated by several studies concluding that

videoconferencing is accepted by a variety of patient populations (including those with mild cognitive impairment, cancer survivors, autistic children, traumatic and spinal cord injury survivors) as an appropriate means for intervention delivery (Kettlewell et al., 2021; Lleras de Frutos et al., 2020; Mehta et al., 2019; Poon et al., 2005). However, issues in this review were reported for remote approaches, suggesting that online methods disrupt the group process. Issues with internet connectivity, sound quality, and reduced social connection online were also reported. Other studies identify similar barriers to remote delivery in older adults and the dementia older population, including challenges with online interventions for those who have reduced attention and concentration (Quail et al., 2021), and acceptability of technology (Vailati Riboni et al., 2020).

Blended or hybrid interventions have been proposed as one option to overcome the recognized barriers and disadvantages of both face-to-face and remote delivery (Erbe et al., 2017). Evidence suggests they are more cost-effective than face-to-face alone, lead to lower drop-out rates, and provide an option where neither a solely face-to-face nor online intervention is suitable (Erbe et al., 2017). Further research is needed to explore whether remote and hybrid (i.e., online/telephone and face-to-face) psychological interventions are appropriate and acceptable to the stroke and TIA population, and how to implement this approach effectively. Potential solutions to overcome barriers in purely online interventions could include intervention facilitators using different methods to control conversation flow, encouraging participants to chat with each other during breaks and providing access to internet/equipment in a clinic setting if home connectivity is an issue.

To better develop remote psychological interventions for the people after stroke/TIA, intervention reporting needs to be consistent with recommendations for using TIDieR as a guide to ensure complete reporting of complex interventions (Walker et al., 2017), and barriers to implementation identified. Although two studies reported qualitative findings and presented some issues associated with delivering remote psychological interventions following stroke/TIA, there is a lack of information suggesting how to improve implementation, or how best to adapt face-to-face interventions for remote delivery. Interventions were delivered by a variety of healthcare professionals, including stroke specialist nurses, mental health nurses and speech and language therapists. For three included studies, information about training of these professionals was missing or limited, particularly

information about how they were trained to provide psychological support, cognitive behavioural training, or psychoeducation. This lack of reporting makes it challenging for future studies to know how best to recruit/train facilitators or intervention providers, and what core skills they require to successfully deliver remote group-based psychological programs. Furthermore, only one study measured fidelity, meaning that limited information is available to suggest if the remote interventions were delivered as intended. It is important that studies measure fidelity and consider clinical competencies necessary for facilitating online groups, thus enhancing implementation of evidence-based group interventions (Wong et al., 2019).

Improvements in mood and/or quality of life were reported across three studies, suggesting that remote interventions can address the psychological needs of individuals after stroke, and improve education regarding the impact of stroke. Only a small number of studies were included in this review, meaning further research is required to determine whether remote psychological interventions can be as effective as a face-to-face approach, however the positive findings presented here are still promising. A previous scoping review concluded that more high-quality studies are needed to determine the effectiveness of face-to-face psychoeducational interventions in TIA or minor stroke, which further highlights the need to conduct more research in this area (Kontou et al., 2021). By understanding implementation barriers and facilitators associated with the delivery of these interventions in stroke/TIA, future remote interventions will be better informed, and existing face-to-face group interventions can be adapted more appropriately for remote delivery.

There were several strengths to this scoping review. It has clearly identified a gap in existing literature and highlighted areas for further research on the delivery of existing or new group-based interventions for people after stroke and in particularly TIA. This was enabled by using the TIDieR checklist to aid data extraction, which allowed us to clearly report intervention details and identify areas that were poorly reported in the included studies. Also, our team of reviewers included a senior information specialist (N.T.) who has extensive experience conducting scoping/systematic reviews.

There were some limitations. Although our search terms were specific, we may have restricted our ability to identify qualitative studies that would have reported more of the barriers and issues

associated with remote delivery in stroke/TIA. We limited our searches to English language only, which may have excluded some relevant studies. Also, we could only retrieve conference abstracts for two included studies, which made comprehensive data extraction difficult and limited our ability to adequately report their findings. Efforts were made to contact authors and search for associated full texts, however we were unable to obtain additional information. Based on the limited availability of published papers, it was considered worthwhile and appropriate for the purpose of this scoping review to include these conference abstracts (Scherer & Saldanha, 2019).

Overall, this review included a small number of studies implementing different remote group interventions for stroke survivors. Although this limits our ability to draw robust conclusions, the existing research suggests there is a future for remote interventions in the stroke population, and need to explore their use in the TIA population. All studies included psychological components with a focus on self-management and promotion of wellbeing. However, the review identified a clear gap in the literature regarding the use of remote group psychological interventions for TIA, along with a lack of studies reporting in-depth qualitative findings and identification of implementation barriers/facilitators. The TIA population may benefit more from an online or hybrid approach; they are on average a younger population (in the UK, the average age of a TIA is 55 years, versus an average of 77 years for stroke) (National Health Service (NHS) UK, 2020; National Institute for & Care, 2019), thus more likely to return to work (i.e. of working age). This population may prefer a more flexible delivery method, more likely to have access to technology and be able to use it independently. The findings from this review clearly indicate the need for more studies (including high-quality, randomized trials and in-depth qualitative explorations) in this area to determine the effectiveness of remote group psychological interventions for TIA and stroke and the best methods for implementing them in practice. Further research is also required to determine what the content of a remote group psychological intervention for people with TIA should be and how this may differ to those interventions targeting the stroke population. It is also important that future studies clearly describe their interventions in line with the TIDieR checklist, detailing facilitators' training, and generate a clear and consistent definition of psychoeducation. This could inform the development of future interventions with multiple components of psychological support after TIA and stroke.

Declaration of interest statement

The authors report no conflict of interest.

Funding details

This research received no specific grant from any funding agency, commercial or not-for-profit sectors.

DRAFT

References

- Banbury, A., Nancarrow, S., Dart, J., Gray, L., & Parkinson, L. (2018). Telehealth interventions delivering home-based support group videoconferencing: systematic review. *Journal of Medical Internet Research*, 20(2), e25.
- Chun, H.-Y. Y., Carson, A. J., Tsanas, A., Dennis, M. S., Mead, G. E., Calabria, C., & Whiteley, W. N. (2020). Telemedicine cognitive behavioral therapy for anxiety after stroke: proof-of-concept randomized controlled trial. *Stroke*, 51(8), 2297-2306.
- Coull, A., Lovett, J. K., & Rothwell, P. M. (2004). Population based study of early risk of stroke after transient ischaemic attack or minor stroke: implications for public education and organisation of services. *Bmj*, 328(7435), 326.
- Crocker, T. F., Brown, L., Lam, N., Wray, F., Knapp, P., & Forster, A. (2021). Information provision for stroke survivors and their carers. *Cochrane Database of Systematic Reviews*(11). <https://doi.org/10.1002/14651858.CD001919.pub4>
- Erbe, D., Eichert, H.-C., Riper, H., & Ebert, D. D. (2017). Blending face-to-face and internet-based interventions for the treatment of mental disorders in adults: systematic review. *Journal of Medical Internet Research*, 19(9), e306.
- Ganesh, A., & Barber, P. A. (2022). The Cognitive Sequelae of Transient Ischemic Attacks-Recent Insights and Future Directions. *J Clin Med*, 11(9). <https://doi.org/10.3390/jcm11092637>
- Gregory, S., Matthew, J., Dennis, L. J. S., Scanlon, M., & Pipim-Addo, N. (2012, 2012). Telehealth cognitive behavioral therapy to manage mood and emotions in the community.
- Hoffmann, T. C., Glasziou, P. P., Boutron, I., Milne, R., Perera, R., Moher, D., Altman, D. G., Barbour, V., Macdonald, H., & Johnston, M. (2014). Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. *Bmj*, 348.
- Huijbregts, M. P., Cameron, J., Taylor, D., McEwen, S. E., Kagan, A., & Streiner, D. (2010, 2010). Videoconference delivery of a stroke self-management program: a mixed methods waiting list randomized controlled trial.
- Kettlewell, J., das Nair, R., & Radford, K. (2019). A systematic review of personal smart technologies used to improve outcomes in adults with acquired brain injuries. *Clinical Rehabilitation*, 33(11), 1705-1712.
- Kettlewell, J., Lindley, R., Radford, K., Patel, P., Bridger, K., Kellezi, B., Timmons, S., Andrews, I., Fallon, S., & Lannin, N. (2021). Factors affecting the delivery and acceptability of the ROWTATE telehealth vocational rehabilitation intervention for traumatic injury survivors: a mixed-methods study. *International Journal of Environmental Research and Public Health*, 18(18), 9744.
- Kontou, E., Kettlewell, J., Condon, L., Thomas, S., Lee, A. R., Sprigg, N., Watkins, D. C., Walker, M. F., & Shokraneh, F. (2021). A scoping review of psychoeducational interventions for people after transient ischemic attack and minor stroke. *Topics in Stroke Rehabilitation*, 28(5), 390-400.
- Laver, K. E., Adey-Wakeling, Z., Crotty, M., Lannin, N. A., George, S., & Sherrington, C. (2020). Telerehabilitation services for stroke. *Cochrane Database of Systematic Reviews*(1).
- Lawrence, M., Davis, B., & Clark, N. (2023). Determining the feasibility and acceptability of delivering HEADS: UP, a psychoeducational intervention for self-management of depression and anxiety symptoms post-stroke, face-to-face and online. *International Journal of Stroke*, 18(1 Supplement), 37-38. <https://doi.org/https://dx.doi.org/10.1177/17474930221142512> (17th UK Stroke Forum. Liverpool United Kingdom.)
- Lawson, D. W., Stolwyk, R. J., Ponsford, J. L., McKenzie, D. P., Downing, M. G., & Wong, D. (2020). Telehealth delivery of memory rehabilitation following stroke. *Journal of the International Neuropsychological Society*, 26(1), 58-71.
- Lee, D., Fischer, H., Yang, B., Tingey, J. L., Miller, M., Kahlia, F., & Bombardier, C. H. (2023). Telehealth Self-Management Support in Early Stroke Rehabilitation: A Feasibility Randomized Controlled Trial. *OTJR : occupation, participation and health*, 15394492231159339. <https://doi.org/https://dx.doi.org/10.1177/15394492231159339>

- Lleras de Frutos, M., Medina, J. C., Vives, J., Casellas-Grau, A., Marzo, J. L., Borràs, J. M., & Ochoa-Arnedo, C. (2020). Video conference vs face-to-face group psychotherapy for distressed cancer survivors: A randomized controlled trial. *Psycho-oncology*, 29(12), 1995-2003.
- Marshall, J., Devane, N., Talbot, R., Cauter, A., Cruice, M., Hilari, K., MacKenzie, G., Maguire, K., Patel, A., & Roper, A. (2020). A randomised trial of social support group intervention for people with aphasia: A Novel application of virtual reality. *PLoS ONE*, 15(9), e0239715.
- Mehta, S., Hadjistavropoulos, H. D., Earis, D., Titov, N., & Dear, B. F. (2019). Patient perspectives of Internet-delivered cognitive behavior therapy for psychosocial issues post spinal cord injury. *Rehabilitation Psychology*, 64(3), 351.
- National Health Service (NHS) UK. (2020). Transient Ischaemic Attack: Causes. NHS choices. Retrieved January 3, 2023, from <https://www.nhs.uk/conditions/transient-ischaemic-attack-tia/causes/>
- National Institute for Health and Care Excellence. (2019). *Stroke and transient ischaemic attack in over 16s: diagnosis and initial management*. National Institute for Health and Care Excellence.
- Ouzzani, M., Hammady, H., Fedorowicz, Z., & Elmagarmid, A. (2016). Rayyan—a web and mobile app for systematic reviews. *Systematic reviews*, 5, 1-10.
- Payne, L., Flannery, H., Kambakara Gedara, C., Daniilidi, X., Hitchcock, M., Lambert, D., Taylor, C., & Christie, D. (2020). Business as usual? Psychological support at a distance. *Clinical Child Psychology and Psychiatry*, 25(3), 672-686.
- Poon, P., Hui, E., Dai, D., Kwok, T., & Woo, J. (2005). Cognitive intervention for community-dwelling older persons with memory problems: telemedicine versus face-to-face treatment. *International journal of geriatric psychiatry*, 20(3), 285-286.
- Quail, Z., Bolton, L., & Massey, K. (2021). Digital delivery of non-pharmacological intervention programmes for people living with dementia during the COVID-19 pandemic. *BMJ Case Reports CP*, 14(6), e242550.
- Sarfo, F. S., Ulasavets, U., Opare-Sem, O. K., & Ovbiagele, B. (2018). Tele-rehabilitation after stroke: an updated systematic review of the literature. *Journal of stroke and cerebrovascular diseases*, 27(9), 2306-2318.
- Scherer, R. W., & Saldanha, I. J. (2019). How should systematic reviewers handle conference abstracts? A view from the trenches. *Systematic reviews*, 8, 1-6.
- Shek, A. C., Biondi, A., Ballard, D., Wykes, T., & Simblett, S. K. (2021). Technology-based interventions for mental health support after stroke: A systematic review of their acceptability and feasibility. *Neuropsychological Rehabilitation*, 31(3), 432-452.
- Stroke Association. (2014). *Not Just a Funny Turn: The Real Impact of TIA*. Stroke Association.
- Taylor, D. M., Cameron, J. I., Walsh, L., McEwen, S., Kagan, A., Streiner, D. L., & Huijbregts, M. P. J. (2009). Exploring the feasibility of videoconference delivery of a self-management program to rural participants with stroke. *Telemedicine and e-Health*, 15(7), 646-654.
- Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., & Weeks, L. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Annals of internal medicine*, 169(7), 467-473.
- Turner, G. M., Backman, R., McMullan, C., Mathers, J., Marshall, T., & Calvert, M. (2018). Establishing research priorities relating to the long-term impact of TIA and minor stroke through stakeholder-centred consensus. *Research involvement and engagement*, 4(1), 1-6.
- Vailati Riboni, F., Comazzi, B., Bercovitz, K., Castelnovo, G., Molinari, E., & Pagnini, F. (2020). Technologically-enhanced psychological interventions for older adults: A scoping review. *BMC geriatrics*, 20(1), 1-11.
- van Rooij, F. G., Kessels, R. P. C., Richard, E., De Leeuw, F.-E., & van Dijk, E. J. (2016). Cognitive Impairment in Transient Ischemic Attack Patients: A Systematic Review. *Cerebrovascular Diseases*, 42(1-2), 1-9. <https://doi.org/10.1159/000444282>
- Walker, M. F., Hoffmann, T. C., Brady, M. C., Dean, C. M., Eng, J. J., Farrin, A. J., Felix, C., Forster, A., Langhorne, P., & Lynch, E. A. (2017). Improving the development, monitoring and reporting of stroke rehabilitation research: consensus-based core recommendations from the stroke recovery and rehabilitation roundtable. *International Journal of Stroke*, 12(5), 472-479.

Wong, D., Grace, N., Baker, K., & McMahon, G. (2019). Measuring clinical competencies in facilitating group-based rehabilitation interventions: development of a new competency checklist. *Clinical Rehabilitation*, 33(6), 1079-1087.

DRAFT

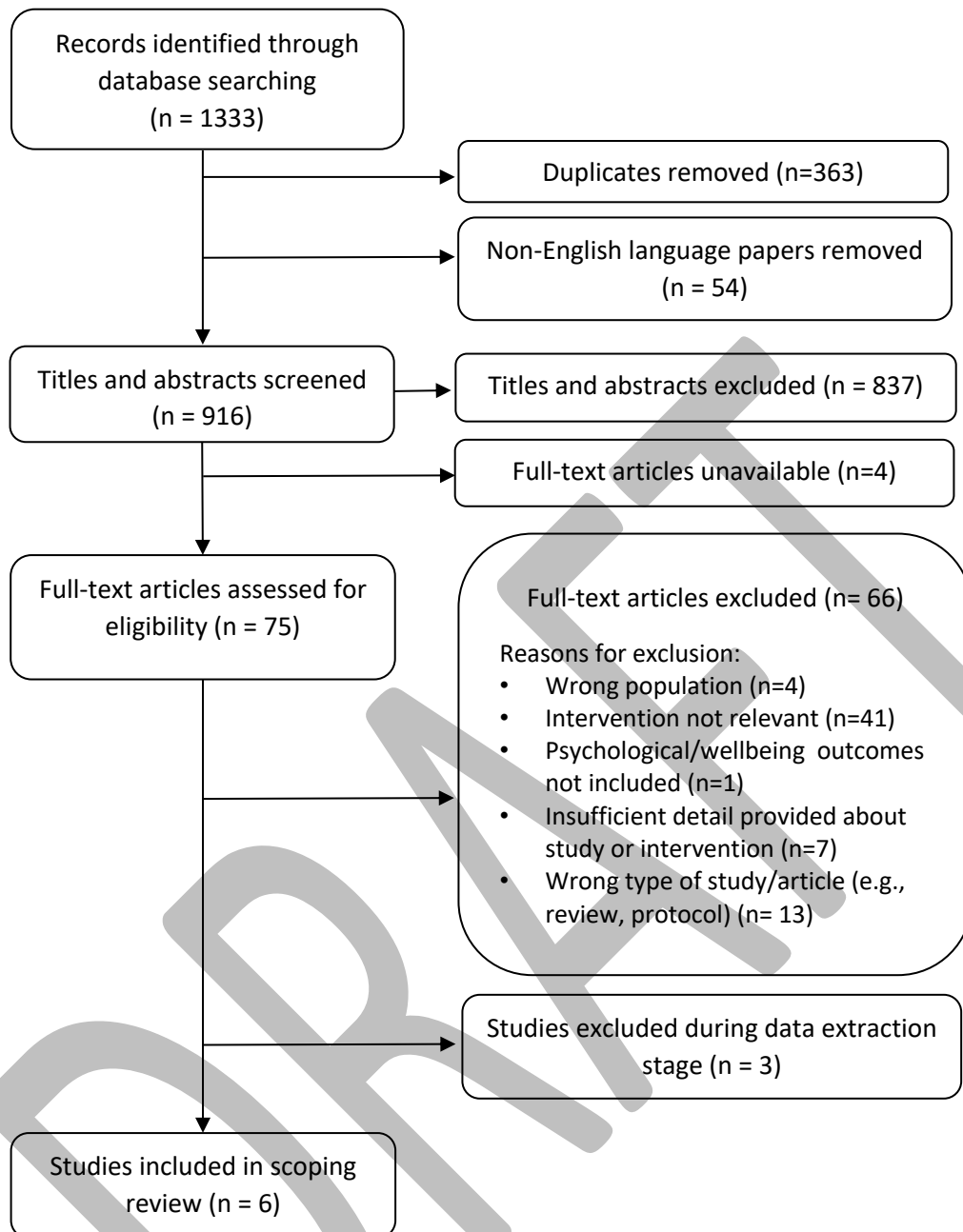


Figure 1: PRISMA diagram

PRISMA flow diagram of record identification, screening, eligibility and inclusion processes.

Table 1: Summary of included study details

Study ID	[1] Gregory et al. 2012	[2] Taylor et al. 2009	[3] Huijbregts et al. 2010	[4] Marshall et al. 2020	[5] Lawrence et al. 2023	[6] Lee et al. 2023
Rationale and aims	The need for psychological and emotional support is highlighted in the National Stroke Strategy. Between 6-12 months low mood is reported, leading to poor quality of life and reduce participation. Aim: To explore whether telehealth cognitive behavioural therapy to manage mood and emotions for stroke survivors in the community is acceptable and cost effective.	Many stroke survivors face challenges re-integrating and adapting to their new ability level when discharged. Programs are not routinely available for people with stroke and their family caregivers to assist in this process. In rural areas, access to these services is limited. To address this issue, Moving On after Stroke (MOST) has been developed, which is a multimodal, psycho-educational, and exercise self-management program for people with stroke and their caregivers. Aim: To explore the feasibility of using telehealth to deliver MOST to people with stroke in rural communities in Ontario, who do not have large numbers of people with stroke or access to a facilitator and, therefore, would not otherwise have access to this type of group program.	Self-management programs may address many long-term effects of stroke; however, access is not widely available, particularly in rural communities. The objective of this study was to determine the efficacy of combined videoconference and face-to-face delivery of the Moving On after Stroke (MOST*) stroke-specific self-management program to improve participation and well-being in urban and rural people.	To host a remote support group intervention which targeted well-being of individuals with post-stroke aphasia.	Depression and anxiety are prevalent after stroke and are associated with poor outcomes, including lack of engagement with rehabilitation. Long-term psychological support is a recognised unmet need and a research priority. To test feasibility and acceptability of HEADS: UP - a stroke-specific psychoeducational self-management intervention which is an adaptation of a Mindfulness Based Stress Reduction course.	To evaluate the feasibility of conducting a randomized controlled trial (RCT) testing MI and the IPASS in early-stroke rehabilitation via telehealth, which will provide critical information to inform a larger efficacy trial.
Design/ Allocation	Non-randomized study. Seven-week teleconference therapy program delivered by a stroke specialist nurse and mental health nurse.	Non-randomized feasibility study. Mixed methods.	A mixed methods wait-list randomized controlled trial.	Feasibility study. The study employed a randomized, waitlist-controlled design. Two intervention groups were randomized to run in months 6–11 of the study (immediate condition). The other two groups ran in months 13–18 (delayed condition).	Two non-randomised feasibility studies (HEADS:UP and HEADS:UP Online).	Feasibility study of a RCT using a mixed-methods design.
Blinding	Information not available.	Focus groups or individual interviews conducted by a researcher not involved in program delivery.	Information not available.	Information not available.	Information not available.	Single-blinded. Preintervention and postintervention data collected in person (baseline while in hospital) and via phone/ Zoom (1-week postintervention) interviews by a blinded assessor.
Duration	Seven weeks	18 x 2-hour sessions (Nine weeks)	Nine weeks, two sessions per week	Six months	Information not available.	Six weeks
Setting	Community setting, in patient's homes.	Information not available.	Information not available.	Community setting or in participants' homes.	Information not available.	Inpatient rehabilitation unit at a Level 1 Stroke Centre and in patient's homes.
Participant numbers & demographics	Diagnosis: Stroke n = 10 completed program (13 recruited) Other information not available.	Diagnosis: Stroke n = 12 with stroke, n=4 caregivers Age: stroke group mean 72.7 years Gender: 7 = female, 5 = male Time since stroke = mean 16.3 months	Diagnosis: Stroke n = 110 (64 intervention group / 46 WLC group) Gender: 65% male Other: 3 to 18 months post-stroke	Diagnosis: Stroke with aphasia n = 34 (Received intervention n = 31) Age: Mean = 53.5 years Gender: 17 = male, 17 = female Other: Time post-stroke = mean 46.5 months Hemiplegia: n=24	Diagnosis: Stroke n = STUDY 1, face-to-face delivery: n=13; STUDY 2, online delivery n=9; Age: STUDY 1: 63.3 (mean), STUDY 2: aged 54.2 (mean)	Diagnosis: first stroke n = 15 randomised, n=10 allocated (Received intervention n = 6) Age: median intervention group = 55 years Gender: 9 = male (n=5 intervention), 1 = female (n=1 intervention) Other: Time post-stroke = median 2.75 weeks (intervention), Ischaemic stroke: n=6 (n=3 intervention), haemorrhagic stroke: n=4 (n=3 intervention)
Inclusion criteria	Information not available.	Included were individuals who had a stroke between 3 and 18 months previously.	Information not available.	1. Moderate or mild aphasia 2. No co-existing diagnosis affecting cognition. 3. No severe hearing or visual impairments 4. Fluent in English before their stroke	Stroke survivor ≥3 months post-stroke, with symptoms of mood disorder (Hospital Anxiety and Depression Scale ≥8)	1. Were aged 18 and above 2. Had a first stroke 3. Had internet access 4. Were able to use Zoom independently or with support 5. Spoke and understood functional English 6.
Exclusion criteria	Information not available.	People living in long-term care, still receiving active in- or outpatient rehabilitation, unable to communicate (i.e., severe aphasia), or not able to participate in groups.	Information not available.	Information not available.	Information not available.	Patients were excluded if they: 1) planned to be discharged to a long-term care facility or 2) were unable to communicate functionally due to moderate to severe cognitive impairment and/or aphasia or other medical conditions.
Control group	Not applicable	Not applicable	Not applicable	Not applicable.	Not applicable.	Control group received typical inpatient rehabilitation.
Dropouts	Dropouts n=3	Three participants discontinued: 2 for health reasons and 1 due to conflicting commitments.	Information not available.	Dropouts n=5 (3 prior to start of intervention): Poor health n=1, Family situation n=1, Opted to withdraw n=1, withdrew before intervention ended n=2	Information not available.	Dropouts n=5 (all prior to start of intervention): lost contact, medical reasons.

Table 2: Summary of interventions

Study IDs	[1] Gregory et al. 2012 (Gregory et al., 2012)	[2] Taylor et al. 2009 (Taylor et al., 2009)	[3] Huijbregts et al. 2010 (Huijbregts et al., 2010)	[4] Marshall et al. 2020 (Marshall et al., 2020)	[5] Lawrence et al. 2023	[6] Lee et al. 2023 (Lee et al., 2023)
Brief name	Teleconference cognitive behavioural therapy program	Moving On After Stroke (MOST)	Moving On After Stroke (MOST)	EVA Park	HEADS: UP	Improving Participation After Stroke Self-management programme: IPASS-TeleRehab (IPASS-TR) plus Motivational interviewing (MI)
Components of intervention	A stepped care pathway approach to manage mood. A seven-week tele-conference therapy program. Healthcare assistant visited patients' homes to introduce the program, the technologies and provide the self-management manual.	18 one-hour sessions focusing on different topics including: 1) Why self-management? Why exercise? 2) Goal setting 3) Introduction to stroke 4) How stroke affects the way you feel 5) Understanding, communication, thinking, and behavior 6) Relaxation 7) Daily activities and responsibilities 8) Effective communication with health professionals 9) Medical treatment and medications 10) Having fun and enjoying recreation 11) Community resources 12) With a little help from family and friends 13) Loving and caring 14) Nutrition 15) Sleep and pain 16) Alternative treatments 17) Community resources and review 18) Looking to the future Plus, 18 one-hour sessions of prescribed exercise including: • 5 minute warm up • 20 minutes self-paced cardiovascular exercise of patient's choice • 25 minutes balance and strength training • 5 minute cool down	Moving On after Stroke (MOST) stroke-specific group self-management program to improve participation and well-being in urban and rural people. Intervention specific details not provided in included article, but assumed that intervention the same as Taylor et al. 2009.	The delivery platform was EVA Park, a multiuser virtual world designed with and for people with aphasia. EVA Park can be accessed from a user's home, on a medium specification computer with a reliable internet connection. Before the intervention began, the project managers provided the group coordinators with two, 4-hour face-to-face training sessions. The first session covered technical aspects of group provision in EVA Park. The second session provided training on delivering the intervention.	Stroke-specific psychoeducational self-management intervention called HEADS:UP that was co-designed as an adaptation of a Mindfulness Based Stress Reduction course. HEADS:UP Online is delivered online.	IPASS-TR: Key intervention strategies included self-management skills of problem-solving, decision-making, resource utilization, self-advocacy, goal setting, and action planning. A guided problem-solving tool, called the Activity-Barriers-Changes-Do it-Evaluation (ABCDE) framework, was used at each session. Participants identified a meaningful activity, recognized barriers to accomplishing this activity, found and tried solutions to engage in that activity using self-management skills learned. Each session ended with creating individual action plans, and the next session started with evaluation of their successes and failures. Participants encouraged to brainstorm and develop strategies with peers with guidance from facilitators. MI: Sessions focused on post-stroke concerns or goals and typically included a brief check-in, discussions in the context of returning back to life after stroke, and conversations that aimed to elicit participants' interest in goal setting and behavioural change.
Who provided (and/or set up device)	Community stroke nurses collaborated with the Changing Minds Mental Health team to develop the program. A specialist stroke nurse and a mental health nurse facilitated via telephone conference with participants who were at home.	The MOST facilitators participated in a 1-hour training session with a telehealth advisor. Training included: simulating a typical MOST session; setting pre-set camera angles; and using the remote control to switch between pre-sets, switch to the VCR, and adjust volumes. At this time it was also discovered that text written on flip charts was not legible across videoconference. As a result, a document camera, which transmits text directly through the video screens, replaced the flip charts.	Trained facilitators	Six group coordinators were recruited (4 female, 2 male), each of whom led one of the 4 intervention groups (two groups had paired coordinators working in a job share). All had at least 3 years' experience, (mean 4.7. Range 3–7) in leading community groups for people with aphasia. One was a qualified speech and language therapist (SLT). Co-Ordinator's, and their associated groups, were geographically dispersed. Before the intervention began, the project managers provided the group coordinators with two, 4-hour face-to-face training sessions. The first session covered technical aspects of group provision in EVA Park. The second	Information not available.	IPASS-TR: Co-facilitated by an occupational therapist with previous experience running the IPASS and a stroke survivor who was locally hired for the study. Both facilitators received 4 to 5 hours of training. MI: sessions delivered by an experienced MI-trained rehabilitation psychologist.

				session provided training on delivering the intervention.		
Procedures and how it was delivered	Teleconference	Videoconference	Hybrid (combined videoconference and face-to-face delivery)	<p>Delivered online in virtual world. Participants accessed the intervention on a computer in their own home. Co-Ordinator's and volunteers worked either from a home computer or from a computer in their community center. All participants were represented by personalized avatars in EVA Park, which were set up before the start of intervention. Group leadership was provided by the coordinators. They introduced each topic and led the activities, for example by assigning roles and turns to group members. They ran group discussions, ensuring that each member had the opportunity to contribute.</p> <p>There were four intervention groups, each led by at least one coordinator and 2 volunteers, and each involving between six and nine people with aphasia.</p>	Face-to-face and online (Zoom).	<p>IPASS-TR: delivered online via Zoom.</p> <p>MI: Participants the first two sessions face-to-face sessions during their inpatient stay, the third session was delivered after discharge, and the last two sessions alongside the second and last IPASS-TR sessions.</p>
Frequency, duration, intensity and fidelity of implementation.	<p>Seven-week program. No further details provided.</p> <p>No measure of fidelity presented.</p>	<p>Delivered over 9 weeks.</p> <p>Two sessions per week, each lasting two hours: one hour group topic discussion, followed by one hour exercise.</p> <p>No measure of fidelity presented.</p>	<p>18 x two-hour sessions.</p> <p>No measure of fidelity presented.</p>	<p>Intervention comprised 14 group sessions (21 hours) delivered over 6 months, with sessions occurring once a fortnight.</p> <p>Fidelity: A fidelity checklist was developed with reference to the intervention manual and in discussion with the project managers, reflecting core/essential features of the intervention. Recorded sessions were reviewed, and each feature on the checklist was scored as fully present (2), partially present (1), absent (0) or not applicable.</p> <p>Across all 18 videos that were evaluated, mean fidelity score per treatment component was 1.76 (/2; range 1.45–2; median 1.82). 81.9% of the applicable treatment components were fully present (scoring 2), 12.6% were present to some degree (scoring 1) and 5.5% were absent (scoring 0).</p>	Information not available.	<p>IPASS-TR: six weekly 90-minute sessions delivered online via Zoom.</p> <p>MI: Participants received five 30-minute individual MI sessions.</p> <p>Fidelity: Fidelity checklist created based on each activity/topic in the manualised IPASS-TR facilitator guide. Fidelity evaluated based on direct observation or recordings.</p>
Tailoring and modifications	None reported.	A dedicated site coordinator added ongoing value by providing personal contact with the participants and ensuring that the room and equipment were set up. Except for the initial clinical safety check, trained volunteers can perform all of the site-coordinator responsibilities. This additional onsite support positively impacts program delivery.	None reported.	None reported.	HEADS:UP adapted for online delivery, called HEADS:UP Online.	<p>The IPASS-TR was modified from IPASS-R for telehealth delivery. Changes included sessions on: Review of Zoom etiquette and basic functions (e.g., mute, video), Plan for an individual community outing (community outing as homework), Stroke and disability community resources for social support.</p>

Table 3: Summary of included study outcomes

	[1] Gregory et al. 2012	[2] Taylor et al. 2009	[3] Huijbregts et al. 2010	[4] Marshall et al. 2020	[5] Lawrence et al. 2023	[6] Lee et al. 2023
Primary Outcomes	<ul style="list-style-type: none"> PHQ-9 GAD-7 EQ5D Stroke Impact Scale 	Telehealth feasibility: <ul style="list-style-type: none"> Recruitment log Attendance rates Facilitator log Facilitator survey 	<ul style="list-style-type: none"> Participation Domain of Stroke Impact Scale (SIS) Reintegration to Normal Living Index (RNL) Goal Attainment Scaling (GAS) Geriatric Depression Scale (GDS) 	Feasibility measures: <ul style="list-style-type: none"> Number of participants screened, recruited and retained, reasons for non-recruitment and attrition. Records of attendance at intervention. Number of times EVA Park was visited, and the amount of time spent in EVA Park by each participant. Adverse events. Other measures: <ul style="list-style-type: none"> Warwick-Edinburgh Mental Well-being Scale – comprises 14 positively worded statements that are rated on a 5-point scale. Communication Activities of Daily Living-2 – 50 items based on specific scenarios which require everyday communication. 	Feasibility measures: <ul style="list-style-type: none"> Completion of paper-based outcome measures post-intervention Intervention attendance Outcome measures (specific details not provided): <ul style="list-style-type: none"> Demographics Mood Quality of life 	Feasibility measures: <ul style="list-style-type: none"> Feasibility of the recruitment Feasibility of data collection processes Feasibility of intervention Acceptability of the online format Acceptability of intervention Outcome measures: <ul style="list-style-type: none"> PROMIS Global Health - general perception of health 8-item Patient Health Questionnaire (PHQ-8) - depression screening tool Stroke Impact Scale (SIS) perceived recovery Patient Activation Measure (PAM) - level of self-management activation 8-item NeuroQoL Satisfaction with Social Roles and Activities Scale Participation Strategies Self-Efficacy Scale (PS-SES) - participants' self-efficacy in using strategies for managing community living and participation
Secondary Outcomes		<ul style="list-style-type: none"> Community reintegration: Reintegration to Normal Living Index (RNL) Mood: Geriatric Depression Scale Balance confidence: Activity-Specific Balance Confidence Scale Mobility: Berg Balance Scale, 6-Minute Walk Test Client-selected goals: Short-Term Goals, Goal Attainment Scaling 		<ul style="list-style-type: none"> Social Connectedness Scale-Revised – 20 positively or negatively worded statements, that have to be rated on a six-point scale. Western Aphasia Battery-Revised – Only sections assessing speech production and comprehension were administered. These produced a single aphasia quotient score. Stroke and Aphasia Quality of Life-39 – 39 items rated on a five-point scale. Three domains are covered: physical, psychosocial and communication. 		
Findings	<p>Ten participants completed the program. All measures improved post-intervention and participants themselves reported a positive impact on their quality of life.</p>	<p>The study confirmed that this process was feasible but identified the need for ongoing communication with telehealth coordinators at participating sites, the need for 3-month advance booking, and the inefficiency of booking all sites prior to participant identification.</p> <p>Improvements were seen in participants' mood as measured by the Geriatric Depression Scale ($F(2, 22) = 4.48, p = 0.04, \eta^2 = 0.29$)</p> <p>6-minute walking distances ($F(2, 22) = 4.50, p = 0.02, \eta^2 = 0.29$),</p> <p>Balance confidence (Activity-Specific Balance Confidence Scale) ($F(2, 22) = 3.27, p = 0.12, \eta^2 = 0.35$).</p>	<p>Approximately 40% participated via videoconference. No significant group effect was found for any outcomes in the multivariate regression analysis.</p> <p>Combined group pre-post analysis showed post-intervention increases in GAS ($p < 0.0001$) and SIS participation ($p = 0.02$), and greater improvements in RNL and SIS participation for those in rural sites than urban participants.</p> <p>Qualitative findings included increased confidence and assumption of responsibility for health behavior change, and favorable reception of videoconferencing.</p> <p>MOST was associated with significant individualized goal attainment in both rural and urban participants.</p>	<ul style="list-style-type: none"> Feasible to conduct a larger trial of remote group intervention for people with aphasia in EVA Park. However, the lack of any indicative treatment effects found in this study suggest that revisions should be made to the intervention and assessment of outcomes. All groups ran the 14 sessions as planned, and participants attended a mean of 11.4 sessions (SD 2.8), which was 81.6% of the intended dose. Fidelity checking showed minimal drift from the manualized intervention. No significant change was observed on any of the outcome measures, although the study was not powered to detect these. 	<ul style="list-style-type: none"> STUDY 1 (HEADS:UP): Completion of paper-based outcome measures post-intervention $n=6$ (46.2%); intervention attendance 6.2/9 (median). Acceptability: <i>'I find myself... on the bus doing [mindfulness]! I realise I am actually doing it!'</i> STUDY 2 (HEADS:UP ONLINE) Completion of online outcome measures : $n=9$ (100%) post-intervention; intervention attendance: 8.6/9 sessions. Acceptability: <i>'I was apprehensive...I wasn't sure you could do mindfulness over Zoom...but it has worked really, really well'</i> 	<ul style="list-style-type: none"> 100% intervention attendance achieved with technical support, reminders, and schedule flexibility. Fidelity of the IPASS-TR remained strong with covering 97% of content of the structured curriculum. Participants were satisfied with the intervention and reported emotional benefits and gain of new insights. Perceived recovery showed a medium effect toward the intervention group ($r = 0.54$). All other measures had a small effect ($r = 0.13-0.27$)