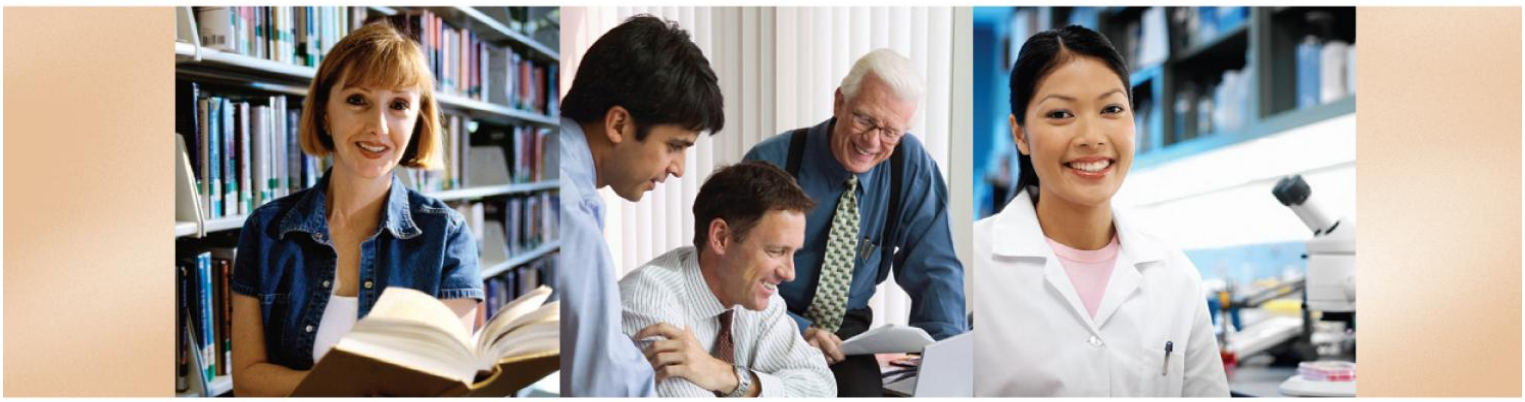
An Australian Government Initiative

Review of current seating practices in supporting people living with dementia in residential aged care

–a pilot study



September 2012

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Translating dementia research into practice

An Australian Government Initiative

Review of current seating practices in supporting people living with dementia in residential aged care

–a pilot study

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Associate Professor Christopher Poulos, Juliet Kelly, Robyn Chapman, Annette Crane, Rebecca Forbes, Meredith Gresham, Rejane LeGrange, Virginia Moore, Sam Neylon.

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Executive Summary

This study arose from a concern there was widespread variation in seating practices within the residential aged care sector for the older person living with advanced dementia. A lack of evidence in the literature on seating in the context of dementia was felt to be a contributing factor to this variation. This study therefore examined the literature for evidence to guide the selection of seating for the person living with dementia and to understand the outcomes of the various seating options available. This study also sought to obtain qualitative information from the residential aged care sector on current seating practices. These two data sources were reviewed and synthesised by an 'expert reference group'.

While this work is a pilot study, it has identified a number of issues related to the optimal choice of seating for the person living with dementia within residential aged care. Consequently recommendations to guide current practice were produced and key areas for future research were identified.

The project methodology had three stages: first, a comprehensive review of the relevant literature; second, semi-structured interviews of residential aged care staff and family carers; and, third, the bringing together of an expert reference group in a one-day workshop day to examine how the literature and the interview data informs knowledge about seating for people living with advanced dementia in residential aged care.

The results of the literature review indicated a paucity of dementia-specific knowledge in relation to seating for people living in residential aged care. Seating as a therapeutic intervention contributing to twenty-four hour postural care is identified within the literature for other populations and the applicability of this knowledge in the context of the person living with advanced dementia is considered.

The interview data provided a description of different 'levels' of seating and postural care and grounded theory analysis identified the context, key concepts and emerging theories about seating and postural care practices for the person living with advanced dementia in residential aged care.

The expert reference group workshop generated a detailed discussion of seating and postural care practices in residential aged care and concludes that:

- For the person living with dementia in residential aged care, the ability to sit comfortablyin an upright position is important to physiological and psychosocial functioning and has significant quality of life consequences;
- There would appear to be a lack of knowledge, skills, resources and philosophical framework within residential aged care facilities to provide person-centred seating and postural care;
- Seating and postural care expertise is identified but is not commonly applied in aged care for a variety of reasons;
- In generalist residential aged care practice there appears to be a lack of appreciation of the fundamental nature of postural care for older people and of the negative impact of the currently available "one size fits all" seating options. For the person living with advanced dementia this lack of appreciation of the role of seating may be adding to disability and limiting functional capacity quality of life.

Recommendations for aged care providers, practitioners and researchers are made.

This study found the knowledge base for seating and postural care practice for people living with advanced dementia in residential aged care to be limited. Thus aims to describe relevant concepts and issues and identify the scope and feasibility of further research to assist generating evidence for practice.

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No conflicts of interest are reported in the conduct of this study.

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The investigators gratefully acknowledge the residential aged care homes who agreed to take part and the staff and family carers associated with these homes who gave their time and opinions freely to the researcher.

The investigators acknowledge and thank Dr Jenny Nitz for her time and contribution to the expert reference group workshop.

Purpose and aims

The purpose is to describe and extend the existing knowledge base in relation to seating for older people with dementia and postural impairments living in residential aged care and to identify areas for further research.

The aims of this project are to:

1. Review relevant academic and grey literature in relation to the role of seating postural care in advanced dementia;

2. Identify the seating products currently used in residential aged care;

3. Benchmark current practice by reviewing seating and postural care practices in a sample of up to ten residential aged care homes;

4. Identify and describe seating principles for people living with dementia and impaired posture;

5. Lay a foundation for future research and practice development in seating and postural care for older people with dementia and impaired posture through exploration of the related concepts and contexts.

Background

The Australian Government's Department of Health and Ageing states that a residential aged care facility must provide "a comfortable lounge chair for each resident to meet their care, comfort and safety needs". This includes "a chair with particular features in order to provide for the safety, care and comfort" that "a high care resident" might need (DOHA 2009).

A healthy adult's concept of a 'comfortable chair' probably includes the soft lounge chair they relax into at the end of a busy day, perhaps in front of the television or with a glass of wine! This concept of comfort perhaps influences the selection of large pressure relief chairs commonly used in residential aged care. However the extent to which such a chair is "comfortable" for a frail person with impaired sitting balance, reduced mobility and dementia is not known. Anecdotal evidence from allied health professionals who specialise in seating suggests that outcomes, such as posture, physiological and psychosocial functioning and quality of life may be improved by the use of more structured seating which better fits and supports the individual resident.

This study originates from practitioners' reflections on current practices within residential aged care, identifying a need to critically examine variations in seating practice and outcomes for residents with advanced dementia. Practitioners involved in this project noted that with advanced dementia often the person's ability to maintain an upright sitting posture is affected. The inability to maintain an upright seated posture affects many domains of human functioning and so may contribute to increasing frailty as defined by Gobbens et al "*Frailty is a dynamic state affecting an individual who experiences losses in one or more domains of human functioning (physical, psychological, social) that are caused by the influence of a range of variables and which increases the risk of adverse outcomes"* (Gobbens, Luijkx et al. 2010).

Within residential aged care a range of seating options are available, from individualised assessment by seating specialists accompanied by the prescription of individually customised seating and wheelchairs, to the use of 'one-size-fits-all' pressure relief chairs with limited adaption to individuals. It is not known on what basis decisions are made about seating selection for older people with dementia and impaired sitting balance. There are also no known seating guidelines specific to people living with dementia.

This study seeks to understand the extent to which different seating practices impact on the person's physiological and psychosocial functioning, progression of dementia and quality of life so that best practice guidelines could be developed and areas for future research identified.

The investigators acknowledge that the residential aged care workforce are caring, hardworking and, in most instances, doing their very best with the knowledge, skills and resources available to them. In the last 20 years there has been an enormous shift toward more individualised care. Equipment and care practices have improved, contributing to knowledge, skills and best practice in caring for people living with dementia. The investigators aim to build on the existing knowledge-base and lay a foundation for further research and practice development in seating and postural care for the older person living with dementia in residential aged care.

The person with dementia

Growing numbers of Australians are living with and dying from dementia (Deloitte 2011). However, the clinical course of advanced dementia has only recently begun to be investigated (Mitchell, Teno et al. 2009). The interaction between physical and cognitive decline is unclear but it is likely that for people with dementia functional decline is related to cognitive impairment irrespective of age-related sarcopenia (Auyeung, Kwok et al. 2008). Staff knowledge and skills to care for the person with advanced dementia are limited yet the condition has many variations and is complex (Chang, Daly et al. 2009). Individualised care, which acknowledges a person's unique symptoms and is responsive to the needs of the individual, requires high level knowledge of dementia applied to the practice setting (Chang, Daly et al. 2009). Impaired sitting balance and declining musculoskeletal function are symptoms of dementia which require evidence-based knowledge and skills in practice to ensure appropriate seating selection and postural care.

For the person with advancing dementia the ability to maintain an upright seated posture in a standard lounge chair may decrease for a combination of reasons:

- Posture requires skeletal stability and muscular control, as well as proprioceptive, somatosensory and cognitive input and feedback (Stinnett 1997);
- Age alone can create deficits in these functions, but when combined with other co-morbidities and/or sensory deficits, may further impact on a person's ability to maintain their sitting posture (Stinnett 1997);
- Dementia is a progressive neurological disorder which, typically when at an advanced stage, causes deficits in many of the physiological systems involved in maintaining posture;
- Dementia, combined with age and other physical co-morbidities, limits functional abilities and complicates the seating needs of the residential aged care resident (Gavin-Dreschnack 2004).

It is acknowledged that older people in residential care have a combination of co-morbidities which contribute to increasing frailty and the need for adapted seating. While this need is often not specific to dementia, 59% of older people in residential aged care in Australia have a recorded diagnosis which includes dementia (AIHW 2010). Not all persons with advanced dementia experience postural and mobility impairment requiring adapted seating, but of the 178,000 people in residential aged care in Australia 75% are assessed as having high care needs (AIHW 2010). In Australia one in three permanent residents of aged care are classified as high Activities of Daily Living care (AIHW 2010); typically these residents will have limited mobility and will be spending the majority of their time seated.

The investigators acknowledge that younger people can develop dementia and, while there may be transferable information generated, the focus of this work is older people living with dementia in residential aged care.

Definition of terms

Terms used throughout the study report are defined as below:-

Seating

Any type of chair. It is the furniture in which residents spend most daytime/awake hours when they are not in bed.

Impaired posture

The reduced ability to maintain an adequate upright seated position in standard chairs.

Carers and family carers

Includes all professional staff and care workers involved in clinical decisions and direct care giving. Family carers includes all family or friends visiting the residential aged care home that may or may not be involved in direct physical care giving.

Residential aged care home/facility

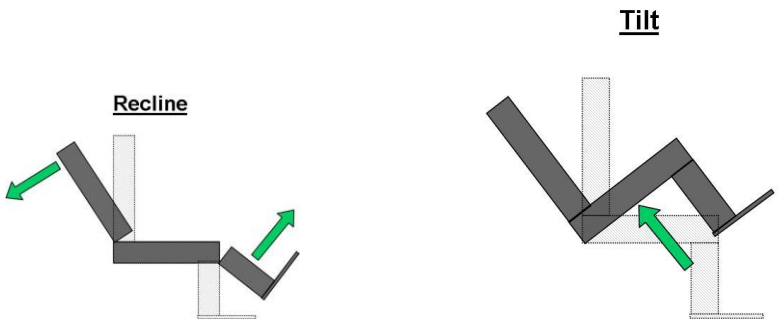
An Australian Government approved organisation providing accommodation and care to older people who can no longer live at home.

Recline

Refers to the angle between the person's seat and back. The chair is reclined when the back of the chair is at a wide angle to the seat which remains parallel to the floor (see diagram).

'Tilt' and 'tilt in space' mechanism

Refers to the change in a person's orientation in space while maintaining a constant –seat-to-back' angle (see diagram)



Postural care

Positioning and supporting the body to maintain a neutral posture, muscular skeletal function and comfort. For immobile persons it aims to prevent postural distortion such as contracture, discomfort and pain.

Methodology

Ethical approval for this study was sought and granted (2011-7-44) from the Human Research Ethics Advisory Panel, University of New South Wales. Refer to Appendix 1.

Literature review

Literature was reviewed to identify the existing evidence base in relation to seating. The search strategy initially included the terms dementia, nursing home, aged care, seat*, chair*, water chair, flotation chair, 'geri-chair', wheelchair, armchair, recliner, posture, sitting posture, sitting balance, postural care and was then widened to identify key literature in the fields of cerebral palsy, muscular dystrophy, motor neurone disease and acquired brain injury which may be transferable or relevant to this study. Key literature in related clinical conditions such as contracture and pressure areas, were also explored. Literature, including brochures from disability services e.g. Independent Living Centre, NSW, and furniture manufacturers were also included to understand the range of seating products available.

Databases searched were CINAHL, MEDLINE, Cochrane Library, EMBASE, Web of Science. Smart text/thesaurus, etc was used to customise the search terms for each database. Reference lists of original articles were examined and information was requested from identified experts, relevant organisations and interested groups. Literature was limited to English language. No date limits were set in the search.

Semi-structured interviews

Interactive semi-structured interview process of seating specialists, professional staff, care workers and family carers in residential age care was selected to gain a description of general practice and specialised practice in relation to seating in residential aged care. The interview schedule was developed alongside initial literature searching and reviewing and was informed by the concepts arising from the literature. The semi-structured interview was piloted with a registered nurse and a physiotherapist, both working in residential aged care, and adjustments made before its use. Pilot interview data were not included in the analysis.

Definitions of dementia and seating were provided at the beginning of the interviews and pictures of chairs or chairs available in the practice area were made available to ensure mutual understanding of chair descriptions and definitions.

Sampling aimed to include the current range of seating practices in Australian residential aged care facilities for people with dementia. A purposive sample of residential aged care homes in Perth and Sydney was identified to include representation of:

- Homes with access to a specialised seating clinic;

- Homes in both metropolitan and regional areas;
- Independent homes and those which are part of a larger organisation;
- For-profit and not-for-profit providers;
- Culturally diverse homes

Selected homes were emailed or telephoned by the researcher or associate investigators, informed of the study and invited to participate. The residential aged care home managers who responded were supplied with the information and consent form (Residential Aged Care Home Form -Appendix 2) and they arranged for the researcher to meet potential staff and family participants within the home. Individual staff or family participants were supplied with the information and consent form (Appendices 3 and 4, respectively) by the researcher and had the opportunity to discuss their participation and ask questions prior to consenting to participate. Digital audio recordings of interviews, as well as hand written notes, were made.

Key individuals with relevant expertise and experience were identified by the researcher and associate investigators and invited to participate; these included postural care experts, seating specialists and dementia care experts.

A grounded theory approach (Corbin and Strauss 2008) is applied to the interview data to extract concepts and themes related to seating and postural care knowledge. Grounded theory approach allows theory to be developed from the existing practice. This is appropriate to the study as the literature search and review demonstrated little prior knowledge of seating for people with dementia. It is consistent with the stage of the research; i.e. exploratory and development of hypotheses which could be tested in further research. Concepts and themes emerge which are organised into domains and categories. A constant comparative method is used to examine the interview data to uncover and explain variants until a point of saturation is reached and no new domains or categories emerge.

Expert reference group

Members of the Expert Reference Group (ERG) are listed in table 1. The ERG met every two months throughout the six month study to discuss the study findings and review the study progress. ERG members were available to the researcher throughout the study to advise, discuss and synthesise study findings.

Table 1 **Seating study – Expert Reference Group**
Robyn Chapman – Physiotherapist Chief Executive Officer Independent Living Centre NSW.
Annette Crane –Physiotherapist and Frontline Management Allied Health Consultant Brightwater Care Group
Rebecca Forbes – Project Officer HammondCare.
Meredith Gresham – Occupational Therapist and Senior Dementia Consultant – Research and Design, HammondCare.
Juliet Kelly – Registered Nurse and Project Manager/Researcher and Dementia Consultant HammondCare.
Rejane LeGrange – Occupational Therapist and Senior Dementia Consultant HammondCare, previously seating therapist with Brightwater Care Group
Virginia Moore – Occupational Therapist and Manager Customer Wellbeing Brightwater Care Group
Samantha Neylon – Occupational Therapist and Manager Specialised Services and Environmental Standards, Brightwater Care Group.
Associate Professor Christopher J Poulos – Rehabilitation Physician and Hammond Chair of Positive Ageing and Care. School of Public Health and Community Medicine, University of New South Wales.

The ERG and invited expert, Dr Jenny Nitz (Senior Lecturer and Leader, Ageing Clinical, Teaching and Research Team, Division of Physiotherapy, University of Queensland), also met for a one-day workshop to examine how the literature and interview data inform knowledge about seating for people with advanced dementia.

The literature and interview data were presented to the ERG, organised against ‘domains’ (broad subject areas relevant to the work) and ‘concepts’ (more specific issues within each domain) that had emerged through initial analysis of the interview data and from the literature. These are shown in Table 2, Appendix 7. These domains and concepts are listed in an abbreviated version of Table 2 below.

Table 2 Domains and concepts emerging from literature and interview data	
Domains (categories)	**Concepts (themes)**
Stage and type of dementia	Stages include early, moderate, severe, advanced, terminal or end stage; Aetiology of dementia; Influence of co-morbidities ageing and frailty
Impact of posture and seating	Postures in dementia including the musculoskeletal system; Impact of posture on nutrition; Impact of posture on the respiratory and cardiovascular function; Impact of posture and seating on skin integrity; Posture and seating and 'comfort'; Impact of posture and seating on pain; Seating and posture affecting social interaction, engagement and behaviour;
Current equipment in use	Standard chairs; Transit wheelchairs; Adapted lounge; Pressure relief chair; Customised wheelchair; Tilt-in-space mechanisms; Use of recline; Wheels and mobility; Occupational health and safety; Maintenance, replacement and cost of seating option.
Assessment of posture and seating needs	Assessment tools; Assessment processes
Staff knowledge and skills and the culture of care	Staff skills and knowledge related to dementia; Staff skills and knowledge related to posture; Staff skills and knowledge related to the use and maintenance of seating and related equipment; Staff skills and knowledge related to the meaning of comfort; Staff skills and knowledge about restraint and safety

The ERG was asked to apply the following questions to the literature and interview data;

1. Is there evidence to guide decisions about seating and what is the level of the evidence?
2. How does the literature inform our knowledge of the outcomes of different seating choices for the person with advanced dementia?
3. Does current practice match the evidence available in the literature?
4. What are the discrepancies between current practice and the literature?
5. Are there discrepancies between experts and non-experts about seating practices?
6. What are these discrepancies and why do they exist?
7. Do different seating and postural care practices create different outcomes for the person with advanced dementia and if so, what are the differences?
8. What recommendations can be made for current practice?
9. Suggestions for further research, including potential hypothesis and how might they be tested?

A written record was made of the discussion generated and the synthesis of the literature and interview data.

Literature Review

The overwhelming finding from the literature review was the paucity of literature directly addressing the issue of seating and postural care in the context of a person with dementia. It was therefore necessary to focus on related literature and apply this to an exploration of the possible impacts, both positive and negative, of different types of seating on the person with dementia and their carers. In particular, the impact on the person with dementia from the use of pressure relief chairs and a reclined posture was explored, as these appear to be the current seating system of choice for a person with loss of postural sitting balance due to advanced dementia.

Seating used in residential aged care

Holden, Fernie and Lunau (1988) described three categories of seating commonly used in residential aged care: the static lounge chair; the reclining lounge chair; and, the self-propelled chair (Holden, Fernie et al. 1988). They acknowledge the need for adapted seating and special design in frail older people and describe a typical user and required design features for each category of chair. They also provide an ergonomic review of the seating needs of 3 typical categories of older people: the older person who needs some adaptations to standard seating but who is still mobile; the older person who is able to self-propel; and, the older person with severe functional decline. The description of seating for the person with severe functional decline and probable confusion focuses on comfort and safety and does not consider maximising remaining function, perhaps reflecting the culture of care in the late 1980s.

Radar and Jones (2000) identify inadequacies in seating for frail older adults, particularly the “one size fits all” approach. They assert that inadequate seating results in poor posture, pain and fatigue, whilst individualised seating can improve comfort and function (Rader, Jones et al. 2000). However, individualised seating in the form of customised wheelchairs may also not be the answer. While standard wheelchairs are overused and often ill-fitting, there is a stage of illness when “even with customized wheelchairs, quality of life for residents with advanced and terminal dementia may not be adequately addressed” (Gavin-Dreschnack, Volicer et al. 2010).

Assessment of postural control and seating requirements

Formal assessment of posture, sitting balance or seating requirements does not commonly occur in aged care homes. Any postural assessment in frail older adults in residential aged care has tended to focus on standing balance and on the prevention of falls (Nitz and Josephson 2011). Studies describing seating assessment in older people and residents of aged care homes tend to concentrate on wheelchair users. These studies often report that a high percentage of seating is inadequate and creates poor posture, and may cause pain, discomfort and pressure problems (Krasilovsky 1993; Fuchs and Gromak 2003; Hawkey and Marsh 2003; Hsieh, Hu et al. 2011). However, the intervention studies to date have limitations that impact on the validity of their findings. Hawkey and Marsh (2003) claim significant improvement in seating

choices following a staff education programme and the use of a seating algorithm but the measures and degree of improvement are not discussed. Krasilovsky's (1993) descriptive study of seating assessment and management in a nursing home population has methodological short-comings, including a small sample size and lack of standard measures to identify sample groups and so enable comparison across studies. Fuchs and Gromack (2003) identify that subjective judgement is involved in evaluating achievement of therapist goals following wheelchair customisation and that this is a limitation. In Hsieh, Hu et al (2011), sample size was small, intervention to post intervention testing period was too short and the confounding factor of staff education was not controlled.

Literature describing postural and seating assessment for frail older people indicates it is a neglected aspect of care (Holden, Fernie et al. 1988; Stinnett 1997; Nitz 2000; Rader, Jones et al. 2000; Gavin-Dreschnack 2004; Strydom 2009). Miller (2004) noted that in long term care, staff have limited knowledge and training about seating and lack a protocol to guide wheelchair choice and use. There is also limited availability of trained equipment prescribers, limited funding and lack of equipment available. Whilst the literature focuses on wheelchairs it is reasonable to infer that the issues identified are transferable to other types of seating.

The paucity of literature on seating for the person with advanced dementia or the frail, older population suggests that the science of postural and seating assessment for these populations is not well developed. However, some guidance is available. In a pragmatic approach to prioritising the need for greater postural support, Miller (2004) developed and tested a screening tool to identify residents who would benefit most from formal seating assessment. The Seating Identification Tool (SIT) tool proved valid and reliable in identifying the need for a seating intervention (Miller 2004; Bourbonniere, Fawcett et al. 2007). Another tool that has been developed is the Sitting Balance Scale (SBS). It is specific to frail older adults but requires further testing to ensure validity and reliability across a larger and more varied sample (Medley and Thompson 2011). The process of thorough postural assessment, including "mat" or supine assessment and identification of flexible or fixed client factors that can be corrected with adapted seating or which need to be accommodated, is described for the aged client, however no comment is made about the use of such assessment in frail older people or those with dementia in residential aged care (Strydom 2009).

Seating assessment in younger people and people with conditions specifically affecting posture and sitting balance has received much greater attention in the literature (Vekerdy 2007; Telfer, Solomonidis et al. 2010; Wright, Casey et al. 2010). An individualised approach which considers "fit" to enable function is the focus but obviously is more costly and there is a requirement for ongoing assessment and follow-up of prescribed seating in order to ensure that changes in the person's condition are accommodated and that the seating prescription remains appropriate (Fuchs and Gromak 2003). Also, evidence from other populations with compromised postural control suggests that seating cannot be considered in isolation and that 24-hour postural care planning has a significant contribution to make to daytime seated posture, comfort and function (Goldsmith 2000).

Nursing knowledge regarding correct sitting positions and seating specifications to maintain posture may be lacking. Education in the clinical setting, prompts in assessment documentation, and regular audit, might be

used to improve relevant nursing knowledge and skills (Hawkey and Marsh 2003). Stinnett (1997) presents a compelling case for skilled therapist management of posture and seating in residential aged care homes. She describes how age-related skeletal and muscular, proprioception and vascular changes, combined with multiple co-morbidities and wear and tear, creates complex postural changes which require an appropriately trained and qualified therapist to systematically assess and plan interventions to treat and prevent further pain, disability and co-morbidity in aged care residents. Strydom (2009) also states that within aged care, interdisciplinary team working is required to support the complex seating and postural care goals of residents.

Impact of seating on physiological systems, function and participation

The literature evaluating the outcomes of various seating options in residential aged care is also lacking, and literature specific to residents with dementia could not be identified. However, there may be a wide spectrum of outcomes to consider, including those related to function and quality of life (Bourbonniere, Fawcett et al. 2007).

Even in the population of children with cerebral palsy, where adaptive seating is widely used to manage postural impairments, there is limited research into the outcomes of such seating on postural control, functional skills and social engagement (Chung, Evans et al. 2008), and more knowledge is required (Telfer, Solomonidis et al. 2010). Instruments potentially suitable for measuring the effects of adaptive seating on children's postural alignment, and support, pressure management, stability, functional ability and comfort, have been identified and tested (McDonald, Wilson et al. 2011) and may be useful in the objective study of the outcomes of adapted seating in other populations, such as those with advanced dementia.

The deleterious effects of immobility are well known and well documented, and include damage from pressure (Jaul 2010). Immobility is a commonly seen complication of advanced dementia, although the clinical course of advanced dementia has only recently been described (Mitchell, Teno et al. 2009). The formal identification and diagnosis of the advanced stage of the dementia occurs in the USA as it qualifies for hospice level funding. However, in Australia, residential aged care funding relates more to functional capacity, so the imperative to identify disease stage does not arise. To serve the American funding rules, reliable and valid tools to categorise stages of dementia exist (Reisburg, Ferris, de Leon, and Crook 1982; Volicer, Hurley, Lathi and Knowall 1994; Albert and Cohen 1992, cited by (Mitchell, Teno et al. 2009). The use of these tools makes it easier for researchers to identify and access data relevant to the study of the particular stage of dementia. For example, stage 7 of the Global Deterioration Scale (Reisberg B and T. 1982) includes the inability to ambulate. In Australia the funding imperative for categorising a person's stage of dementia does not arise. For researchers this can mean that the process of identifying relevant populations to study is more complex but typically advanced dementia is related to immobility and high care needs.

Evidence from literature on cerebral palsy indicates that seating is a key contributor to posture, and in turn affects comfort, the physiological and neurological systems, functional capacity and capacity to interact and

engage (Goldsmith 2000). This evidence would seem to be applicable to immobility due to other conditions, including immobility due to advanced dementia, although the associated physiological and functional changes associated with ageing may result in heightened adverse impacts from immobility in those with advanced dementia.

The gastrointestinal system is also adversely affected by immobility. Immobility can cause decreased appetite, poor peristalsis, and constipation and faecal impaction (Gavin-Dreschnack 2004). Safe swallowing requires an upright position while a semi-recumbent position may increase the risk of aspiration of both food and saliva (RCP/BSG 2010). Eating problems were observed in 85.8% of residents with advanced dementia and there was a 41.1% incidence of pneumonia (Mitchell, Teno et al. 2009).

Adopting the upright sitting position improves tissue oxygenation (Nitz, Hourigan et al. 2007). However this may need to be balanced against the value of the tilted seat position. In a systematic review of the effect of the tilted seat posture for non-ambulant individuals with neurological and neuromuscular impairment, posterior tilt can reduce pressure at the interface of the seat under the pelvis (Michael, Porter et al. 2007) and as age related reduction in fat on the ischial tuberosities increases the risk of pressure damage, this position has an important role in maintaining skin integrity.

Spending a sustained period of time in a reclined pressure relief chair can lead to the person assuming the “foetal” posture as the arms and legs are drawn tightly toward the body. Without corrective action it is possible for contractures to result from extended periods in this position (Gavin-Dreschnack 2004; Jamshed and Schneider 2010). Advanced dementia is a risk factor for contracture development secondary to immobility, although there is no evidence that Alzheimer’s Disease (AD) itself causes contracture (Jamshed and Schneider 2010). People with dementia may also have other risk factors for contracture development, because of co-morbid conditions such as Parkinson’s disease and stroke.

Maintaining mobility as long as possible, proper positioning to support joints in neutral positions and passive range of movement (ROM) exercises may all be important in preventing and treating contractures in older people with dementia (Jamshed and Schneider 2010), but there is debate about the value of stretch in older people with cognitive impairment and contracture (Jamshed and Schneider 2010; Katalinic, Harvey et al. 2011). However, the extent to which preventative strategies are used may be limited by staff resources, knowledge and skills and a perception that the gradual contracture of a limb is an expected outcome of dementia (Jamshed and Schneider 2010). Once formed, contractures can become irreversible, causing pain and discomfort, limiting function and being a risk factor for fracture (Jamshed and Schneider 2010). Contracture development also increases carer workload and the resources needed for personal care activities.

Unrelated to dementia, older people may also suffer from a range of conditions such as osteoarthritis, osteoporosis, joint replacement, vertebral body compression fractures, kyphosis and scoliosis, which create postural impairments and require appropriate attention to seating (Krasilovsky 1993).

Sitting posture is also important for social participation and interaction with the environment. In a study of immobile and totally dependent female residents in an aged care facility the upright seating posture was shown to increase level of responsiveness and potential for participative interaction, and so may improve quality of life (Hammer and Nitz 2009). The reclined position changes the field of vision to the upper part of the room and towards the ceiling. In order to look straight ahead the neck has to be flexed to lift the head and this could be exhausting and uncomfortable, leading to social withdrawal and isolation (Gavin-Dreschnack 2004). Residents who are seated in a semi-recumbent position commonly receive less stimulation and attention from caregivers, who may assume that the person has a low functional and cognitive level (Gavin-Dreschnack 2004). As with wheelchair users, the chair that a resident sits in can become a part of their identity, affecting the way they are perceived by others (Gavin-Dreschnack 2004). For the older person this misperception, and the resulting lack of interaction, may create further dependence and isolation (Rader, Jones et al. 2000; Gavin-Dreschnack 2004).

Semi-structured interviews

Thirty-nine individual participants across two Australian states were interviewed and generated 22 hours of audio data supported by hand written notes. Digital audio recordings of 32 of the 34 interviews were made.

Interviewees were from 10 different organisations, including:

- 11 different residential aged care homes;
- a specialist seating service;
- Alzheimer's Australia;
- an adult disability service; and,
- a cerebral palsy service.

Of the residential aged care homes included:

- 1 was for-profit and 8 were not-for-profit;
- 2 were regional and 7 were metropolitan (including one specifically for older people of Chinese origin;
- 2 were independent and 7 were part of larger groups; and,
- 8 were general and 1 was dementia specific (although 4 of the general homes had dementia specific units).

Family carers were included as interview participants as their perspective is important. However it is acknowledged that asking family members about 'cause and effect' in relation to the resident's condition may be value laden. Any expressed perception, by staff or family carers, that disability is due to the disease, which is beyond control, has to be accepted in the context that it may be appropriate and "safe" to blame the disease rather than care approaches.

It is noted that staff participants drew on their clinical and work experience as a whole and did not limit comments to the policies and practices of their current workplace. A final question asking for any other

relevant comments or information generated minimal response, indicating the questions asked had given the participants opportunity to say all they knew about seating.

The interview schedules are included as appendices 5 & 6.

Organisation of data

As described in the Methodology, grounded theory approach was applied to the interview data to extract concepts and themes related to seating and postural care knowledge. The subsequent domains or categories and concepts and themes that emerged as outlined in Table 3.

Interviewees' data was divided into two groups, which aimed to differentiate probable specialised practice from more general practice:

1. Those with access to, or were influenced by, a specialised seating service or personnel (such as a postural care tutor, a senior occupational therapist (OT) providing postural care to clients with cerebral palsy, or an OT and a physiotherapist (PT) working within a specialist dementia service, as these people had particular expertise in seating for people with dementia); and,

2. Those without access to a specialised seating service (all other interviewees)

The results of the interviews describe a wide range of current practice and current 'opinion' of what comprises best practice. It is noted that in many descriptors of practice there was overlap and similarity between the two groups and that a continuum of practice emerges rather than two distinct groups. However for the purposes of presenting the results, the terms **"seating specialists"** and **"generalists"** are used to distinguish between the two groups.

Two associate investigators read transcripts or listened to the audio recording of a sample of seven of the interviews to check that the interview data are accurately reflected in the identified domains and categories and summarised below.

Table 3 Domains and concepts emerging from interview data	
Domains (categories)	**Concepts (themes)**
Stage and type of dementia	Stages include early, moderate, severe, advanced, terminal or end stage; Aetiology of dementia; Influence of co-morbidities ageing and frailty
Impact of posture and seating	Postures in dementia including the musculoskeletal system; Impact of posture on nutrition; Impact of posture on the respiratory and cardiovascular function; Impact of posture and seating on skin integrity; Posture and seating and 'comfort'; Impact of posture and seating on pain; Seating and posture affecting social interaction, engagement and behaviour;
Current equipment in use	Standard chairs; Transit wheelchairs; Adapted lounge; Pressure relief chair; Customised wheelchair; Tilt-in-space mechanisms; Use of recline; Wheels and mobility; Occupational health and safety; Maintenance, replacement and cost of seating option.
Assessment of posture and seating needs	Assessment tools; Assessment processes
Staff knowledge and skills and the culture of care	Staff skills and knowledge related to dementia; Staff skills and knowledge related to posture; Staff skills and knowledge related to the use and maintenance of seating and related equipment; Staff skills and knowledge related to the meaning of comfort; Staff skills and knowledge about restraint and safety

Stage of dementia, co morbidity, frailty and ageing

Interviewees described the stage of dementia, existence of other physically disabling co-morbidities and the level of physical frailty as key determinants of seating and postural care needs. They explained that needs vary enormously from person to person and that individual assessment of seating need is accepted practice, though varying depths of assessment were reported with consequences for selection of seating. Interviewees identified that the early stages of dementia create needs for seating which support function, socialisation, and independent mobility. Seating needs to be of appropriate size and fit for the person, and should be sufficiently stable, practical and robust to withstand institutional living. Defining 'best practice' should include how chairs are perceived by the person living with dementia. For example, fabrics which are well defined and visible in relation to other furnishings and carpets, familiarity and personal preference, or meaning of the chair to the person should be included in the seating needs assessment. Interviewees reported that this assessment is often complicated by the person's inability to express their opinion about a particular chair. Defining best practice also needs to include the effect of the chair on a person's behaviour. Personalising seating to aid recognition and comprehension of its function are also features described as best practice; e.g. using a favourite throw or cushion or position in the room.

Generally, interviewees expressed the view that, as mobility and physical strength decline, the person living with dementia is likely to spend longer sitting and therefore requires more specialised seating to assist in the management of the effects of prolonged immobility.

Interviewees explained that advanced dementia creates many complex scenarios for staff to manage; for example, an individual might be unable to judge their own level of physical ability and might be at risk of falling when rising from a chair and walking unaided. Physical restraint was described as unacceptable by all interviewees. Some specialists indicated that physical restraint may actually create behavioural problems and increase risk of injury. However, staff perception is that families judge the quality of care by the degree to which their loved one is "kept safe" and free from accidental injury. Current general practice identified the need for continuous assessment of seating needs in response to change in the person's condition, including behaviours. Interviewees explained that general practice relies heavily on care workers reporting changes in the person's condition to professionally qualified or specialised staff. Professionally qualified staff reported that carer workers generally do not have the knowledge and skills to identify small but significant postural changes and don't correct these with appropriate supports. Over time this creates greater problems which may lead to referral to an Occupational Therapist (OT) or Physiotherapist (PT) at a later stage but which are then more difficult to correct.

Interviewees recognised that general practice includes awareness of the variable progression between stages of dementia and of the range of factors which affect a person's seating needs; for example, co-morbidities such as:

- Stroke with hemiplegia;
- Arthritis, which limits range of movement;
- Diabetes, which may create problems with circulation and/or sensory impairments;
- Incontinence;
- Parkinson's disease;
- Chronic obstructive pulmonary disease, where the person's seated position might be important to breathing.

Frequently, interviewees described the combination of normal ageing, dementia and co morbid conditions, and frailty, as creating complex seating needs.

Seating specialists distinguished between advanced or severe dementia and end-stage dementia. The use of 'comfort chairs' was seen as appropriate for those who were terminally ill or at the end of life stage "when the person is unresponsive" and is probably "just days", or at the most, "weeks", from death. They recognised that the palliative approach should not just apply to end stage disease and described a palliative approach as potentially lasting years; the person with advanced or severe dementia "can still be eating, drinking, taking meds, medically stable". They described active postural care as contributing to comfort and as part of palliative care.

Equipment in current use

Standard lounge chairs

Interviewees reported that a person might have severe or advanced dementia but still be mobile and using a standard lounge chair manufactured for the residential living environment. They described standard lounge chairs as: being of sturdy, stable construction; having extra foam supports; being easy to clean and having water resistant upholstery; having space to allow the feet to be placed back under the body to assist sit to stand; and being available in a variety of shapes and sizes to fit different body shapes and preferences. Interviewees in general practice tended to utilise the standard lounge chair for as long as possible, and then progress to using adapted or clinical lounge chairs with wheels.

Standard wheelchairs

Interviewees explained that standard wheelchairs might be used to transport the person from place-to-place, or chair-to-chair if the resident's ability to transfer can be supported by one member of staff. Interviewees expressed awareness that standard wheelchairs are uncomfortable, do not offer adequate postural support and increase the risk of pressure damage, and that pressure relief cushion inserts are sometimes used. Staff interviewees also described the high risk of skin tears from the use of standard wheelchairs. However, there were comments that residents do tend to be left in standard wheelchairs for too long and that they are sometimes used to save staff time by wheeling a person rather than assisting them to walk. To avoid this type of "convenient" use, one home was described in which all wheeled commode chairs were removed. Some staff reported that standard wheelchairs were sometimes used by residents who liked to "peddle" themselves around.

Adapted or clinical lounge chairs

Interviewees explained that this type of chair may be used with a pressure relief cushion insert, has a high back and perhaps wings for head support, padded arms, some recline positions and leg and foot supports. Interviewees report a key feature of these more 'clinical' chairs is that they have wheels which then enable the immobile person to be moved between rooms whilst in the chair and perhaps outside, although not usually into a motor vehicle. Staff described the resulting reduction of transfers as an advantage. Specialists clarified that a reduction in transfers should only be motivated by the resident's level of ability. They explained that use of this type of chair is sometimes motivated by staff workload, therefore reducing the person's opportunity to mobilise and creating greater disability.

Pressure relief chairs

Interviewees had many colloquial names for this type of chair including "comfort chair", "water chair", "flotation chair" and brand names, reflecting the key feature of a pressure relief system. Other features of this type of chair included multiple recline and tilt positions, leg rests, head rests, fold down sides, wheels and washable upholstery. Interviewees explained that in general practice once a person is immobile and non-weight-bearing and requiring a hoist to transfer, the pressure relief chair tends to be used as it is regarded as contributing the most to relief of pressure, the maintenance of skin integrity and comfort. Interviewees in

general practice reported that these chairs are used as an alternative to bed and that if they didn't exist some residents would never be able to get out of bed. There were some descriptions of the pressure relief chair being used as a form of restraint, particularly in the management of falls. "Safety" was identified by staff in general practice as a priority alongside comfort and involved preventing accidental injury; "she tries to get up but she can't". There was also a recount of aggressive behaviour managed by reclining the person, as it "keeps them calm". In some homes the use of many pressure relief chairs was reported, however within specialist practice very few were reported, with the preference being for customised wheel chairs.

Interviewees reported that family carers have a mixed reaction to pressure relief chairs. Many like the idea of their relative being as comfortable as possible and associate the large, padded, multi-function chair with this ideal. Safety is often a key consideration for the family carer and staff perceived the prevention of injury as a key indicator of quality of care even though it may infringe the person's right to freedom of movement. Staff interviewees also reported that sometimes families are confronted by the chairs as a symbol of the person's declining ability and the progression of the disease to a severe stage and want to deny this by refusing to allow their relative to use a comfort chair.

Seating specialists had several criticisms of pressure relief chairs. They explained that whilst a variety of different brands, varying slightly in design and size, may be available in residential care homes, the "one size fits all" approach to seating frail older people who need postural support means that for many residents the chair they use does not fit and does not provide the postural support needed. Specialists stated that this has many negative consequences which are not always identified by staff in current general practice.

Specialists reported that the "comfort chair" tends not to have a clear seat/back differentiation, making it difficult for staff to position a person correctly and create a stable pelvis. They explained that instability at the hips and pelvis makes it difficult for the person with weak postural muscles to control the rest of the body, leading to instability in the trunk and the shoulders and the limbs. Instability at the shoulders makes the neck and head and arms more difficult to control. They identified that, in addition, there is often no foot support, again making it more difficult to keep the pelvis stable. Seating specialists explained that, in order to gain greater stability in the hips and trunk, and to feel more supported, people often slip down in the "comfort chair", perhaps pushing their feet into flexion against footplates or digging the heels in and creating increased flexion at the knee. They noted that this "slipped" position reduces body contact with the chair and increases pressure on the heels, sacrum and elbows. It also directs the person's view towards the ceiling. If the person tries to counteract this position by lifting the head, this increases flexion in the neck and is too exhausting to maintain.

Specialists suggested that this "slipped" position is at best uncomfortable and at worst painful, socially isolating and contributing to the formation of contracture through the increased flexion and tone at the knees and elbows. They explained that the use of tilt rather than recline can address these issues, but commonly care workers, who are the main operators, do not understand the difference between these two mechanisms or how to use them effectively. Specialists also suggested that poor position within the chair could be contributing to the development of pressure damage. Generalists did not identify this risk, though they did

report that people using the pressure relief chairs do still develop pressure damage and whilst they were aware that repositioning was still required, they expressed lack of time to do this frequently and frustration that people “slip” in these chairs.

The mobility of the chairs is described as an advantage as it enables the person to be moved from room to room. However, specialists identified that this function can be over used and so the opportunity to transfer to alternative seating is often lost once the pressure relief chair is employed, reducing incidental mobilising and changes of position.

Interviewees report that in general practice the “comfort chair” is often utilised as soon as the resident is non weight-bearing as it is seen as providing a relaxed position, which allows the person to sleep or rest but still be out of bed and not isolated in their room. In general practice such chairs are described as the seating of choice for the immobile person and are seen as reducing the risk of pressure damage. However OT and PT staff in general practice did voice some frustration that the pressure relief chairs are often the only seating option available.

Seating specialists commented that pressure relief chairs have been seen as a panacea and so are overused; certainly many generalists described these chairs as “fantastic” and “really useful”. In current general practice a typical day for a person using a pressure relief chair was summarised as follows: people get up in the morning, are transferred into the comfort chair (via hoist) and may stay in the chair all day; the recline / tilt functions are used to sit the person up as far as possible for eating and drinking; the chair can be wheeled to and from different rooms and reclined for sleeping rather than putting the person back to bed; and, continence pads can be changed by rolling the person within the chair. Putting the person back to bed to rest rather than resting in the chair was sometimes included.

Specialists explained that the typical day described above does not provide sufficient change of position or full extension of the body and limbs as may be achieved in bed. Some interviewees identified that the approach to seating for younger people with disabilities is different, and that a person with reduced mobility needs at least two seating options throughout a normal day - one which enables and facilitates functional capacity and one which supports rest and relaxation or passive functions such as watching television. It was reported that the seating care of younger people recognises the need for 24 hour postural care to protect the body from muscular / skeletal deformities and contractures. Seating specialists caring for younger people with disabilities and people with cerebral palsy described giving the sleeping posture increasing attention and stated that preventative postural care was better than managing established deformity. Specialists also suggested that supported bed positioning could be used with frail older people to prevent and treat contractures. They also described the use of tilt in space mechanisms to “fight the force of gravity” and to “keep people upright” to “be part of the mainstream”.

Individually customised wheelchair

Staff in general practice did not consider an individually customised wheelchair an option for the older person living with advanced dementia and impaired postural control. Some interviewees referred to it as possibly "a phase" of care which gets "missed out" because PT and / or OT staff, if available, do not get the referrals early enough, or that customised wheelchairs were "really for a younger person". These interviewees reported that customised wheelchairs were rarely seen, and if they were, these high backed, tilt and recline wheelchairs tended only to be used if the person was a wheelchair user from a younger age and the wheelchair had been acquired before admission. Professionally qualified staff in general practice identified funding processes for customised wheelchair seating as prohibitive and frustrating.

Specialists were familiar with customised wheelchairs and talked about them as the norm for frail older people living with dementia and impaired postural control residing within the homes they worked in. Customisation creates an individually fitted chair and might include features such as: moulded inserts to support the trunk; pressure relief cushion inserts; padding and shaping to accommodate fixed postures (e.g. kyphosis); recessed head rests; and, footplates adapted for the individual's shape and size. These practitioners also described the value of an aligned and supported upright posture as enabling function, preventing pressure damage and enhancing quality of life. All levels of staff with access to a specialised seating service were able to describe the use of tilt rather than recline to maintain an upright posture and used language such as "lateral supports" and "body alignment" in relation to the use of this type of seating.

Occupational Health and Safety (OH&S)

Interviewees described the pressure relief chairs as "easier on staff backs" and they were generally felt to make care giving easier, particularly as they are used to reduce transfers. Transferring residents via hoists was identified often as a difficult and risky activity for residents and staff. Interviewees identified that the pressure relief chairs and adapted lounge chairs are sometimes too big for smaller stature staff and family members to push comfortably, creating risk of injury. Accessibility of brakes and ease of use and level of maintenance were also mentioned as OH&S issues for staff. The customised wheelchair is described as generally more manoeuvrable than other wheeled chairs.

Maintenance and replacement

Interviewees usually expressed satisfaction with the chairs available and their condition. They felt that it was important that chairs were in good condition as they reflected the quality of care given. Selection of chairs for procurement is usually made by management, but sometimes OT and PT staff are asked to provide their opinion. Some residential aged care homes reported that chairs were only used by one person for hygiene, infection control and ownership reasons. Interviewees reported that most therapists working in residential aged care do not have access to a workshop with resources such as cutting equipment, foam and glue to create customised supports. They described frustration at limitations in the availability of resources, for which there may be long waiting lists, meanwhile postural deterioration occurs. They reported that sometimes families are willing and able to fund specialised seating resources, but in residential care homes which did not have access to a specialised seating service they were directed toward reclining pressure relief chairs

rather than customised wheelchair seating. OTs reported that applications for funding for customised wheelchairs through EnableNSW take too long and so are not practicable in the seating of residents with advanced dementia.

Impact of postures and seating

Postures in dementia and muscular skeletal impacts

Interviewees identified some postural changes they thought may be related to the early stages of dementia. These included: leaning back when walking; inability to sit on a stool; misjudging the seat position; difficulty co-ordinating sit-to-stand; or lack of recognition of walking aids. Interviewees suggested that co-morbid conditions might contribute factors that are more significant to posture than dementia for many people. They listed falls, hospital stays or any period of bed rest as having significant negative effects on the resident's mobility and posture. Interviewees demonstrated general awareness that immobility quickly creates postural problems such as reduced range of movement, loss of muscle strength and contracture but expressed frustration that the "use it or lose it" philosophy has to compete with the reality of staff time constraints. Use of antipsychotic medication was mentioned as causing over sedation and therefore reduced mobility.

Interviewees expressed mixed views about postural changes that are attributable to dementia as it progresses. The "foetal" position is frequently seen. Interviewees described people "curling up into a ball", "hunched", "flexed", "stooped", with "limb rigidity", "neck extension" perhaps followed by "neck dropped forward", "some hyperextension ....perhaps depends on type of dementia". Specialists described high tone and flexion in all joints including the hands but with the index finger often left out. Some interviewees identify the reappearance of primitive reflexes such as tongue thrust as evidence that the "foetal" position is a natural consequence of brain tissue damage due to dementia.

Interviewees in general practice mostly regarded the development of the "foetal" posture as a direct consequence of advanced dementia. It is associated with "withdrawing" and "comfort" and "security" and sometimes "resistiveness" or "defensiveness" or "protectiveness" which is interpreted as "don't touch me"; "I don't want to be moved". There is a sense in general practice that this is acceptable, expected and associated with an advanced stage of dementia and can potentially last for years. Conversely seating specialists identified this postural development as related to postural care and seating and therefore with good care generally only appears in the terminal or end stage of dementia and lasting only months or weeks.

Specialists described a supported, "neutral" and "aligned" (joints maintained in the middle of their ROM) body position as achievable and described as follows the key elements to this seated position: A stable neutral seated posture is dependent on the pelvis being positioned well back in the chair and stable with the hips aligned, foot plates which support the feet add stability to the pelvis; this relies on the seat depth being appropriate to the thigh length and foot plates being at the right height for the foot to rest at a neutral angle. Stability at the pelvis with lateral support for the trunk (if required) creates stability at the shoulders and allows the person to relax back onto the chair. Stability at the shoulder allows greater control of the arms. Lack of stability at the shoulder or appropriate support for the arms means the weight of the arms can pull

the person's trunk sideways. Stability at the shoulders enables use of the arms and so is important to functional capacity and activities of daily living such as eating and drinking. Seating specialists described knowledge and understanding of a neutral body position and how to use gravity, foam or cushion supports and tilt mechanisms to maintain it in a chair and in bed. Conversely, generalists described repositioning residents to prevent pressure damage and deliver continence care rather than postural care; "Postural care? What do you mean?"

Specialists noted that "habitual posture becomes obligatory posture" and in current general practice a person's position tends not to be corrected but "allowed". They reported that distortions in posture created by a person's habitual posture can become pronounced and reach a destructive, painful and very disabling phase. Typically this is side lying with knees and arms flexed. Specialists identified that the relatively recent knowledge gains in the postural care of people with physical disability suggest that with 24 hour postural care, these destructive postures are preventable and that this can have an important impact on the person's physical comfort, pain, skin integrity, functional ability and quality of life. Specialists also suggested that this area of knowledge and skills could be transferrable and applicable to older people living with dementia.

Seating specialists reported that immobility and the forces of gravity often means the person takes on the "shape of the chair"; they explained that a large soft chair allows gravitational forces to pull the person with limited muscular strength into the curled up posture. This reduces body contact with the chair and increases pressure at points of contact. They claimed that a well supported neutral posture is comfortable for longer, enables more function and reduces the risk of pressure damage as it maintains greater body contact with the chair. They also described night time positioning as important in maintaining joint extension and function as in lying gravity can be used to support extension, correcting flexion and posture created by sitting. A balance of sitting and lying in extension may be more effective than passive range of movement exercises and take less staff time once staff have developed knowledge and skills in postural care.

Specialists went on to explain that the "foetal" position is to some degree preventable or it's development can be delayed; that quality or active postural care prolongs functional and cognitive abilities and adds quality to life whilst lack of active postural care contributes to decline in physical and cognitive abilities perhaps precipitating and prolonging the severe and end stage of dementia and reducing quality of life.

Generalists described aiming to maintain posture and joint mobility through passive range of movement exercises and stretches though admitted this is limited by staffing resources. Cushions and pillows and foam wedges and rolls are used to varying degrees to support an aligned posture. Botox therapy for the treatment of contracture was mentioned. Interviewees report that Speech and Language Therapists are sometimes involved in head and neck positioning to support swallowing "concerned with here up (indicating neck)".

Specialists claimed that well supported and maintained posture reduces contracture development and therefore the resident is easier to assist with activities of daily living such as showering, dressing and taking medications.

Specialists described a lack of appreciation of the level and frequency of repositioning required in maintaining comfort and preventing pressure damage. They highlighted that seated healthy adults make constant, small adjustments to their seated position which maintain joint mobility and prevent pressure damage.

Social interaction, engagement and behaviour

Interviewees agreed that people are normally upright to communicate. The person who is seated is disadvantaged in relation to the person who is higher or standing and that a reclined position makes this worse as it directs the person's gaze to the ceiling; "it's really hard to make your needs known when you're lying on your back looking at the ceiling". For the person with dementia it was acknowledged that this position could cause disorientation and boredom which may be expressed as agitation or other behaviour which staff find challenging. Seating specialists emphasised the value of keeping the person with advanced dementia upright and able to make the most of coincidental interaction with passersby, particularly as they may be unable to initiate communication with others.

Conversely generalists expressed greater acceptance that with advanced dementia there is a stage where the person is "past it"; "not participating anyway". Interviewees expressed some awareness of the disadvantages of being reclined but described using it to keep a person "safe" as it is difficult to get out of. When asked about levels of social interaction, generalists described getting people to a group activity but this might only be for 30 mins of the day. For the remainder of the day the person may be reclined "to rest". It was reported that space available in lounge rooms sometimes limits positioning of chairs and bulkiness of chairs can limit attendees participating in group activities. This is managed by "turn taking". Seating specialists identified that one-to-one interaction is more useful for the person with dementia but that staff time probably limits this to meal times.

Specialists suggested that the reclined position "feels like bed" so decreases the person's level of "motivation" and perhaps induces more sleep than is actually needed. They explained that this in turn reduces the person's functional capacity. They felt that chairs are not as upright as they could be and that people are not repositioned as often as is really needed to maintain body alignment. They felt that recline is used incorrectly and overused in an attempt to prevent slipping in the chair, but that recline has a negative effect on posture, cognition and ability to interact.

All interviewees described "wheels enabling access to the environment", but at two different levels. Generalists described the environment as room-to-room within the home and outside into the garden whereas specialists talk about accessing the environment as having a wheelchair which is transport approved and enabling the person to access the community beyond the residential care home.

Generalists stated that the comfort chair enables the resident to be present, perhaps listening even if not actively participating in an activity because otherwise they would be in bed and unable to attend. However specialists argued that seating a person in a structured, supportive wheelchair prolongs their function and

opportunity for participation. They stated that customised wheel chair seating prevents a protracted "bedridden" stage whilst over use of the comfort chair is destructive to the posture and disabling, therefore precipitating a stage of reduced ability.

Nutrition

Interviewees reported sitting residents as upright as possible for eating and drinking, although speech and language staff commented that residents are not always in a good position for swallowing. ... "just this morning I've altered the texture of someone's food simply because of their inability to be upright to swallow". Seating specialists described the customised wheelchair with a tilt mechanism as providing better support for an upright position and that pressure relief chairs often do not provide enough lateral support to keep a person upright to swallow effectively.

Respiratory and cardiovascular

All interviewees generally expressed awareness that posture is important to the ability to breathe. When the only identified alternative is bed, pressure relief chairs are seen as enhancing breathing because the person is "up" and out of bed. Nursing and allied health interviewees identified that a supine position reduces ventilation and the ability to produce an effective cough. However seating specialists pointed out that the person's posture in the pressure relief chair may still not be conducive to respiration because the chair may create a slumped, curled or "foetal" position. They went on to suggest that a customised wheelchair could maintain posture and thereby improve respiratory and cardiovascular outcomes.

Skin integrity

Generalists nominated the relief of pressure and the protection of skin integrity through the use of pressure relief chairs and mattresses as priorities. Seating specialists expressed a slightly different focus and prioritised chair fit and posture to prevent and reduce pressure damage. Specialists also described seating as an intervention which aims to maintain a supported upright and aligned position and so prevent pressure damage, support continued physical and cognitive function.

Assessment of seating and postural care needs

Generalists described individual assessment of seating needs by the multidisciplinary team. They reported that typically a care worker will identify a seating need and refer to the registered nurse, occupational therapist and/or physiotherapist. No formally set criteria for referral were reported but might include "looking uncomfortable", "pressure damage", "reduced mobility", "falls" and "safety". Interviewees reported that care workers often refer to professionally qualified staff, suggesting the resident "needs a comfort chair" and indicated a preference for this type of seating because it is perceived as being comfortable and as making it easier to care for the resident. Occupational therapists described assessing sitting tolerance, balance, need for leg elevation, behaviour, skin integrity, level of alertness, fit, functional needs, family perspective, and then trialling different available chairs. Interviewees reported that families sometimes have funds to purchase a new chair; otherwise the prescription is limited to what is already owned by the residential aged care home.

Nursing and allied health interviewees described the process of preparing a business case for a new purchase as a hurdle and report that the time involved can mean the need has changed by the time it is acquired. Staff and families prioritised comfort and safety, though in generalist practice providing comfort and maintaining function were sometimes described as competing goals. Whilst there was some awareness that the comfort style chair inhibits function and is for a “final stage” and is the “last resort”, the possibility to maintain function and comfort through the use of customised wheelchair seating was not considered. Occupational and physio therapists in generalist practice explained that they might prescribe a particular chair and might “set it up”, “locking” the tilt or recline mechanisms because they are not understood by the majority of staff and can be misused. Lying position in bed is not usually included in the assessment or care plan in either specialised or generalist practice.
Interviewees reported attempting to conduct a person-centred assessment and seating prescription but being limited by available chairs, staff knowledge and skills in postural care and use of complex seating and staff time to transfer residents between chairs and bed.

Seating specialists interviewed described an assessment process which is more person-centred and which focuses on maintaining physical, cognitive and social function. This is facilitated by leadership from a seating service. OT and therapy assistant interviewees described their role as to “eyeball” residents, constantly monitoring body posture and assisting care staff to reposition as required to maintain an aligned posture, comfort and safety.

In specialised seating practice care workers described postural care education programmes which have developed their knowledge and skills in seating and posture; they value their role in maintaining a person’s seated posture and recognise that it contributes to maintaining a person’s function. Staff interviewees working in residential aged care with access to a seating clinic described a practice culture which includes frequent repositioning to maintain postural alignment which ensures physical comfort and enables the person to maintain function as long as possible.

Interviewees did not identify any assessment tools specific to seating or posture though pressure risk tools were mentioned as contributing to seating assessment. The specialised seating clinic has developed assessment forms. Whilst a plinth was available in the seating clinic for supine assessment staff felt this is generally inappropriate for the person living with dementia. They described the use of use clinical skills to complete a comprehensive seated assessment which includes observation, range of movement, tone, resting position and pressure risk/damage assessment tools such as Braden and Waterlow.

Specialists reported minimal use of pressure relief chairs, preferring to maintain posture through individually fitted, customised high back wheelchairs with tilt in space and recline functions, lateral supports (where required), correctly fitted foot support, head and neck supports and individually tailored padding and upholstery. Seating is described as “growing with” the person living with dementia and responds to different behaviours as well as physical ability to maintain a seated posture.

Seating specialists described that a seating assessment cannot be done in isolation but needs to be “holistic” and “person-centred” and focus on functional outcomes for the person. Functional outcomes included for example breathing, swallowing, sleeping, maintaining a comfortable body temperature, resting, interacting and for the person living with advanced dementia taking into consideration factors such as need for sensory stimulation to alleviate boredom or behaviours such as foot tapping or picking at fabrics which may indicate a need for sensory feedback. They went on to explain that these behaviours might mean the chair has to have padding in a specific area to prevent friction/pressure damage from a repetitive behaviour or minimised seams. Alongside customising the chair specialists described the multidisciplinary team and family, when available, planning and working to alleviate boredom or provide need for stimulation through activity mats. They acknowledged that these mats cannot be used as a “babysitting exercise” and that there is a general lack of staff time to offer 1-2-1 engagement or stimulation for residents and that group activity, whilst more sustainable, are not always appropriate for the person living with dementia. Seating specialists described using seating assessment as an opportunity to increase the knowledge and skills of care workers and professionally qualified staff when possible. Specialists expressed appreciation of the need for a seating prescription to be manageable and practical for the care workers so might include management of transfers and suggestions about sitting tolerance, position changes in the chair and time out of the chair resting in bed. Resting in bed rather than the chair was described as important for the maintenance of body alignment and there was an expectation that a person would not spend all day in any one chair because the opportunity to “stretch out” is as important as an “upright posture”. In specialised practice photographs of the person seated correctly or positioned in bed are included in a care plan.

Staff knowledge and skills and the culture of care

About dementia

Generalist staff described a series of timed tasks which they need to complete in order to move onto the next task. For example “getting them up in the chair”, “wheeled to the activity”, “upright to eat lunch”; the pressure relief chair was seen as useful as it enabled the resident to be “present” even when they were unable to “participate” and for staff to facilitate the series of care tasks as quickly and easily as possible.

A family member said that the most important aspect of good dementia care is “how much the staff care” - “screaming at her to sit down” because they think “she is being naughty” and not ensuring the resident has their “hearing aid, teeth and drink in reach” were examples given of staff not “caring enough”.

About posture

Interviewees who lead the specialised seating service described an important part of their role as sharing their knowledge and skills, perhaps making suggestions for staff to try out solutions before referral to the service or to redirect referrals to more appropriate services such as behaviour management advisors. They described encouraging staff to “do their homework”, so empowering staff to use knowledge and skills to address postural care issues as far as possible before referring to the seating service. Therapy and care worker interviewees with access to the specialised seating service used language such as “lateral support”, “trunk control”, “centred” in the chair and body “alignment” appropriately and described positioning people to

enable functions such as eating and drinking. Generalists tended not to mention posture or “hadn’t thought about it before”, but discussed positioning in chairs to maintain comfort and safety.

About equipment

Therapy assistant and care workers accessing specialised services level expressed confidence with utilising tilt mechanisms and, with access to a stock of accessories such foam wedges, described interventions to support correct body alignment whilst waiting for a referral to be acted upon or over a weekend. By comparison generalist care workers often did not understand the difference between, or how to use, tilt and recline mechanisms.

Meaning of comfort

Different meanings of comfort emerged from specialist and generalist staff. Most generalists described a comfortable chair as “soft”, easy to “sink into” and able to “curl up” in, which perhaps equates to a healthy adult’s idea of comfort and relaxation. However specialists identified that poor muscular strength may mean that such a chair reduces the ability to adjust the body position. They explained that the person who lacks sitting balance may feel unsupported and even as if they are falling. The effort to maintain a stable position in a soft chair creates increased flexor tone which may contribute to development of contractures. Specialists described the pressure relief chairs as uncomfortable for any prolonged period, but the person with dementia may be unable to clearly articulate this; though they may communicate it through their behaviour. Specialists described a supported neutral posture, as achieved in an appropriately prescribed and customised high backed wheelchair, as likely to be physically comfortable for longer. They also linked physical comfort to psychological comfort, explaining that physical comfort enables function and facilitates continued involvement in activities of daily living and social interaction and so contributes to quality of life and a more holistic sense of comfort.

Restraint and safety

Generalist staff invariably identified safety as a care priority. Some described restraint practices used to maintain resident safety which could be negatively impacting on the personhood of the resident with dementia; e.g. reclining a chair so the person can’t get out. Some staff expressed frustration at family expectations for safety which they felt had the potential to reinforce restraining practices. Specialists identified the potential for postural supports to be mistaken for and misused as restraints if sufficient education and monitoring was not in place to develop staff understanding and to support and challenge care practises.

Philosophical framework

Interviewees identified that the impetus to get the “look” right in residential aged care may have limited the availability of different shapes and sizes of lounge chairs, making seating individuals more difficult; “the aesthetic was more important”. A specialist interviewee described a recent situation where furniture was

moved around to create the “hotel look” for a visiting dignitary at the expense of accessible seating for an ambulant resident.

All participant groups described cleanliness as important to family, as is furniture which is “in good condition”, explaining that these aspects are perceived to reflect care but that aesthetics are generally not as important as physical comfort. Interviewees reported that the comfortable look of the pressure relief chair often prompts family members to request this chair for their family member. Most interviewees suggested that families “want the best” and often associate this with the highest technical specification of chair. They also reported that for some the use of a pressure relief chair is a confronting issue; it can be “shocking” as it is seen as “indicating downward spiral”.

Specialists expressed awareness that the chair a person regularly sits in becomes part of their identity and creates expectation in others about that person’s functional capacity. Generalists agreed that this was likely to occur but mostly they had not considered this before. Interviewees identified that the pressure relief chair tends to convey that the person is no longer engaging in life and has become passive. Interviewees identified the importance of staff knowing the resident but admitted the tendency is to make assumptions... “they’re at the end”, “indication of decline”.

Interviewees could see the comparison to wheelchair users in the community who might report similarly negative responses; however, seating specialists reported the advantage of the wheelchair is that it supports an upright posture: “good postural support means you see the person” and interact with the person; “poor postural support means you see the deformity” and assume the person is beyond engagement. Specialists were able to recount situations where they have demonstrated to families the advantages of a good seated posture in a well fitting wheelchair and how this has influenced the decision about the choice of seating.

All interviewees reported gaining their knowledge and skills through ‘on-the–job’ experience and some training. Specialists reported having conducted postural care and seating education programmes ‘in-house’.

Discussion and synthesis

The discussion and synthesis of the literature and interview data was generated by the Expert Reference Group, who had input throughout the study and met for a workshop, as described in the methodology.

Stage and type of dementia

The literature provides definitions of stages of dementia (for example, advanced or end stage dementia) but in practice there is inconsistency in the knowledge of these stages. Yet, stage of dementia is referred to frequently and is used in practice to categorise people. Also, practice currently relies on the medical model, by categorising people into stages of dementia and by focusing on the disease rather than the level of disability. This may be of limited value in the residential aged care setting. The International Classification of Function (WHO 2002) might be more usefully applied to describing how dementia impacts on the individual.

In practice, stage of dementia is largely defined by physical functioning (e.g. immobility) and is used by staff to guide seating selection. There is a risk that diagnosis and stage of dementia drive seating selection rather than the overall functioning and capacity of the individual, and focuses on physical capacity rather than a more holistic approach which includes cognitive capacity and psychosocial needs. This inappropriate use of staging to prescribe or direct seating selection for the person living with dementia does not take into consideration the many and complex variables which impact on the person's seating needs and may have serious consequences for the person.

Supporting the maintenance of cognitive function can become a lost care priority when the need for pressure relief increases due to immobility. Physical, cognitive, emotional and social needs are not differentiated sufficiently. In residential aged care advanced dementia is largely defined by physical disability, meaning that assumptions are often made about the person's level of cognition based on their physical ability. The consequence of this is possibly a loss of the priority of seating to maintain function, precipitating the person's functional decline.

There is significant evidence from the literature, supported by the interview data, that people ageing in residential aged care homes are likely to have multiple and serious co-morbidities which, combined with ageing and frailty, restrict functional capacity and require comprehensive assessment of the need for interventions and supportive equipment such as seating. In practice, co-morbidity, ageing and frailty tend to create acceptance of functional and cognitive impairment. Holistic assessment of the interaction of ageing, frailty and dementia, and the impact on functional and cognitive capacity of the individual, is required to ensure care interventions maintain capacity in all areas rather than accepting decline in all areas due to decline in one area. Differentiating physical and cognitive decline may be helpful in planning interventions aimed at supporting the maintenance of functional capacity. Prescription of seating tends to be dictated by co-morbidity and stage of dementia instead of functional capacity and context, probably disabling further the older person with dementia. It would be interesting to compare the extent to which co-morbidity occurs in people with younger onset dementia and how this impacts on physical abilities.

It is acknowledged that dementia is a terminal illness requiring palliative care in the later stages. However the different perspectives on the expectation of quality of life with advancing dementia need to be further debated and could contribute to the understanding of palliative care in the context of dementia; for example the prevention of contracture and the management of pain and comfort. It is suggested that the progression of dementia to an advanced and disabling stage can be reduced by timely and skilled postural care and seating.

Specialists identified that there are increasing numbers of people with pre-existing and complex seating needs who are developing dementia; for example, people with physical disabilities, wheelchair users and people with cerebral palsy. As a higher proportion of residents have these needs there may be transference of knowledge and skills derived from the seating needs of these people to the general dementia population.

Equipment in current use

Specialised seating and postural care practitioners are quite specific in their observations of what seating should do. In contrast, generalist staff expectations of seating and postural equipment are much lower and there is often a poor understanding of how specific equipment items can facilitate people living with dementia to function better. This fits with the nihilistic attitude often expressed about dementia; ie, that there is little that can be done to help the person to continue to "live" with dementia. In seating selection, specialists usually prioritise "fit for purpose", with the chair being a part of the intervention to allow a resident to achieve certain functional goals, while generalists often focus on perceived staff prioritises, for example pressure relief, providing "comfort" and protecting from injury ("safety").

Economy dictates purchase of seating that can be used by a series of people, or is shared. This may reinforce the manufacturers' position of offering "one size fits all" options which focus on the perceived priority of pressure relief. Cost is a major concern, recognised by all staff and for generalist staff drives the multi-user, one size fits all procurement of seating which is practicable for institutional living. While current practice needs to consider staff workload, ease of use issues and availability of particular chairs, aged care homes need to be mindful that these do not become prioritised above individual resident need. Cost/benefit analysis of seating interventions need to consider the full range of short and long term outcomes for residents and staff. In particular, if seating and postural care improve residents' functional capacity there may be 'knock-on' benefits, for example on staff workload.

A service which is able to pool, adjust, rebuild and reallocate seating resources according to individual resident need, has greater opportunity to provide the right seating solution to an assessed need than a therapist working in isolation with no access to specialised equipment and accessories. A management system to regularly check the quality of available chairs, maintain and replace seating resources is also required.

Mobility of chairs is important to staff and facilitates movement of residents from room to room or indoor/outdoor spaces. Occupational health and safety issues for staff and family carers are a key consideration in furniture selection.

Practicality of the upholstery, style, suitability for institutional living and multiple users are other important issues for residential aged care homes. Fabrics need to be easily cleaned, not have too many folds, buttons, ledges or seams which can trap small pieces of food and be awkward to clean. Immobile chairs will still be pushed and pulled by staff into position whilst residents are seated, so sturdy construction is essential.

Effectiveness of an intervention in solving a particular issue such as pressure damage as well as the social significance of the intervention are also important outcomes. For example, does use of a pressure relief chair change staff approach to the resident because it indicates a palliative rather than an enablement care approach? Similarly, what is the impact on subjective wellbeing of different types of seats used for the same individual? For example, does the use of a tilted seat position create a feeling of relaxation or frustration for the individual?

The culture of care in any particular residential aged care home may have an impact on the seating selected for individual residents. A rehabilitative and enabling approach to dementia care is likely to mean that staff are more focused on actively maintaining cognitive function, social engagement and functional capacity and thus would select seating which facilitates achievement of related resident goals.

The overall philosophy of care may have a significant role in seating selection. For example a “nursing home” may reflect a medical/hospital culture and therefore select chairs that have a clinical purpose and appearance. Residential aged care homes that aim for the “resort” look might select seating which matches and creates the “hotel” look but does not offer enough variation in size and shape or individuality. Limited resources might mean staff don’t discard chairs which are worn or old or that families have donated, creating overcrowding of inappropriate chairs.

Typology of seating

Currently four main categories of seating are commonly available in residential aged care homes and the key features, uses and history of each are discussed below. Customised wheel chairs are included as a fifth category. Discussion of how the chairs are used and the implications for a person with dementia are included.

Standard lounge chairs

The standard lounge chair has been developed by aged care furniture manufacturers to provide a comfortable upright posture, taking into consideration some of the needs created by ageing and to suit institutional use. Within residential aged care, this seating might be available in a variety of sizes, heights and styles, to suit a range of residents. Features might include: legs which allow feet to be placed under the seat for improved readiness for moving from sit-to-stand; armrests, headrests or wings; and concave seat

backs which provide some support or accomodate kyphosis (Burke and Gresham 2009). This type of seating cannot be mobilised by a carer and residents are usually expected to be able to weight bear in order to transfer in and out of the chair. Typically, residents using this seating might be independently mobile or are perhaps transported to this chair by a wheelchair. Aesthics of chairs are important to the 'homeliness' of residential aged care, as are practicalities such as cleaning and hardiness for shared use in an institution. Manufacturers have responded to these needs and are able to produce chairs in an enormous range of water resistant, easy to clean fabrics and styles which suit the modern, homely look of aged care facilities.

The standard high backed upright lounge chair is not meant to provide therapeutic intervention, but it should contribute to the resident's function and socialisation. The seating needs of a person who is mobile are often not considered until their function, and particularly their mobility, has declined. Broad principles and existing guidelines might be applied but there are none specific to dementia. Best practice includes holistic assessment of individual needs and the availability of seating choices which maximise and prolong function. Lack of assessment and care planning and limited variety of seating options can mean residents are unintentionally restrained as they are unable to mobilise out of the chair independently and that falls risk and incontinence is increased.

Ill fitting chairs can be uncomfortable or cause postural deformities (Holden, Fernie et al. 1988; DLF 2005). Nitz (2000) argued that the principles of fitting wheelchairs to individual users are transferable and should be applied to other types of seating for the residential aged care population (Nitz 2000). A chair manufactured for a domestic market may or may not include all the features suitable for institutional living and needs to be assessed against suitable criteria (DLF 2005). Detailed advice on the fitting of this type of chair to individual needs is available (DLF 2005). The extent to which this information is currently utilised by residential aged care homes is unknown but is likely to be dependent on the knowledge level of staff about seating.

Clinical/adjustable lounge chair

Clinical/adjustable lounge chairs exist in a variety of styles. Colloquially referred to as "geri-chairs" or by their product names, this type of upright seating is used in a similar way to standard lounge chairs but has a variety of additional functions such as wheels which enable mobility by carers, two or three reclining backrest positions and/or adjustable footrests. Lap trays/tables for meals or activities are also options. Typically this seating is used as people become more immobile or unable to maintain an upright seated position. The seat height generally still enables most users to stand to transfer in and out of this type of chair and it may not have a specialised pressure relief system. This type of chair tends to be upholstered in more resilient fabric such as vinyl and have a more clinical appearance. Historically, lap trays have been used to restrain people but modern designs allow the occupant to push the lap tray/table away. Manufacturers tend to produce these chairs in a standard "fits most" size and perhaps a bariatric version. This means that finding a chair that promotes good posture becomes more difficult as people become more physically compromised.

This type of seating has been developed by manufacturers in response to care demand but there is doubt about the extent to which it meets individual resident goals, particularly for people living with dementia. Many residents "progress" to this type of seating to reduce staff assisted transfers and thus reduce injury to staff,

however they still pose a risk to staff who then have to manoeuvre the chair which is often large and bulky and has “wheels like a shopping trolley”. The resident may be at risk of less frequent change of position and therefore pressure damage and less staff interaction once this type of seating is utilised. The tray or lap table addition may be a drawcard for buyers but as well as being used as a restraint they could even pose a strangulation risk if the person slides down the chair. Also, the slide-out foot plates can be a trip hazard. Some chairs have been developed which meet some residents’ need for movement (e.g. rock or glide or can be “peddled”). This type of seating should only be used after thorough therapist assessment and identification of resident goals and its use should be detailed in a care plan which care workers are supported to deliver.

Pressure relief (or “comfort”) chair

Pressure relief chairs have a specialised pressure relief system, recline into multiple positions including flat, may tilt-in-space, are mobile by carers, and have fold-down sides and head support wings to enable residents to access the chair by hoist. They are upholstered in fabrics suitable for multiple resident use. These chairs are also known as “water” or “flotation” chairs because the earlier pressure relief systems used water. Specialised foams and air bladders are now more commonly used and the term “comfort chair” has become common. The recline and tilt-in-space mechanisms are used to try to prevent sliding out, to allow rest and to support those who have compromised postural sitting balance, however there are no evidence-based guidelines for use of these systems and practice varies widely. Furthermore, rigorous research is needed to identify and measure the physiological and functional outcomes of tilt-in-space seating mechanisms, particularly on people with progressive conditions affecting neuromuscular function (Michael, Porter et al. 2007).

The prevention of pressure damage is a strong nursing priority and has been a focus for research (Goossens 2007) and this type of seating appears to have been developed in response. Its key aim is to protect skin integrity and reduce the incidence of pressure damage due to prolonged sitting, although published research which assesses the effectiveness of these types of chairs was not identified in the literature search for this project. The pressure relief priority may have led to the development of seating for immobile aged care residents, perhaps to the exclusion of other considerations such as enabling function. Pressure relief chairs are often marketed based on their pressure relief qualities, however residential aged care homes need to consider their performance over time and be mindful that most pressure relief systems will need maintenance.

These chairs are produced in a “standard” size with some “slim” and “bariatric” versions. The “one size fits all” approach may be limiting the ability of practitioners to consider the important seating priorities of fit of chair and enabling individual function and may be creating postural problems. The pressure relief reclining chairs currently available are used to seat immobile people out of bed during the daytime. Previous practice would have been to care for these people in bed so this is viewed as their major advantage, but the outcomes of this type of seating are unknown, particularly in relation to the effect on function of the occupant living with advanced dementia. The extent to which these chairs are used when another type of chair might still be possible is unknown. These chairs may be perceived as reducing nursing workload as their pressure

relief properties allow people to “sit” for longer and require fewer transfers, so minimising moving and handling risks for residents and staff. These are not person focussed goals; unless these chairs are used within a resident, goal orientated, care plan, they could easily be overused to benefit staff more than residents, though a long term impact of disabling residents might equally be increasing staff workload.

Several discrepancies and concerns are noted in the use of this type of seating:

- “they’re just for non weight-bearing residents” but are used as a restraint for mobile residents;
- the use of cotton sheets to cover the chair can negate the pressure relief effects;
- the addition of cushions, pillows, towels etc in an attempt to improve the fit and comfort;
- ‘rostering’ residents into these chairs could be an infection risk;
- there is a lack of available information about the life of the compression foam;
- chairs are used constantly for long periods for a number of years without the foam being checked or replaced, with worn foam perhaps even contributing to pressure damage;
- staff report that residents are “fidgety” but are not responding to this behaviour appropriately - that is, they are assuming the chair is comfortable and not potentially uncomfortable perhaps because it is colloquially known as a “comfort chair”;
- the lack of a clear differentiation between the seat and the back in some of these chairs makes correctly positioning a person very difficult;
- the chairs are too deep for the average older person;
- reclining increases the potential for shear forces and pressure damage, although it may slightly negate the gravitational pull.

Tilt-in-space is better at reducing gravitational pull and preventing shear but the use of these mechanisms is complex and needs thorough individual assessment to be optimised. All too frequently these mechanisms are being used by staff who lack the knowledge and skills to use them appropriately and without assessment and prescription by a seating or postural care professional. Incorrect positioning, slipping, flexion to maintain stability and the consequential “foetal” position can mean a resident is actually compressing the foam/gel/air at some pressure points negating any pressure relief properties because they are effectively sitting on the chair frame. Over time, flexed posture becomes obligatory and increases the risk of the development of fixed contractures.

The slipped position and the reclined position also change the person’s visual field and functional ability in the upper limbs as the person then has to effectively hold their arms up in the air in order to use them. This is exhausting and disorientating and could be contributing to the person’s physical and cognitive decline.

As with wheelchair users, the chair a resident uses becomes part of their identity and affects the way they are perceived by others (Gavin-Dreschnack 2004). In the residential aged care environment the reclined pressure relief chair may indicate to staff and visiting family members, a lower level of physical and cognitive function than the resident is actually capable of. This misperception and the resulting lack of interaction may create further dependence and isolation (Rader, Jones et al. 2000; Gavin-Dreschnack 2004).

Residential aged care facilities need to be careful not to confuse “comfortable lounge chair” as described in the Residential Care Manual (DOHA 2009) with the pressure relief “comfort” chairs. Moving a person prematurely to a pressure relief recliner may have worse outcomes for the resident with dementia, particularly as no guidance on the use of such seating exists. This type of seating is being used to sit people out of bed who staff report would otherwise not be able to get out of bed. However person-centred proactive postural care and individually assessed and prescribed therapeutic seating interventions may have more to contribute to maintaining sitting balance, posture and therefore function, including the ability to be up in a chair for some part of a day. In reality, due to lack of knowledge, skills and resources, currently some staff have no alternative to this type of seating.

However, these chairs can be used to allow a person to remain with staff rather than be isolated in their bedroom at night, or to sleep better if they are not comfortable in bed. They may be particularly useful as an alternative seat for the person who is requiring terminal care. But their use should be assessed, planned and evaluated. They may provide a useful alternative resting position to bed for many different reasons but their role as a chair for resting rather than functioning should be emphasised and a chair which supports functioning should also be provided. This may involve challenging the culture of care which expects minimal function from the person living with advanced dementia.

Standard wheel chairs

Standard wheel chairs are used in residential aged care as seating, a mobility device and as a mode of transport, though most are inadequately fitted to the individual user (Fuchs and Gromak 2003). There appears to be international variation in their use in residential aged care; up to 80% of USA nursing home residents spend their day sitting in a wheelchair even if unable to use it as a mobility aid (Gavin-Dreschnack, Volicer et al. 2010). Lounge style chairs appear to be used more in Australia with wheelchairs being used simply as a mode of transport to a lounge chair except where a resdient has a specifically fitted wheelchair which they are able to self propel either manually or electrically. Research attention has been given to designing seating components for wheelchairs, but little has focused on the specific requirements of the aged popualtion, particularly residents in long term care (Gavin-Dreschnack 2004). Studies evaluating the outcomes of specific wheelchair interventions with older people are limited but have demonstrated some benefit to posture. Actual gains are difficult to determine for older people with neurological impairments (Hsieh, Hu et al. 2011). Wheelchair seating in younger populations has possibly received more attention due to greater funding for these groups (Gavin-Dreschnack 2004) and the greater emphasis on enabling maximum functional capacity.

Individually customised wheel chairs

Customisation is a complex process. It is a broad term and there are several different ways a chair can be prescribed, customised or tailored to fit the individual. A chair can be fully custom-built, perhaps including foam support cushions specifically cut and upholstered for the individual, or a standard chair can be customised by adding off-the-shelf “seating systems”, components and accessories. However, neither is

considered viable within the current aged care funding system and service models within residential aged care are lacking. Reconfiguring and rebuilding wheelchair components as carried out by a seating service may be considered “manufacturing” and may therefore be subject to the Therapeutic Goods Act (1989).

Expertise is required to utilise and apply this type of specialised equipment to an individual and to monitor its use. Seating cannot be considered a “one-off” event; the person’s requirements will change and the seating will need to be dynamic if it is to continue to be a therapeutic intervention. Care workers can be instructed in the management of customised seating but will need access to therapy staff with specialised postural knowledge for advice, education and input.

Families’ and the lay persons’ perception of what is comfortable can have an impact on seating selection. A customised wheelchair may look too structured and so conflict with the lay sense of a ‘comfortable’ chair which is probably something you sink into and curl up in. A customised wheelchair can reinforce feelings of loss for some and there may be a sense that wheelchairs “belong in disability” rather than “ageing” because the dominant culture in ageing accepts loss of function rather than trying to maintain function.

Current funding arrangements for residential aged care mean that for many residential care homes, customised wheelchairs are too costly. Outcome measures such as quality of life and functional level, medication use, constipation, weight maintenance, food wastage, decreaseD frailty, continence management, decreased assistance with ADLs, workforce management and pressure prevalence survey might be used in cost/benefit analysis; but these would need to be long term studies.

Impact of posture and seating

The fundamental nature of postural care and seating and its wide ranging impact on the neurological and other physiological systems, functional capacity and capacity to interact and engage is only beginning to be realised. In measuring outcomes, what is most meaningful to the resident in both the long and short term should be considered although in the cognitively impaired older adult this may be difficult to know.

Postures in dementia and muscular skeletal impacts

Musculoskeletal outcomes to be considered include immediate effects and longer term outcomes resulting from continued use of a particular seat or postural intervention, or lack thereof. Advanced dementia affects many of the systems of the body involved in maintaining posture, the result being that the chair in which the person with advanced dementia is immobile for long periods, creates a particular posture.

The literature is sparse but suggests that the flexed “foetal” position is not an inevitable consequence of dementia. This view is upheld by practitioners with specialised knowledge and skills in postural care for people living with dementia, who describe this posture in the terminal phase of dementia, perhaps lasting weeks or months. The more general view in residential aged care is that the flexed “foetal” position is to be expected, accommodated and may last several years. These different perspectives on the expectation of

quality of life with advancing dementia need to be further debated and could contribute to the understanding of palliative care in the context of dementia.

Specialised levels of practice aim to prevent and to correct postural misalignments on a continual basis, their rationale being that posture impacts most physiological systems. Better nutritional, respiratory, circulatory and musculoskeletal function all contribute to better overall health and cognitive function. Seating specialists are concerned that ill-fitting pressure relief chairs are creating a flexed position in frail older people with impaired sitting balance. Current practice in aged care focuses on skin integrity as the key outcome of seating, whereas specialists think in terms of holistic assessment to identify interventions which can be used to maintain an aligned body posture to prevent pressure damage and to maintain function. The specialist sees the chair as a “designed and selected intervention”.

Specialists understand and utilise the effect of gravity on posture. Seating can contribute to maintaining an upright posture but from the seated position gravity can pull the person into flexion. In a supine bed position gravity can be used to support extension and correct the “flexion” effects of seating. The use of gravity in bed positioning at night and for periods during the day may be the most important postural care strategy in maintaining joint extension. Specialists understand and talk about “a 24 hour postural care plan” and appreciate the long term effects of positioning across the 24 hour period. Aged care staff without this level of knowledge and skill tend to focus on the immediate effects of position on pressure damage risk. Specialists suggests that maintaining extension through good postural care contributes significantly to preventing pressure damage as it enables greater body contact with bed and chair surfaces and so reduces pressure points.

The focus of enabling functional capacity, preventing the development of further musculoskeletal deformity or injury through postural assessment and care has a longer history in fields such as cerebral palsy, muscular dystrophies, spinal cord injury and motor neurone disease. Whilst these populations will differ there may be useful transferable knowledge which can be applied to postural care and seating for people living with advanced dementia. Encouragingly, the possibility of rehabilitation or restorative care is gaining more attention in aged care (Weening-Dijksterhuis, de Greef et al. 2011).

There is debate about the value of stretching therapy in people with cognitive impairment and this requires further investigation. The relationship between dementias and neurological disorders which cause increased muscle tone might increase the understanding of the development of contractures in some dementias; i.e. there could be different causes of contracture depending on the cause of the dementia. Current aged care practice focuses on preventing contractures through passive range of movement (ROM) exercises which, for many residents, are probably not performed frequently enough to have a positive impact. Specialists suggest the use of a 24 hour positioning care plan may be more useful in contracture prevention.

Families need information about seating and postural care and assistance to understand the impact and outcomes of the choices they make for the person living with dementia. It is quite understandable that a

family member's priority is comfort and that a customised wheel chair may not look as comfortable as a large, soft, curved chair.

Social interaction, engagement and behaviours

The association of personal identity with the chair in use means people can be negatively categorised or stereotyped by others. The reclined position also disadvantages the person in social interaction. A chair which supports and maintains an upright posture is therefore preferable. The range of practice described by participants suggests that whilst the seated position clearly impacts on a person's ability to interact with others and the environment, knowledge and skills in relation to dementia care are probably the more significant factor. How seating is used is actually a reflection of the underpinning philosophy and existing culture of dementia care.

The person living with advanced dementia may have a level of alertness that varies from day to day, and this may impact on their ability to maintain their posture and interact with others. They may need frequent assessment of their level of alertness and require different levels of intervention to stimulate and engage them. This is a complex task and requires that care workers have a high level of skill and are familiar with the individual.

Staff may lack awareness of their level of responsibility regarding engaging the person who has lost ability to initiate interaction and social engagement. A limited response from a person may too frequently be interpreted as meaning the person does not need or will not benefit from interaction. The person who has very limited ability to respond is often regarded as beyond engagement or "past it". There appears to be a lack of appreciation of the extent to which staff and family carers can influence the person's ability to interact. Maintenance of an upright posture extends the person's opportunity for social engagement with others.

Nutrition

It is accepted current practice that a person should be as upright as possible to eat and drink and should remain so for at least 30 minutes after ingestion to allow time for the stomach contents to empty into the small intestine and so not put them at risk of aspirating reflux. There is some acknowledgement that practice isn't as good as it should be all the time. The ERG felt that the interview data painted a more positive picture of the general level of knowledge of dysphagia than they had experienced in practice, particularly in relation to using pressure relief chairs, where positioning the head correctly for swallowing is actually more difficult due to the lack of support. Tilt can be useful in enabling a person to maintain an upright posture for swallowing but is not widely understood or used.

Speech and Language Therapists are sometimes involved in head and neck positioning to support swallowing "concerned with here up" (indicating neck) but perhaps have limited awareness that head and neck position is also related to hip and pelvic stability. Thus a knock-on effect of poor posture can be the need to alter food texture to support swallowing, a quality of life issue frequently identified by families of aged care residents. This example also suggests limited understanding of interdisciplinary teamwork to achieve

the best outcomes for a resident and that the multidisciplinary aged care team members still work in isolation rather than focusing on resident identified goals.

The evidence generated demonstrates a focus on managing risk of aspiration through correct posture for swallowing and altering food texture to support swallowing. Silent aspiration is a significant risk for older adults not mentioned by the interviewees so there may be a lack of awareness of the level of risk. The mechanics of swallowing are the focus of care rather than food as a significant quality of life issue. This is a start but only a small part of the nutrition puzzle for the person living with dementia. How much the person eats, how frequently, what it is, it's contribution to their level of energy, the person's enjoyment and recognition of food are important quality of life considerations that could be addressed if dementia and aged care could move beyond the mechanics of swallowing.

Respiratory and cardiovascular function

The seated posture will affect lung expansion, the ability to cough and breath and may increase the risk of pneumonia. Immobility and recumbent positions can cause orthostatic hypotension, poor circulation and deep vein thrombosis. The ERG concluded that knowledge and skill levels of care staff are insufficient in some aspects of positioning for optimal respiratory and cardiovascular function. This impacts on the oxygenation of tissues and is likely to affect the cognitive function of the person with dementia.

Skin integrity

Pressure area care is given a high priority in residential aged care. Pressure damage is resource intensive and can be confronting for staff and families. The prevention of pressure damage has long been inextricably linked to the quality of nursing care; "it's a pride thing" and can be a concrete example to staff and families of 'insufficient' care. However the evidence presented suggests that staff are still not providing pressure area care as well as they could. Two examples of this are the use of cotton sheets over chairs with multi-way stretch fabric and the expectation that once positioned a person won't move. Generalist staff often do not have the opportunity or specialist support to explore why, despite their best efforts, people still develop pressure damage when sitting in a pressure relief chair. There is high awareness of pressure damage risk but more knowledge could be applied to practice; for example postural care knowledge now challenges the traditional side-to-side positioning frequently used in bed; correct positioning in chairs, frequency of repositioning in the seated position and the use of tilt-in-space mechanisms are all areas of knowledge in which the interviewees lacked awareness.

Assessment of posture and seating needs

The ERG identified gaps in assessment processes. In current residential aged care practice seating assessment is predominantly physical and psychosocial needs are less likely to be addressed. Assessment is also generalised to older people so the specific and special needs of the person living with dementia are unlikely to be identified or addressed. Routine assessment of pain and agitation levels might contribute to raising staff awareness of physical and psychosocial comfort.

Assessment tools available to staff are limited, although there may be more transferable knowledge from the fields of disability and cerebral palsy. The Goal Attainment Scale has been found to be a feasible and responsive measure in long term aged care (Gordon, Powell et al. 1999). In their review of clinical methods for quantifying body segment posture in healthy adults, Fortin, Ehrmann Feldman et al. (2011) identify the need for an easy to use global clinical posture tool that has been rigorously tested. Utilised by care workers in residential aged care, such a tool could be of great value to the aged, frail population.

Research examining the efficacy of assessment tools may be limited because frail older people living with dementia are vulnerable research participants but may equally be restricted by the attitude that there is little worth doing for this group. The family role in assessment is important; the family carer may be the “expert carer” and the impact of any intervention on the relationship between the person living with dementia and their most significant other has to be a key consideration. The disability field is more used to working in this model and dementia care could explore its applicability.

Assessment is of limited value if it is a one-off event or if the resulting care plan is not communicated to all carers. Carers need to be educated about individual seating plans to ensure all staff are able to carry through the plan. Seating care plans need frequent review as postures change and equipment requires regular maintenance.

Adapted seating prescribed by an occupational therapist has to be understood and used by care workers and should also incorporate the positioning recommendations of the speech and language therapist for swallowing. Changes in position throughout the 24 hour period have to manageable by both the professionally qualified staff and care workers and include transfer techniques developed with the physiotherapist. Seating appropriate for activity and social engagement has to maximise the person’s ‘awake’ time and provide for increased need for rest to enable participation in valued activity to optimise quality of life. Thus a postural care plan and seating intervention has to consider all other aspects of the resident’s care plan and life goals and requires collaboration between the multidisciplinary team, client and family carers. Some goals may appear to conflict, for example ensuring sufficient night time sleep and rest and providing joint extension, or resident wish to mobilise and prevention of falls. Skilled staff need to be available to guide and facilitate these complex day-to-day decisions for care workers and ensure person centred care. Care which is limited by staff availability to transfer the person between seating, or dictated by an occupational health and safety priority of minimising transfers is not person-centred.

The ERG noted that assessment and care planning are all very well but need to be carried through in practice and a “tick and flick” attitude to paper work still exists in aged care. Organisations need a policy and process which includes a system of triggers for care workers to ensure that people are appropriately referred to professional staff for assessment and seating prescription. A screening tool (Miller 2004) might be of use but resources must also be allocated to meet the identified needs. Funding a new service which meets newly identified needs is an issue. Cost/benefit analysis of postural assessment and seating interventions in the care of frail older residents needs to demonstrate valuable resident and staff outcomes if funding allocation is to be influenced. Staff outcomes in recruitment, retention and wellbeing are increasingly important as the

demands on the aged care workforce grow. Staff wellbeing has been used to support positive changes in postural care for frail older people in residential aged care (Neylon 2012).

Staff knowledge, skills and culture of care

About dementia

There is an abundance of literature about dementia but not about staff knowledge of dementia. The interview evidence suggests that staff generally attempt to do their best with the knowledge and skills they have but that the level of knowledge and skills and the time and resources allocated, are often insufficient to deliver 'best care' and that the organisational culture might limit person-centred dementia care. Staff need continual updates in knowledge and skills but cultural change doesn't necessarily follow. A management culture which empowers staff to exercise their full range of skills seems most useful in creating a care environment which enables person-centred care. Care workers may know more about dementia, behaviour and the individual resident than their supervisor. Person-centred care has a greater opportunity to flourish if responsibility for care is delegated to direct care staff, with access to and supervision by appropriate professional and managerial staff. This values and recognises direct care workers' skills and builds on their capacity to improve outcomes for residents.

An 'enablement' culture in aged care is still new and the idea of maintaining function at different levels e.g. psychological, intellectual, social, physical is something that is still being explored in dementia care. Equally significant are the resource implications of such a model of care.

As dementia progresses, staff efforts to engage and interact with the resident have to increase to compensate for the resident's reduced ability to initiate interaction for themselves. Development of staff knowledge and skills may be necessary to create understanding of how postural care and seating practices can be applied to facilitate interaction.

About posture

Postural care across the 24-hour period can have a significant impact on body shape and deformity in children and young adults with severe disabilities such as cerebral palsy (Hill and Goldsmith 2010). Aged care needs to assess the applicability of this knowledge to immobile, frail older people with dementia as there is no dementia specific evidence base. The potential value of 24-hour postural care for frail older people in residential aged care has to be explored. Currently in residential aged care there is insufficient knowledge about postural care. Care workers don't have the knowledge base to position people correctly or identify and adjust seating for small changes in posture which can develop into larger postural problems before they are referred to therapy staff for assessment and advice. At times, available equipment is poorly understood and misused. Specialists suggest that the "foetal" position so frequently described may be attributable to lack of postural knowledge, skills and care.

About equipment

The equipment available and used in supporting people living with dementia and impaired sitting balance is complex and varied. There is a lot for staff to learn and apply and there are risks to staff and residents associated with equipment use; e.g. hoists in confined spaces, pressure relief cushions placed upside-down, postural supports misused as restraints. Staff turnover and the large number of different staff who are all required to have broad knowledge may mean it is difficult for knowledge about equipment to be retained and used in a residential care home. Visual aids, such as photographs of a resident correctly positioned, can be useful to staff as they are quicker and easier to access than written care plans, particularly for staff with English as a second language. Greater availability of therapy staff for advice and education in practice can create a more sustained knowledge base, as demonstrated in the interviews with care workers who have access to a seating service. The context of dementia care adds to the complexity of equipment utilisation, as the resident's goals and response to the equipment are more difficult to know and rely on staff's in depth knowledge of the person.

Seating prescription is limited by the notion that the person uses one chair all day rather than different chairs depending on activity. For example, use of a customised wheelchair when awake and alert and able to engage; relaxing lounge chair to watch TV; and a period of rest in bed. Apart from cost, staff availability to transfer the person between seating and the occupational health and safety priority of minimising transfers are identified as reasons for seating selection to be limited to one option per person.

Meaning of comfort

Seating specialists have a broader concept of comfort than most generalist staff, with the latter tending to think in terms of immediate physical comfort. Specialists described a correct and stable posture as key components of physical comfort which enable other broader functions such as eating, drinking, an appropriate visual field, freedom from pressure damage and social opportunities. The ERG also emphasised the "comfort" that can be provided by human contact, interaction and presence and that this level of comfort may be lacking in residential aged care due to staffing levels.

Current residential aged care staff and families tend to define comfort as they experience it themselves. This is probably a big soft chair that one relaxes in to watch television at the end of a busy day. However the able bodied adult has muscular control and mobility which enables constant small adjustments to position to maintain physical comfort in such a chair. The frail older person with dementia and impaired sitting balance is unable to make these adjustments so they might feel unsupported, perhaps as if they are falling and can quickly become uncomfortable. The lack of support in a large soft chair encourages the person to curl up and flex, possibly contributing to the development of contractures, resulting in pain and disability.

The interior designer's choice might appeal to the younger generation who are "shopping" for a home for their parent but it may be different factors which create a sense of a comfortable home for the person living with dementia. "Recognition, familiarity, ownership" and expressions of individuality probably clash with "the hotel look". Specialist practitioners are aware that furniture choice is part of individual expression in our own

homes; this becomes complex and challenged in institutional living. A range of choice and an eclectic look might actually create a more realistic “homely” look, and might allow for greater personal choice and an individual sense of comfort and home.

Safety and restraint

Assisting a frail older person with dementia to be safe and still exercise their personal freedom and choices is a complex task that requires staff to apply ethical principles, to compensate appropriately for the person’s cognitive and physical impairments, to advocate, and to communicate clearly to families and other staff. To be person-centred, staff and managers have to appreciate that every situation is different and requires observation, critical reflection and negotiation skills; a philosophical framework rather than hard and fast rules have to guide practice. Residential aged care staff also have to account to families who may have different ideas about balancing safety and freedom, perhaps expecting staff to restrain a person living with dementia.

Seating specialists describe protracted debate about the use of straps or harnesses for postural care and the meaning of restraint, but have developed clear definitions and policies about their use. The person’s perceived outcomes and staff intent have to be the determining factors. For example, a pelvic strap can be a postural support or a restraint. For the individual person with dementia this is a complex debate and A decision which may need constant review and is difficult for care workers to understand.

If the motive is postural support and after detailed clinical assessment and trial the outcome for the person is not an uncomfortable sense of restriction, then a strap which helps to hold a person’s head in an upright position for eating, in addition to a headrest could be acceptable. Judging the response of the person with dementia requires the carer to understand dementia, to be familiar with the person and confident to adjust care accordingly. this requires a culture of empowerment.
Seating and postural care knowledge is perhaps perceived as the domain of allied health, and nursing has focussed on other aspects of care. However, the ratio of allied health professionals to residents may mean they have very limited input with individual residents and postural care relies on nursing and carers.

Limitations of this work

Demographic data was not collected from interviewees. It is not possible to know the extent to which the sample of interviewees represents the Australian aged care work force and is generalisable.

Published literature of direct relevance to the study title was very limited. The Expert Reference Group suggested search terms and fields which might reveal relevant and transferable literature but selection and exclusion criteria for literature were not clearly defined.

The interviews were completed prior to commencing data analysis. A constant comparative method was used to uncover the domains and concepts within the interview data. These domains and concepts have not been tested. Two associate investigators listened to or read transcripts of a random selection of the interviews to check content validity of the domains and concepts identified, and commented on the researcher's initial analysis. Further validity of data could have been established by sending the transcripts to the participants for checking or through asking participants to comment on the data analysis.

Terms of reference for the ERG were not defined. Levels of expertise within the ERG in synthesis of literature and interview data are not known and may have been limited.

Conclusions

Improving the assessment and selection of seating options could benefit people with dementia and their carers. Perceived benefits for people with dementia may include fewer and less severe contractures, greater levels of social engagement, improved respiratory and digestive function. Perceived benefits for carers may include fewer behaviours of excess or omission in the person living with dementia, improved manual handling for care staff and improved ability to provide care.

The upright, supported seated position is generally preferable to a reclined or "curled up" position and affects the physiological, psychological and social functioning of the person with dementia. Nutritional, respiratory, cardiovascular, musculoskeletal and skin integrity impacts demonstrate the significance of maintaining an upright seated posture for as long as possible for the person with dementia.

There appears to be a lack of appreciation within residential aged care settings of the role of a supported, stable, upright posture to create physical comfort and the significance of this in enabling other levels of comfort and function such as human interaction.

Improving postural care has many potential positive short and long term outcomes for all frail older people, staff and families. These outcomes may encompass quality of life, food preparation and nutritional support, pain, continence care, medication use, falls prevention, pressure care, and staff manual handling, job satisfaction and workforce retention. However, cost benefit analyses in these areas are currently lacking.

The use of stage of dementia, immobility and need for pressure area care alone as the key criteria in seating selection limits postural care and appropriate seating options and may have negative consequences for the person living with dementia. An enablement approach to the care of persons with dementia which maximises function, whilst also acknowledging the palliative context, might be more useful than the current focus which is predominantly on pressure care and manual handling.

A 'nihilistic' attitude to dementia must be challenged because there is the potential, with increased knowledge and skills in postural care, access to appropriate therapist advice and resources, for care workers to help in the prevention of the postural decline currently experienced by people living advanced dementia in residential aged care settings. Courses in postural care could be a valuable resource; however expecting care workers to implement changes through education alone is simplistic and likely to fail.

Funding for seating resources and postural care is generally seen as inadequate, often resulting in a "one size fits all" approach which limits person-centred dementia care in residential aged care. A seating service which is able to pool, adjust, rebuild and re-allocate resources according to individual resident need clearly has greater opportunity to provide the right solution to an assessed need than a therapist working in isolation without access to specialised equipment and accessories. As a minimum, a management system to regularly check the quality of available chairs, and maintain and replace seating resources is required.

The development and use of a standardised postural care and seating assessment tool could generate consistent clinical data across residential aged care homes, enabling aggregation of data and increased statistical power for epidemiological study (Sprigle 2007). Such a tool would need to include outcomes on relevant body systems, as well as function, social engagement and quality of life and include the resident's perspective and stage of disease. Tools for measuring outcomes of seating and postural care interventions (Neilson, Bardsley et al. 2001) in people with cerebral palsy include video recording and observation of function and behaviour, and these tools could be transferable to residential aged care but would need to be simplified and inexpensive to implement.

Historically, the person with dementia has been excluded from research due to their vulnerability as a participant, however that has begun to change as the importance of hearing the perspective of the person living with dementia is recognised and the need for evidence-based care is growing. Individually adapted seating is a costly intervention that has to be justified and an evidence base for seating interventions is needed.

Recommendations

For aged care providers and practitioners

1. Every older person living with dementia in residential aged care should receive regular, thorough postural and seating assessment by a professional qualified to assess posture and seating requirements.
2. As seating impacts on social interaction and emotional well-being, postural care and seating interventions must contribute to person-centred care for people with dementia in residential aged care. Holistic assessment of need which identifies the resident's functional goals will help achieve this.
3. Models of care which focus on enablement should be explored for their applicability to care of the person living with dementia in residential aged care.
4. Staff knowledge and skills about 24-hour postural care and the use of seating in residential aged care requires investment to develop.
5. Aged care providers must ensure there are sufficient qualified therapy and nursing staff to lead and direct knowledgeable and skilled practice and to assist with the implementation of person-centred postural care and seating practices.
6. Postural assessment, care planning and evaluation should utilise photographs and visual screening tools which graphically illustrate to care workers and families correct positioning and the outcomes of postural care and seating.
7. Policies and processes are needed which ensure postural changes are identified and responded to before they progress to a serious and disabling stage.
8. Care workers' capacity to improve postural care outcomes for frail older people living with dementia could be improved. Care workers need to be valued, provided with education to develop their knowledge and skills, given delegated responsibility, have access to professionally qualified support, have adequate resources and sufficient time to give person-centred care.
9. Family carers need education to be better informed to make decisions about postural care and seating options.
10. Procurement of seating, furniture and equipment should be informed by therapist assessed resident need to ensure efficient use of resources and contribution to person-centred care.

For aged care service leaders

1. The development and use of a clear statement of indications and contraindications for the use of chairs commonly available in residential aged care for people living with dementia. Followed up by audit of chair use to identify inappropriate use, unmet need and to inform seating and postural device management.
2. The Residential Care Manual statement about seating provision is recommended to read an "individually assessed and prescribed chair which supports the person to maintain functional capacity".
3. Postural care, seating and dementia specialists need to work with manufacturers to develop and produce customised seating which looks less clinical and technical and which is easier to use.

For researchers

1. Seating systems currently used in residential aged care for people living with advanced dementia and compromised sitting balance need to be studied and outcomes scientifically attributed to provide an evidence-base for care interventions and ensure the appropriate allocation of resources. This should include longitudinal study of outcomes of different postural care approaches.
2. The change process and outcomes in postural care and seating practices within a residential aged care home would be a legitimate research study that could inform aged care providers planning change in postural care and seating practices.
3. A comparative observational study of homes with access to seating clinics, as opposed to homes which do not, for outcomes attributable to different levels of seating and postural care. Residential care homes could be matched for factors such as levels of care, age and type of residents.
4. The impact of postural care and seating positions in causing or limiting the development of contractures in the person living with advanced dementia needs further study.
5. The current practice of seating as a form of restraint and the role of seating in managing risk of falls needs further investigation.
6. The effect of posterior tilt position on function and physiology in populations with progressive neuromuscular conditions needs further exploration (Michael, Porter et al. 2007).
7. Fields of acquired brain injury and cerebral palsy should be monitored closely for possible transferrable information in relation to postural care for people with dementia.
8. Detailed examination of the use of individually customised wheelchairs. Single case studies could be reported; a multicentre comparative trial might also be possible.
9. Development of a dementia specific postural and seating assessment tool is required.

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Appendices

1. Ethics approval letter
2. Participant Information Sheet and Consent (residential aged care home)
3. Participant Information Sheet and Consent (staff)
4. Participant Information Sheet and Consent (family)
5. Staff interview schedule
6. Family interview schedule
7. Table 2 Domains and concepts emerging from data analysis

Appendix 1

UNSW

Medical and Community Human Research Ethics Advisory Panel

10 November 2011

A/Professor Chris Poulos
Clinical Training Centre, 9 Judd Ave
Hammondville NSW 2170

Reference: *"Review of current seating practices in supporting people living with dementia in residential aged care- a pilot study"*
Reference Number: 2011-7-44
Reference: *Poulos, Gresham, LeGrange, Moore, Crane, Chapman, Neylon, Kelly, Forbes*

At its meeting of 7 November 2011 the Medical and Community Human Research Ethics Advisory Panel was satisfied that this project is of minimal ethical impact and meets the requirements as set out in the National Statement on Ethical Conduct in Human Research. Having taken into account the advice of the Panel, the Deputy Vice-Chancellor (Research) has approved the project to proceed.

This approval is valid for 12 months from the date of the meeting. Please provide a copy of this letter to your Head of School.

Yours sincerely

A/Professor Heather Worth
Medical and Community Human Research Ethics Advisory Panel

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Approval No 2011-7-44

THE UNIVERSITY OF NEW SOUTH WALES, HAMMONDCARE, BRIGHTWATER GROUP
AND THE INDEPENDENT LIVING CENTRE, NSW.

RESIDENTIAL AGED CARE FACILITY PARTICIPANT
INFORMATION STATEMENT AND CONSENT FORM

Review of current seating practices in supporting people living with dementia in residential aged care –a pilot study.

Your residential aged care facility is invited to participate in a study of seating for people living with dementia in residential aged care. This study is being conducted by the UNSW in partnership with HammondCare, Brightwater Group and the Independent Living Centre, NSW. Little is known about the seating selection process and the effects of different types of seating for people living with dementia and experiencing difficulty in sitting or maintaining an upright posture in standard chairs. This exploratory study aims to gain a better understanding of current practice. We hope to learn how different types of seating are used to support people living with dementia in residential aged care, how seating is selected and the effects of the different types of seating used. We hope to be able to describe good practice principles in relation to seating selection for people living with dementia in residential aged care. Your facility was selected as a possible participant in this study because it is a residential aged care facility caring for people living with dementia.

If your facility decides to participate, firstly the researcher will ask to review any policies or procedures which may relate to seating for people living with dementia in your facility. Secondly the researcher will ask you to identify potential staff and family carer participants and arrange mutually convenient appointments for them with the researcher. Potential participants are care staff involved in daily decision making regarding seating selection and family carers of residents living with advanced dementia. At these appointments the researcher would explain the study, give written information for the participant to read and take away, answer any questions and gain the written consent of those willing to participate. Individual participation involves a semi structured interview with the researcher about current seating practices used to support people living with dementia. The researcher will make written notes of the individuals' responses and audio record the discussions. These would be once only discussions that are expected to last about 40 minutes. We hope you can support this study by allowing staff to be interviewed during paid time and by facilitating the opportunity for family carers to share their opinions. The researcher will be available to negotiate mutually convenient appointments for family carers who express interest in being involved in the study. The researcher may need a quiet room in the facility in which to conduct the interviews or if more convenient to participants could conduct the interview over the telephone. Ethical conduct of research requires that the facility ensure that participation or non-participation will have no consequences for residents' care or staff employment. The facility will not have access to individual participants' feedback.

Any information that is obtained in connection with this study and that can be identified with your facility will remain confidential and will be disclosed only with your permission, except as required by law. If you give us your permission by signing this document, we plan to publish the results in relevant health care journals and present the results at relevant conferences. If we are able to describe good practice seating principles we will make these available on the internet. In any publication or presentation, information will be provided in such a way that your facility cannot be identified.

Complaints may be directed to the Ethics Secretariat, The University of New South Wales, SYDNEY 2052 AUSTRALIA (phone 9385 4234, fax 9385 6648, email ethics.sec@unsw.edu.au). Any complaint you make will be investigated promptly and you will be informed about the outcome.

A summary of the research findings will be provided to you and as the Care Manager or Director of Nursing of the facility you are asked to make this available to all individual participants.

Your decision whether or not to participate will not prejudice your facility's future relations with the University of New South Wales, HammondCare, Brightwater Group or Independent Living Centre. If your facility decides to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice.

If you have any questions, please feel free to ask us. If you have any additional questions later, Associate Professor Chris Poulos Tel 02 8788 3900 or Project Manager Juliet Kelly Tel 02 8437701 will be happy to answer them.

You will be given a copy of this form to keep.

THE UNIVERSITY OF NEW SOUTH WALES, HAMMONDCARE, BRIGHTWATER GROUP
AND THE INDEPENDENT LIVING CENTRE, NSW.

RESIDENTIAL AGED CARE FACILITY PARTICIPANT
INFORMATION STATEMENT AND CONSENT FORM

Review of current seating practices in supporting people living with dementia in residential aged care – a pilot study.

You are making a decision whether or not your facility..... (facility name) will participate. Your signature indicates that, you have read the information provided above, and decided your facility will participate.

……	**…….**
Signature of Facility representative	Signature of Witness
……	**…….**
(Please PRINT name)	(Please PRINT name)
……	**…….**
Date	Nature of Witness

Appendix 2

THE UNIVERSITY OF NEW SOUTH WALES, HAMMONDCARE, BRIGHTWATER GROUP
AND THE INDEPENDENT LIVING CENTRE, NSW.

RESIDENTIAL AGED CARE FACILITY PARTICIPANT
REVOCATION OF CONSENT

Review of current seating practices in supporting people living with dementia in residential aged care – a pilot study.

I hereby wish to **WITHDRAW**.....(facility name)consent to participate in the research proposal described above and understand that such withdrawal **WILL NOT** jeopardise any treatment or .....(facility name) relationship with The University of New South Wales, HammondCare, Brightwater Group and the Independent Living Centre , NSW.

…… **…….**
Signature Date

……
Please PRINT Name

The section for Revocation of Consent should be forwarded to Associate Professor Chris Poulos, The Clinical Training Centre, 9 Judd Avenue, Hammondville, NSW 2170.

Approval No 2011-7-44

THE UNIVERSITY OF NEW SOUTH WALES, HAMMONDCARE, BRIGHTWATER GROUP
AND THE INDEPENDENT LIVING CENTRE, NSW.

RESIDENTIAL AGED CARE FACILITY STAFF PARTICIPANT
INFORMATION STATEMENT AND CONSENT FORM

Review of current seating practices in supporting people living with dementia in residential aged care – a pilot study.

You are invited to participate in a study of seating for people living with dementia in residential aged care. This study is being conducted by the UNSW in partnership with HammondCare, Brightwater Group and the Independent Living Centre, NSW. Little is known about the seating selection process and the effects of different types of seating for people living with dementia and experiencing difficulty in sitting or maintaining an upright posture in standard chairs. This exploratory study aims to gain a better understanding of current practice. We hope to learn how different types of seating are used to support people living with dementia in residential aged care, how seating is selected and the effects of the different types of seating used. We hope to be able to identify, describe and publish good practice principles in relation to seating selection for people living with dementia in residential aged care. You were selected as a possible participant in this study because you are directly involved in clinical decision making and caring for people living with dementia in residential aged care. We hope you will be interested in this opportunity to share your practice knowledge and improve future outcomes for people living with dementia.

If you decide to participate, the researcher will ask you a series of questions about the seating used in your facility to support people living with dementia. The researcher will make written notes of your responses and audio record the discussion. This would be a once only discussion that is expected to last about 40 minutes.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission, except as required by law. If you give us your permission by signing this document, we plan to publish the results in relevant health care journals and present the results at relevant conferences. If we are able to describe good practice seating principles we will make these available on the internet. In any publication, information will be provided in such a way that you cannot be identified.

The residential aged care facility you are employed by have agreed to participate in this study and if you decide to participate the discussion would take place during your normal working hours and be paid time.

Complaints may be directed to the Ethics Secretariat, The University of New South Wales, SYDNEY 2052 AUSTRALIA (phone 9385 4234, fax 9385 6648, email ethics.sec@unsw.edu.au). Any complaint you make will be investigated promptly and you will be informed about the outcome.

A summary of the research findings will be provided to the Care Manager or Director of Nursing of the facility and she/he has agreed to make this available to you.

Your decision whether or not to participate will not prejudice your future relations with your employer, the University of New South Wales, HammondCare, Brightwater Group or Independent Living Centre. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice.

If you have any questions, please feel free to ask us. If you have any additional questions later, Associate Professor Chris Poulos Tel 02 8788 3900 or Project Manager Juliet Kelly Tel 02 8437701 will be happy to answer them.

You will be given a copy of this form to keep.

THE UNIVERSITY OF NEW SOUTH WALES, HAMMONDCARE, BRIGHTWATER GROUP
AND THE INDEPENDENT LIVING CENTRE, NSW.

RESIDENTIAL AGED CARE FACILITY STAFF PARTICIPANT
INFORMATION STATEMENT AND CONSENT FORM

Review of current seating practices in supporting people living with dementia in residential aged care – a pilot study.

You are making a decision whether or not to participate. Your signature indicates that, you have read the information provided above and you have decided to participate.

……	…….
Signature of Research Participant	Signature of Witness
……	…….
(Please PRINT name)	(Please PRINT name)
……	…….
Date	Nature of Witness

THE UNIVERSITY OF NEW SOUTH WALES, HAMMONDCARE, BRIGHTWATER GROUP AND THE INDEPENDENT LIVING CENTRE, NSW.

RESIDENTIAL AGED CARE FACILITY STAFF PARTICIPANT
REVOCATION OF CONSENT

Review of current seating practices in supporting people living with dementia in residential aged care – a pilot study.

I hereby wish to **WITHDRAW** my consent to participate in the research proposal described above and understand that such withdrawal **WILL NOT** jeopardise any treatment or my relationship with ..... (facility name)The University of New South Wales, HammondCare, Brightwater Group and the Independent Living Centre , NSW.

…… **…….**
Signature Date

……
Please PRINT Name

The section for Revocation of Consent should be forwarded to Associate Professor Chris Poulos, The Clinical Training Centre, 9 Judd Avenue, Hammondville, NSW 2170.

Approval No 2011-7-44

THE UNIVERSITY OF NEW SOUTH WALES, HAMMONDCARE, BRIGHTWATER GROUP
AND THE INDEPENDENT LIVING CENTRE, NSW.

RESIDENTIAL AGED CARE FACILITY FAMILY CARER PARTICIPANT INFORMATION STATEMENT AND CONSENT FORM

Review of current seating practices in supporting people living with dementia in residential aged care – a pilot study.

You are invited to participate in a study of seating for people living with dementia in residential aged care. This study is being conducted by the UNSW in partnership with HammondCare, Brightwater Group and the Independent Living Centre, NSW. Little is known about the seating selection process and the effects of different types of seating for people living with dementia and experiencing difficulty in sitting or maintaining an upright posture in standard chairs. This exploratory study aims to gain a better understanding of current care. We hope to learn how different types of seating are used to support people living with dementia in residential aged care, how seating is selected and the effects of the different types of seating used. We hope to be able to describe good practice principles in relation to seating selection for people living with dementia in residential aged care. You were selected as a possible participant in this study because you are a family carer of a resident living with dementia in residential aged care. We hope you will be interested in this opportunity to share your perspective on seating and chairs for people with dementia and hopefully improve future care for people living with dementia.

If you decide to participate, the researcher will ask you a series of questions about your perception of the seating used by residents who are living with dementia. The researcher will make written notes of your responses and audio record the discussion. This would be a once only discussion that is expected to last about 40 minutes.

Any information that is obtained in connection with this study and that can be identified with you, will remain confidential and will be disclosed only with your permission, except as required by law. The staff at ..... (insert name of facility) will not be informed of your individual responses. If you give us your permission by signing this document, we plan to publish the results in relevant health care journals and present the results at relevant conferences. If we are able to describe good practice seating principles we will make these available on the internet. In any publication, information will be provided in such a way that you cannot be identified.

The residential aged care facility that cares for your family member has agreed to participate in this study and if you decide to participate the discussion would take place at a time convenient to you sometime during the week commencing 28TH Nov 2011.This can be at the facility or over the telephone depending on your preference.

Complaints may be directed to the Ethics Secretariat, The University of New South Wales, SYDNEY 2052 AUSTRALIA (phone 9385 4234, fax 9385 6648, email ethics.sec@unsw.edu.au). Any complaint you make will be investigated promptly and you will be informed about the outcome.

A summary of the research findings will be provided to the Care Manager or Director of Nursing of the facility and she/he has agreed to make this available to you.

Your decision whether or not to participate will not prejudice your future relations with..... (insert name of facility), the University of New South Wales, HammondCare, Brightwater Group or Independent Living Centre. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice.

If you have any questions, please feel free to ask us. If you have any additional questions later, Associate Professor Chris Poulos Tel 02 8788 3900 or Juliet Kelly Tel 02 8437701 will be happy to answer them.

You will be given a copy of this form to keep.

THE UNIVERSITY OF NEW SOUTH WALES, HAMMONDCARE, BRIGHTWATER GROUP
AND THE INDEPENDENT LIVING CENTRE, NSW.

RESIDENTIAL AGED CARE FACILITY FAMILY CARER PARTICIPANT
INFORMATION STATEMENT AND CONSENT FORM

Review of current seating practices in supporting people living with dementia in residential aged care – a pilot study.

You are making a decision whether or not to participate. Your signature indicates that, you have read the information provided above and you have decided to participate.

……	…….
Signature of Research Participant	Signature of Witness
……	…….
(Please PRINT name)	(Please PRINT name)
……	…….
Date	Nature of Witness

Appendix 4

THE UNIVERSITY OF NEW SOUTH WALES, HAMMONDCARE, BRIGHTWATER GROUP
AND THE INDEPENDENT LIVING CENTRE, NSW.

RESIDENTIAL AGED CARE FACILITY FAMILY CARER PARTICIPANT
REVOCATION OF CONSENT

Review of current seating practices in supporting people living with dementia in residential aged care – a pilot study.

I hereby wish to **WITHDRAW** my consent to participate in the research proposal described above and understand that such withdrawal **WILL NOT** jeopardise any treatment or my relationship with ..... (facility name), The University of New South Wales, HammondCare, Brightwater Group and the Independent Living Centre , NSW.

…… **…….**
Signature Date

……
Please PRINT Name

The section for Revocation of Consent should be forwarded to Dr Chris Poulos, The Clinical Training Centre, UNSW, 9 Judd Avenue, Hammondville, NSW 2170.

Review of current seating practices in supporting people living with dementia in residential aged care – a pilot study.

Semi structured interview schedule for residential aged care facility staff participants

Participant information

Job title

Qualifications

Years in aged care

Facility information

Number of residents

Dementia specific or general

Metropolitan or regional location

Researcher will define dementia and advanced dementia and seating for the participant.

Dementia is a condition in which there is a gradual loss of brain function; it is a decline in cognitive/intellectual functioning. The main symptoms are usually loss of memory, confusion, problems with speech and understanding, changes in personality and behaviour and an increased reliance on others for the activities of daily living. It is not a single disease but rather a group of symptoms which may result from a number of causes the most common being Alzheimer's disease. **Advanced dementia** refers to the severe and end stages of the condition usually defined by a Mini-Mental State Examination (MMSE) score of less than 10. The person may be immobile and dependent on others for many activities of daily living. **Seating** refers to any chair which a person spends most awake/daytime hours sitting in.

1. What do you think are the seating needs of people.....
    a. with dementia?
    b. with advanced dementia?
    c. with dementia and other physical problems?
2. Can you describe typical postures in residents with dementia?
    a. How do postures change over time?
    b. Do you have any ideas about why or how these changes happen? (Causes, precipitating factors)
    c. When /how/why do you think the foetal posture occurs?
3. What are the different seating options available at your RACF to support residents with these postural changes?
4. What do you think are the consequences or outcomes of the different seating options used ...

a. for residents? E.g. are residents in pressure relief chairs treated differently by people?

b. for staff? E.g. do staff care differently when a resident goes into a pressure relief chair.

c. for family carers?

5. Have you noticed that different seat/chairs and residents' positions have any effect on residents' level of social interaction or engagement? If so please explain.

6. Have you noticed that different seats/chairs and residents' positions have any effect on residents' eating and drinking or digestive/nutritional function? If so please explain.

   a. Can you describe how/the extent to which seats/chairs are adjusted for eating and drinking?

7. Have you noticed that different seat/chairs and residents' positions have any effect on residents' respiratory or cardiovascular function? If so please explain.

8. Have you noticed that different seat/chairs and residents' positions have any effect on residents' musculoskeletal function? If so please explain. E.g. contractures?

9. What are the advantages of the different types of seating ... (What is good about it? What works well?)

   a. for residents? "comfort" how do you know when someone is comfortable?

   b. for staff?

   c. for family carers?

10. What are the disadvantages of the different types of seating ... (What is not good about it? What doesn't work well? What is difficult?)

    a. for residents?

    b. for staff?

    c. for family carers?

Researcher to clarify definition of pressure relief chair (pictures will be available). This type of seating is also known as water chairs, flotation chairs. It supports the full length of the body and can be reclined and tilted into several different positions. It may have a pressure relief system using water, air, foam or gel.

11. When is it appropriate to use this type of seating?

12. When is it not appropriate to use this type of seating?

13. Do you use any tools or know of any tools to assess residents in deciding which chair/seating to select?

    a. What tools do you use?

    b. How do these tools assist you in selecting seating?

14. Why/how were the seating options/chairs available to residents in this facility chosen?

    a. Are those all the factors that contribute to the choice?

15. What would you say are the most important considerations in the selection of seating ... (Prioritise the factors contributing to the selection of seating for each group of people.)

    a. for the resident?

    b. for the staff?

    c. for the family?

16. Can you explain why these are the most important factors? Why have you prioritised in that order? Is the look of the chair important? E.g. homely standard lounge as opposed to the clinical/medical/institutional?

17. Can you think of any other factors which are affected by the persons seating for example how easy/difficult is it to hug/talk to/assist to eat/listen to/ignore a person in a recliner chair?

18. Can you describe the ideal range of seating options for residents with dementia?

    a. Do any residents have tailored, individually prescribed seating?

19. What improvements would you suggest to seating options for residents with dementia? Any other features you would like chairs to have?

20. How or where have you gained your current level of knowledge about seating and postural support for frail older people?

21. Do you have any other ideas or comments in relation to seating for residents with dementia that you think might be important/significant/useful to this project?

Thank you for your time and contribution.

Review of current seating practices in supporting people living with dementia in residential aged care – a pilot study.

Semi structured interview schedule for residential aged care facility family carer participants

Participant information

Relationship to person with dementia in RACF

Years family member has been in residential aged care (any facility)

Researcher will define dementia and advanced dementia and seating for the participant.

Dementia is a condition in which there is a gradual loss of brain function; it is a decline in cognitive/intellectual functioning. The main symptoms are usually loss of memory, confusion, problems with speech and understanding, changes in personality and behaviour and an increased reliance on others for the activities of daily living. It is not a single disease but rather a group of symptoms which may result from a number of causes the most common being Alzheimer's disease. **Advanced dementia** refers to the severe and end stages of the condition. The person may be immobile and dependent on others for many activities of daily living. **Seating** refers to any chair which a person spends most awake/daytime hours sitting in.

1. What do you think are the seating needs of people.....
   a. with dementia?

   b. with advanced dementia?

   c. with dementia and other physical problems?

2. Can you describe typical postures in residents with dementia?
   a. How do postures change over time?

   b. Do you have any ideas about why or how these changes happen? (Causes, precipitating factors)

3. What are the different seating options available at your RACF to support residents with these postural changes?

4. What do you think are the consequences or outcomes of the different seating options used ...

    a. for residents?

    b. for staff?

    c. for family carers?

5. Have you noticed that different seat/chairs and residents' positions have any effect on residents' level of social interaction or engagement? If so please explain.

6. Have you noticed that different seats/chairs and residents' positions have any effect on residents' eating and drinking or digestive/nutritional function? If so please explain.

    a. Can you describe how/the extent to which seats/chairs are adjusted for eating and drinking?

7. Have you noticed that different seat/chairs and residents' positions have any effect on residents' respiratory or cardiovascular function? If so please explain.

8. Have you noticed that different seat/chairs and residents' positions have any effect on residents' musculoskeletal function? If so please explain. E.g. contractures?

9. What are the advantages of the different types of seating ... (What is good about it? What works well?)

    a. for residents?

    b. for staff?

    c. for family carers?

10. What are the disadvantages of the different types of seating ... (What is not good about it? What doesn't work well? What is difficult?)

    a. for residents?

    b. for staff?

    c. for family carers?

Researcher to clarify definition of pressure relief chair (pictures will be available). This type of seating is also known as water chairs, flotation chairs. It supports the full length of the body and can be reclined and tilted into several different positions. It may have a pressure relief system using water, air, foam or gel.

11. When is it appropriate to use this type of seating?

12. When is it not appropriate to use this type of seating?

13. Are you aware of any particular assessment process the staff use in deciding which chair/seating to select for residents?

14. Are you aware of why/how the seating options available to residents in this facility were chosen?

15. What would you say are the most important considerations in the selection of seating ... (Prioritise the factors contributing to the selection of seating for each group of people.)

    a. for the resident?

    b. for the staff?

    c. for the family?

16. Can you explain why these are the most important factors? Why have you prioritised in that order? Is the look of the chair important? E.g. homely standard lounge as opposed to the clinical/medical/institutional?

17. Can you think of any other factors which are affected by the persons seating for example how easy/difficult is it to hug/talk to/assist to eat/listen to/ignore a person in a recliner chair?

18. Can you describe the ideal range of seating options for residents with dementia?

19. What improvements would you suggest to seating options for residents with dementia?

20. Do you have any other ideas or comments in relation to seating for residents with dementia that you think might be important/significant/useful to this project?

Thank you for your time and contribution.

Appendix 7

Table 2 Domains and concepts emerging from literature and interview data

Domains/ Categories	Concepts/themes	Literature data	Data from specialists	Data from generalists	**Conclusions from data.**
Stage and type of dementia	Generally described using the terms:- early, moderate, severe, advanced, terminal or end stage;	***On the workshop day these columns were presented to the workshop completed.***			***This is the column the workshop completed.***
	Co morbidity, ageing & frailty				
Impact of posture and seating	Postures in dementia				
	Muscular skeletal				
	Nutrition				
	Respiratory and cardio vascular				
	Skin integrity				
	Comfort; Pain				
	Social interaction, engagement and behaviour				
Current equipment in use	Standard chairs				
	Transit wheel chairs				
	Adapted lounge				
	Pressure relief chair				
	Customised wheel chair				
	Tilt in space mechanisms				
	Use of recline				
	Wheels and mobility				
	Occupational Health and Safety				
	Maintenance, replacement & cost				
Assessment of posture and seating needs	Tools & processes				
Staff knowledge and skills and the culture of care	Related to dementia				
	Related to posture				
	Related to equipment				
	Meaning of comfort				
	Restraint and safety				