

## **Lifetime Support Authority Research Project**

### **Tapping into technology for individuals with tetraplegia: a pilot study**

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Access to everyday technology such as smartphones and tablets can be difficult for individuals with impaired upper limb function. For individuals with tetraplegia access to technology can be facilitated via assistive aids or software applications, enabling participation in meaningful activity. The aim of the project was to explore participants' perspective of using mainstream technology and the influence of technology on participant's daily life.

#### **Method:**

Mixed method design to measure changes in participation and well-being but also to gain a rich understanding of the use of technology devices from the perspective of the participant. A convenience sample was utilised due to the small population of people with tetraplegia in South Australia. Participants were aged over 18 years and had experienced a spinal cord injury/impairment affecting upper limb function.

Assessments included:

- Ryff's Psychological Wellbeing Scales
- Ferrans and Powers Quality of Life (QOL) Index (SCI Version)
- Canadian Occupational Performance Measure (COPM)
- Assistive Technology Device Predisposition Assessment (ATDPA)
- The Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST) was used to score the technology item most relevant to their goals

The COPM and ATDPA were used to guide goal setting relevant to technology items. As goal setting was participant-directed each participant developed individual goals and intervention by OT was tailored to achieve goals. All clients identified goals to use mainstream technology in preference over disability-specific technology (e.g. switch scanning devices). OT intervention included research and consultation regarding technology items to meet goals, client education on use of devices and apps, trial of adaptive aids and modified techniques to interact with touchscreen. Clients used devices for one-to-one therapy sessions with OT and in their own time.

#### **Results:**

Assessments completed at baseline were repeated post intervention. Analysis was completed on all assessments using a paired t-test comparing pre and post intervention data.

Following intervention all participants had achieved their intended goals. This was reflected by self-report and in the improved scores on occupational performance and satisfaction on the COPM (statistically significant change).

All participants were more satisfied with their technology items following intervention as measured by the QUEST, which also demonstrated statistical significance. Quality of life and wellbeing also showed slight improvements following intervention however these were not found to be statistically significant.

Qualitative interviews supported the quantitative data above. For one participant the supply of a stylus "was the best thing since sliced bread" and he "would be lost without it". Another participant reported he thought he would get out of the house more as he now had an app for bus routes and timetables and was excited by all the new apps that provide avenues ready for exploration and education.

Participants in the study used adaptive aids to independently access devices, make and receive phone calls, email, interact socially online, use internet and trial apps. With use of various apps individuals with tetraplegia could independently access environmental control systems, read books, complete self-directed upper limb therapy, increase productivity for work/study, access public transport schedules and participate in leisure activities.

#### **Conclusion:**

Small sample size is a distinct limitation to this study. Recruitment proved difficult due to reduced recruitment period and limited availability of participants in South Australia, which has a small population of people with tetraplegia.

Limited conclusions can be drawn from this project due to the small the sample size. However, results in this population are positive and warrant further investigation with a greater sample size. It is recommended to conduct a larger multi-site study in order to overcome recruitment difficulties.

All participants demonstrated positive improvement on quantitative assessment, with QUEST and COPM results statistically significant. Qualitative assessment also indicates the potential positive impact of everyday technology on the lives of people with tetraplegia. All clients were able to independently use devices, reducing need for carers and/or assistance. With exponential development in devices and apps there are unlimited opportunities for clients with tetraplegia to increase their independence and engagement in occupation.