Sustainable residential aged care: the influence of environment on carer work satisfaction and stress levels

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Throughout the world populations are moving towards urban areas (UNFPA 2007) and in Australia as in many countries populations are also ageing (Australian Bureau of Statistics 2004; Vladeck 2005; Healy, Sharman et al. 2006; Maples and Abney 2006). This has obvious implications for environmental sustainability when viewed in the context of resource depletion and environmental degradation (Basiago 1999) but also considerable inherent implications for social and urban sustainability (Basiago 1999). Currently it is thought that the ageing populations will increase the demand for residential aged care (RAC) (Coombs and Dollery 2004; Birrell and Healy 2005; Howe and Healy 2005; Mitchell and Mosler 2006) with an increasing level of dementia specific care (Access Economics 2003). However the provision of these facilities represents a significant investment of resources and the community will benefit if these resources can be better utilised.

The argument is put forward that Quality of Life (QoL) for residents is the primary aim for RAC facilities and has been the subject of many studies predominantly from a care perspective (Willhelmson 2005) and while there is a strong relationship between QoL and care (Parker 2004) the World Health Organisation Quality of Life Group notes QoL as being multidimensional and difficult to define (Barnes 2002, Bowling 2007). This paper argues that this ill defined multidimensional term therefore has other factors that may affect care and QoL, and one aspect is the effect of environmental design.

The workplace environment can be a contributor to stress by providing stressors to which an individual reacts (Lloyd, King et al. 2002) and this individual reaction (Kinman and Jones 2005) can have a varying impact on physical and mental health (Parslow, Jorm et al. 2004). There are many particular stressors associated with RAC that may combine to cause stress with some being the emotionally charged nature of dealing with older people (Haggstrom, Skovdahl et al. 2005), working with cognitively impaired residents (Brodaty, Draper et al. 2003) and exposure to and dealing with death and dying (Michie, Ridout et al. 1996).

There is an association between quality of care and work stress/job satisfaction (Edvardsson, O.Sandman et al. 2008) and with an estimated 80-90% of care undertaken by carers (as distinct from registered nurses) they may be the 'linchpin' to the provision of quality care (Proctor, Stratton-Powell et al. 1998; Castle 2007).

Evidence is increasing that the physical environment affects both job performance and job satisfaction (Vischer 2007) and where the physical environment can introduce potential stressors (Aspinall 2001) it can also be used to assist work outcomes (Stokols, Clitheroe et al. 2002). Therefore if workplace stress can be affected by the physical environment and workplace stress also affects the level of care which is a part of QoL then RAC facilities will find it advantageous to consider the insulation of workers from stressors or even the promotion of spaces that stimulate care.

This paper identifies a range of candidates as design attributes for sustainable residential aged care facilities that can impact upon carer job satisfaction and stress, and outlines a pilot study intended to confirm/extend this model.

Keywords: ageing and the built environment, design, job satisfaction, residential aged care, work-related stress, working environment

INTRODUCTION

In 2007 the United Nations Populations Fund anticipated that by 2008 half the world's population would reside in cities or urban areas (UNFPA 2007). This has obvious implications for environmental sustainability when viewed in the context of resource depletion and environmental degradation (Basiago 1999) but also considerable inherent implications for social and urban sustainability (Basiago 1999). The overall efficiency and well being of a community enable it to function and maintain or enhance resources, including human or social resources, within the community and in doing so determine the sustainability of the community. Porta and Renne cite the works of Oscar Newman, William Whyte and Jan Gehl in determining the impact of the built environment on social well being (Porta and Renne 2005) which is a contributor to the complex multifaceted and changing nature of sustainability (Eden 2000) of the community. The integration of economics and social responsibility and the interconnection between human, natural and built systems has the ability to help or hinder the social process. In an effort to optimise an outcome from this mix O'Hara puts forward the proposition that the satisfaction of the needs of participants are necessary to establish a sustainable environment and therefore their input is an essential ingredient to the design of that environment (O'Hara 1999). This paper looks at a small section of the social environment in the context of this proposition.

Members of the community in the later stages of life require varying levels of care from very little, or self care, to much higher levels of care requiring a facility and services beyond those available in the family home. In Australia those in this latter group are cared for in a residential aged care facility (RAC) and are classified under the Residential Classification Scale (RCS) ranging from 8 for low care to 1 for the highest level of care (Australian Government Department of Health and Ageing 2006). In the past RAC had been somewhat institutionalised but changes were introduced by the Australian Government in 1997 to prepare the industry for an anticipated increased future demand and provide a more sustainable system. This paper investigates a way to make this new system more sustainable.

The paper will outline the anticipated growing need for RAC facilities in societies throughout large parts of the world and the importance of Quality of life as a principal aim in these RAC facilities. The argument will be made that there are stresses involved in workplaces and there are particular stressors involved in the care of dependent cognitively impaired people. Carers undertake a large part of the day to day care and the extent of this interaction has the potential to make a difference (positive or negative) in the resident's quality of life. The environment may have an effect on workplace stress and some possible candidates for adaptation of the physical environment with the potential to affect stress in RAC facilities will be highlighted. It will be proposed that suitable design of RAC facilities with the work stress/job satisfaction of carers in mind could affect the resident's quality of life and result in a more efficient sustainable facility with the resultant flow on to society. The need for further investigation will be noted and a current study will be outlined.

QUALITY OF LIFE IN AGED CARE FACILITIES

In 2003, 13% of the Australian population was over 65 years with 5% of that group in residential aged care (RAC) (Australian Bureau of Statistics 2006). However sustained low levels of fertility and medical advances (Bender 2004) increasing life expectancy (Pardasani 2004; Healy, Sharman et al. 2006) allied to the influx of the baby boomers (Vladeck 2005) are predicted to inflate these figures. People over the age of 65 years are anticipated to account for 20% of the Australian population with a 54% increase by 2023 (Australian Bureau of Statistics 2004). This pattern is repeated throughout the industrialised world (Vladeck 2005; Healy, Sharman et al. 2006; Maples and Abney 2006).

Whereas current indications point to an increase in the demand for residential aged care (Coombs and Dollery 2004; Birrell and Healy 2005; Howe and Healy 2005; Mitchell and Mosler 2006) not all people over the age of 65 years require aged care (Wiggins, Higgs et al. 2004). Peter Laslett (1996) sets up a scenario in "A Fresh Map of Life" where he outlines four "ages" with the 'Fourth Age' being an era that sees the individual return to dependency. These dependencies and the associated level of care determine the individual's suitability to ageing in place or the requirement for residential aged care which could be increasingly regarded as end of life (EOL) care (Ginsburg, Citko et al. 2005). In 2003 the median age of RAC residents was 85 years (Australian Bureau of Statistics 2006) indicating that it is the "fourth age" that will possibly exhibit the predominant demand for residential aged care (Coombs and Dollery 2004; Ginsburg, Citko et al. 2005) with an increasing level of dementia specific care (Access Economics 2003). However Howe (2003) notes that since 1986 the entry rate into RAC has decreased from 10.4% to 8.1% (Howe 2003) as people prefer to age in place (Pardasani 2004; Spanbroek 2005), a trend expected to increase as the Baby Boomers grow older (Spanbroek 2005).

QoL for RAC residents and patients in general has been the subject of many studies and papers written predominantly from a care perspective (Willhelmson 2005) and while there is a strong relationship between QoL and care (Parker 2004) the World Health Organisation Quality of Life Group notes QoL as being multidimensional and therefore difficult to define (Barnes 2002, Bowling 2007). This ill defined multidimensional term therefore has other factors, aside from care, to explore and one aspect could be the effect of environmental design.

QoL for residents is a primary aim in RAC facilities and care is an essential part of realising that aim. RAC facilities are also work places for carers and those other than residents and visitors and as such literature indicates that workplaces can cause stress (Marchand 2002, Parslow 2004, Wellens 2006). Environments can have an effect on stress (Clark 2007, Wilhelm 2004, Aspinall 2001, Vischer 2007, Moultrie 2007, Stokols 2002) and in the context of a RAC facility the level of stress can have an effect on care (Hannan 2001, Edvardsson 2005) which is a factor of QoL (Willhelmson 2005, Parker 2004) and a primary aim of RAC facilities. Therefore it would seem reasonable to put forward the question "will the consideration of workplace stress in environmental design affect quality of life in RAC?"

WORKPLACE STRESS

Prior to the 1970's stress was viewed as a simple mechanical response to a threat, this view has been broadened to accept that stress is non specific and is based on an individual's conscious or unconscious evaluation of an event (Lazarus and Folkman 1984). Whereas stress is not necessarily negative, continued exposure may alter the body's sensitivity to the hormone cortisol resulting in varying effects dependent on the individual (Olofsson, Bengtsson et al. 2003).

The workplace environment can be a contributor to stress by providing stressors to which an individual reacts (Lloyd, King et al. 2002). Since stress is an individual reaction (Kinman and Jones 2005) there can be a varying impact on physical and mental health (Parslow, Jorm et al. 2004). Job stress can contribute to stress-related illnesses, such as mental, behavioral, and cardiovascular diseases (Toppinen-Tanner, Ojajärvi et al. 2005), can lead to staff turnover (Ellenbecker 2003; Coogle, Parham et al. 2007), loss of production and absenteeism (Parslow, Jorm et al. 2004; Kinman and Jones 2005; Marchand, Demers et al. 2005; Toppinen-Tanner, Ojajärvi et al. 2005). The Australian Bureau of Statistics report that in 2005-06 "exposure to mental stress" accounted for 5% of all work related injuries making it the fifth most common category of work related injury (Australian Bureau of Statistics 2006). Not all work related stress is a result of high levels of personal work related responsibility with some other causes including being the victim of sexual or racial harassment or exposure to a traumatic event (Australian Bureau of Statistics 2006). Work related injuries that resulted in the largest periods away from work included stress which accounted for 51% of people taking time of work for more than five days (Australian Bureau of Statistics 2007). The Australian Bureau of Statistics estimates that the total cost of work related injury in 2005-06 was $34.96 billion AUD (Australian Bureau of Statistics 2006) of which a minimum of 5% could be the result of stress (minimum as stress represented 5% of the work related injuries but resulted in longer durations away from work).

The "health and community services" industry comprised 1,038,000 people in 2005-06 which represented 10.4% of the Australian workforce however this industry had a disproportional representation of 11.5% of all reported work related injuries which made it the industry with the third most work related injuries behind the retail and manufacturing industries and puts it marginally ahead of the construction industry which had 11% of reported work related injuries (but makes up 8.8% of the work place) (Australian Bureau of Statistics 2006).

The Australian Bureau of Statistics information on stress in the workplace is echoed throughout the world. Studies in Canada showed that 42.9% of workers had reported at least one instance of psychological distress (Marchand, Demers et al. 2005) a result that was similar to studies from North America (Brodaty, Draper et al. 2003; Coogle, Parham et al. 2007) and Europe (Olofsson, Bengtsson et al. 2003; Harenstam 2005; Marchand, Demers et al. 2005; Nordam, Torjuul et al. 2005; Toppinen-Tanner, Ojajärvi et al. 2005).

There is evidence that the incidence of stress in the workplace is increasing however one argument is that the inherent non specific nature of work place stress, the lack of definition and the reliance on an individual's perception results in a

flexible concept that can be used to substantiate a variety of situations to suit individuals or organisations (Kinman and Jones 2005). This is an idea supported by Schaufeli and Enzmann (1998) who argue that stress related problems are more becoming noticeable as people are better able and more prepared to describe problems in psychosocial terms (Rafnsdottira, Gunnarsdottira et al. 2004).

Despite the reasons for the increased occurrence and/or visibility of workplace stress there are particular stressors imposed by the work environment in residential aged care that may combine to cause stress including shift working conditions (Moniz-Cook, Woods et al. 2000), the emotionally charged nature of dealing with older people (Haggstrom, Skovdahl et al. 2005), working with cognitively impaired residents (Brodaty, Draper et al. 2003), exposure to and dealing with
death and dying (Michie, Ridout et al. 1996), the perception that providing care to older people is not prestigious (Moyle, Skinner et al. 2003), tasks and time constraints, including documentation, preventing the opportunity to relate to residents (Michie, Ridout et al. 1996; Ellenbecker 2003; Moyle, Skinner et al. 2003), lack of clinical supervision which may lead to resident abuse or neglect and the associated ethical issues (Brodaty, Draper et al. 2003) and resident's aggressive or disruptive behaviour (Michie, Ridout et al. 1996; Moniz-Cook, Woods et al. 2000; Brodaty, Draper et al. 2003; Morgan, Stewart et al. 2005; Edvardsson, O.Sandman et al. 2008).

The workplace stresses particular to RAC facilities have been very effectively summarised by Redfern et al as having the potential to result in "burnout" or "rustout" in carers (Redfern, Hannan et al. 2002). "Burnout' is a commonly used term which can result from work stressors but "rustout" in RAC facilities can result from constantly caring for highly dependent and cognitively impaired residents where there is little or no possibility of interpersonal relationships resulting in unrewarding work, low levels of job satisfaction and boredom (Redfern, Hannan et al. 2002). Redfern et al associate the causes of "burnout" to overload and "rustout" to underload however both result in the same outcomes (Redfern, Hannan et al. 2002).

EFFECT OF STRESS ON QUALITY OF CARE

There is increasing demand for improvements in the quality of care and better quality of life for residents in RAC, there is also substantial research in the area of job stress for carers in RAC facilities whilst there is also considerable research into QoL for residents. There is also a mounting body of evidence that there is an association between the level of job strain or job satisfaction experienced by carers, the level of care and the QoL of residents in RAC facilities. Edvardsson, Sandman et al undertook a study of 40 residential care units for people with dementia and came to the conclusion that "the well-being of nursing staff is associated with the well-being of people with dementia in residential care settings" (Edvardsson, O.Sandman et al. 2008). In 2001 Hannan, Norman et al conducted a review of the current literature revealing 417 papers relating in some way to stress/satisfaction,

care and long term care facilities (not necessarily RAC) of these they cite a total of ten references which relate in some way to the relationship between stress/ satisfaction, quality of care and resident well being (Hannan, Norman et al. 2001). Two of the studies cited by Hannan, Norman et al investigated positive outcomes of the stress/care relationship but the majority investigated the negative relationship (Hannan, Norman et al. 2001). Regardless of the outcomes of the studies the link between work stress/satisfaction, quality of care and resident well being has been identified.

It has been estimated that carers provide 80% to 90% of resident care and are thus the "linchpin" to the provision of quality care (Proctor, Stratton-Powell et al. 1998; Castle 2007). The association between job stress/satisfaction and positive or negative work behaviour like tardiness, poor work performance, absenteeism, tension, irritability or fatigue is therefore important to address in a cohort with the extent of interface and the affect on resident's quality of life afforded to carers. These negative reactions to stress can have a deleterious affect on the quality of care (Proctor, Stratton-Powell et al. 1998). In a study of 1579 responses from carers in 72 facilities over six states in the U.S. by Castle in 2007 carers rated the effect they had on resident's lives as an average 8.2 out of a scale up to 10 (Castle 2007) the importance of the relationship between stress and the quality of care (Redfern, Hannan et al. 2002; Murphy 2007) is therefore essential to providing the level of care anticipated and necessary to promote sustainability in this sector of society.

Although there is a body of literature linking job stress/work satisfaction to levels of care in various types of care facility some authors question the relationship (Gravlin 1994, Goodell & Coeling 1994, Powers et al, 1994, Shepherd et al. 1995, Jenkins & Allen 1998 are cited by Redfern, Hannan et al 2002 page 513). However a possible explanation to a potentially lower level of correlation between work stress and quality of care and lower than anticipated levels of staff burnout found in a relatively small number of studies of RAC facilities is that a large proportion staff leave when exposed to stress (Train, Nurock et al. 2005). In 2002 Redfern, Hannan et al conducted a small study in a RAC facility in London to test the association between job stress/work satisfaction and quality of care and found adequate correlations to warrant further investigation (Redfern, Hannan et al. 2002).

EFFECT OF THE ENVIRONMENT ON STRESS

There is increasing evidence that the physical environment, in which people work, affects both job performance and job satisfaction (Vischer 2007) there is also a link between the physical environment and mental health (Clark, Myron et al. 2007). The physical environment provides a large number of factors or potential stressors (Aspinall 2001) many of these independently pose little risk however exposure to a number or combination of these stressors over a period of time will pose an increased risk (Wellens and Smith 2006). By returning to the work of Lazarus and Folkman (1984) in "Stress, Appraisal and Coping" the effect of this risk is governed by the concept of "an individual's interpretation" which can be affected by an indefinite array of factors and will deter mine their reaction to this risk (Olofsson, Bengtsson et al. 2003).

In 1989 Melamed, Luz et al investigated the factors that can contribute to stress and developed the Ergonomic-Stress-Level (ESL) as a tool to measure aspects of the environment experienced by individuals in their work place (Wellens and Smith 2006) The ESL has been further used in subsequent tests and has showed a relationship between environmental conditions and the occurrence of stress related outcomes (Wellens and Smith 2006). The predictability of the ESL is an indicator and adds further weight to the argument that the environment has an effect on stress.

The built environment is being used in some industries to insulate against stressors and assist in the provision of work outcomes (Stokols, Clitheroe et al. 2002), provide a stimulation for innovation and creativity (Moultrie, Nilsson et al. 2007) and accommodate social relationships (Chan, Beckman et al. 2007). It is also being considered as a part of the holistic approach to work environments (Genaidy, Salem et al. 2007) and is attracting interest as part of the "healing environment" in healthcare (Dijkstra, Pieterse et al. 2006).

Therefore if workplace stress can be affected by the physical environment and workplace stress also affects the level of care which is an important ingredient to the resident's QoL then the design of RAC facilities should consider the insulation of workers from stressors or even the promotion of spaces that stimulate care. Literature has provided some avenues for further investigation.

CANDIDATE STRESSORS

The causes of stress in the workplace are complex and multifaceted (Wellens and Smith 2006) as is the quality of life of residents (Bowling 1995; Barnes 2002) therefore the existence of a "silver bullet" to alleviate worker's stress and simultaneously improve quality of care thereby having a positive effect on QoL for residents is extremely improbable. However the planning and construction of a RAC facility represents a large investment of resources and if these resources can be better utilised to aid the operation of the facility then a step towards sustainability will have been achieved.

A study of current literature has highlighted some candidates for further investigation to determine if modifications to the physical environment can contribute to a reduction of stress in the RAC workplace. These identified candidates have formed the core of a study involving RAC carers being presently undertaken to determine the potential or validity of modifications to the physical environment of a RAC facility that may enhance sustainability.

Aggressive or disruptive behaviour

Amongst the most disturbing and distressing behaviours in RAC is aggressive, disruptive or assaultive behaviour (AB) which does not necessarily need to be directed at a particular carer to be an effective work place stressor (Landreville, B ´edard et al. 2006). AB in a RAC facility can generally be associated with a part of the wide range of changes to behaviour associated with dementia and is commonly

described as the "behavioral and psychological symptoms of dementia" or BPSD (Lovheim, Sandman et al. 2006) It is reported that the most common medical condition in Australian RAC facilities is Alzheimer's disease and other dementia with 32% of residents affected. A further 10% of residents are affected by other behavioural disorders resulting in a total of 42% of residents (Australian Bureau of Statistics 2006) having the potential to exhibit AB.

AB has been described by Landreville, B'edard et al as including "…hitting, kicking, scratching, pushing, biting, punching, grabbing, throwing objects, slugging, pinching, cutting, stabbing, spitting, cursing, swearing, insulting, obscene or profane language, sexual aggression, and sexual advances." (Landreville, B´edard et al. 2006). AB has also been described as behaviours that may have a detrimental effect on the resident/carer relationship and may lead to the use of pharmacological or physical restraints (Moniz-Cook, Woods et al. 2000; Morgan, Stewart et al. 2005) even though restraints are often used to protect the resident exhibiting AB from harm rather than to protect the staff (Moore and Haralambous 2007).

Pharmacological treatment of AB, often with atypical antipsychotic drugs, is relatively common despite the associated side affects including the increased risk of stroke or transitory ischemic attack and an increased mortality rate (Lovheim, Sandman et al. 2006). There are also concerns about the quality of life of residents subjected to such pharmacological restraint (Lovheim, Sandman et al. 2006) and the emotional burden on the care giver brought about by this ethical dilemma which provides another work place stressor (Nordam, Torjuul et al. 2005).

AB is most commonly directed at carers as they have the greatest interface and spend the most time with residents and are most often perceived by the resident as invading personal space whilst undertaking their care responsibilities (Morgan, Stewart et al. 2005).

The actual number of assaults or extent of AB is somewhat confused as some authors cite estimates of 9.3 assaults per carer each month to almost daily assaults (Morgan, Stewart et al. 2005; Landreville, B´edard et al. 2006). Morgan, Stewart et al conducted a study in 2004 involving 355 carers and found that 64.5% of those working in special care units and 74.4% of those in non special care units had been physically assaulted by residents in the previous twelve months (Morgan, Stewart et al. 2005).

The worst outcomes of AB are job stress, time off work, staff burnout, staff turnover (Morgan, Stewart et al. 2005) distress, emotional exhaustion and injuries (Landreville, B´edard et al. 2006). A study of 40 facilities in Sweden in 2007 found a correlation between staff stress and the occurrence of AB with facilities where the staff reported a higher level of stress also demonstrated a higher level of AB with the converse also occurring (Edvardsson, O.Sandman et al. 2008). The same study also indicated that facilities where staff reported a more positive caring climate had a lesser occurrence of AB (Edvardsson, O.Sandman et al. 2008). However job strain/stress is not necessarily the inevitable outcome of AB, a study of 253 staff in 12 RAC facilities in Sydney found that although AB was nominated as the attribute most difficult to cope with the staff in different facilities reported varying levels of

job strain not necessarily correlated to the levels of AB. A result which suggests that other factors were involved as in some facilities the occurrence of AB was of comparable levels but staff in those facilities reported varying levels of stress with staff in some facilities more able to cope (Brodaty, Draper et al. 2003). This increased ability to cope can be attributed to a large variety of factors including staff training, selection of staff with greater tolerance to AB and provision of a Special Care Unit (SCU) (Morgan, Stewart et al. 2005).

Several authors refer to "adjustments" or "modifications" to the physical environment to cope with AB and one study by Cohen-Mansfield and Werner in 1998 adjusted "visual, auditory and olfactory stimuli" in parts of a facility to replicate a home scene and also a nature scene. There was a decrease in physical assaults in the home scene but no change in verbal AB in either (Landreville, B ´edard et al. 2006).

Adaptations and modifications incorporated into the physical environment have lead to the SCU which is being continually developed to suit residents with BPSD. The complex and changing physical environment of the SCU (Grant and Sommers 1998; Morgan, Stewart et al. 2005; Filan and Llewellyn-Jones 2006; Landreville, B ´edard et al. 2006) warrants further investigation to determine if there are characteristics with a positive effect on carer stress that could be generalised to the benefit of all care staff.

Training

It has been estimated that carers provide 80% to 90% of resident care but are often poorly trained to help them cope with the stresses particular to RAC facilities (Proctor, Stratton-Powell et al. 1998). It has been shown that adequate training can reduce problems with residents (Kotynia-English, McGowan et al. 2005), reduce carer stress (Proctor, Stratton-Powell et al. 1998), improve the attitudes of staff, promote caring behaviours and impact on resident quality of life (Brodaty, Draper et al. 2003).

The growing prevalence of dementia is becoming the most expensive mental health item in Australia with a cost of $3.2billion in 2002 and an anticipated cost double that by 2010 (Access Economics 2003). Despite this, training for dementia specific care of these highly cognitively impaired residents is not mandatory.

Training carers to manage and prevent intrusions into the personal space of those with BPSD has been found to reduce the occurrence of AB (Landreville, B´edard et al. 2006). Landreville, B´edard et al reported on ten studies they had identified from literature where training programmes to assist carers to manage AB had been evaluated. Eight of the ten studies noted that the effects of the training had been positive and showed a reduction in AB with four studies reporting an improvement in resident behaviour (Landreville, B´edard et al. 2006).

Staff training can also be linked to the use of restraints as without adequate training there can be uncertainty over any available alternatives to physical or

pharmacological solutions to address the fear of AB or concern over residents falling and harming themselves (Moore and Haralambous 2007).

Staff training in RAC facilities can have an immediate and noticeable effect on attitudes, stress, AB, in particular the frequency of assault (Morgan, Stewart et al. 2005) but can be non permanent if there is a high turnover of staff (Kotynia-English, McGowan et al. 2005).

In a study of 2,015 residents over 59 RAC facilities in Maryland, U.S. the authors adopted outcome indicators like theoretically preventable infections and hospitalisations as a measure of quality of care in RAC. Amongst the findings of the study it was noted that there may have been up to 40% of the hospitalisations resulting from infections that were "inappropriate" and could have been avoided as the resident could have been suitably cared for at the RAC facility had there been better staff training (Zimmerman, Gruber-Baldini et al. 2002). Additionally the study found that staff turnover, which can be symptom of work stress (Michie, Ridout et al. 1996; Brodaty, Draper et al. 2003; Morgan, Stewart et al. 2005; Toppinen-Tanner, Ojajärvi et al. 2005; Coogle, Parham et al. 2007) was a common factor in both infection and hospitalisation and was linked to a reduction in familiarity between resident and staff and inconstant levels of training and supervision (Zimmerman, Gruber-Baldini et al. 2002). Reducing the financial burden and resources utilised in unnecessary and avoidable infections and hospitalisation would greatly aid sustainability.

As the incidence of BPSD increases in RAC facilities the nature and focus of training will have to adjust (Morgan, Stewart et al. 2005) to meet the challenge aligned with an ongoing regular training support programme which should improve morale and reduce carer stress (Proctor, Stratton-Powell et al. 1998). To accommodate an ongoing training programme the effects of incorporating a dedicated training facility within the RAC facilities and the type of training facility need to be further investigated.

Residents with high risk of falls

Frail, cognitively impaired residents in RAC facilities are of concern to the community as they present a great risk of falling and the resultant serious consequences (Jensen, Nyberg et al. 2003). Falls were one of the major causes of hospitalisation in older people in New South Wales ahead of circulatory, digestive conditions and cancers in 2004 (Australian Bureau of Statistics 2004).

Falls and the consequences are a considerable cost to the community with the costs of falls in older people representing approximately 33% of the cost of medical treatment for all injuries in Sweden (Kallin, Jensen et al. 2004). It is possible that some falls may be preventable and this cost and utilisation of resources could be reduced (Jensen, Nyberg et al. 2003; Kallin, Jensen et al. 2004).

The causes of falls in RAC has been the subject of several studies with many falls being multifactorial and affected by a combination of factors relating to the predisposition of the resident, the level of care and the environment (Kallin, Jensen

et al. 2004). A study in Sweden of 199 residents over a period of 12 months recorded 482 falls of which 331 could be attributed to causes or principal causes. These causes included the effects of disease, drug side effects, problems walking, reaction times, previous falls, poor vision and external factors (Kallin, Jensen et al. 2004). External factors alone were the primary contributing factor to 7.9% or 38 of the recorded falls, these factors included obstacles, defective equipment, clothes and building problems however there were other falls where external factors were in combination with primary factors like disease and drug side effects (Kallin, Jensen et al. 2004).

The risk of falls can have the effect of a stressor on staff as carers are concerned that they cannot constantly watch every resident in their care (Haggstrom, Skovdahl et al. 2005; Nordam, Torjuul et al. 2005; Bauer 2006) who is at risk of falling. Staff often opt to protect the resident at greater risk by pharmacological or physical restraint on the basis that the potential harm without the restraint is greater than the inherent risk of the restraint (Moore and Haralambous 2007). A number facilities have physical environments with characteristics that make it difficult to avoid restraints like single bedrooms with limited vision of residents in ensuites, furniture, residents' personal belongings (Moore and Haralambous 2007) and equipment which contribute to the risk of falls and can increase the perceived need for restraint (Moore and Haralambous 2007).

A wide range of environmental modifications to reduce the risk of falls have been utilized and trialed. These modifications include rearranging furniture, securing floor coverings, alleviating steps, providing grab rails and hand rails, improved lighting (Jensen, Nyberg et al. 2003), specifically designed beds with bedrails (Kallin, Jensen et al. 2004) and securing resident's personal belongings to avoid clutter (Moore and Haralambous 2007).

The range of environmental modifications requires further investigation as it is extensive and could range from very subtle changes to lighting or decoration to more extensive building alterations. Potential modifications may also be contentious with ethical dimensions, by way of example, Kallin, Jensen et al (2004) see bed rails as a means of avoiding unnecessary falls, Moore & Haralambous (2007) note that they are a form of restraint.

Further investigation is required to identify and analyse the range of potential modifications with ability to reduce the risks of avoidable falls, the inherent stress on care staff, the detrimental effects on residents and family and the cost to the overall community.

Relatives

The relationship between relatives and care staff in RAC facilities has been shown to be a significant source of work stress in some instances as family members relay their expectations for their relative to staff. These expectations may not necessarily be those of the resident as expectancy disconfirmation may apply if the resident has no expectation they may be satisfied with any level of service (Chong 2003). Similarly some of the expectations expressed by the "Baby Boomer" children may

not be those of the "Veteran" parent now in RAC, "Baby Boomer" expectations are shown to be much greater than those of their parents (Maples and Abney 2006). Some care staff have expressed difficulty in dealing with relatives of residents (Michie, Ridout et al. 1996). The sources of the family member's concern can be a result of many factors including anguish that the care of the resident has passed to another party, anticipation by family members of the resident's expectations, concerns over the level of care (Train, Nurock et al. 2005), lack of information (Brodaty, Draper et al. 2003) and the feeling that participation of relatives in an essential ingredient to quality of care (Bauer 2006).

Relatives may feel ongoing anguish that they have passed care of a family member to others and although they may not object to the level of care in the facility they may be experiencing part of the grieving process (Train, Nurock et al. 2005). In this situation they may project their family member's anticipated expectations based on their relationship with the resident, recollections of the resident's previous quality of life and their own personality onto the care environment (Train, Nurock et al. 2005). Relative's dissatisfaction may also, largely through lack of communication, see the routine nature of care as unsympathetic with the potential to fail to recognise the unique needs of the resident (Bauer 2006). This dissatisfaction has lead in some cases to verbal conflict with care staff (Bauer 2006) which could be a work place stressor with a similar result to resident's AB. To further complicate the family/care staff relationship Bauer notes that some families may experience dissatisfaction but be reluctant to complain for fear or retaliation against the resident (Bauer 2006).

Some family interaction may provide stressors to care staff in that relative's concern, beliefs and demands in some areas result in actions that care staff may see as unnecessary and with which they are not entirely comfortable. An example would be repeated requests for some form of restraint or obstructing the reduction of restraints where the family believe there may be a chance of saving the resident from the risk of falling (Moore and Haralambous 2007).

However family involvement, interaction and contribution is known to be an important factor in the well-being of residents in RAC and good care in a sustainable facility would accommodate the needs of all stakeholders (Bauer 2006). In Australia, the significance of the family has been included in both the Charter of Residents' Rights and Responsibilities (Commonwealth Department of Health and Aged Care 2002) and the Australian Government aged care standards of practice (Commonwealth Department of Health and Aged Care 2001)

Many relatives have difficulty imagining their own ageing process and growing dependency and are not able to identify with the resident's needs however, in the context of their current lives, most people to not want to envisage ending up in RAC (Train, Nurock et al. 2005). It would seem that adequate communication is essential to inform relatives of the processes and options available and to thereby go some way to reduce stress on care staff (Train, Nurock et al. 2005; Moore and Haralambous 2007).

Family involvement can be a stressor to care staff however adequate communication could alleviate some stress. The area of family involvement and

communication requires further investigation to determine any implications where the physical environment may assist communication and have an effect on care staff stress.

Privacy, Dignity and Autonomy

Privacy, dignity and autonomy are essential for both residents and care staff in RAC facilities. Bowling and Gabriel (2007) argue that control, independence and autonomy are base human needs that are essential for individuals and not culture dependent (Bowling and Gabriel 2007). Privacy, autonomy, safety and personalization are often considered to relate to quality of life for residents (Slaughter, Calkins et al. 2006) in the RAC context but these factors are not always considered when care staff are concerned.

Care work in RAC is described by Chong (2003) as a "closed system" where residents receive "a monopolistic service system where choice, autonomy and participation are out of their control" (Chong 2003). The service is very personal, intimate and around-the-clock with no break (Chong 2003) for the resident or their carers. The lack of privacy and autonomy for care staff along with continuing stress at work can cause excessive job strain which can result in alienation and a lack of belonging which can result in exhaustion and irritability which in combination can be labeled staff burnout (Nordam, Torjuul et al. 2005).

However the effects privacy and autonomy can have on job satisfaction are significant (Moyle, Skinner et al. 2003) and care staff with higher job satisfaction have been found to be more inclined to have better resident /carer relationships, pass on information during care tasks and offer residents more personal attention and choice (Jenkins and Allen 1998).

Due to the intimate and constant nature of care work some literature has mentioned that care staff may need privacy, possibly in the form of separate areas away from residents, for break times and meetings (Zimmerman, Gruber-Baldini et al. 2002).

The core aim for most RAC facilities is to increase the quality of life for residents with some of the key factors being dignity, which encompasses privacy, and autonomy (Train, Nurock et al. 2005). A view of autonomy in RAC is self governance, independence and self determination giving residents the ability to choose for themselves (Tuckett 2005) this requires the promotion of resident's unique identity and treatment as a dignified human being. Care without dignity becomes disengaged and converts the care of humans to a technical process which can have an undesired and counter productive effect on both resident and carer in making them feel powerless and become a stressor due to ethical dilemma (Nordam, Torjuul et al. 2005; Tuckett 2005).

The challenge for RAC facilities is to create an environment that has the ability to provide residents with flexibility and choice (Train, Nurock et al. 2005) adequate privacy to allow intimacy, meeting and dining with visitors (Zimmerman, Gruber-

Baldini et al. 2002) and as much autonomy and control as possible provided it does not jeopardise their safety (Calkins and Marsden 2000).

Privacy, dignity and autonomy are essential for both care staff and residents and can have a multi faceted influence on carer stress. Further investigation is needed to determine if the physical environment can enhance the ability for a RAC facility to provide privacy, dignity and autonomy for both residents and care staff.

Meals

Mealtimes can be stressful periods in RAC facilities where care staff can be faced with the responsibility and difficulties of ensuring adequate nutrition and hydration for residents with varying levels of cognition including the inability to transfer food to the mouth, high risk of choking, diminished senses of taste and smell, loss of appetite and resistive behaviour with refusal to eat (Crack 2007). Nutrition and hydration are however critical factors of successful ageing and quality of life with the dining experience contributing to social and physiological quality of life (Ruigrok and Sheridan 2006).

Despite the complexities and variety of potential stressors involved with meal management and ensuring adequate nutrition and hydration for dependent residents (Crack 2007), the community has an expectation that RAC facilities provide a home like environment particularly around dining areas. This is not an entirely realistic expectation as RAC facilities provide a mixture of home and institutional environments at meal time. A relevant example is provided by Slaughter, Calkins et al. (2006) who explain that people at home prepare meals, where at a resort the meals are prepared and served by others but in a hospital care staff carefully monitor nutrition, provide assistance and administer medication (Slaughter, Calkins et al. 2006).The RAC facility can only provide a mix of these scenarios in an environment with some "home like" décor. Therefore the physical environment is an essential ingredient to providing the home like atmosphere expected by the community and it must be used in conjunction with the other activities of food service and care, to provide the dining setting that feels as much like home as possible (Calkins and Marsden 2000).

Aesthetics

Aesthetics are seen by some as essentially private and highly subjective therefore difficult to measure and therefore a difficult subject for a rational study (Aspinall 2001). However aesthetics do play a part in everyday life and most people appreciate the benefits of beauty in the surroundings (Edvardsson, Sandman et al. 2005) or the experience of being in a pleasant space (Danes 2002). The aesthetics of RAC facilities may become more prevalent as Baby Boomers age and enter RAC (Maples and Abney 2006) as they are more conscious of quality and beauty and have higher expectations than their parents, the Veterans (Quine and Carter 2006).

The health and well being of humans is influenced by the environment particularly in caring environments (Edvardsson, Sandman et al. 2005) where studies have

found that both care staff and residents have identified that they need environments that are safe, private, friendly and 'homely' (Murphy 2007)

Although care staff and residents have both identified the environment of a RAC facility as important they look at different aspects. In a Swedish study between 2001 and 2004 of 112 care staff, residents and relatives the care staff indicated that significant factors to job satisfaction were the aesthetics of the surroundings in conjunction with "the spirit of the workforce" (Edvardsson 2008). In the same study residents and relatives looked more to feelings of security and safety (Edvardsson 2008).

Noise

RAC facilities can sometimes be noisy places particularly when residents with BPSD may be engaging in noisy vocalisations, disruptive or aggressive behaviour. Noise in the work environment, particularly noise over which a person has no control, can lead to job stress (Hughes 2001; Wellens and Smith 2006; Vischer 2007) and in the case of loud cries and laments from other humans some care staff can feel that the noise can signal angst (McLean 2006) and this in itself can be a stressor. Noise can also come from activities, equipment and nurse call systems (Slaughter, Calkins et al. 2006) but can also be a trigger for AB (Landreville, B ´edard et al. 2006) possibly because studies in cognitive psychology have shown that noise can be a stressor/distractor that cannot be filtered out (Hughes 2001).

Others

There are other aspects of the RAC facility that have the potential to be modified or adapted to reduce stress.

Animal-assisted therapy (AAT) has been the subject of several studies where it has been shown to be beneficial particularly in reducing AB and the resultant stress in both residents and care staff and is becoming more popular as a therapy in RAC facilities (Filan and Llewellyn-Jones 2006). Further investigation is required to identify modifications and adaptations to the physical environment of RAC facilities to accommodate AAT.

The effects of music are also the subject of studies with some results indicating that there can be a contribution to well being and a reduction of stress as music has the ability to link the past with the present (Hays and Minichiello 2005).

FURTHER INVESTIGATION AND CURRENT STUDY

The proposal that social sustainability can be enhanced and quality of life improved for residents in RAC via modifications and adaptations to the physical

environment with the aim of reducing stressors applicable to carers is based upon theory and requires further investigation.

Presently a study is being undertaken to determine the extent to which the candidate environmental stressors are experienced by those working in the RAC sector, and whether further environmental stressors are experienced beyond those already identified in the literature. This study addresses multiple perspectives (practitioners and managers), using multiple methods (Delphi study and semi-structured interviews), and is national in scope.

CONCLUSION

This paper has demonstrated that there is a strong relationship between QoL and care, but that QoL is complex, multidimensional, and therefore difficult to define. It has further argued that there are other factors that can affect care and QoL.

The RAC workplace environment can provide particular stressors to which individuals have their own varying reactions, thereby determining their individual levels of stress/satisfaction. There is an association between quality of care and work stress/job satisfaction however with much of the actual care being undertaken by carers (as distinct from registered nurses) their levels of job stress/satisfaction have the potential to have a great affect on quality of care.

The physical environment affects both job performance and job satisfaction by introducing or alleviating potential stressors. Therefore if workplace stress can be affected by the physical environment and workplace stress also affects the level of care which is a part of QoL then RAC facilities may find an advantage in insulating carers from stressors.

A range of design attributes with the potential to impact upon carer stress have been outlined and there is further investigation required in these areas. A pilot study intended to confirm/extend this model has been described.

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