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Documented nursing practices of pain assessment and management when communicating about pain in dementia care

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Abstract

Aim: To evaluate nurses' documented practice when communicating about pain for people with dementia in hospital.

Design: Retrospective medical record review.

Method: Medical records were retrieved from four inpatient units in a district and a tertiary teaching hospital of people aged 65 years and over with documented dementia. Data were extracted on nurses' documented pain assessment and management. Pain frequency and association between patient self-report, pain scores, cognition levels and analgesics used during hospitalization were analysed using descriptive and inferential statistics. Multivariate regression examined patient characteristics, pain characteristics and length of hospital stay.

Results: One-hundred patient records met the inclusion criteria between 1 January and 31 August 2017. Sixty-six percent of patients with dementia had pain documented at least once during hospitalization with 58% reported as moderate to severe pain intensity. Patients' pain severity during admission was associated with their length of hospital stay. Ninety-three percent of nurses used a self-reporting pain tool and 7% used an observational pain tool. Pain scores were not associated with patients' cognition level, nurses' pain reports or analgesic management.

Conclusion: Pain frequently occurs in people with dementia during hospitalization. Fragmented pain reporting influences the translation of pain messages. Disproportionate pain tool application and non-association between pain scores and analgesic management suggest a potential knowledge gap among nurses about the practical use of pain tools and practice gap between pain assessment and management in dementia care.

Impact: Pain was regularly assessed by nurses and implemented as a fifth vital sign for people with dementia in hospitals. However, the high frequency of pain affects care outcomes. Areas for improvement include nursing practice of pain assessment and management in dementia care in hospitals. Further understanding of the usefulness of pain tools and the efficacy of pain scores when communicating about pain in dementia care in hospitals is required.

1 | INTRODUCTION

Dementia affects millions of people worldwide and is currently the seventh leading cause of death and a significant cause of disability and dependency among older people (World Health Organization, 2021). Healthcare organizations are expected to prepare for increasing care demands from people with dementia over the next 20 years (World Health Organization, 2021).

Pain is a sophisticated subjective experience involving sensory-discrimination (pain threshold), affective-motivation (pain tolerance) and cognitive-evaluation (pain memory) (Mano & Seymour, 2015), collectively known as pain perception. Deficits in cerebral cortical neurons in dementia modify the medial and lateral systems of pain perception (Haasum et al., 2011). As a result, pain possibly diminishes among people with dementia and the intensity of pain may decrease with increasing severity of dementia (Beach et al., 2017). However, studies have found that neuronal deficits affect different areas of the cerebrum system (Achterberg et al., 2020). The neuropathological changes occurring within different types of dementia could be a more prominent factor for individuals experiencing pain (Achterberg et al., 2020).

Despite the modification of pain perception that may occur in people with dementia, communication barriers between patients and nurses make pain assessment and management in people with dementia challenging (Rantala et al., 2014). Due to cognitive deficits, people with dementia often have limited ability to communicate verbally (Hadjistavropoulos et al., 2014). These limitations result in less reliable self-reporting pain methods in people with dementia, and the assessment of pain may need to rely more on observational pain reporting methods (Achterberg et al., 2020). Many pain assessment tools, comprising self-reporting pain tools and observational pain tools, have been developed to assist in pain assessment and obtain a pain score in people with dementia (Anderson et al., 2018). Nevertheless, behavioural and psychological symptoms of dementia that are considered the most relevant indicators associated with pain experiences often overlap (Atee et al., 2021). This overlap makes distinguishing the symptoms of dementia from pain-related behaviours challenging, even with the use of pain assessment tools, impacting the management of pain and dementia behaviours (Nguyen et al., 2021).

Pain is a common cause of hospitalization for people with dementia (Panayiotou, 2018; Sampson et al., 2015). Various pain-related conditions, such as arthritis, musculoskeletal disease, cancer, depression, osteoporosis and many other chronic diseases, are common among people with dementia who are hospitalized (Jones et al., 2017). Caring for people with dementia in a hospital environment presents unique challenges for nurses as their ability to provide quality care is reduced due to the nature of cognitive impairment and communication difficulties (Australian Health Ministers Advisory Council, 2015). Hospital is an unpredictable environment with high workloads and varied patient acuities; hence hospitalization can be a distressing experience for people with dementia (Fry et al., 2015). Given that people with dementia may be less likely to provide accurate and complete histories of their pain, a nurse's ability to acquire adequate information to accurately observe and identify pain in people with dementia is reduced (Australian Health Ministers Advisory Council, 2015). Any supplemental information received from caregivers and family members may depend on their level of engagement. These barriers hinder nurses from communicating about pain with people with dementia leading to less than optimal pain assessment and management in hospital care environments (Australian Institute of Health and Welfare, 2019).

Global approaches to managing pain in people with dementia are emerging with scientific advancement in pain detection and development of non-pharmacological pain management (Erin Browne et al., 2019; Liao et al., 2021; Othman et al., 2021). Clinical guidelines and recommendations for assessing and managing pain in people with dementia are available in most healthcare settings (Anderson et al., 2021). Various approaches have been made to improve nurses' pain assessment and management for people with dementia, including pharmacological and non-pharmacological management (Liao et al., 2021; Tsai et al., 2020). However, inadequacies and challenges associated with nursing practice, in general, mean that pain in people with dementia remains suboptimal in the global healthcare context (Achterberg et al., 2021). Hospitalization is often an important transition period for people with dementia (Australian Institute of Health and Welfare, 2019). Therefore, identifying areas for improvement and a better understanding of clinical implications is important for future nursing practice of pain in dementia care in hospital.

Nurses' documentation is a communication tool that reflects how pain messages of people with dementia are being assessed and managed during hospitalization. Nursing documentation reveals the frequency of pain occurrence and associated care outcomes in people with dementia in hospitals. Evaluating how pain has been communicated through nurses' documented practice informs an evidence-based discussion and may help address the associated clinical implications for dementia care in hospital settings.

2 | THE STUDY

2.1 | Aim

This study aims to evaluate nurses' documented practice when communicating about pain in people with dementia in hospital. The research questions addressed in this study are (1) How frequently is

pain reported by nurses caring for people with dementia in hospitals? (2) What patient outcomes are associated with pain frequency in dementia hospitalization? (3) How do nurses report pain messages from people with dementia when undertaking pain assessment and management? (4) What effect do pain scores have on nursing practice when undertaking pain assessments and management, (5) What implications do nurses' documented practice have on their communication about pain for people with dementia in hospitals? and (6) Do patient outcomes differ between a district hospital and a tertiary teaching hospital.

2.2 | Design

A retrospective medical record review design was used. The patient record review method enables the nurses' documented communication of pain practice to be quantified into an aggregated evaluation. The study conforms to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines (von Elm et al., 2008).

2.3 | Settings and sample size

Patients' medical records were selected from four inpatient units in two hospitals in regional New South Wales, Australia. The 4 units included a geriatric rehabilitation unit and a medical unit in one district hospital (300 beds) and two acute geriatric units in one tertiary teaching hospital (500 beds). Each unit size was between 25 and 30 beds and accommodated patients with and without dementia. To evaluate nurses' practices from these 4 units, a minimum of 20 patient records from each unit (total 80 records) was sufficient to satisfy an 80% statistical power at a 0.05 significance level. Each unit used an electronic medical record system.

2.4 | Eligibility of participant records

Patient records were included if they were aged 65 years and over with a documented dementia diagnosis in their medical record. Patients were excluded if they were aged under 65 years and had no dementia diagnosis documented in their medical record.

2.5 | Data collection

Medical records were retrieved electronically using a standardized data extraction codebook and procedure by the first author. The first author, external to the 4 units, received training to use the electronic medical record systems and had clinical experience in pain management in dementia care prior to data collection. To evaluate the most current nurses' documented pain practices in dementia care in hospitals, data from the latest hospital admission were collected during

the study's data collection period. The records of patients with a dementia diagnosis hospitalized between 1 January 2017 and 31 August 2017, meeting the inclusion criteria were retrieved. Extracted information included patient's demographic characteristics such as age and gender and clinical characteristics. Clinical characteristics included reason for admission, comorbidities, length of stay, type of dementia, cognition level, type and frequency of pain assessment tools used, pain scores, type and frequency of prescribed pain medications and type and frequency of non-pharmacological methods used for managing pain. Patients' cognition levels were determined by the documented Mini-Mental Score Examination (MMSE), with scores between 21 and 24 indicating mild cognitive impairment, between 11 and 20 indicating moderate cognitive impairment and between 0 and 10 indicating severe cognitive impairment (Folstein et al., 1975). MMSE was widely used in the recruited hospitals and data were retrieved including where the MMSE scores were above the cut-off level for cognitive impairment or where no MMSE score was recorded.

At the time of the audit, the types of self-reporting pain tools used in the participating hospitals were as follows: numeric rating scale (McCaffery & Beebe, 1989), visual analogue scale (Gould et al., 2001) and Wong–Baker Faces pain scale (FACES) (Wong-Baker, 1983). The observational pain tools used in the participating hospitals included: Face, Leg, Activities, Cry, Consolability (FLACC) scale (Merkel et al., 1997) and the Pain Assessment IN Advanced Dementia (PAINAD) scale (Warden et al., 2003). Nurses' progress notes relevant to pain assessment and management were included by extracting the information verbatim and recording this in conjunction with the documented pain scores from pain tools to differentiate patients' and nurses' pain reports.

2.6 | Outcome measures

The outcome measurements for evaluating nurses' documented practices when communicating about pain in dementia care were divided into: patient demographic characteristics, pain characteristics and associated patient outcomes during hospitalization, nurses' documented pain assessment and management practices for people with dementia and the effect of pain scores on nursing practice.

Measurement of patient demographic characteristics and pain characteristics included: patients' age, gender, comorbidities, type of dementia, cognitive level, pain aetiology, existing pain-related diagnosis, pain occurrence by the type of dementia and cognition level. Measurement for pain-associated patient outcomes included: patients' pain occurrence and pain severity during hospitalization and length of hospital stay.

Measurement of nurses' documented pain assessment practices included: the frequency of pain assessment recorded, pain assessed as a fifth vital sign, together with other observations, including respiratory rate, heart rate, blood pressure and temperature; pain scores, types of pain assessment tools used and types of pain assessment tools used by the severity of dementia. Measurement of nurses'

documented pain management practices included: the frequency and types of pharmacological and non-pharmacological methods nurses used in dementia care.

Measurements for assessing the effect of pain scores on nursing practice included: the association between patient-reported pain and cognition level; association between patient-reported pain and pain scored by nurses; and association between pain scores and nurses' pain management in dementia care. To measure the effect of pain scores on nurses' pain management activities, the acceptable timeframe between each pain score entry and the administration of pain medication was set as within 60 min. This timeframe was based on a study conducted by Fry et al. (2018), which considered 60 min as a reasonable time for nurses to have initiated analgesic pain management for patients with dementia. With the retrospective nature of documentation, there was no timeframe set for nurses to initiate non-pharmacological pain management.

2.7 | Ethical considerations

This study was approved by the Human Research Ethics Committee of regional New South Wales, Australia (LNR/16/HNE/578). Site-specific approval was obtained from the local health district (0117-009C). The information in the medical records was non-identifiable, and only aggregated patient data were reported. Any personal identifier was precluded from the extracted information.

2.8 | Data analysis

Medical record data were entered into a Microsoft Excel spreadsheet on a password-protected computer. Missing data were recorded. Statistical analyses were conducted using Stata 15 software. Patients' demographic characteristics were analysed using descriptive statistics and presented as the percentage, mean, range and standard deviation (SD). The degree of the plausible population value was set with a 95% confidence interval (CI). A two-sample t-test was used to assess statistical significance of continuous data between two sample means, and Pearson's chi-squared test was used to assess the statistical significance of categorical data. Statistical significance was set at $p < .05$. The association between patient demographic characteristics, pain characteristics and associated patient outcomes and length of hospital stay were analysed using multivariate regression. The association between patients' reported pain and pain scored by nurses, and between nurses' pain scores and their pain management were analysed with a linear regression model and presented as a coefficient.

2.9 | Validity, reliability and rigour

Using medical record review is a valid design that allowed the study to investigate the occurrence of pain events, the effect of existing practices and the outcomes of care activities (Worster & Haines, 2004). Each patient record was assessed using the same data extraction codebook and procedure by the same abstractor to maintain consistency and minimize potential bias ensuring the same results on repeated occasions (Jordan & Troth, 2019). The included patient data were measured for the same variable and outcome to ensure content validity of the study (Wallis et al., 2018). Missing data were recorded and specified in the analysis process.

3 | RESULTS

3.1 | Patient characteristics

Among the 100 patient records retrieved between 1 January 2017 and 31 August 2017, 41 patients with a diagnosis of dementia were hospitalized in the district hospital and 59 were hospitalized in the tertiary teaching hospital. There were 49 males and 51 females. The mean (SD) patient age was 83.9 (6.54) years, range between 65 and 95 years. There were no significant differences in patient age ($p = .95$) and gender ($p = .66$) between the two hospital sites. The average (SD) time that the patients stayed in hospital across both sites was 14 (12.9) days, ranging from 11 to 18 days. Patients in the district hospital had a longer mean hospital stay (18 days) than in the tertiary teaching hospital (11 days); $p = .006$. The major dementia types were non-specified dementia (42%), Alzheimer's disease (25%), vascular dementia (22%), Parkinson's disease (5%), frontal-temporal dementia (4%) and Lewy-body dementia (3%); there was no difference in dementia type between the two hospital sites ($p = .11$). The majority of patients (50%) had an MMSE recorded between 11 and 20, indicating moderate cognitive impairment, followed by mild cognitive impairment (22%) and severe cognitive impairment (18%). Each patient recorded at least one comorbidity on hospitalization, with an average of 5.36 comorbidities per patient. Table 1 shows characteristics of patients with dementia admitted to two regional hospitals taken from the medical records in detail.

3.2 | Patient pain characteristics and associated outcomes

Of all retrieved medical records, a total of 128 pain-related diagnoses were recorded. Seventy-eight (78%) of patients had at least one pain-related diagnosis before hospitalization and 22% had no prior pain-related diagnosis. The pain-related diagnosis included osteoarthritis or osteoporosis (41%), post-surgery, fracture or injury (41%) and lower back pain and pain in other body areas (37%). The number of patients who had existing pain-related diagnoses prior to admission did not differ significantly between the two hospital sites ($p = .13$). During the hospital admission, 66% of all patients had pain at least once; 34% of all patients had no pain reported. Of the 66% of patients who had pain reported, 58% had a pain score ≥5, indicating moderate to severe pain intensity, and 42% had a pain score ≤4, indicating mild pain intensity. District hospital patients had

TABLE 1 Characteristics of patients with dementia admitted to two regional hospitals taken from the medical records

Patient	District hospital $n = 41$ n (%)	Tertiary hospital $n = 59$ n (%)	Total $n = 100$ n (%)	95% CI	*p* value
Age mean (SD)	82.9	84.7	83.9 (6.54)	82.6 to 85.2	.95
Gender				−0.00 to 0.01	.66
Male	19 (46)	30 (51)	49 (49)	0.25 to 0.53	
Female	22 (54)	29 (49)	51 (51)	0.29 to 0.57	
Length of stay in days mean (SD)	18	11	14 (12.9)	11 to 16	.006[*]
Comorbidities mean (range)	5.49 (1–10)	5.27 (0–11)	5.36 (1–11)	−0.05 to 0.02	.42
Type of dementia				$\chi^2 = 9.04$	.11
Vascular dementia	11 (27)	11 (19)	22 (22)		
Alzheimer's disease	6 (17)	19 (32)	25 (25)		
Frontal-temporal dementia	0 (0)	3 (5)	3 (3)		
Lewy-bodies dementia	1 (2)	2 (3)	3 (3)		
Parkinson disease	1 (2)	4 (7)	5 (5)		
Non-specified type	22 (54)	20 (34)	42 (42)		
Cognition level (MMSE)				$\chi^2 = 27.7$	.37
Dementia diagnosis MMSE ≥25	4 (10)	3 (5)	7 (7)		
Mild dementia MMSE 21–24	7 (17)	15 (26)	22 (22)		
Moderate dementia MMSE 11–20	21 (53)	29 (51)	50 (50)		
Severe dementia MMSE 0–10	8 (20)	10 (18)	18 (18)		
MMSE not recorded[a]	1 (2)	2 (3)	3 (3)		

Abbreviations: CI, confidence interval; MMSE, Mini-Mental Score Examination; SD, standard deviation.

[a]Missing data in 3 participants.

[*]*p* < .05. *p* values were tested with two-sample *t*-test for continuous variables and chi-square test for categorical variables to examine differences between two hospitals.

higher pain occurrence (71%) and higher pain severity (69%) than tertiary teaching hospital patients (63% and 49%) during their admission (*p* = .001/.00). Of the 66% of patients who had pain, 26% had Alzheimer's disease, 21% had vascular dementia, 3% had frontal-temporal dementia, 5% had Lewy-bodies dementia and Parkinson's disease and 41% had non-specified types of dementia; there was no significant difference between the two hospital sites (*p* = .41). In terms of cognition level of patients who had pain during hospitalization, 21% had mild dementia, 55% had moderate dementia and 14% had severe dementia; there was no significant difference between the two hospital sites (*p* = .84). Table 2 shows patient pain characteristics and associated outcomes.

Patients' age ($\beta = -0.01$, 95% CI −0.11 to 0.08, *p* = .77), gender ($\beta = 0.00$, 95% CI −0.00 to 0.11, *p* = .40), comorbidities ($\beta = -0.02$, 95% CI −0.06 to 0.02, *p* = .24), type of dementia ($\beta = 0.02$, 95% CI −0.09 to 0.13, *p* = .72) and cognition level ($\beta = 0.10$, 95% CI −0.77 to 0.97, *p* = .80) had no association with their length of hospital stay. Patients' length of hospital stay was associated with their pain severity during admission ($\beta = -0.01$, 95% CI −0.16 to −0.00, *p* = .02), but no association with their pain occurrence ($\beta = -0.01$, 95% CI −0.13 to 0.00, *p* = .09), pain occurrence by type of dementia ($\beta = -0.08$, 95% CI −0.26 to 0.09, *p* = .37) or pain occurrence by level of cognition ($\beta = 0.00$, 95% CI −0.11 to 0.02, *p* = .54). Table 3 shows the association between patient characteristics, pain characteristics and length of hospital stay.

3.3 | Documented practice for pain assessment and management in dementia care

3.3.1 | The practice of pain assessment

A total of 2347 pain assessments were documented during the 1383 total hospitalization days, with an average of two pain assessments per patient per day. Out of 2347 pain assessments, pain was assessed 2314 times (99%) as a fifth vital sign. The number of pain assessments was not statistically significantly different between the two hospital sites (*p* = .22). Ninety-three percent (93%) of nurses used a self-reporting pain tool to assess pain in patients with various stages of dementia, and 7% of nurses used an observational pain tool. The most commonly used self-reporting pain tool was the numeric rating scale (96%), followed by the FACES scale (2.9%) and visual analogue scale (0.9%). These self-report pain tools were used in moderate dementia (46%), mild dementia (22%) and severe dementia (17%). Between the severity of dementia, there was no statistically significant difference in the use of self-report pain tool (*p* = .87) and observational pain tool (*p* = .23) among the two hospital sites. Overall, nurses' utilization of pain assessment tools when caring for people with dementia had no significant difference between the two hospital sites (*p* = .78). Reassessment of pain was recorded for 37% of all patients. The tertiary teaching hospital had significantly more

TABLE 2 Patient pain characteristics and associated outcomes

Patient	District hospital $n = 41$ n (%)	Tertiary hospital $n = 59$ n (%)	Total $n = 100$ n (%)	95% CI	p value
Pain aetiology				$\chi^2 = 9.11$	.10
(Lower) back pain	7 (17)	6 (8)	13 (13)		
Osteoarthritis/osteoporosis	19 (12/7) (46)	22 (12/10) (37)	41 (41)		
Post-surgery/fracture/injury	20 (49)	21 (36)	41 (41)		
Cancer (bladder/bowel/prostate)	4 (10)	5 (8)	9 (9)		
Pain (other areas)	12 (29)	12 (20)	24 (24)		
Total pain-related diagnosis (per person)[a]	62 (1.48)	66 (1.13)	128 (1.28)		
Existing pain-related diagnosis[b]				$\chi^2 = 2.19$	.13
Existing pain-related diagnosis(s)	35 (85)	43 (73)	78 (78)		
No existing pain-related diagnosis(s)	6 (15)	16 (27)	22 (22)		
Pain occurrence[c]				$\chi^2 = 10.7$	.001*
Pain occurrence during admission	29 (71)	37 (63)	66 (66)		
No pain occurrence during admission	12 (29)	22 (37)	34 (34)		
Pain severity				$\chi^2 = 33.7$	.00*
Pain score ≤4	9 (31)	19 (51)	28 (42)		
Pain score ≥5	20 (69)	18 (49)	38 (58)		
Pain occurrence by type of dementia[d]				$\chi^2 = 4.97$	.41
Vascular dementia	8 (28)	6 (16)	14 (21)		
Alzheimer's disease	5 (17)	12 (32)	17 (26)		
Frontal-temporal dementia	0 (0)	2 (5)	2 (3)		
Lewy-bodies dementia	1 (3)	2 (5)	3 (5)		
Parkinson disease	1 (3)	2 (5)	3 (5)		
Non-specified type	14 (48)	13 (35)	27 (41)		
Pain occurrence by level of cognition[e]				$\chi^2 = 1.42$	.84
Dementia diagnosis MMSE ≥25	3 (10)	2 (5)	5 (8)		
Mild dementia MMSE 21–24	6 (21)	8 (22)	14 (21)		
Moderate dementia MMSE 11–20	14 (48)	22 (59)	36 (55)		
Severe dementia MMSE 0–10	5 (17)	4 (11)	9 (14)		
MMSE not recorded	1 (3)	1 (3)	2 (3)		

Abbreviations: CI, confidence interval; MMSE, Mini-Mental Score Examination.

[a]Total number of pain-related diagnosis for the entire population (per person).

[b]Patients who had existing pain-related diagnosis prior to admission.

[c]Patients who had pain scored between 1 and 10 during admission.

[d]Patients' dementia type with their pain occurrence.

[e]Patients' dementia severity with their pain occurrence. p values were tested with chi-square test for categorical variables to examine differences between two hospitals.

*$p < .05$.

frequent pain reassessments recorded (47%) than the district hospital (21%) ($p = .009$).

3.3.2 | The practice of pain management

Fifty-seven percent (57%) of the patients with dementia had regular pain medication/s prescribed during their hospitalization. Thirteen percent (13%) of patients had antipsychotic drugs. Prescribed pain medications included acetaminophen, nonsteroidal anti-inflammatory drugs, anticonvulsants and opioids. Sixty-one percent (61%) of the patients were given pro re nata pain medications, 30% were given a stat dose of pain medications and 2% were given nurse-initiated pain medications. Fourteen percent (14%) of patients were not prescribed pain medications during their hospitalization. The use of pharmacological pain management did not differ significantly between the two hospital sites ($p = .81$).

Non-pharmacological pain management methods were documented in 20% of patient records. These varied, include the use of a heat pack (7%), repositioning (5%), providing reassurance (5%),

TABLE 3 Association between patient characteristics, pain characteristics and length of hospital stay

Patient n = 100	Coefficient	Std. err	95% CI	p value
Age	−0.01	0.05	−0.11 to 0.08	.77
Gender	0.00	0.00	−0.00 to 0.11	.40
Comorbidities	−0.02	0.02	−0.06 to 0.02	.24
Type of dementia	0.02	0.05	−0.09 to 0.13	.72
Cognitive level	0.10	0.39	−0.77 to 0.97	.80
Existing pain-related diagnosis	−0.01	0.01	−0.02 to 0.01	.38
Pain occurrence	−0.01	0.00	−0.13 to 0.00	.09
Pain severity	−0.01	0.00	−0.16 to −0.00	.02*
Pain occurrence by type of dementia	−0.08	0.09	−0.26 to 0.09	.37
Pain occurrence by level of cognition	0.00	0.08	−0.11 to 0.02	.54

Note: p values were tested with multivariate regression to examine the association with length of hospital stay.

Abbreviations: CI, confidence interval; Std.err, standard error.

*p < .05.

physical mobilization (2%) and continuous monitoring of the pain condition (1%). The use of non-pharmacological pain management did not differ significantly between the two hospital sites (*p* = .63). Table 4 shows nurses' documented practice for pain assessment and management in dementia care.

3.4 | The effect of pain scores on nursing practice

3.4.1 | Association between patient-report, cognition and the pain scored by nurses

Of all retrieved medical records, 50% of patients had patient (self)-reported pain described and documented in the progress notes. Of these, 25% had moderate dementia, 12% had mild dementia and 6% had severe dementia. The linear regression model showed no statistically significant association between patient-reported pain and their cognition level ($\beta = 0.03$, 95% CI −0.04 to 0.10, *p* = .36). Among these 50% of documented patient-reported pain, 22% of the patients also had their pain score reported by nurses. Patient self-reported pain was documented on 219 occasions and on 32 occasions these were recorded as a pain score. Of these recorded pain scores, seven were from patients with mild dementia, 16 were from those with moderate dementia and five were from those with severe dementia. The linear regression model showed no statistically significant association between patient-reported pain and the pain scored by nurses ($\beta = 0.54$, 95% CI −1.64 to 2.73, *p* = .61). Table 5 shows linear regression outcome for the association between patient-report, cognition and pain scored by nurses.

3.4.2 | Association between pain scores and pain management in dementia care

Pain scores and pain medication administration showed no significant relationship within the 60 min timeframe ($\beta = 0.22$, 95% CI −0.92 to 0.48, *p* = .53). Of the 315 times that pain was scored between 1 and 10, where a score of 10 is very severe pain, pain was managed by medications 65 times within 60 min (21%); this was not significantly different between the two hospital sites (*p* = .62). Of the 252 times that pain was scored between 1 and 5, pain medications were administered 43 times (17%) within 60 min (SD 1.26). Of the 63 times that pain was scored between 6 and 10, pain medications were administered 22 times (35%) within 60 min (SD 1.37). Of the 315 times that patients had their pain scored between 1 and 10, non-pharmacological pain management was recorded three times (1%). Table 6 shows linear regression for the association between pain scores and pain management in dementia care.

4 | DISCUSSION

This study aimed to evaluate nurses' documented practices when communicating about pain in people with dementia in hospital. The occurrence of pain and how nurses reported pain messages of people with dementia were investigated through documented communication to evaluate pain assessment and management and address the associated clinical implications for nursing practice and future research.

4.1 | Frequency of pain and associated outcomes

Pain frequently occurs and is reported by nurses caring for people with dementia in hospitals. In this medical record review, more than three-quarters of the patients (78%) had documented pre-existing pain-related conditions before hospitalization. More than two-thirds of the patients (66%) reported pain at least once during their hospitalization and more than half (58%) reported moderate to severe pain intensity. For individuals with dementia who had pain reported during hospitalization, there was no difference between their dementia type and their cognition level compared with those with dementia who did not report pain (*p* = .36). The finding of the high occurrence of pain was consistent with a previous study that found 57% of 230 patients with dementia had pain on at least one occasion in hospital (Sampson et al., 2015). Some studies have questioned that pain might be diminished due to the alteration of pain perception in people with dementia (Haasum et al., 2011), however, the claim was not supported by this study.

In this study, patients' pain severity during admission was associated with their length of hospital stay (*p* = .02). District hospital patients with dementia had higher pain occurrence and pain severity during their admission (*p* = .001/.00), and they were found to stay longer in the hospital than the tertiary teaching hospital patients

TABLE 4 Nurses' documented practice for pain assessment and management in dementia care

Practice documented	District hospital $n = 41$ n (%)	Tertiary hospital $n = 59$ n (%)	Total $n = 100$ n (%)	95% CI	p value
Pain assessment					
Frequency (days)/SD	1089 (724)	1258 (659)	2347 (1383)/1.52	0.44–0.57	.22
Average/day	1.9	2.1	2.0		
Range	0.30–8.33	0–4.14			
Pain assessed as 5th vital sign	1089 (99)	1225 (99)	2314 (99)		
Pain assessment tools used (self-report vs observational pain tools) frequency (%)				$\chi^2 = 33.029$	.00*
Self-report pain tools	1088 (99)	1225 (97)	2313 (99.8)	1.05–1.08	.78
Numeric rating scale	1045 (96)	1179 (94)	2224 (96)		
Visual analogue scale	14 (1.3)	6 (0.5)	20 (0.9)		
FACES scale	29 (2.7)	40 (3.2)	69 (2.9)		
Observational pain tools	1 (0.1)	33 (2.6)	34 (1.4)		
FLACC	1 (0.1)	1 (0.1)	2 (0.08)		
PAINAD	0 (0)	32 (2.6)	32 (1.3)		
Pain assessment tools used in the severity of dementia N^0 pts (%)					
Self-report tools used in				$\chi^2 = 1.21$	.87
Mild dementia	7 (17)	15 (25)	22 (22)		
Moderate dementia	20 (49)	26 (44)	46 (46)		
Severe dementia	8 (20)	9 (15)	17 (17)		
Dementia diagnosis – MMSE >25	2 (4.9)	3 (5)	5 (5)		
Dementia diagnosis – no MMSE	1 (2)	2 (3.3)	3 (3)		
Total	38 (93)	55 (93)	93 (93)		
Observational tools used in				$\chi^2 = 2.91$	.23
Mild dementia	0 (0)	3 (5)	2 (2)		
Moderate dementia	0 (0)	2 (3)	2 (2)		
Severe dementia	0 (0)	0 (0)	0 (0)		
Dementia diagnosis – MMSE >25	1 (2)	1 (2)	2 (2)		
Total	1 (2)	6 (10)	7 (7)		
Reassessment N^0 pts (%)/SD	9 (21)	28 (47)	37 (37)/0.49	0.27–0.47	.009*
Pain management					
Pharmacological pain management N^0 pts (%)				$\chi^2 = 3.81$	.81
Regular pain medications	25 (61)	32 (54)	57 (57)		
PRN pain medications	24 (59)	37 (63)	61 (61)		
Nurse initiated pain medications	1 (2)	1 (1)	2 (2)		
Stat dose pain medications	15 (37)	15 (25)	30 (30)		
No pain medication prescribed	4 (10)	10 (16.9)	14 (14)		
With patients who have pain-related condition(s)	3 (75)	5 (50)	8 (57)		
Antipsychotics medications used	5 (12)	8 (13)	13 (13)		
Nonpharmacological pain management N^0 pt (%)				$\chi^2 = 2.59$	.63
Physical mobilization	1 (2)	1 (2)	2 (2)		
Heat pack	3 (7)	4 (7)	7 (7)		
Monitor	1 (2)	0 (0)	1 (1)		

(Continues)

TABLE 4 (Continued)

Practice documented	District hospital n = 41 n (%)	Tertiary hospital n = 59 n (%)	Total n = 100 n (%)	95% CI	p value
Reposition	2 (5)	3 (5)	5 (5)		
Reassurance	1 (2)	4 (7)	5 (5)		
Total	8 (20)	12 (20)	20 (20)		

Abbreviations: CI, confidence interval; FACES, Faces pain scale; FLACC, Face, Leg, Activities, Cry, Consolability behaviour pain scale; MMSE, Mini-Mental Score Examination; N^0 pts, number of patients; PAINAD, Pain Assessment IN Advanced dementia scale; PRN, pro re nata pain medication; SD, standard deviation.

*$p < .05$. p values were tested with two-sample t-test for continuous variables and chi-square test for categorical variables to examine differences between two hospitals.

TABLE 5 Linear regression for the association between patient-report, cognition and pain scored by nurses

	District hospital n = 41	Tertiary hospital n = 59	Total n = 100	Coefficient	95% CI	p value
Patient-reported pain[a] (N^0 pts/frequency)				0.03	−0.04 to 0.10	.36
Mild dementia	6/24	6/31	12/55			
Moderate dementia	10/43	15/60	25/103			
Severe dementia	2/7	4/25	6/32			
Dementia diagnosis – MMSE >25	3/8	2/4	5/12			
Dementia – no MMSE	1/3	1/14	2/17			
Total	22/85	28/134	50/219			
Pain score by nurses from patients who reported pain[b] (N^0 pts/frequency)				0.54	−1.64 to 2.73	.61
Mild dementia	3/3	3/4	6/7			
Moderate dementia	5/8	6/8	11/16			
Severe dementia	1/2	1/3	2/5			
Dementia – MMSE >25	1/1	0/0	1/1			
Dementia – no MMSE	1/2	1/1	2/3			
Total	11/16	11/16	22/32			

Abbreviations: CI, confidence interval; MMSE, Mini-Mental Score Examination; N^0 pts, number of patients.

[a]Patients' self-report pain was documented in the progress note.

[b]A pain score was recorded by nurses from those patients who self-reported pain.

($p = .006$). Prolonged hospitalization in people with dementia increases the risk of hospital-acquired infections and decreases functional daily living activities (Toh et al., 2017). The high occurrence of pain is also associated with developing delirium in patients with dementia during hospitalization (Feast et al., 2018). While negative outcomes associated with pain have been noted in previous studies, this study highlights the high frequency of pain and its associated outcomes continue to affect the quality of life in people with dementia, especially when hospitalized in an acute care service.

4.2 | Pain reporting in dementia care

This medical record review found no association between patient's self-report of pain and the pain scores reported by nurses ($p = .61$). Pain reporting between patients with dementia and nurses appeared fragmented and inconsistent. Most nurses in this patient cohort recorded using self-pain reporting methods to assess pain in various stages of dementia. The high percentage of self-pain reporting used by nurses indicates that most patients in this cohort were, to some extent, able to comprehend a self-reporting pain tool by responding to nurses' questions as part of their pain assessments. Although this finding is consistent with a previous study that found 61% of 129 patients with severe dementia understood at least one self-reporting pain scale (Pautex et al., 2006), the findings contradict other studies (Achterberg et al., 2020; Fry et al., 2018).

The nuance between a patient's self-pain report and an observational pain report when obtaining a pain score in pain assessment is the patient's capacity to answer pain questions (Herr et al., 2019). In this medical record review, there is a lack of association between patient-reported pain and their cognition level ($p = .36$). With the higher pain occurrence from patients with moderate to severe dementia (66%), the self-pain reports in this patient cohort are considered inconsistent with the severity of patients' cognition level. There is also no association between patients' pain report and the pain scored by nurses ($p = .61$). This could be due to fragmented

TABLE 6 Linear regression for the association between pain scores and pain management in dementia care

	District hospital $n = 41$	Tertiary hospital $n = 59$	Total $n = 100$	Coefficient	95% CI	p value
Scored pain and pharmacological pain management within 60 min[a] (freq/times)				0.22	−0.92 to 0.48	.53
Pain scored 1–5/pain managed (SD)	123/21	129/22	252/43 (1.26)			
Pain scored 6–10/pain managed (SD)	25/10	38/12	63/22 (1.37)			
Total	148/31 (21%)	167/34 (20%)	315/65 (21%)		0.51–0.91	.62
Scored pain and non-pharmacological pain management (freq/times)[b]						
Pain scored 1–5/pain managed	123/0	129/1	252/1			
Pain scored 6–10/pain managed	25/2	38/0	63/2			
Total	148/2 (1%)	167/1 (1%)	315/3 (1%)			

Abbreviations: CI, confidence interval; SD, standard deviation.

[a]Pain scored and managed by nurses with pharmacological methods within 60 min of timeframe.

[b]Pain scored and managed by nurses with non-pharmacological methods. Pain score ≤5 is considered as mild to moderate pain, pain ≥6 is considered as moderate to severe pain. Scored pain and non-pharmacological pain management only reported in frequency.

pain information that nurses have assessed and recorded for patients with dementia during their practice, resulting in discrepancies between the pain reports. These findings indicate that pain reporting by nurses may have underestimated the difference between the type and severity of dementia and that pain scored by nurses using a self-reporting pain method may not have reflected the patients' pain report.

Fragmented pain reporting affects nurses' communication about pain for people with dementia while undertaking pain assessment and management. Given the barriers in communication and the challenges of pain identification in people with dementia, pain reporting becomes crucial for translating patients' pain messages into a visible form. A further concern was the levels of accuracy in the estimated pain scores by nurses for people with dementia who may not be able to communicate coherently. However, the discrepancy between the pain reports among nurses' practice requires further investigation. Therefore, using different research methods to explore how nurses score pain in patients with various stages of dementia will enhance our understanding of the documented pain scores between patient and nurse.

4.3 | Reflection of pain practice from the documented communication

4.3.1 | Pain assessment in dementia care

Pain was regularly assessed by nurses as part of their dementia care activities according to this retrospective medical record review. In the records, most pain assessments were implemented as a fifth vital sign. However, the use of self-reporting and observational pain assessment tools was disproportionate. This means that nurses commonly used the numeric rating scale to assess pain in various stages of dementia. The observational pain tool, on the other hand, was only applied to a small number of patients. As the neuropathological changes advance in people with dementia, self-reported

numeric pain scores may be less reliable and using a self-reporting pain tool may not be easily understood by the person with dementia (Achterberg et al., 2020).

Pain assessment tool used in this patient cohort requires further investigation. The finding of disproportionated pain tool use indicates that the nurses associated with this patient cohort may have a potential knowledge gap about the application of different pain tools and may use them inappropriately for patients with dementia.

Comparably, a qualitative study found that it could be a common practice for nurses to use their own rational judgements and documented it as a proxy for the patient's self-pain reporting (Johannessen, 2019). However, this common practice among nurses does not compensate for the potential inadequacy of pain reports from people with decreased communication abilities and may further overlook the nuances of a patient's subjective pain report if it is not complemented with an observational pain tool. Another concern is the unintended consequence of encouraging opioid administration in response to the high pain scores commonly reported in clinical practice (Adams et al., 2016). Therefore, regarding this potential knowledge gap, it is vital to support nurses by providing relevant training and knowledge to minimize a perplexing situation that nurses may encounter in their pain assessments for people with dementia. From the vantage point of nurses, it is also vital to further investigate the usefulness and practicability of currently available pain tools used in dementia care to provide practical insights for nurses and healthcare organizations.

4.3.2 | Pain management in dementia care

Pharmacological pain management is a common approach for treating pain in people with dementia in hospitals. Among this patient cohort, most patients were administered regular or pro re nata pain medications. Only 14% of the patients had not been prescribed any type of pain medications during their hospitalizations. The common use of analgesics may have also resulted from the high frequency

of pain among this patient cohort. Non-pharmacological pain management was not frequently documented. Therefore, the type and frequency of non-pharmacological pain management that nurses have used when caring for people with dementia in hospitals remain unclear.

Nevertheless, nurses' documented pain management found no association between pain scores and their analgesic pain management ($p = .53$). This disassociation indicates that the nurses' reported pain scores had not led to their actions for managing pain in people with dementia. This finding was consistent with studies that found the use of pain assessment tools via pain scores did not have a direct effect on analgesic pain management (Fry et al., 2018; Rostad et al., 2018). Indeed, the relationship between pain scores and pain management involves complex decision-making for nurses in dementia care. The finding of a lack of association between pain scores and nurses' pain management also indicates the complexity in the effectiveness of pain scores when managing pain for people with dementia in a hospital care environment. Further investigation from nurses' perspectives regarding pain scoring systems used in people with dementia is needed. The investigation into the meaning of pain scores and their practical function for managing pain in people with dementia would be beneficial to understand the efficacy of pain scores for managing pain in dementia care in hospitals.

5 | CLINICAL IMPLICATIONS AND FUTURE RESEARCH

By reviewing patients' medical records, this retrospective patient cohort study raises important clinical implications for consideration in nursing practice when communicating about pain in dementia care and can guide future research in this area.

Although pain has been assessed regularly and implemented as a fifth vital sign, the function and meaning of using pain scores and pain tools for nurses to effectively communicate with patients with dementia about pain is not satisfactory. The disproportionate use of pain tools may be due to nurses in this setting lack of understanding about pain tools used for dementia care. Fragmented pain reporting for patients with dementia affects the pain messages transmitted between the individuals involved in their care. Therefore, future research to better understand the meaning of pain scores, reduce the knowledge gap about pain tools and improve fragmented pain reporting by nurses is needed.

From this analysis, pain scores showed no effect on nurses' pain management. There could be underlying unmeasured causes that influence this disassociation, leading to a practice gap. Previous studies have reported that nurses often experience high workloads, high patient acuities and time constraints in acute care settings (Fry et al., 2015). This may be related to the lack of association between pain scores and pain activities by nurses because other activities interfere with nurses' pain assessment and pain management. Thus, nurses' pain assessment activities may be shaped and influenced by their working environment. Their use of pain tools and pain scoring

may also depend on the organizational routines that can constrain nurses' pain assessment and management (Graham & Herndl, 2013) and be reflected in their documentation. Therefore, further research to understand factors influencing nurses' pain scores and analgesic management is needed. Non-pharmacological pain management was seldom documented among nurses' pain practice for dementia care in this study. Understanding how nurses utilize and document non-pharmacological pain approaches to manage pain in people with dementia in hospital settings would be beneficial in seeking a balance when using pain medication.

6 | LIMITATIONS

This study was conducted using a retrospective review of medical records as the primary source of data. Medical record reviews are subject to the completeness and accuracy of the information documented by clinicians (Callahan et al., 2020). Consequently, the extent of incomplete or missing information affects the reliability of the results (Jordan & Troth, 2019). This study used the documented MMSE score to classify dementia severity. Patients whose MMSE scores were above the cut-off level for cognitive impairment and those with no MMSE scores recorded were included based on the study inclusion criteria. The MMSE can be insensitive when determining a person's cognitive level (Myrberg et al., 2020), therefore the accuracy of the recorded MMSE score cannot be ascertained from the retrieved records. Furthermore, non-pharmacological pain management was documented in a small number of records; thus, statistical analysis was unable to be undertaken. Although the sample size satisfied the statistical power calculation, the relatively small sample was due to the limited number of patients admitted to the hospitals during the data collection period to obtain the most current documented practice of nurses. As documented practices may change from time to time, the findings from this study may not be readily generalizable to other hospital settings. However, because the comparison of pain practice documentation was similar in both the district and tertiary teaching hospitals in this study, the findings may represent common nursing practice. Therefore, the clinical implications arising from this medical record review may inform future clinical practice and research on nursing practice.

7 | CONCLUSION

This retrospective patient medical record review evaluated nurses' documented practices when communicating about pain in dementia care in hospital. Areas for improvement have arisen from the investigation of documented pain assessment and management by nurses. Pain frequently occurs in people hospitalized with dementia, which was associated with an extended period of hospitalization. Pain reporting in dementia care was fragmented; there was a disproportionate use of pain tools and a lack of association between pain scores and pain management. The use of pain tools and the discrepancy

in pain scores between patients and nurses raises concerns about the translation of pain messages for people with dementia in terms of their cognition and communication capability. These clinical implications and areas for improvement can guide nurses and future research to improve the care of people with dementia in hospitals.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

PEER REVIEW

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Data available on request due to privacy/ethical restrictions.

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