



Salaris M¹, Janssen H^{1,2}, Quinn R¹, Jordan L¹, Galvin R¹, Veitch K¹, Young A³, Mc Elduff P⁴, De Vries R¹ & Spratt N^{1,2}.

¹ Hunter Stroke Service, Hunter New England Local Health District, New Lambton Heights, NSW, Australia

² Centre of Research Excellence in Stroke Rehabilitation and Brain Recovery, Hunter Medical Research Institute, University of Newcastle, Callaghan, NSW, Australia

³ Department of Information Technology and Telecommunications, Hunter New England Local Health District, New Lambton, NSW Australia

⁴ Faculty of Health and Medicine University of Newcastle, Callaghan, NSW, Australia

Introduction

Emerging evidence suggests that tablet devices may facilitate engagement in therapy^{1,2,3}. Our preliminary work found that tablets enabled stroke survivors to; engage in higher levels of self-directed therapy, leisure activities, communicate easier and have a greater sense of independence⁴. This technology is becoming more popular and accessible, is highly portable and provides access to inexpensive applications with therapeutic value. It was hypothesised that tablet computers may:

- enhance patient motivation;
- increase engagement in therapeutic activity;
- increase compliance to therapy through novelty, the provision of immediate feedback and enjoyable nature.

TnT Aims

The Tablets and Technology Project (TnT) was a pilot randomised control trial aiming to:

- determine the effect access to and use of tablets during the first month post-discharge had on stroke-survivor quality of life and;
- estimate the effect access to and use of a tablet during this time had on mood, cognition, communication, self-efficacy and activity participation.

The secondary aim of the study, and focus of this poster, was to describe the characteristics of stroke survivors using tablet computers after a stroke, along with the frequency and nature of tablet use.

Method

- Clinicians at three mixed rehabilitation units were provided with tablet computers.
- Clinicians used tablets equipped with a range of therapeutic applications which they considered appropriate to the needs of inpatient stroke survivors.
- Weekly online surveys were completed by clinicians describing the nature and frequency of tablet use.
- De-identified data was collected on all stroke survivors who used a tablet computer including those from those who consented to participate in the primary study.
- One week prior to discharge consenting participants were randomised to receive (intervention) or not receive (control) a tablet to take home for one month.
- Participants were surveyed regarding access to and use of tablets (i) before stroke and (ii) every week for one month following discharge. Descriptive statistics were used to analyse survey data.

Results

A total of 20 stroke survivors were recruited to the study. Participants were recruited to a control (n=7) or intervention (n=8) group. An additional 5 participants were later allocated to the non-randomised intervention (NRI) group due to having purchased a tablet during their hospital admission.

Acknowledgements

- Funding and support provided from the National Stroke Foundation and their Small Project Grant 2014.
- Hunter Stroke Service for their ongoing support, funding and enthusiasm for the project.
- The wonderful stroke clinicians at Wingham Rehabilitation Unit, Rankin Park Centre for Rehabilitation and The Maitland Hospital.

Pre-stroke access to technology

Approximately 14% of participants (n=15, 66 +/- 15 years old) had access to tablets prior to stroke. Exposure in the control versus intervention groups was low and similar. The NRI group reported higher levels of home access to tablet computers prior to stroke (60%).

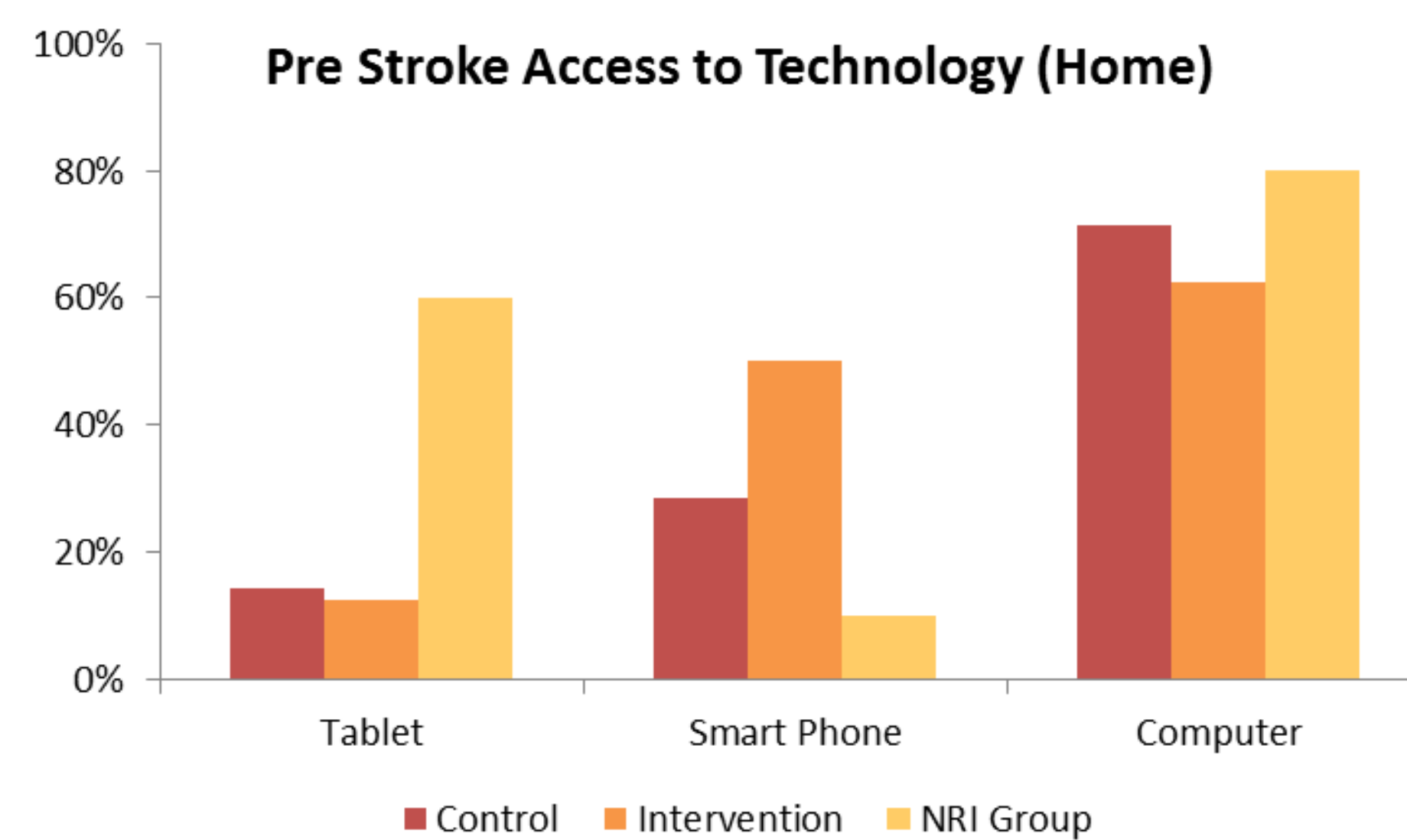


Figure 1. A small proportion of control and intervention group participants had access to a tablet computer at home, prior to their stroke.

Pre-stroke use of technology

Participants who reported access to a tablet computer (n=5) had a pre-stroke average frequency of use between 'rarely' and 'once a week'. Use of smart phone technology, which is similar in operation to tablet computers was higher in the control group. Computer use was mixed.

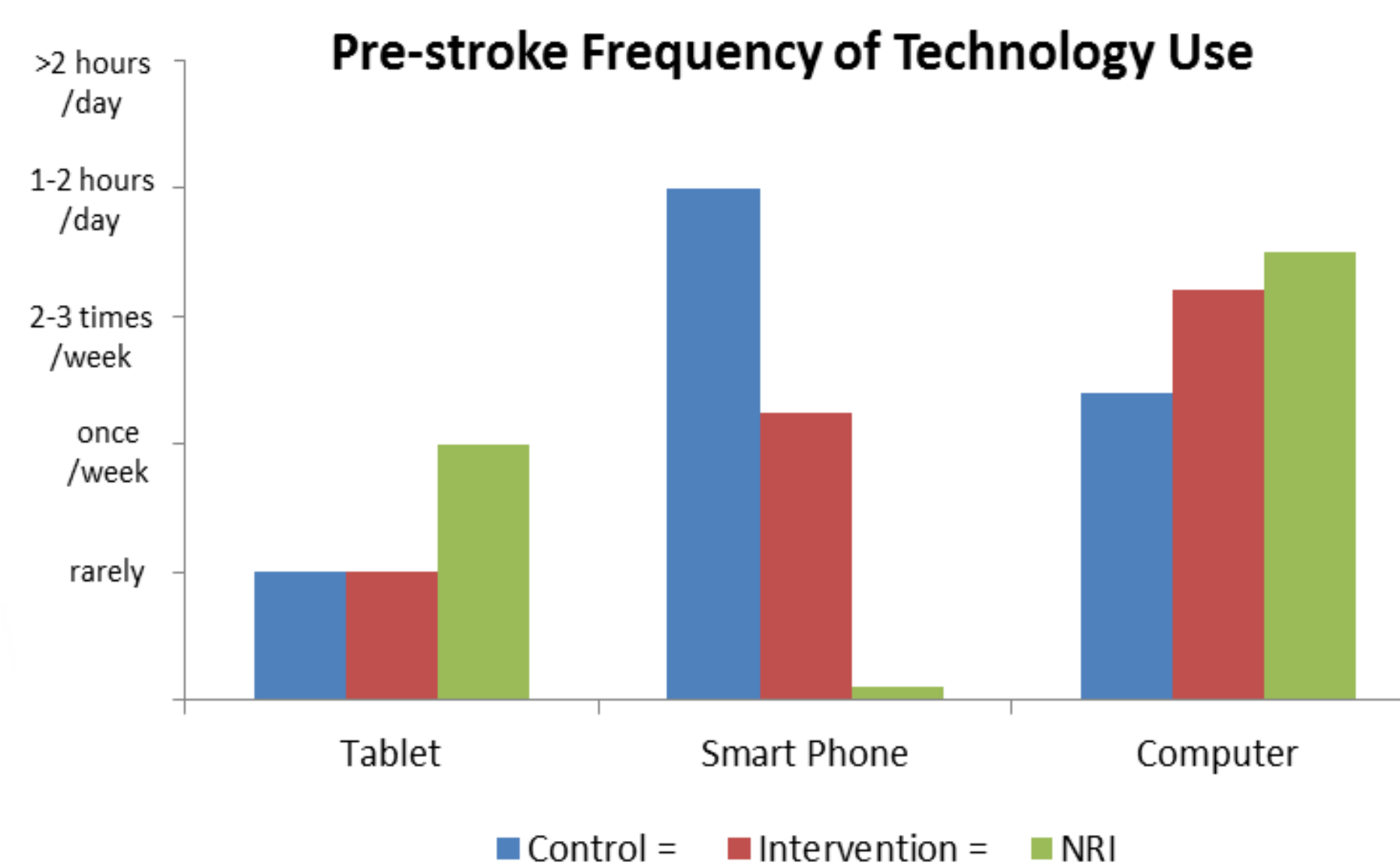


Figure 2. Pre-stroke tablet use was low in frequency and comparable between the control and intervention groups.

Use of tablet technology during inpatient rehabilitation

The control group were reported by clinicians to use tablet technology more than the intervention group during their inpatient admission.

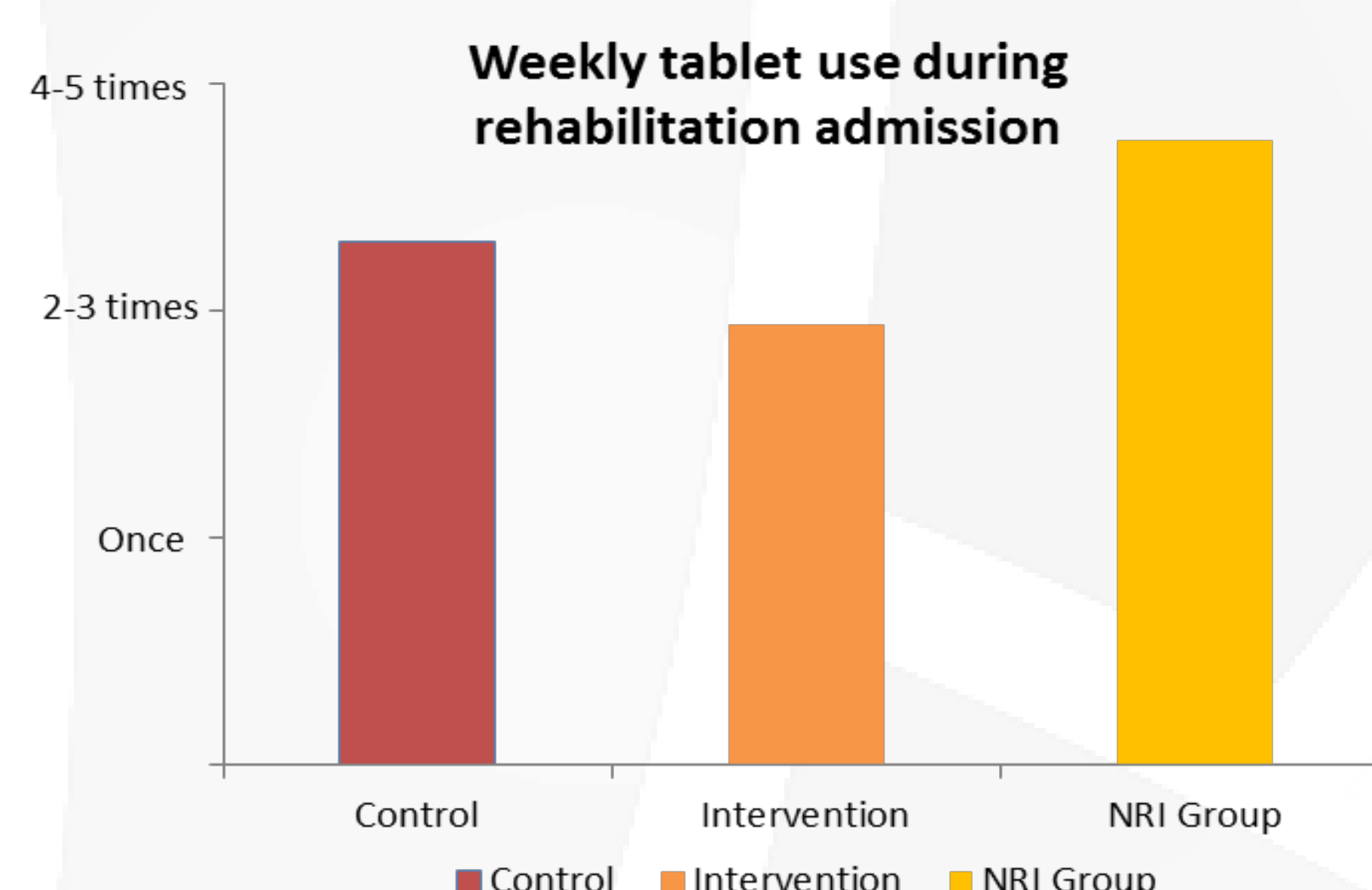


Figure 3. The control group used tablets > 2-3 times weekly compared to the intervention group who used them slightly less than 2-3 times each week.

Tablet use one month post discharge

In the month following discharge from hospital the intervention and NRI groups maintained similar levels of tablet use as observed in hospital. The control group was not contaminated and had no reported tablet use.

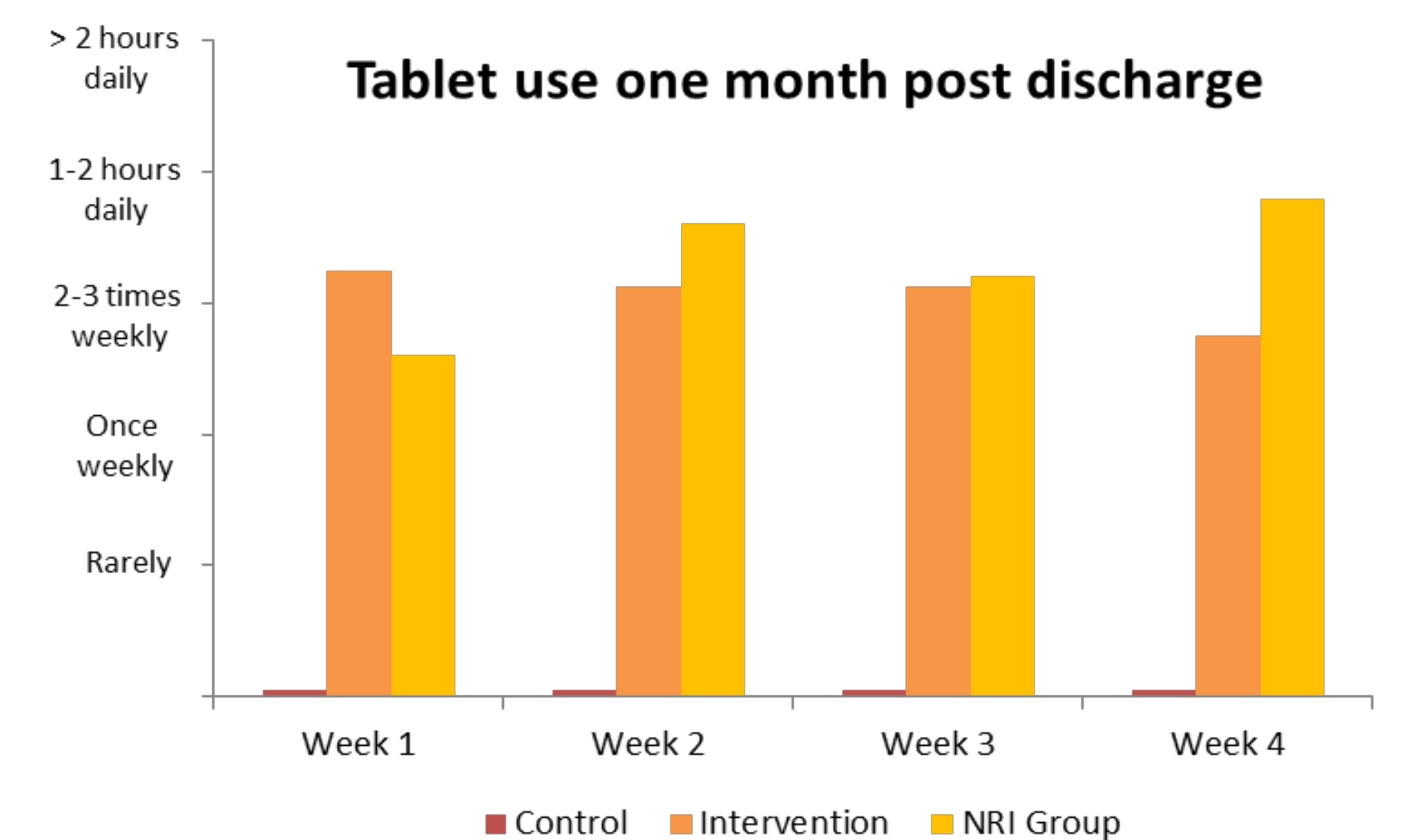


Figure 4. The intervention group used tablet computers 2-3 times a week on average, and the NRI group up to 1-2 hours daily.

Purpose of tablet use

The majority of reported tablet use in the intervention and NRI groups was for therapeutic activity.

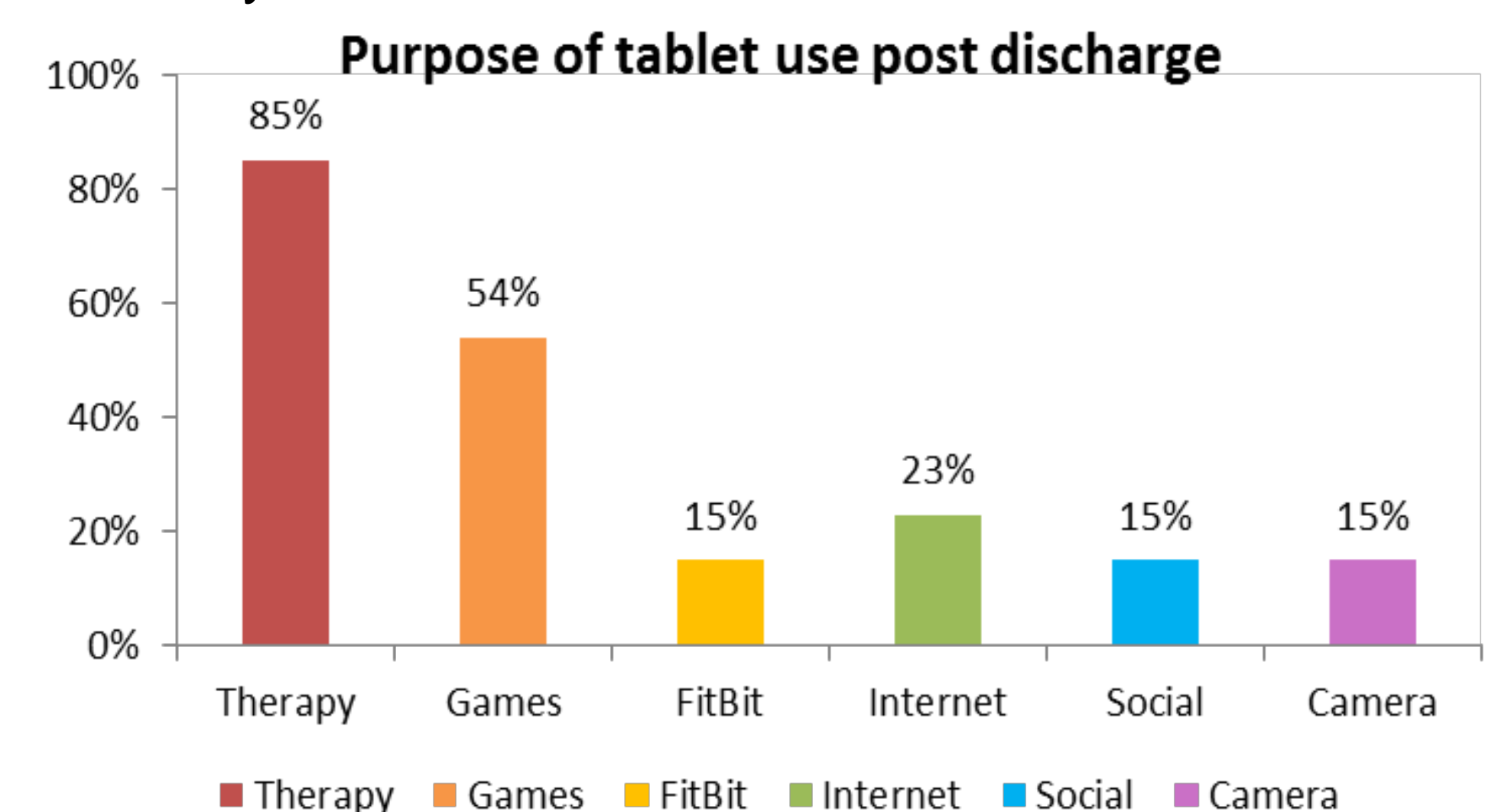


Figure 5. The purpose of tablet use reported by the intervention and NRI groups.

The intervention group reported that they were 'reasonably confident' with tablet use on average. They had a mean cognitive score of 21/30 on the Montreal Cognitive Assessment and a mean Modified Rankin Scale of 2.8. Confidence levels were higher in the NRI group (mean MRS 3, MOCA 22/30).

Conclusion

Stroke survivors from a range of age groups, who had minimal previous exposure to tablet computers were able to be trained to use these for therapy based activity within this pilot study. If provided with access to a tablet computer, the frequency of inpatient tablet use was maintained up to one month post discharge for ongoing therapeutic, leisure based and social activity. The investment of clinician time for training of stroke survivors with tablets appeared to positively impact use. Levels of mild-moderate disability and/or mild cognitive impairment did not appear to impact uptake. The control group did not seek out tablets despite higher levels of inpatient use, suggesting easy access is a primary contributing factor to uptake. Providing access and training with tablet technology appears to provide therapeutic opportunity for stroke survivors after discharge from hospital.

References

1. Fager S & Burnfield J. Disabil Rehabil Assist Technol. 2013 :1-7.
2. Rand D, et al. Virtual Rehabilitation (ICVR), International conference on. 2013; 26-29 Aug, 2013.
3. Kizony R, et al. J. Neurologic Physical Therapy. 2016; 40(1): 31-39.
4. Janssen H, et al. International Journal of Stroke.2013;8:1-26.

Contact person **Melanie Salaris**.
Melanie.Salaris@hnehealth.nsw.gov.au 02 65151820



Health
Hunter New England
Local Health District