

User evaluation of the Neater Uni-wheelchair in the home environment: an exploratory pilot study

N. Teater, M. Banat, F. Leeb, E. Hnat, J. P.

Key words: ■ hemiplegia ■ home environment ■ Neater Uni-wheelchair ■ wheelchair

Quality of life, wheelchair, stroke, home environment, user evaluation, pilot study, ergonomics, assistive technology, rehabilitation, older adults, independence, autonomy, quality of life, National Service Framework for Older People (NSF), Department of Health, 2007, National Stroke Strategy (2010), evidence based technologies, rehabilitation.

The standard manual wheelchair is an effective, but inefficient means of transport (Veeger et al, 1992) particularly for people who have experienced a stroke and have a resultant hemiplegia. Moreover, falls and V4 injuries are widely reported. The National Service Framework for Older People (NSF) (Department of Health, 2007) promotes independence, autonomy and quality of life for both users and carers, while the National Stroke Strategy (2010) endorses the need for rehabilitation to embrace evidence based technologies in rehabilitation.

Mandy et al (2007; 2009) summarized the literature regarding wheelchair provision for hemiplegic subjects, and identified a lack of suitable provision. In response to this issue, and in conjunction with a stroke rehabilitation team, stroke patients and an engineer (Neater

Solutions), the team designed a novel ergonomic self propelled steering system (Neater Uni-wheelchair). The team designed a novel ergonomic self propelled steering system (Neater Uni-wheelchair).

Findings: The study found that the Neater Uni-wheelchair was perceived as more comfortable and easier to use than a standard manual wheelchair. Users reported improved independence and quality of life when using the Neater Uni-wheelchair in their homes.

Conclusions: The Neater Uni-wheelchair is a promising assistive technology for people with hemiplegia. Further research is needed to evaluate the long-term effectiveness and safety of the Neater Uni-wheelchair in a larger population.



recorder or a diary to record their feelings and experiences each time they used their wheelchair, for a period of one month. In particular they were asked to record 'what worked', and 'what did not work' for them, and to describe the type of activities they were able to undertake and if this differed from their activities in their standard issue wheelchair. At the end of the month they were also asked to reflect and report on whether they had used the Neater Uni-wheelchair more or less than their standard issue wheelchair.

myself to the bathroom when I need to' and another just said 'Freedom'.

The partner of one user also reported a sense

DATA ANALYSIS

The users, and carer, recorded their experiences in diaries, or in files recorded onto digital recorders at the end of the period of wheelchair use. The entries were not date stamped, but presented simply as either oral or written text. The entries were transcribed and analysed using Framework Analysis (Ritchie and Spencer, 1994). Framework analysis permits the researcher to analyse all the data following collection, which was the case in this study. The five step process of familiarization, identifying a thematic framework, indexing, charting, mapping and interpretation (Ritchie and Spencer 1994) was undertaken. The data for each participant was initially explored to consider if the type of activities that the users were able to undertake in the Neater Uni-wheelchair differed from the norm, and also whether they reported any change in their activities. The data from the six users and one partner was transcribed verbatim for framework analysis (Ritchie and Spencer, 1994). The users were shown copies of their transcripts and the identified themes, which they then endorsed.

Familiarization occurred through repeated reading of the transcripts in order to gain an overview of key issues and recurrent themes. A thematic framework was developed to filter and classify the data using a priori knowledge, literature and earlier studies (Mandy, 2009). The following key themes were identified: independence and freedom, ease of use and manoeuvrability, usefulness and change in activity.

Independence and freedom

All the users, including the partner of one user, identified that the Neater Uni-wheelchair afforded greater independence.

Within this theme, three users reported a sense of freedom from having to wait for someone to propel them: 'I am able to take



