THE EFFICACY OF PRESCRIBED SEATING FOR ELDERS IN LONG TERM CARE SETTINGS: A PILOT RANDMONISED CONTROl TRIAL

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BACKGROUND

Older people are considered to be the fastest growing population group worldwide. As people age many are affected with physical illnesses and neurological conditions that are associated with deterioration in physical ability, function and wellbeing. With advancing age it is not unusual for seating needs to emerge at home or within institutional care.

Clinical, anecdotal evidence suggestive that current seating provision is not meeting the needs of elders. Often they are compromised in terms of their comfort, postural and pressure care needs. Clinical practice and decision making have generally depended on expert opinion combined with individual practitioner experience and preferences.

Research literature describes the use of seating systems to increase comfort and quality of life (Telfer, 2010), improve upper extremity function (Stavness, 2006), and improve respiratory function and/or prevent or delay deformities (Holmes, 2003). Littleton (2011) demonstrated the positive effect of sitting and side lying on respiratory measurements (oxygen saturation, heart rate, respiratory rate and chest wall excursion).

Emerging from the literature, this paper reports on a pilot, randomised controlled trial to explore the impact of personalised prescribed seating on elders within a nursing home environment. This research paper outlines the methods and results of a clinical trial examining the effectiveness of individualized seating assessment and provision within long term care facilities and how appropriate provision can impact significantly on the health and wellbeing of patients and their caregivers. It will identify the key principles of correct positioning, seating and mobility and the influence this can have on health of older people.

Guidance is available on most aspects of pressure ulcer prevention and management however few research papers specifically address the particular issues of seating for patients who are seated for long periods. When pressure ulcer prevention and management are discussed, the specific issues most often addressed are the use of pressure-redistributing beds and mattresses, risk assessment, patient repositioning and local management of established pressure ulcers (EPUAP, 2009).

OBJECTIVES

This study aims to:

(1) Identify the postural issues of elders within seating evident in long term care settings.
(2) Understand the impact of a poor sitting posture for elders in long term care settings.
(3) Highlight the effect that sitting postures can have on the elders' caregiver.
(4) Identify the contribution of a seating assessment and provision of the prescribed seating equipment in reducing pressure ulcers.

METHODS

This was a pilot randomised control trial. Within this standardised and non-standardised tools were used to support data gathering.

Three similar long-term care facilities providing nursing home care to elders in rural Northern Ireland were identified and consented to participate in the study. The overall target sample size from the 3 long term care was a total of 20 participants in the control group and 20 in the intervention group. Inclusion criteria specified that the participants must be aged over 65 and would be identified by the facilities manager as needing a seating intervention due to postural difficulties. Information letters were sent out beforehand to all participants and families involved. For those participants who did not have the capacity to consent, the information letter was given to patients' next of kin. Once the potential participants were identified they were randomly allocated They were matched according to size and similar nursing needs. Twenty eligible participants were randomly selected from each facility, using computer generated random numbers once the inclusion criteria had been applied.

In addition to the elders their carers and key workers for each participant were also recruited into the study.The participant, carers completed a questionnaire before and after the 12-week trial period. A comprehensive seating assessment was completed on each participant prior to the intervention of a personalised seating system being provided. During the intervention phase of the study the participants were closely monitored by family and key workers. After a12 week

intervention phase comprehensive reassessment of changes in posture, skin breakdown or any changes in medical presentation was undertaken.

Ethical governance of this study was been aligned to the guidance of the University of Ulster and ethical approval given by Office Research Ethics Northern Ireland.

INTERVENTION

The intervention arm of this trial included 20 participants and involved completion of a seating assessment before and after the twelve week trial period and the provision of a suitable seating system. The chair selected was determined on postural ability and limitations of each participant. The range of chairs available offered the ability to cater for a vast range of client needs; from pelvic rotation and obliquity, limited hip flexion, tight hamstrings, scoliosis, and the opportunity to tilt to redistribute pressure over the 'at-risk' areas of pressure sores therefore meeting required postural needs over a 12 week period.

The control group of the study experienced usual care alongside the pre and post intervention assessments. A total of twenty participants took part in Intervention B and received a seating assessment before and after the 12week trial period to record changes if any, with regards posture, medical presentation and medication received. They were assessed over the twelve week period in their existing chair.

At baseline the following assessment tools were administered for participants in both arms of the trial.

Clinical factors:

- Demographics (such as age of participant, medical history etc.)
- Seating assessment (of participants' sitting balance and postural needs, sitting skills, range of movement for sitting and transferring in/out of the chair)
- Digital Photographs (to be taken before and after initial assessment with participants sitting in their original chair and in the chair provided following seating assessment)

Physiological factors:

- Force Sensing Array (Pressure Mapping)
- Braden Scale to measure risk of developing pressure ulcers
- Pulse Oximeter to measure saturated oxygen levels

Quality of life factors:

- Caregiver questionnaire to gather any changes, if any before and after trial period
- Participant questionnaire to gather changes, if any, before and after the trial period
- Visual analogue scale (client comfort scale)

The chief investigator administered these outcome measures with the long term care participants, the caregiver and/or next of kin. Following the intervention period of 12 weeks the same outcome measures were re-administered.

RESULTS

This research study clearly demonstrated that prescribed seating following personalised assessment can contribute to a reduction in pressure ulcer incidence and postural correction, increased saturated oxygen levels, functional ability and social interaction.

Seven of the intervention participants who had red skin areas at the beginning of the trial no longer presented with these at the end of the 12 week trial period. One participant in the control group developed a pressure ulcer in their existing seating while one red skin area that presented at the beginning of the 12 week trial no longer presented at the end of the 12 week trial period.

Seventeen of the intervention group participants were found to have increased saturated oxygen levels over the 12 week trial. One of the intervention group participants maintained their initial results and none of the intervention participants were recorded to have decreased saturated oxygen levels. Nine of the control participants experienced decreased oxygen saturation levels while continuing to use their existing seating which had not been individually tailored to their needs. Eight of the control group participants experienced increased saturated oxygen levels over the twelve week period and one control group participant's saturated oxygen levels remained the same.

Many of the caregivers reported that the provision of a suitable seating system made it much easier to feed the residents particularly when using the tilt in space feature on the chairs, as well as some reporting that they noticed an increase in social interaction when using the chairs. Overall, many of the caregivers reported the experience of having individualised seating for their patients was a positive one both for the patients and the caregivers.

CONCLUSIONS

The provision of seating as an assistive technology is often required as people age. Within long term care facilities the temptation may exist to use existing seating or a 'pool' of seats to meet the needs of this changing population. This research highlights the very real value in maintaining a person centre approach to seating provision. It clearly highlights that the needs of each patient are different and require individualised evaluation to provide appropriate clinical guidance for the ordering recommendations of an appropriate static chair (Engstrom, 2002). Some of the key findings indicate that the provision of an individually assessed seating system to an elder within a long term care environment improves skin integrity, quality of life factors and ease of completing ADL's. It is vital that those clinicians responsible for postural management and seating complete individualised assessments with long term care patients and suitable seating

systems are identified and provided for these patients. It is also essential that long term care staff are given the opportunity and support to develop their knowledge of seating and postural care so that they can translate this knowledge into practice.

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Engstrom, B. Ergonomic Seating, (2002) *A True Challenge.* Wheelchair Seating and Mobility Principles. Posturalis Books, Germany

European Pressure Ulcer Advisory Panel and National Pressure Ulcer Advisory Panel. Prevention and treatment of pressure ulcers: quick reference guide. Washington DC: National Pressure Ulcer Advisory Panel; 2009.

Holmes, K.J., Michael, S.M., Thorpe, S.L., Solomonidis, S.E. (2003) Management of scoliosis with special seating for the non-ambulant spastic cerebral palsy population – a biomechanical study. Elsevier Ltd.

Stavess, C., The effect of positioning for children with cerebral palsy on upper extremity function. (2006)

Telfer, S., Solomondis, S., Spence, W. (2010) An investigation of teaching staff members' and parents' views on the current state of adaptive seating technology and provision. Bioengineering Unit, University of Strathclyde, UK

Levine, M. J and Ayello, A. E., (2010) Pocket guide to Pressure Ulcer's. *How to classify, stage and document pressure ulcers and other common wounds.* NJHA Healthcare Business Solutions, Princeton, NJ.

Littleton, S.R., Heriza, C.B., Mullens, P., Moerchen, V., Bjornson, K. (2011) Effects of positioning on respiratory measures in individuals with cerebral palsy and severe scoliosis. Lippincott, Williams and Wilkins Inc