



Relationship Between Dementia Knowledge and Occupational Strain Among Staff of Residential Facilities for Older Adults: A Cross-sectional Survey

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Abstract

Working with people living with dementia in residential facilities for older adults can be challenging, and this is exacerbated when staff have a limited understanding of dementia. However, the relationship between knowledge of dementia and strain in caring for people with dementia among residential facility staff is unclear. This cross-sectional study investigated the relationship between dementia knowledge and strain in caring for people with dementia. A questionnaire containing the Dementia Knowledge Assessment and Strain in Dementia Care Scales was administered in 2017 and 2019 to 141 staff in three southern Australian residential facilities for older adults. Bivariate and hierarchical regression analysis examined inter-scale relationships and the power of dementia strain to explain knowledge variance. It was found that staff had substantial gaps in dementia knowledge (mean score 32/50) and low strain in dementia care (mean score 4/16). A positive relationship was found between higher dementia knowledge and greater strain in dementia care ($r_s = 0.319$, $p < .001$), particularly with feeling that residents are not receiving appropriate care from colleagues (Factor 1 *Frustrated Empathy*; $r_s = 0.392$, $p < .001$). *Frustrated Empathy* explained a significant amount of variance in dementia knowledge beyond demographic variables. The findings suggest that more comprehensive dementia knowledge is associated with higher strain in care of people with dementia, particularly in the context of perceived lapses in the quality of care provided by colleagues. Arguably, organisational-wide dementia education to address identified gaps should be supported by facilitating staff enaction of their knowledge to improve care.

Keywords Dementia · Knowledge · Occupational stress · Nursing homes · Surveys and questionnaires · Nursing

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Introduction

Working with people living with dementia in residential facilities for older adults can be challenging, and this is exacerbated when staff have a limited understanding of dementia (Robinson et al., 2014). Over half of the residents of Australian residential facilities for older adults (nursing homes) are living with dementia, similar to the situation in many other countries (Alzheimer's Association, 2013; Australian Institute of Health and Welfare [AIHW], 2012; Xu et al., 2017). Typically, these residents may have symptoms such as anxiety, agitation and apathy and a number of possible comorbidities, including diabetes and stroke (Bunn et al., 2014; Tible et al., 2017). Together, these lead to a high level of care needs for people living with dementia, including with activities of daily living.

However, the care of people living with dementia is predominantly provided by unregulated care workers who tend to have a low level of formal education (typically a Certificate III in Individual Support in Australia) and limited understanding of dementia, both in Australia and internationally (Estabrooks et al., 2015; Foster et al., 2019; Gilster et al., 2018; Mavromaras et al., 2017). Furthermore, care workers are not well-remunerated and working conditions can be demanding, with staff feeling pressured to work harder (King et al., 2013). Even more highly qualified staff, such as registered nurses, often have gaps in their dementia knowledge and can experience challenges with working in the residential facility setting (Davis et al., 2016; Evripidou et al., 2019; Robinson et al., 2014). For example, registered nurses have been found to express concern about a perceived deskilling and lack of opportunity to continue their learning, casualisation of the workforce and the staff-skill mix, and difficulties balancing the rights of people with dementia with risk-taking in decision-making (Davis et al., 2016). Yet internationally there have been a limited number of explorations of the challenges experienced with working in the residential facility setting and how they may relate to staff knowledge of dementia (Hughes et al., 2008).

Background

Arguably, all staff across the gamut of residential facility roles should have an understanding of dementia, ranging from the care workers who carry out the majority of direct care, to cleaning staff who interact with residents when undertaking their tasks, to the managers who make staffing, practice and policy decisions (Foster et al., 2019; Müller et al., 2018). Yet limited understanding of dementia among residential facility staff has been found in various studies (Evripidou et al., 2019; Robinson et al., 2014). For example, a systematic review of nurses' knowledge about dementia and care of people living with dementia found gaps in some aspects of such knowledge, such as how to recognise dementia in the early stages, effective communication strategies, and how to manage behavioural changes and resistance to care (Evripidou et al., 2019). An Australian study of 174 residential facility nurses and care workers found that only half understood dementia to reduce life expectancy, with limited understanding of physical symptoms associated with dementia progression (Robinson et al., 2014). In order to provide better care to people living with dementia, it is particu-

larly important that staff view the person with dementia holistically and understand the concept of person-centred care, including strategies to best communicate with people with dementia (Gilster et al., 2018; Morris et al., 2018).

There are a range of factors which contribute to these gaps in knowledge, including low levels of formal education and lack of experience (Evripidou et al., 2019). Studies from international community samples have shown that people are more likely to have higher knowledge of dementia if they have more experience of dementia from work, family or education or a combination of these (Eccleston et al., 2019). Being female, older, and more highly educated are also associated with greater dementia knowledge, as has been found in both large general and older adult care-focused international samples and smaller residential facility staff samples (Di Napoli et al., 2013; Eccleston et al., 2019; Van Patten & Tremont, 2018). Although care workers for older adults often fall outside of the more highly educated categories that are associated with greater dementia knowledge, they are predominantly female and older (Mavromaras et al., 2017; OECD, 2020). For example, of the Australian residential direct care workforce (comprising nurses, care workers and allied health), 55% are aged 45 years or older and 87% are female (Mavromaras et al., 2017).

In addition to challenges posed by not always having adequate dementia knowledge, previous research has found that caring for people with dementia may lead to increased stress levels (Edvardsson et al., 2009; Isaia et al., 2011; Karantzas et al., 2016; Vogel et al., 2017). For example, an Italian study has found that staff particularly feel stress from difficulties communicating with people with dementia and can find caring for people with dementia to be tiring and frustrating (Isaia et al., 2011). Edvardsson and colleagues' (2009) study of nursing staff in residential dementia care in Sweden found the majority of participants reported that the high level of effort required, conflicting demands and lack of time to complete work were all major problems manifesting as job strain. Edberg et al. (2008) report that 'strain' is a direct contrast to 'satisfaction' and is sometimes used interchangeably with 'stress' or congruent with 'moral distress', where it may be difficult to follow what one feels is the correct cause of action due to institutional barriers. These institutional barriers, such as lack of time, resources, or management support, mean that staff are not always able to satisfy their desire to provide the best care possible, thus creating strain (Edberg et al., 2008). Strain can be measured as a combination of stress caused by experience of a situation or feeling when caring for people with dementia and frequency of occurrence of this situation or feeling (Edberg et al., 2008). Using this definition of strain, moderate levels of strain were found in Australian staff working in residential facilities for older adults, with higher levels present with lower staff self-efficacy (or belief in their capacity) to work with residents with dementia (Karantzas et al., 2016).

Limited research has looked at the relationship between level of residential facility staff dementia knowledge and strain associated with care of people living with dementia. Although Edvardsson et al. (2009) examined knowledge and job strain - and did not find a relationship between the two - they only used self-reported knowledge of caring for people with dementia measured as a single item and general, rather than dementia specific, measures of job strain. Some studies have examined the relationship between dementia knowledge and concepts closely related to strain, including stress, anxiety (feeling worried or afraid, with accompanying physical symptoms

such as muscular tension [Cooper et al., 2007]) and perceived burden (the emotional, physical, and social impact of the stress of care provision [Zarit et al., 1985]). German and UK studies with family caregivers of people with dementia have found that higher *perceived* knowledge has been associated with lower burden (Schindler et al., 2012), but that the more actual knowledge caregivers have about dementia, such as the biomedical aspects, the more anxiety is present (Graham et al., 1997; Proctor et al., 2002). Proctor and colleagues (2002) suggest that the latter may be more likely due to anxious family caregivers seeking out biomedical knowledge rather than increased awareness of biomedical aspects of dementia leading to anxiety over the dementia trajectory. An Italian longitudinal study with residential facility staff (registered nurses and nurse assistants) has found that completion of a 64-hour course on caring for people with cognitive impairment decreased stress levels, leading the authors to hypothesise that better knowledge of dementia may help reduce work-related stress of older adult care staff (Isaia et al., 2011). The findings of these studies suggest the need to further explore the relationship between knowledge of dementia and strain in caring for people with dementia among residential facility staff, using a more in-depth assessment of knowledge, as the relationship is unclear.

The Study

Aim

The aim of the study was to investigate the contemporary relationship between residential facility staff knowledge of dementia and strain in caring for people with dementia. Firstly, we wanted to establish the level of dementia knowledge and strain in dementia care among staff; secondly, investigate whether a relationship was present between the two and, if so, the direction and size of the relationship; and thirdly, identify which dimensions of strain in dementia care are associated with dementia knowledge. We also wanted to consider the influence of demographic and employment characteristics, namely gender, age, education, and experience, on dementia knowledge in relation to strain.

Design

This was a cross-sectional survey of dementia knowledge and strain in dementia care that was undertaken with staff from three residential facilities (owned by the same organisation) at two time periods, with data aggregated to maximise sample size. Questionnaires were self-administered with an investigator present to ensure they were completed independently. This method was chosen over online survey administration to minimise burden on residential facility staff, as well as to enhance the response rate by removing the barrier of lack of access to computers in the workplace and facilitating staff participation by enabling questionnaire completion during or on either side of shifts.

Participants

The study was conducted in three southern Australian residential facilities owned by a single not-for-profit residential care provider (> 350 residents with low-to-high care needs, including dementia). The survey was conducted in July 2017 and again in February/March 2019 to increase sample size. A single 24-hour period for data collection at each site was determined and advertised to staff via flyers, personal communication, and word of mouth. On the designated day, all staff working in any role during the morning, afternoon and night shifts were invited to participate in the survey by filling in a paper questionnaire.

One hundred and fifty-nine questionnaires were returned from the 402 staff members rostered on during the two data collection periods, giving an overall response rate of 40% (53% and 29% for the first and second periods). Staff from a wide range of roles participated in the survey (Table 1). Care workers comprised the largest group of participants, with 65 of 170 care workers rostered on at the data collection times participating, giving an overall care worker response rate of 38% (53% and 26% for the first and second periods). Overall, 141 individuals participated in the survey, as 18 individual staff members (including 4 care workers) completed the survey at both data collection periods. The predominant reasons given by staff for not participating were a lack of time due to the need for direct engagement in resident care or inability to stay longer at the site after completion of their shift.

Data Collection

Questionnaires were completed on paper and were self-administered on-site in a quiet area of each facility, with an investigator present. They were completed during or after shifts, depending on participant preferences. Completion of the questionnaire took approximately 20–30 min. Surveys were coded by the investigator with a unique identification code for each staff member so that individuals who completed at both times could be identified. Identifying information (names and linked codes) was stored separately from survey responses.

Questionnaires

Staff were asked to complete a questionnaire containing two scales, the Dementia Knowledge Assessment Scale and Strain in Dementia Care Scale, as described below. Both scales had been previously used with Australian samples, and hence were suitable for the Australian context. Demographic and employment items, including gender, age, role, years of experience working with people with dementia and highest level of completed education, were included in the Dementia Knowledge Assessment Scale tool (see Table 1).

Dementia Knowledge Assessment Scale. The Dementia Knowledge Assessment Scale is a validated tool with high levels of test-retest reliability, internal consistency (Cronbach alpha 0.85), and construct, concurrent and factorial validity (Annear, Toye, et al., 2017). The tool includes 25 true-false items measuring knowledge of different aspects of dementia, including characteristics of dementia (e.g. “Blood vessel

Table 1 Percentages and Number of Cases or Means and Standard Deviations (SD) for Demographic Items, Dementia Knowledge and Strain in Dementia Care Scores for Participants Overall (N=141) and for Care Workers (n=61)

	Overall sample, including care workers % (n) or Mean (SD)	Care workers % (n) or Mean (SD)
Gender		
Female	84.4% (119)	85.2% (52)
Age (mean)	47.0 (14.073)	43.1 (14.472)
Education (highest level completed)		
Primary school	1.4% (2)	1.7% (1)
Secondary school (years 7–10)	19.3% (27)	16.7% (10)
Secondary school (years 11–12)	10.0% (14)	15.0% (9)
Certificate or apprenticeship (e.g., Certificate III or IV ^a)	37.9% (53)	50.0% (30)
Diploma / Associate Degree	10.0% (14)	5.0% (3)
University Degree (Bachelor)	14.3% (20)	8.3% (5)
Higher University Degree	7.1% (10)	3.3% (2)
Role		
Care worker	43.3% (61)	100.0% (61)
Hospitality services (e.g., cleaning, catering)	16.3% (23)	
Registered nurse	11.3% (16)	
Leisure and Lifestyle (activities worker)	7.1% (10)	
Enrolled nurse	6.4% (9)	
Administration	5.7% (8)	
Other (e.g., maintenance)	5.7% (8)	
Senior managers	3.5% (5)	
Allied health	0.7% (1)	
Number of years working with people with dementia (mean)	9.5 (8.388)	8.3 (7.440)
Dementia Knowledge Assessment Survey (DKAS) score^b(mean)	32.1 (8.685)	32.9 (7.547)
Strain in Dementia Care Scale (SDCS) score^c(mean)	4.2 (1.625)	4.5 (1.699)

^aA Certificate III or IV is obtained after completion of nationally recognised training or apprenticeship at level 3 or 4, respectively, of the Australian Qualifications Framework (in comparison, a Bachelor Degree is at level 7 and a Doctoral Degree at level 10)

^bDKAS maximum possible score=50

^cSDCS maximum possible score=16

disease (vascular dementia) is the most common form of dementia”), communication with people with dementia (e.g. “People experiencing advanced dementia often communicate through body language”), care needs of people with dementia (e.g. “People with advanced dementia may have difficulty speaking”), and dementia risk factors (e.g. “Exercise is generally beneficial for people experiencing dementia”) (Annear, Toye, et al., 2017). Response options are ‘false’, ‘probably false’, ‘probably true’, ‘true’ and ‘don’t know’, with a maximum possible summed score of 50 indicating comprehensive dementia knowledge.

The standard scoring procedure was followed to create a Dementia Knowledge Assessment Scale score for each participant according to whether answers to each of the 25 items were correct or incorrect. That is, a score of 2 was given to each correct

answer (e.g. when an answer of ‘true’ was given to a true statement), 1 for a partially correct answer (e.g. when an answer of ‘probably false’ was given to an untrue statement) and 0 for an incorrect or ‘don’t know’ answer (e.g. when an answer of ‘false’ or ‘probably false’ was given to a true statement). These scores were summed to give a total Dementia Knowledge Assessment Scale score for each participant.

Strain in Dementia Care Scale. The Strain in Dementia Care Scale is a validated 27-item tool with high internal consistency (Cronbach alpha 0.94) designed to assess staff strain by examining dementia care staff perceptions of frequency of various dementia care situations or feelings (‘never’, ‘sometimes’, ‘quite often’, ‘very often’) and associated stress (‘none’, ‘mild stress’, ‘moderate stress’, ‘high stress’) (Edberg et al., 2015). An overall strain score is obtained by multiplying the frequency and stress components and summing the total number of items divided by number of questions, with higher scores indicating greater strain (to a maximum possible score of 16). Exploratory and confirmatory factor analysis was used by the tool developers (Edberg et al., 2015) to differentiate the items into five factors: (1) *Frustrated Empathy* (e.g. “I see other staff behaving toward a resident in a way which shows they do not understand the effects of dementia”; “Residents do not receive the care I feel they are entitled to”); (2) *Difficulties Understanding and Interpreting* (e.g. “I have difficulty understanding what residents are trying to communicate”; “I worry I might upset or hurt a resident because I do not understand his or her needs”); (3) *Balancing Competing Needs* (e.g. “I have to prioritise on the basis of urgency rather than fairness or the needs of residents”; “I have to balance the needs of a resident against the needs or demands of other residents”); (4) *Balancing Emotional Involvement* (e.g. “I feel the residents are highly dependent on me”; “I wish I knew more about residents so that I could understand them better”); (5) *Lack of Recognition* (e.g. “I want to do much more for residents than my employers allow me to”; “My employers do not appreciate the work I am doing”).

The standard scoring method was used to generate an overall Strain in Dementia Care Scale score for each participant. This was done by calculating the mean of the multiplication of frequency and stress Strain in Dementia Care Scale items. Strain in Dementia Care Scale factor scores were generated from calculating the mean of the multiplication of frequency and stress Strain in Dementia Care Scale items, based on published factors (Edberg et al., 2015).

Ethical Considerations

Approval for the project was received from the University of Tasmania Human Research Ethics Committee (Ref. No. 0016630). Staff members were provided with Information Sheets, the project was explained to them by the investigators, and informed consent to participate was provided by completion and submission of the questionnaire.

Data Analysis

Data were managed and analysed using IBM SPSS version 24.0 (IBM Corp., Armonk, NY, USA). Statistical testing was undertaken at the 0.05 level of significance. Data

from both collection periods were aggregated to maximise the sample size. Eighteen individuals (including 4 care workers) participated in the survey twice. To minimise the bias that may be introduced as a result of these repetitions, one time point was randomly selected for each of these participants, with the data from the second time deleted (Fiscella & Holt, 2007).

Descriptive statistics were generated for Dementia Knowledge Assessment Scale and Strain in Dementia Care Scale scores, and demographic items. As the largest group when considering participants' roles, and given their role as the main care providers, data for care workers were considered separately when appropriate; the other role groups were not considered separately as they were too small to be able to provide meaningful data. Pearson chi-square tests were used to compare gender and education between care workers and all other participants.

Bivariate analysis examined the relationships between the Dementia Knowledge Assessment Scale score and Strain in Dementia Care Scale overall, Strain in Dementia Care Scale factor mean scores and demographic items [age, gender (using a dummy variable to represent this categorical data so it can be used in the analysis: '0' for male and '1' for female), education, number of years working with people with dementia] for the overall sample. In order to assess these relationships among individuals with the same role, analysis was also run separately for care workers alone. The non-parametric Spearman's rank-order correlation, expressed as r_s , was used due to the non-normal distribution of the examined data. When reporting results of bivariate analyses, the strength of each of the relationships was guided by De Vaus (2007), that is: 0.0=no association; 0.01–0.09=trivial; 0.10–0.29=low to moderate; 0.30–0.49=moderate to substantial; 0.50–0.69=substantial to very strong; 0.70–0.89=very strong; 0.90+=near perfect.

Hierarchical multiple regression was conducted to examine whether the Strain in Dementia Care Scale independent variables explained any variance in dementia knowledge after accounting for age, level of general education, gender and years working with people with dementia. The independent variables were entered in two blocks, using enter and stepwise entry methods respectively: (1) age, education, gender (dummy variable), number of years working with people with dementia and (2) the five Strain in Dementia Care Scale factors. In the first block, all variables were entered in a single step (enter). Stepwise entry - where new variables are added incrementally while testing for statistical significance - was used for the second block due to the exploratory nature of the model-building phase. Checks were conducted, such as via scatter plots, to ensure that the assumptions of multiple regression analysis were not violated, including linearity, collinearity, and distribution and autocorrelation of residuals (e.g., variance inflation factor ≤ 1.067 , indicating low collinearity between the independent variables; Durbin-Watson $d=1.655$, which is in the acceptable range of 1.5–2.5, indicating no first order linear auto-correlation in the residuals from our regression analysis data). Cases with any missing data were excluded ($n=44$), as missing data diagnosis confirmed that there was no systematic pattern of missing data (i.e. missing data were completely at random). The regression was performed only on the whole sample and not care workers separately, given the need for adequate sample size for this technique. The sample of 97 complete cases gave the study sufficient statistical power, according to recommendations for a minimum of 10

participants per explanatory variable (Harris, 1985; Wilson Van Voorhis & Morgan, 2007).

Results

Table 1 summarises participants' key demographic characteristics, together with mean dementia knowledge and strain scores, for participants overall and for care workers, as the largest occupational group. The majority of participants were female (note that there was no significant difference between the gender of care workers compared to non-care worker participants, $\chi^2(1, N=141)=0.1, p=.81$). Mean age of participants was 47.0 years (range 18–72 years). The highest level of completed education for over a third of participants (37.9%) was a certificate or apprenticeship, with a slightly lower proportion (30.7%) not having obtained any post school qualification. Care workers had a lower level of completed education than non-care worker participants, $\chi^2(6, N=140)=14.5, p=.03$. Participants were mostly employed as care workers (43.3%) or in nursing (17.7% enrolled or registered nurses) or hospitality (16.3%) roles, with a mean of 9.5 years working with people with dementia. Addressing our first research question, dementia knowledge among the staff in our sample was deficient in a number of areas (32.1 from a maximum possible score of 50), with strain in dementia care low (4.2 from a maximum possible score of 16).

In answer to our second research question of whether a relationship was present between dementia knowledge and strain in dementia care, there was found to be a positive relationship of moderate strength between higher knowledge and greater strain (Table 2). In addition, for the overall sample rather than care workers separately, there was a positive relationship between higher dementia knowledge and some demographic characteristics (Table 2). The demographic characteristics with the strongest relationship with dementia knowledge were a higher level of education and longer experience working with people with dementia. For the whole sample, the strongest relationship (positive, moderate strength) was between higher dementia knowledge and feeling that residents were not receiving appropriate care from other staff (Strain in Dementia Care Scale Factor 1 *Frustrated Empathy*), followed by the Strain in Dementia Care Scale overall mean score. For care workers, the only relationships (positive, moderate strength) between dementia knowledge and demographic and strain items were with Strain in Dementia Care Scale Factor 5 *Lack of Recognition*, Strain in Dementia Care Scale Factor 4 *Balancing Emotional Involvement* and Strain in Dementia Care Scale Factor 1 *Frustrated Empathy*. In other words, the higher the dementia knowledge, the higher the strain in dementia care experienced.

Finally, in relation to our third research question, the demographic variables of gender and level of education together explained a significant amount of variance in knowledge ($R^2_{adj}=0.175, F(4, 92)=6.082, p<.001$), with age and number of years working with people with dementia not associated (Table 3). The amount of variance explained increased when Strain in Dementia Care Scale Factor 1 *Frustrated Empathy* entered the model ($R^2_{adj}=0.343, F(1, 91)=24.537, p<.001$). The remaining four Strain in Dementia Care Scale factors did not enter the model. Thus, even when the

Table 2 Bivariate Analysis Correlations (Spearman's Rank-Order, r_s) Between Level of Dementia Knowledge (DKAS) With Demographics and Strain in Dementia Care for Participants Overall and for Care Workers

	Dementia knowledge			
	Overall sample, including care workers		Care workers	
	Spearman's rank order, r_s	p-value	Spearman's rank order, r_s	p-value
Demographics				
Age	0.210	0.01	0.199	0.13
Gender ^a	0.215	0.01	-0.050	0.70
Education (highest level completed)	0.250	0.003	-0.097	0.46
Number of years working with people with dementia	0.230	0.011	0.007	0.96
Strain in Dementia Care Scale (SDCS)				
SDCS Overall	0.319	< 0.001	0.265	0.051
SDCS Factor 1 <i>Frustrated Empathy</i>	0.392	< 0.001	0.269	0.047
SDCS Factor 2 <i>Difficulties Understanding and Interpreting</i>	0.151	0.09	0.258	0.06
SDCS Factor 3 <i>Balancing Competing Needs</i>	0.289	0.001	0.183	0.18
SDCS Factor 4 <i>Balancing Emotional Involvement</i>	0.256	0.004	0.299	0.03
SDCS Factor 5 <i>Lack of Recognition</i>	0.230	0.01	0.300	0.023

Note. Bold is used to highlight the statistically significant findings

^a 0=male, 1=female

Table 3 Hierarchical Multiple Regression Analysis of Dementia Knowledge on Control Variables and Strain in Dementia Care (Showing Standardised Regression Weights, β)

Predictor	Step 1		Step 2	
	Standardised regression weight, β	p-value	Standardised regression weight, β	p-value
Control variables				
Age	0.105	0.37	0.100	0.34
Gender ^a	0.218	0.03	0.206	0.02
Education	0.341	< 0.001	0.278	0.002
Years working with people with dementia	0.161	0.17	0.148	0.16
SDCS Factor 1 <i>Frustrated Empathy</i>			0.415	< 0.001
R^2	0.209		0.377	
Adjusted R^2	0.175		0.343	
ΔR^2	0.209		0.168	

Note. Bold is used to highlight the statistically significant findings

^a 0=male, 1=female

demographic variables were controlled for, strain in dementia care was still significantly associated with dementia knowledge.

Discussion

Our sample is typical of the Australian residential facility workforce, being predominantly female and middle-aged (Mavromaras et al., 2017). Sixty-nine per cent ($n=97$) of participants in our sample were in direct care roles, compared to the 65% national average, with 63% and 17% of those in direct care in our sample being care workers or registered nurses, respectively, compared to 70% and 15% nationally (Mavromaras et al., 2017).

In the context of working in a residential facility setting where dementia prevalence is high, substantial gaps were found in dementia knowledge (32.1 of maximum of 50), which is consistent with previous studies and only marginally higher than reported scores for individuals with no exposure to dementia (typically less than 30) (Eccleston et al., 2019; Robinson et al., 2014). We found a low level of strain experienced by residential facility staff from working with people with dementia (mean of 4.2/16), comparable to previous studies that have utilised the same questionnaire (Orrung Wallin et al., 2015; Sandberg et al., 2018). For example, Swedish studies found nursing assistants in residential care had a mean score of 3.3 (Orrung Wallin et al., 2015), while, in home care services, dementia care specialists had a mean score of 5.7 and staff not specialised in dementia care had a mean score of 4.7 (Sandberg et al., 2018).

Consistent with previous research, we found links between demographic variables (gender, formal education, age, years of experience working with people with dementia) and dementia knowledge (Di Napoli et al., 2013; Eccleston et al., 2019; Van Paten & Tremont, 2018). However, we found that strain in dementia care had a stronger relationship with knowledge than with demographic indicators. This contributes to closing the gap in understanding of the relationship between dementia knowledge and strain involved with caring for people with dementia among residential facility staff. Although the relatively low explained variance in dementia knowledge that we found (i.e. $R^2_{\text{adj}}=0.343$) is not atypical for this type of study (cf. Chang & Hsu, 2020; Smyth et al., 2013), it indicates that there are factors in addition to strain and demographic variables that are related to dementia knowledge but which we did not examine, such as attitudes. For example, a survey of Taiwanese adults found that participants who held attitudes towards people with dementia associated with shame had poorer knowledge of dementia than those who held non-negative attitudes (Chang & Hsu, 2020). A more comprehensive set of factors underpinning dementia knowledge could be explored in future studies.

Although Isaia and colleagues (2011) did not directly examine the relationship between dementia knowledge and strain in dementia care, their research suggests dementia education decreases stress levels of residential facility staff. The areas of stress which they found to improve most were related to frustration resulting from participants' personal difficulties with communicating with people with dementia (Isaia et al., 2011). In contrast, we found a positive relationship between higher dementia

knowledge and higher strain in dementia care. At first, this finding seems counter-intuitive, but upon closer inspection of the specific components of strain which are related to knowledge, this becomes more understandable. In particular, those aspects of strain most closely connected to knowledge were as a result of feeling that residents are not receiving care appropriate to the needs of people with dementia (*Frustrated Empathy*). This was also present when data from care workers was examined separately, although the strength of the relationship differed and was weaker overall.

Our findings suggest that there are knowledge deficits in what we have termed ‘essential’ understandings of dementia (Annear et al., 2015) among residential facility staff, but more comprehensive knowledge is also associated with higher strain in the context of perceived lapses in care quality. In other words, staff members with a higher level of dementia knowledge are likely to be more aware of deficiencies in approaches to providing care for people living with dementia. These findings raise two aspects where attention may be warranted. Firstly, staff knowledge of dementia needs to be enhanced in residential care. Clear deficits in fundamental knowledge of dementia persist among staff. For those with greater knowledge, strain may be increased if they are unable to translate their knowledge into practice. This may be more pronounced if they are in a lower status role, such as care workers and hospitality staff. This suggests that education about knowledge translation may be needed as well as cultural support for practice change. A whole-of-organisation, systematic approach is needed to create a learning environment. Therefore, the second aspect where attention is warranted is that knowledge enhancement needs to be complemented by providing staff at all levels with the opportunity and support to apply knowledge to practice change in order to improve the quality of care for residents with dementia.

Previous research suggests that to achieve organisation-wide dementia practice change there are a number of sector-wide, organisational and individual challenges that need to be met and support structures put in place to better facilitate improvements in dementia knowledge among the workforce (Goodenough et al., 2017; Low et al., 2015; Spector et al., 2016). For example, research has found that multiple factors impact on levels of dementia knowledge and strain in dementia care, such as workforce issues related to part-time work, low pay, workload, low level of education and lack of opportunity to participate in further education or training, as well as broader issues for the sector such as funding (Aged Care Workforce Strategy Taskforce, 2018; Edvardsson et al., 2009; Evripidou et al., 2019; Gilster et al., 2018). A systematic approach to raising knowledge of dementia across the organisation may help overcome barriers to individuals’ knowledge acquisition and reduce reliance on highly motivated staff members to improve their own knowledge on an ad hoc and individual basis. Previous research has demonstrated the importance of organisational- rather than individual-level change to drive quality care (Annear, Elliott et al., 2017; Annear et al., 2014; Chenoweth et al., 2019; Sjögren et al., 2017). For example, a systematic whole of organisational change approach to develop teaching residential facilities for older adults has improved residents’ and family members’ perception of dementia care quality and staff engagement in professional development and learning, overcoming an ineffective ad hoc approach to developing organisational knowl-

edge and capability to drive improvements in dementia care quality (Annear, Elliott, et al., 2017; Annear et al., 2014).

It may be that staff need to be equipped with greater knowledge about dementia in an environment that allows them to apply this knowledge: What does this knowledge mean for their own and others' dementia care practices? How can this knowledge be translated into improvements in dementia care practices? Indeed, a study by Goodenough and colleagues (2017) found that simply providing information about dementia was inadequate for staff to drive change without sufficient information about applying this in practice.

Limitations

This was an exploratory study conducted in one organisation which, although inclusive of three residential facilities and with participants in alignment with Australian workforce characteristics, limits the generalisability of the results; for example, similar workforce strategies are in operation across the organisation. However, it has been questioned whether generalisability should be a goal of research conducted within residential facilities, given the dynamic nature of these settings (Lood et al., 2019). Additional investigation of the relationship between strain in dementia care and dementia knowledge is required, including in multiple organisations with different models of care and from countries outside Australia. Exploration of the impact of role status on strain and knowledge is also warranted. It would be interesting to examine the relationship among staff with roles other than care workers, such as among a sample of registered nurses; the number of registered nurses in our sample was too small to examine separately. Furthermore, because this was a cross-sectional study, causality cannot be assumed. Future research could include a longitudinal study where strain in dementia care could be examined before and after an intervention that improves dementia knowledge widely across the organisation. It may be that in a context of improved dementia knowledge that is put into practice across the organisation, strain decreases.

Conclusion

The results of our study suggest that there is indeed a relationship between residential facility staff knowledge of dementia and strain in caring for people with dementia, and that this is a positive relationship of moderate strength. Our findings suggest that not only do residential facility staff have gaps in their dementia knowledge, consistent with other studies, but that more comprehensive knowledge is associated with higher strain in the context of perceived lapses in care quality. In other words, staff members with higher dementia knowledge feel residents with dementia are not being provided with an appropriate level of care by others. This implies that training or education alone is unlikely to lead to sustained change if it is not complemented by a mechanism to translate the new knowledge into practice in an environment which supports staff to challenge existing practices that do not accord with high quality evidence-based dementia care. A supportive environment where staff are equipped

not only with dementia knowledge but empowered to apply this knowledge to practice change is likely to be an important step in changing dementia care practices. Staff at all levels within an organisation need to be encouraged to initiate change. There needs to be a focus on improving dementia knowledge of residential facility staff more widely and on ensuring knowledge translation aspects are incorporated, which may enable improvements to dementia care and minimise occupational strain experienced by staff with better knowledge.

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Author Contributions Emma Lea designed the study, collected the data, and drafted the manuscript. Emma Lea and Kathleen Doherty analysed the data. All authors were involved with interpretation of data. Andrew Robinson and Kathleen Doherty critically revised the manuscript. All authors have read and approved the final version of the manuscript.

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Declarations

Conflict of Interest The authors have no relevant financial or non-financial interests to disclose.

Ethics Approval Approval for the project was received from the University of Tasmania Human Research Ethics Committee (Ref. No. 0016630). The study was performed in accordance with the National Statement on Ethical Conduct in Human Research (NHMRC, 2007, updated 2018), which aligns with the 1964 Declaration of Helsinki ethical standards.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

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