Telehealth for carers' communication skills: Research report

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Accompanying documents to this report

1. *Research summary*

2. *Minutes of final reference group meeting*

3. *Reference group feedback: One page summary*

4. *ASSBI Conference 2014: Presentation on questionnaire data*

5. *ASSBI Conference 2014: Presentation on qualitative data*

6. *INS/ASSBI Conference 2015: Submitted abstract on conversational data*

7. *INS/ASSBI Conference 2015: Submitted abstract on pilot single case intervention study*

8. *Article proof to be published in Bridge Magazine (publication of Synapse, Queensland brain impairment association)*

Contents

Executive Summary

Key messages

- It was possible to use videoconferencing (Skype) to meet with people with traumatic brain injury (TBI) and their families. Brain injury services could consider videoconferencing as a potential tool for increasing families' access to supports.
- Questionnaires about communication skills were able to be administered reliably and efficiently over videoconferencing for all participants, however the quality of the Skype connection prevented evaluation of conversations for several participants. There may be a minimum requirement for videoconferencing quality to allow evaluation of conversations.
- When the Skype connection was adequate, observations about the general conversational quality and conversational participation of people with TBI could be made over Skype with the same accuracy as from an in-person session. This supports the use of videoconferencing for assessment and intervention for conversation skills of people with TBI.
- Observations about the conversational support provided by carers were less similar between the Skype versus the in-person conversations. Further research could assist to identify more reliable methods of measuring carer's conversational support skills.
- Decisions about whether to use videoconferencing for brain injury rehabilitation should be made in consultation with individual families, with clear reasoning about the benefits and planning around how to manage the risks.

Purpose

The aims of this research were:

(1) To determine whether telehealth (Skype) assessment of social communication skills for people with TBI and the support skills of their carers is as (i) accurate and (ii) reliable as a face-to-face assessment.

(2) To investigate the feasibility of using Skype for diagnostic evaluations

(3) To compare the efficiency of telehealth to face-to-face assessment

(4) To conduct a qualitative exploration of participants' satisfaction with and perspectives on telehealth services.

Rationale

Many carers of people with TBI experience high levels of psychological distress. Support in managing the consequences of TBI is required not just for the person with the injury, but for their whole support network. However, it is difficult for carers to access support or training. Many live in rural or regional areas that do not have specialist brain injury services. Where services do exist, the time required for caring for the person with TBI, or meeting other commitments may prevent carers from accessing services.

Telehealth services may be a possible solution to improving access to support for carers. Telehealth is the use of information and communication technology to deliver health services over a distance, often involving a real-time connection between a patient or carer and a clinician through a telephone call or videoconferencing. A recent systematic review of the use of telehealth for providing services to carers of people with TBI found 16 studies in this area. There were positive findings across studies for feasibility, consumer satisfaction and effectiveness.

However, clinical judgements in a telehealth session may be difficult because the quality of audio, visual and contextual information available is more limited than in a face-to-face evaluation. This is particularly true for communication-based observational assessment. For example, one study found that ratings of intelligibility were significantly poorer over telehealth compared to a face-to-face assessment. Furthermore, communication performance can often be affected by the context in which the communication is observed. One study found that participants with TBI tended to perform more poorly on a story retell task over telehealth than on a face-to-face assessment, although the difference between modes was not statistically significant. Self-report questionnaires may also yield different results when administered during a telehealth session than when used in a face-to-face session. Research comparing face-to-face and telephone administration of questionnaires has found that the mode of administration affects the quality of the data collected.

The level of interest of carers and people with TBI in participating in telehealth services must also be considered. Overall, approximately one third of carers of people with TBI prefer face-to-face over web-based services. However, the reasons for these preferences are unclear and could be explored further using qualitative methods.

This project would provide the opportunity to investigate the feasibility of working with carers of people with TBI using Skype, and specifically, would determine the reliability of collecting information on carers' communication support skills during a Skype session. It is already known that communication skills training which involves both the carer and the person with TBI can be effective in improving both the support skills of the carer and the communication skills of the person with TBI. This project would trial Skype as a means of working on communication between a carer and the person with TBI, to determine if this is an appropriate way of increasing access to this type of training.

Methods

1. **Participants**: 20 participants with a moderate-severe TBI and their communication partners were recruited from two metropolitan and two regional brain injury units in NSW, Australia.

2. **Measures**: The primary outcome measure was the Measure of Participation in Conversation (MPC) and Measure of Support in Conversation (MSC) (Adapted). The MPC (Adapted) involves global ratings of the level of interaction and transaction of information within a conversation for the person with TBI. The MSC (Adapted) involves global ratings of the contribution of the carer in acknowledging and revealing the communication competence of the person with TBI.

The secondary outcome measures included global ratings of conversational quality and self-ratings of communication support skills and burden, communication skill, communication participation and communication confidence.

Demographic and technology variables: Injury-related data included time post-injury and PTA duration. Participants also provided information on their gender, age, frequency of computer and Internet usage and confidence with computer/Internet usage. We also collected data on participants' type of computer, webcam and speed of Internet connection.

Process measures: We recorded the total duration of the telehealth assessment and the face-to-face assessment sessions, and the individual assessment components. We noted any technical difficulties with the audio or video quality or the connection during the Skype call. Participants completed an eight-item satisfaction with online assessment questionnaire. We also conducted qualitative interviews with participants to ask them about their experiences with the sessions and their overall perspectives on telehealth services.

3. **Procedure**: Following ethical approval, the researchers contacted potential participants and obtain written consent. The order of assessment mode (face-to-face assessment and Skype telehealth) was randomised across participants. These two assessment sessions were between one and two weeks apart. The face-to-face assessment was conducted at either the home of the participant with TBI or the carer. The web-based assessment was conducted over a Skype connection with the participants at one of their homes and the researcher in a quiet office room. At the end of participants' second assessment session, they completed a semi-structured videorecorded interview on their perspectives on using telehealth for brain injury services.

4. **Data analysis**: Quantitative data: Two independent, trained assessors rated each casual and purposeful conversation sample using the MPC (Adapted), the MSC (Adapted) and global conversation quality ratings. One of these assessors also rated each sample again four weeks later. Intra-class correlations were calculated for the inter-rater and intra-rater agreement for each mode of assessment for each scale, and will be compared between the two modes. For all measures, test-retest correlations were used to examine the agreement between the face-to-face assessment score and the telehealth assessment score for each measure. For the conversation rating scales, the mean of the two assessors' scores was used for the analysis. Responses to the satisfaction with online assessment questionnaire were analysed descriptively.

Qualitative data: Interviews were transcribed verbatim. The data were then analysed using thematic analysis to identify topics within and across transcripts. The researcher interpreted final topics in relation to current research and key questions regarding implementation of telehealth in clinical practice.

Research findings & Implications

RESEARCH FINDINGS

1a. Reliability of questionnaires

There were no significant differences in the total scores reported by people with TBI or their communication partners on the La Trobe Communication Questionnaire or the Communication Confidence Rating Scale for Aphasia between the home visit and Skype sessions. There were almost perfect correlations (r>0.8) between total scores from the home visit and Skype sessions on these questionnaires.

1b. Reliability of evaluation of conversations

There were no significant differences in the participation of people with TBI in conversation (as measured by the Adapted Kagan scales) between the two recordings made during the home visit and Skype sessions. There were substantial to almost perfect correlations (r>0.6) between ratings made from the home visit and Skype recordings. Our two independent assessors had equivalent, excellent inter-rater reliability (ICC>0.8) on these scales for both home visit and Skype recordings for casual conversations, and equivalent, good inter-rater reliability (ICC 0.6-0.8) on these scales for both home visit and Skype recordings for purposeful conversations.

There were no significant differences in the overall quality of conversations (as measured by the Bond & Godfrey scales) between the home visit and Skype sessions, with the exception of the task completion scale (p=.047). There were moderate to substantial correlations (r=0.4-0.8) for casual conversations and almost perfect correlations (r>0.8) for purposeful conversations between scores on this scale from the home visit and Skype sessions. Our two independent assessors had good to excellent inter-rater reliability (ICC>0.6) for both casual and purposeful conversations in both home visit and Skype recordings for the scales of Appropriateness, Interest and Task Completion. The scales of Rewardingness and Effortfulness had lower reliability across tasks and across modes (ICC>0.4).

There were no significant differences in the conversational support provided by communication partners (as measured by the Adapted Kagan scales) between the home visit and Skype sessions. There were substantial correlations (r=0.6-0.8) for purposeful conversations between ratings made from the home visit and Skype recordings but only fair to moderate correlations (r=0.2-0.6) for casual conversations. This may reflect the greater variability in casual conversations. Also, our two independent assessors had varied inter-rater reliability (ICC 0.4-0.8) across both home visit and Skype recordings which suggests this scale is difficult to use regardless of the mode.

2. Feasibility

We were able to complete the Skype assessment session with all families. However for two families we needed to use the telephone for some components of the Skype assessment session due to deterioration of the connection or audiovisual quality. For one family we had to schedule a second appointment to complete the Skype assessment as the audiovisual quality was not adequate for making a conversation recording.

There were no significant audiovisual problems for 11 out of 20 families. There were minor audiovisual problems for 5 families and major audiovisual problems for 4 families. There were problems with the connection dropping out for 7 families.

The two independent speech pathologists who looked at our conversation samples were unable to evaluate 3 of 19 Skype conversation recordings due to poor audiovisual quality.

3. Efficiency

There was no significant difference in the time taken to complete the La Trobe Communication Questionnaire by both people with TBI and communication partners between the home visit and the Skype session. There was however a trend towards communication partners taking a minute longer (7:59 compared to 6:55) over Skype as compared to the home visit condition.

4a. Preference for videoconferencing versus in-person assessment

We asked participants whether their preference would be for an in-person or for a Skype assessment before they started the study, and then again after they had completed both assessments.

	Prefer in-person	No preference	Prefer telehealth
Before assessments	**19** (12 TBI, 7 CP)	**13** (5 TBI, 8 CP)	**7** (3 TBI, 4 CP)
After assessments	**13** (7 TBI, 6 CP)	**18** (9 TBI, 9 CP)	**7** (4 TBI, 3 CP)

TBI = people with TBI, CP = communication partners

4b. Views on use of videoconferencing for rehabilitation

Positive opinions about videoconferencing
Some participants expressed the following opinions:
- Telehealth perceived as equivalent to in-person
- Telehealth better than no therapy
- Easier to focus on Skype than in-person
- Can facilitate client engagement: perceived as more normal, more private   from the community, less upsetting than visiting brain injury service
- Skype was easy to use and worked well
- Learning to use Skype could lead to other benefits

Positive opinions about in-person sessions

Some participants expressed the following opinions:

- Easier to focus on in-person sessions
- Easier to keep private from family
- Provides social contact
- Feels more personal
- Conversation can be easier to manage
- Easier to read non-verbal communication
- Able to access physical resources
- Provides clinicians with broader information
- Do not have technical problems

Reasons for using videoconferencing for brain injury rehabilitation

- Reduce need for travel:
- Allows shorter or more frequent sessions
- Reduces costs
- Increases clinician efficiency
- Easier for patients with reduced mobility.
- Help with the transition from more intensive to less intensive therapy
- A way of accessing TBI experts
- Reduce feelings of isolation for families

Family recommendations for successful use of videoconferencing

- Need to consider client and family factors
  - Injury severity
  - Level of motivation
  - Stage of rehabilitation
  - Familiarity with technology
- Manage home environment (distractions, privacy)
- Best to meet family in-person first if possible
- Provide hard copies of resources
- Ensure reliable technology and back-up plans
- Continue to evaluate whether telehealth is adequate

IMPLICATIONS

- Brain injury services could consider videoconferencing as a potential tool for increasing families' access to supports, and specifically for assessment of conversation skills of people with TBI.
- There may be a minimum technological and connectivity requirement for videoconferencing quality, particularly when it is important to pick up on the subtleties of family communication.
- Rating conversational skills of people with TBI is possible and reliable over skype. However, the dynamic nature of conversation caused some difficulties with reliably evaluating carers' conversational support skills in this study. Further research could assist to identify more reliable assessment methods.
- The potential benefits (e.g., more efficient) and risks (e.g., potential loss of relevant clinical information) of using videoconferencing for brain injury rehabilitation will need to be considered on an individual basis, including discussion with families about their own perspectives. If videoconferencing is used for rehabilitation, there needs to be ongoing evaluation of whether it is adequate for the needs of the family.

Use of the research

This research supports the feasibility of videoconferencing as a means to increase families' access to conversation assessment and brain injury rehabilitation services in general. However the qualitative data highlights that the benefits and risks of using videoconferencing with an individual family need to be weighed carefully.

Potential impact of the research

The application of the use of videoconferencing to brain injury rehabilitation services could increase families' access to services (including frequency of contact or ability to access more specialised clinicians) and reduce costs associated with travel. This increased access to services could result in improved communication outcomes for people with TBI. Client satisfaction may increase where videoconferencing is used appropriately in the context of shared decision making with an individual family.

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