Received: 25 August 2024 | Revised: 24 March 2025 | Accepted: 14 April 2025

DOI: 10.1111/ajag.70044

RESEARCH ARTICLE

Australasian Journal on Ageing WILEY

Factors associated with length of stay in patients from residential aged care facilities admitted for behavioural and psychological symptoms of dementia

Adeloisa Pajaro | **Timothy To** | **Craig Whitehead**

Flinders Medical Centre, Adelaide, South Australia, Australia

Correspondence
Adeloisa Pajaro, Flinders University, Adelaide, SA 5042, Australia.
Email: adeldel10@yahoo.com

Abstract

Objective: To determine factors affecting the length of stay (LOS) in patients from residential aged care facilities (RACFs) admitted for behavioural and psychological symptoms of dementia (BPSD).

Methods: Medical records for RACF patients admitted to Flinders Medical Centre between January and December 2018 were reviewed. For patients admitted with BPSD, demographics, clinical characteristics, admission characteristics and outcomes were extracted. Key outcomes were LOS and admission to a subacute unit (psychogeriatric or geriatric) for ongoing care. Factors influencing LOS and subacute admission were explored.

Results: The average LOS was 21.7 days and median LOS 10.5 days. Younger age, prior Dementia Behaviour Management Advisory Service review, psychogeriatrician assessment, inpatient treatment order and increased number of Code Blacks (hospital code for violent behaviour) were associated with a longer LOS and subacute admission. Being women and being bed-bound were associated with shorter admission and direct discharge. Opioid use was associated with shorter admission. Use of benzodiazepine and higher dose, higher antipsychotic dose, use of antidepressant or mood stabilisers were associated with subacute admission. The presence of reversible causes was associated with direct discharge.

Conclusions: Certain clinical characteristics may be associated with LOS in patients with BPSD from RACFs. This information may help in the development of strategies to prevent acute presentation to hospital, minimise LOS and create pathways for improved management.

KEYWORDS

dementia, length of stay, nursing homes, residential aged care facility

1 | INTRODUCTION

Over 55 million people have dementia worldwide,[1] and in Australia, 401,300 people were living with dementia in 2022,[2] with the number expected to increase if no effective treatment is found. Dementia is the second leading cause of death and the second major cause of burden of disease in Australia following coronary heart disease.[2] One important aspect of dementia care is managing behavioural and psychological symptoms of dementia (BPSD), also referred to as neuropsychiatric symptoms, changed behaviour or responsive behaviour. These symptoms include delusions, hallucinations, aggression, agitation, depression, anxiety, apathy, disinhibition, irritability, aberrant motor behaviour, night-time behaviour disturbance and appetite/eating change.[3] These occur in 60% of people with dementia living in the community and as high as 80% in those living in RACFs.[4] Behavioural and psychological symptoms of dementia portend a great impact on the health system as this is associated with greater likelihood of placement in a residential aged care facility (RACF), decreased quality of life for both the caregiver and the patient, carer stress and stress to RACF staff, increased financial cost, longer hospitalisation and increased progression of dementia stage.[5–10]

The causes of BPSD are quite complex and could originate from a multitude of factors including physical comorbidities, concomitant psychiatric illness, unmet needs and physiological changes in the brain.[2] The management of BPSD is multifaceted and primarily involves behavioural strategies, treatment of reversible causes such as infection and pain, and sometimes the use of psychotropic agents such as antipsychotics, antidepressants, cognitive enhancers and mood stabilisers.[11] Individualised non-pharmacologic approaches are the cornerstone of BPSD management; there should be careful analysis of the cause of the BPSD and development of a behaviour management plan.[12]

One in three people with dementia in Australia are living in RACFs, and the rate of BPSD is 29%–90% among dementia patients in Australian RACFs.[2] In 2018–2019, 3 billion Australian dollars was spent directly on dementia, and $1.7 billion was spent on RACFs.[2] The Australian Government funds Dementia Support Australia (DSA) to provide support for people with dementia, including the Dementia Behaviour Management Advisory Service (DBMAS), which assists in managing low-risk-related behaviour, and the Severe Behaviour Response Team (SBRT) for severe BPSD.[13] Dementia Support Australia provided support to 1674 RACFs in Australia between January and June 2022.[2] Other sources of support in South Australia include general practitioners, geriatricians and psychogeriatricians visiting RACFs. Despite this support, there is a cohort of older adults with BPSD that is sent to hospital because this responsive behaviour is unmanageable.

Policy impact

Certain characteristics were associated with a longer hospital stay in patients with behavioural and psychological symptoms of dementia from residential aged care facilities. Recognising and identifying these characteristics may help in developing strategies that will prevent acute hospital presentation, shorten acute hospitalisation and assist in improving patient care.

Factors that are associated with prolonged LOS in patients with BPSD from RACFs are not known. The primary aim of the study was to determine factors associated with the LOS in patients from RACFs admitted for BPSD. This study also reviewed population demographics, clinical characteristics and management of patients from RACFs admitted for BPSD. In addition, we evaluated the characteristics associated with admission to psychogeriatric units or subacute geriatric units compared to patients who were directly discharged to their RACF.

2 | METHODS

2.1 | Study design

A retrospective study of older adult patients aged 65 years and older than 65 years from RACFs admitted for BPSD at a single centre (Flinders Medical Centre, a tertiary hospital in South Australia) under the acute geriatric team, called the Residential Care Outreach Team (RCOT), between January 2018 and December 2018, was conducted using hospital medical records. The RCOT admitted patients from RACFs who had medical reasons for admission including BPSD. It consisted of a geriatrician, resident medical officers, nurses and allied health staff, including an occupational therapist, physiotherapist, social worker, speech pathologist and dietitian. Some patients were discharged directly back to the RACF, whilst others requiring a longer admission for further management were transferred to a subacute unit, either a psychogeriatric unit managed by a psychiatrist and their team or a geriatric medical unit managed by a geriatrician and their team. The LOS included the acute admission to RCOT and, where applicable, the LOS in the subacute units. Readmission of patients to hospital was reviewed from the period of January 2018 to December 2019.

There is no diagnostic code for BPSD; hence, they were all classified under the dementia diagnosis. Using the

discharge letters of patients with a primary or secondary diagnosis of dementia, the primary investigator extracted data related to the patients with BPSD and this was followed with case notes review. Data collected during the patient's acute RCOT admission included the following: baseline demographics, Charlson Co-morbidity Index (CCI), prior DBMAS review, Mini-Mental State Exam (MMSE) score, presence of Inpatient Treatment Order (ITO; a legal order which requires a person with mental illness to receive treatment as an inpatient at an approved treatment centre without their consent), number of 'Code Blacks' (standard emergency code for violent patients/ behavioural situations, activating a team consisting of a doctor, a nurse and security guards organised by the hospital to assess and manage changed behaviour), types of dementia, presence of reversible causes such as infection, cardiac issues, electrolyte imbalance, presence of psychiatric diagnosis, need for psychogeriatrician review in RCOT, transfer to a subacute unit, hospital acquired complications, mortality and readmission rate. The Neuropsychiatric Inventory (NPI) was applied retrospectively. Data were also collected for psychotropic or other medications used to manage the BPSD such as opioid for pain management, and calculation of the average antipsychotic (chlorpromazine[14]) and benzodiazepine (diazepam[15–17]) dose equivalent per day during the RCOT admission.

2.2 | Ethics approval

The authors sought ethics review from the hospital's ethics committee, which determined that formal review and approval were not required, as retrospective data were collected through clinical care processes. It is a quality Improvement activity and has a QI ID.

2.3 | Data analysis

All statistical analyses were performed using the R software, version 4.2.3. Patient characteristics were expressed as median and interquartile range (IQR) for continuous skewed data, and proportions were presented as percentages of the respective denominator. A generalised linear model with a log link and gamma distribution was used to model the hospital LOS due to the skewed nature of the data. Model diagnostics and goodness of fit were evaluated by residual deviance. Mann–Whitney *U*-test and standard χ^2 test for association with continuity correction, where appropriate, were used to explore the significant differences of individuals' characteristics between two groups of patients—direct discharge to RACF versus admission to a subacute unit. Mean and standard deviation were also calculated for non-skewed data, and groups were compared by independent sample *t*-test. The two-sided test was performed for all analyses, and the level of significance was set at $\alpha = .05$.

3 | RESULTS

There were 608 patients admitted under RCOT with a primary or secondary diagnosis of dementia on coding between January and December 2018, with 82 (13%) patients noted to have BPSD that required management in the hospital. The mean age of those with BPSD was 82.1 years, and 58% of patients were male ($n = 48$). Fifty-one per cent of the patients ($n = 42$) were discharged directly from RCOT to the RACF, while the remainder required admission to a psychogeriatric ($n = 12$, 30%), or a subacute geriatric ($n = 28$, 70%) medical unit. The average length of admission was 21.7 days, the median was 10.5 days, with an interquartile range of 4.0–32.0 days. The average LOS for patients who were directly discharged to the RACF was 4.4 days, while those who required admission to a psychogeriatric or geriatric medical unit were 39.8 days.

Factors associated with a longer LOS and subacute admission were as follows: younger age, need for or had received DBMAS review in the RACF, need for a psychogeriatrician assessment in RCOT, presence of ITO and increased number of Code Blacks. Factors associated with a shorter LOS and direct discharge from RCOT were female gender and being bed-bound (Tables 1–3). Additional factors associated with a shorter LOS included unspecified type of dementia and opioid use (Tables 1 and 2). Factors that had no significant association with LOS include CCI, language spoken, presence of past psychiatric diagnosis, types of behaviour and presence of hospital acquired complications (Tables 1 and 2).

Use of benzodiazepine (95% vs. 79%, $p = .03$) and higher dose (10.9 vs. 5.5 mg diazepam equivalent, $p = .02$), higher dose of antipsychotic medications (144.7 vs. 71.9 mg chlorpromazine equivalent, $p < .001$), use of antidepressant (85% vs. 62%, $p = .02$) and use of mood stabilisers such as valproate and carbamazepine (20% vs. 2%, $p = .01$) were additional factors associated with subacute admission (Table 4).

Of the 82 patients with BPSD, infection was noted in 27% ($n = 22$), changes in medications in 13% ($n = 11$), constipation in 13% ($n = 11$) and pain in 12% ($n = 10$) (Figure 1). The MMSE was not performed or was likely difficult to perform in 74% ($n = 61$) of the patients.

The NPI was used to categorise the type of behaviour retrospectively. Most patients showed agitation/aggression/resistance to care and calling out (95%, $n = 78$). The

TABLE 1 Factors associated with length of stay by demographics and clinical characteristics.

Characteristic	Beta	95% CI	*p*-Value
Age	−.05	−.10, −.01	.004
Sex			
Male	—	—	
Female	−.67	−1.3, −.01	.045
Charlson			
≤5	—	—	
6–7	−.35	−1.0, .30	.30
8+	−.08	−.80, .68	.80
Mobility			
Unaided	—	—	
Independent with frame	−.65	−1.2, −.11	.02
1–2 assist	−.89	−1.7, −.01	.03
Bed-bound	−1.9	−2.8, −.76	<.001
Language			
English	—	—	
Non-English	−.84	−1.7, .19	.07
DBMAS			
No	—	—	
Yes	.64	.09, 1.2	.030
ITO			
No	—	—	
Yes	1.3	.80, 1.8	<.001
HAC			
No	—	—	
Yes	.09	−.50, .74	.80
Code Blacks			
0	—	—	
1	.13	−.51, .82	.70
2+	1.0	.31, 1.9	.01
Types of dementia			
Alzheimer's	—	—	
Vascular	.41	−.34, 1.2	.30
Mixed Alzheimer's with other type	.08	−.67, .85	.80
Others	−.23	−1.0, .61	.60
Unspecified	−.93	−1.7, −.13	.02
Reversible causes			
No	—	—	
Yes	−.42	−1.0, .16	.20
Psychiatric diagnosis			
No	—	—	
Yes	.10	−.47, .68	.70
Psychogeriatrician review			
No	—	—	
Yes	.84	.27, 1.4	.004

type of behaviour was not associated with the likelihood of direct discharge to the RACF or admission to a psychogeriatric or geriatric medical unit (Table 4).

Six per cent of patients ($n=5$) died. These were 7% ($n=3$) of the group who remained under RCOT, and 5% ($n=2$) of the group that required a psychogeriatric or geriatric medical unit. The readmission rate was not significantly different between the two groups ($p=.11$) (Table 3).

4 | DISCUSSION

This study explored multiple factors that could determine the LOS of dementia patients with BPSD from RACFs. There were two cohorts of patients identified in this study: (1) patients who were directly discharged to the RACF, who had a shorter LOS and (2) patients who required admission to a psychogeriatric or geriatric medical unit, portending a longer LOS.

Younger age, male gender, independent mobility and need for prior DBMAS review were associated with longer LOS. This also equated to a need for subacute admission since this cohort of patients had an average LOS of 39.8 days versus 4.4 days for those who were directly discharged to the RACF. Younger age, male patients and those more mobile were likely to be more challenging when they had BPSD because they could be more aggressive, intrusive or resistive to intervention. However, analysis of the types of behaviour did not indicate that particular behaviour types were associated with prolonged LOS. Kitamura et al. looked at predictors for time to favourable discharge for patients with BPSD from home or care facilities in Japan and identified family, residential factors and higher MMSE scores as independent predictors for a shorter LOS.[18] In our study, it was difficult to interpret the effect of MMSE on LOS because most patients did not have an MMSE, or it was challenging to perform on patients with responsive behaviour. Similar to our study, Kitamura et al. identified male gender as a predictor for longer LOS, and combative behaviour was identified in their study as a predictor for longer LOS, but not in our study. This is likely because NPI was used retrospectively to classify the types of behaviour in our study, and this classification combined aggression with agitation, with 95% of the patients displaying this behaviour, and hence, aggression was not analysed on its own. Involvement of DBMAS in the community likely indicated there was ongoing difficulty in managing the patient's behaviour in the RACF, and hence, admission to hospital was required. Patients with an unspecified type of dementia was associated with a shorter LOS compared to patients with specific types such as Alzheimer's, vascular and Lewy body dementia, probably because the dementia diagnosis was not fully elucidated with their shorter LOS.

TABLE 2 Factors associated with LOS by medications used for BPSD and types of behaviour.

Characteristic	Beta	95% CI	*p*-Value
Benzodiazepine			
No	—	—	
Yes	.64	−.33, 1.4	.20
Antidepressant			
No	—	—	
Yes	.34	−.37, .98	.30
Cognitive enhancer[a]			
No	—	—	
Yes	−.80	−1.6, .17	.07
Opioid			
No	—	—	
Yes	−.59	−1.1, −.09	.02
Mood stabilisers[b]			
No	—	—	
Yes	.51	−.32, 1.6	.30
Diazepam equivalent	.01	−.01, .03	.60
Chlorpromazine equivalent	.00	.00, .00	.50
Parenteral route			
No	—	—	
Yes	−.01	−.57, .57	>.90
Delusions			
No	—	—	
Yes	−.11	−.69, .50	.70
Hallucinations			
No	—	—	
Yes	−.11	−.75, .62	.80
Agitation/aggression/resistive to care/calling out			
No	—	—	
Yes	−.47	−2.0, .60	.50
Depression/dysphoria			
No	—	—	
Yes	.72	.06, 1.5	.05
Anxiety			
No	—	—	
Yes	.46	−.35, 1.5	.30
Disinhibition			
No	—	—	
Yes	.25	−.60, 1.3	.60
Aberrant motor behaviour/wandering			
No	—	—	
Yes	.06	−.51, .64	.80
Sleep and nighttime behaviour disturbance			
No	—	—	
Yes	−1.2	−2.2, .39	.07
Irritability/lability			
No	—	—	
Yes	−1.3	−3.1, 2.8	.30
Appetite/eating change			
No	—	—	
Yes	1.1	−.29, 3.5	.20

[a]Cognitive enhancers include donepezil, rivastigmine and memantine.
[b]Mood stabilisers include carbamazepine and sodium valproate.

Increased number of Code Blacks and need for psychogeriatrician review were associated with longer LOS and subacute admission. Code Blacks was likely indicative of the severity of a patient's behaviour, and if non-pharmacologic strategies were not effective whereby patients refused to take oral psychotropic medications, they were given parenteral formulation of psychotropics. The use of parenteral medications was not associated with longer LOS. However, the use and higher dose of benzodiazepine, higher dose of antipsychotics or the use of mood stabilisers or antidepressants independently were associated with higher likelihood for subacute admission.

Benzodiazepines are classified as potentially inappropriate medications in older adults because they can exacerbate cognitive impairment and dementia.[19] On the other hand, a systematic review showed that atypical antipsychotic medications such as risperidone and olanzapine have modest efficacy in BPSD, while quetiapine has limited efficacy mainly for aggression, agitation and severe symptoms.[20] Antipsychotic medications are associated with higher adverse effects compared to placebo, including an increased risk of cerebrovascular events and death.[20] For mood stabilisers, meta-analysis supports the use of carbamazepine in managing global BPSD including aggression and hostility, but there was limited evidence for valproate,[21–23] and they were often used as second-line agents if antipsychotic medications were ineffective.[21] A Cochrane review showed limited evidence to support the use of antidepressants for agitation and psychosis in dementia.[24] In some studies, citalopram caused side effects including slight prolongation of the QTc interval on ECG and worsened cognition.[25,26] In summary, the use of psychotropic medications likely reflected the higher severity of patients' behaviour, but it was not known whether they contribute to prolonged admission due to adverse effects.

TABLE 3 Baseline demographics and clinical characteristics of patients who were directly discharged to the RACF versus patients admitted to a psychogeriatric or geriatric medical unit.

Characteristic	*n*	Overall, *n* = 82	Direct discharge to RACF, *n* = 42	Psychogeriatric or geriatric medical unit, *n* = 40	*p*-Value
Age, mean (SD)	82	82.1 (8.1)	83.9 (9.2)	80.2 (6.3)	.04
Age cat	82				.01
		***n* (%)**	***n* (%)**	***n* (%)**	
60–74 years		16 (19)	9 (21)	7 (17)	
75–84 years		34 (41)	11 (26)	23 (57)	
85+ years		32 (39)	22 (52)	10 (25)	
Sex	82				.003
Male		48 (58)	18 (43)	30 (75)	
Female		34 (41)	24 (57)	10 (25)	
Mobility	82				.003
Unaided		30 (37)	9 (21)	21 (52)	
Independent with frame		36 (44)	20 (48)	16 (40)	
1–2 assist		10 (12)	7 (17)	3 (7)	
Bed-bound		6 (7)	6 (14)	0 (0)	
Language	81				.30
English		73 (90)	35 (85)	38 (95)	
Not English		8 (10)	6 (15)	2 (5)	
Unknown		1 (1)	1 (2)	0 (0)	
Charlson co-morbidity index	82				.20
≤5		30 (37)	12 (29)	18 (45)	
6–7		32 (39)	20 (48)	12 (30)	
8+		20 (24)	10 (24)	10 (25)	
Types of dementia	82				.20
Alzheimer's		23 (28)	10 (24)	13 (32)	
Vascular		15 (18)	6 (14)	9 (22)	
Mixed Alzheimer's with other type		16 (19)	8 (19)	8 (20)	
Others		13 (16)	6 (14)	7 (17)	
Unspecified		15 (18)	12 (29)	3 (7)	
Reversible causes	82				.006
No		27 (33)	8 (19)	19 (47)	
Yes		55 (67)	34 (81)	21 (52)	
DBMAS	82				.01
No		54 (66)	33 (79)	21 (52)	
Yes		28 (34)	9 (21)	19 (47)	
Psychiatric diagnosis	82				.20
No		45 (55)	26 (62)	19 (47)	
Yes		37 (45)	16 (38)	21 (52)	
Psychogeriatrician	82				.002
No		37 (45)	26 (62)	11 (27)	
Yes		45 (55)	16 (38)	29 (72)	
ITO	82				<.001
No		40 (49)	29 (69)	11 (27)	
Yes		42 (51)	13 (31)	29 (72)	

TABLE 3 (Continued)

Characteristic	*n*	Overall, *n* = 82	Direct discharge to RACF, *n* = 42	Psychogeriatric or geriatric medical unit, *n* = 40	*p*-Value
Code Blacks	82				.005
0		47 (57)	30 (71)	17 (42)	
1		21 (26)	10 (24)	11 (27)	
2+		14 (17)	2 (5)	12 (30)	
Hospital acquired complications	82				.70
No		58 (71)	29 (69)	29 (72)	
Yes		24 (29)	13 (31)	11 (27)	
Died during admission	82				>.90
No		77 (94)	39 (93)	38 (95)	
Yes		5 (6)	3 (7)[a]	2 (5)	
Readmission	82				.11
0		30 (37)	16 (38)	14 (35)	
1		23 (28)	12 (29)	11 (27)	
2		14 (17)	10 (24)	4 (10)	
3+		15 (18)	4 (9)	11 (27)	

[a]Died during RCOT admission.

One of the factors associated with a shorter LOS was the use of opioids. A study by Husebo et al. showed that a systematic approach to pain management resulted in reduced agitation in residents of RACFs with moderate-to-severe dementia.[27] A Cochrane systematic review, however, found insufficient evidence to establish the clinical efficacy and safety of opioids for agitation in people with dementia.[28] Selecting appropriate patients might be the issue because not all of the studies had formal pain assessments such as the Abbey Pain Scale or Pain Assessment in Advanced Dementia (PAINAD).

The average LOS in this study was 21.7 days with a median of 10.5 days (interquartile range of 4 to 32 days), which is lower compared to a previous study of BPSD in Australia (22 days). However, the latter study required admission to a specialist dementia unit, and the patients came from both the community and RACFs, not from RACFs alone.[29] Brodaty et al. described a seven-tiered model of service delivery for patients with BPSD ranging from Tier 1 (no dementia) to Tier 7 (dementia with extreme BPSD).[30] Intervention for higher tiers intensifies such that admission to a psychogeriatric or neurobehavioural unit is required.[30] Risk stratification of patients can help identify those that will require a specialised unit. Paramount to this is early identification and treatment of reversible causes, which could result in improvement in behaviour and early hospital discharge. Our study was the first study to analyse factors associated with LOS for patients admitted for BPSD from RACFs. It provides important information that may help in triaging patients with BPSD, predicting those patients that may require a specialised dementia unit, and avoiding emergency department presentation or extensive acute LOS in a mainstream ward.

With our ageing population and increasing number of people with dementia, there is a growing need to improve the management of BPSD in RACFs. Although DBMAS is a nationwide service accessible to all RACFs in Australia, it is limited in the services it provides. The DBMAS sends a nurse to assess the patient, followed by discussion with an external geriatrician; as such, the advice may be limited as the patient has not been formally reviewed. Although RCOT sometimes provides outreach support for RACFs, the work is still mainly hospital focused. Our institution has recently developed a new model of care to assist RACFs with the management of BPSD, such as a transition support team composed of a geriatrician and nurses who provide support during the transition from the hospital to the memory support unit of the RACF. Another model is the establishment of a responsive outreach support team composed of a geriatrician, nurses and allied health staff, who accept referrals for the management of BPSD from an RACF's general practitioners. It is yet to be determined whether these services will be effective in the prevention of hospital admission, facilitation of earlier discharge or prevention of further readmission of patients with BPSD from the RACF. There is now greater recognition of the increasing need to improve the management of patients with BPSD in order to enhance the quality of life of these patients and the people who are caring for them.

The strength of this study was its comprehensive overview of multiple factors that could potentially affect

TABLE 4 Types of behaviour and psychotropic medications of patients who were directly discharged to the RACF versus patients admitted in a psychogeriatric or geriatric medical unit.

Characteristic	*n*	Overall *n* = 82, *n* (%)	Direct discharge to RACF *n* = 42, *n* (%)	Psychogeriatric or geriatric medical unit *n* = 40, *n* (%)	*p*-Value
Delusions	82				.50
No		50 (61)	24 (57)	26 (65)	
Yes		32 (39)	18 (43)	14 (35)	
Hallucinations	82				.70
No		64 (78)	32 (76)	32 (80)	
Yes		18 (22)	10 (24)	8 (20)	
Agitation/aggression	82				.60
No		4 (5)	3 (7)	1 (2)	
Yes		78 (95)	39 (93)	39 (97)	
Depression/dysphoria	82				>.90
No		70 (85)	36 (86)	34 (85)	
Yes		12 (15)	6 (14)	6 (15)	
Anxiety/apathy	82				.50
No		74 (90)	39 (93)	35 (87)	
Yes		8 (10)	3 (7)	5 (12)	
Disinhibition	82				.20
No		74 (90)	40 (95)	34 (85)	
Yes		8 (10)	2 (5)	6 (15)	
Aberrant motor behaviour	82				.40
No		47 (57)	26 (62)	21 (52)	
Yes		35 (43)	16 (38)	19 (47)	
Sleep and night-time behaviour	82				.60
No		78 (95)	39 (93)	39 (97)	
Yes		4 (5)	3 (7)	1 (2)	
Irritability/lability	82				.50
No		81 (99)	42 (100)	39 (97)	
Yes		1 (1)	0 (0)	1 (2)	
Appetite/eating change	82				>.090
No		80 (98)	41 (98)	39 (97)	
Yes		2 (2)	1 (2)	1 (2)	
Antipsychotic	82				.13
No		11 (13)	8 (19)	3 (7)	
Yes		71 (87)	34 (81)	37 (92)	
Benzodiazepine	82				.03
No		11 (13)	9 (21)	2 (5)	
Yes		71 (87)	33 (79)	38 (95)	
Antidepressant	82				.02
No		22 (27)	16 (38)	6 (15)	
Yes		60 (73)	26 (62)	34 (85)	
Cognitive enhancer[a]	82				.50
No		73 (89)	36 (86)	37 (92)	
Yes		9 (11)	6 (14)	3 (7)	

TABLE 4 (Continued)

Characteristic	*n*	Overall *n* = 82, *n* (%)	Direct discharge to RACF *n* = 42, *n* (%)	Psychogeriatric or geriatric medical unit *n* = 40, *n* (%)	*p*-Value
Opioid	82				.20
No		41 (50)	18 (43)	23 (57)	
Yes		41 (50)	24 (57)	17 (42)	
Mood stabilisers[b]	82				.01
No		73 (89)	41 (98)	32 (80)	
Yes		9 (11)	1 (2)	8 (20)	
Parenteral route	82				.70
No		47 (57)	25 (59)	22 (55)	
Yes		35 (43)	17 (40)	18 (45)	
Diazepam equivalent, median (IQR)	82	8.0 (2.0, 15.0)	5.5 (1.6, 10.1)	10.9 (5.8, 15.6)	.02
Chlorpromazine equivalent, median (IQR)	82	100.0 (50.0, 168.1)	71.9 (12.5, 112.5)	144.7 (74.2, 214.6)	<.001

[a]Cognitive enhancers include donepezil, rivastigmine and memantine.

[b]Mood stabilisers include carbamazepine and sodium valproate.

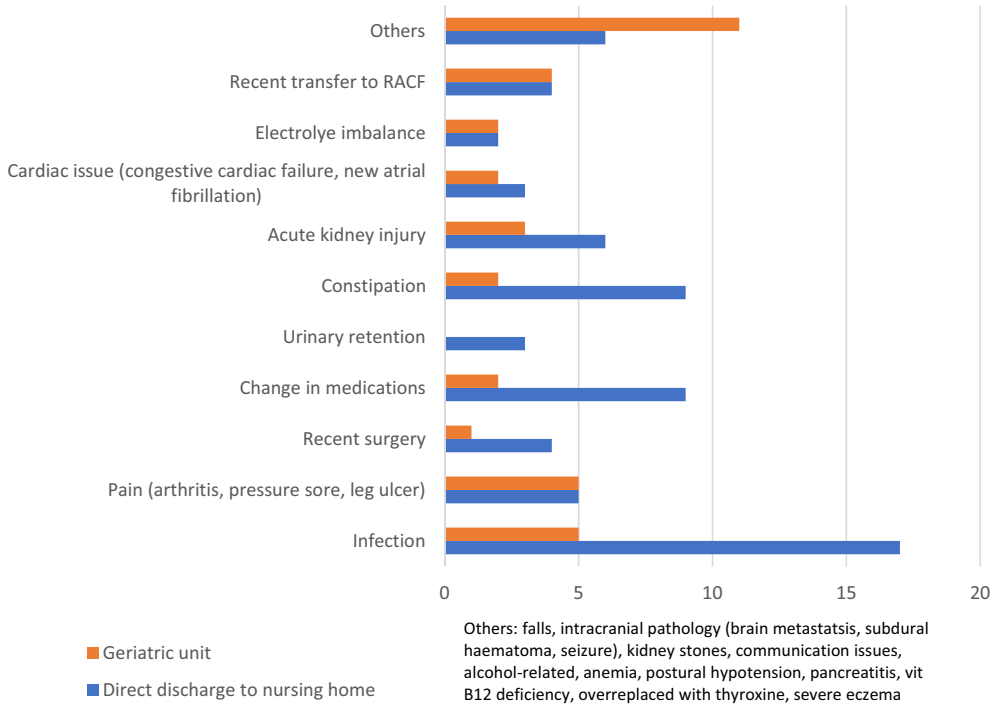

FIGURE 1 Conditions contributing to BPSD in patients who were directly discharged to RACF versus patients admitted to a psychogeriatric or geriatric medical unit.

patient LOS. Limitations of the study were its retrospective nature, some data were not available, small sample size, and this was a single institution study analysed by the primary investigator based on chart reports. A generalised linear model with a log link and gamma distribution was not performed in each group of patients because of a small sample size. The unadjusted model and likely confounding effects could impact the results. The course of the subacute admission was also not included. The severity of patient behaviour was not formally assessed because there was no formal assessment form utilised such as the NPI or BEHAVE-AD. Non-pharmacologic strategies that were applied were difficult to ascertain in a retrospective study.

5 | CONCLUSIONS

Clinical characteristics that were associated with a longer LOS of patients from RACFs admitted for BPSD include younger age, male gender, independence with mobility, need for DBMAS review in the RACF, need for a psychogeriatrician assessment, presence of ITO and increased number of Code Blacks during acute admission. Opioid use was associated with a shorter LOS. Factors that were associated with subacute admission were use and higher dose of benzodiazepine, higher dose of antipsychotic medications, use of antidepressant and use of mood stabilisers such as valproate and carbamazepine. Identification of reversible causes for BPSD was associated with direct discharge to the RACF. These findings should be taken into account when developing strategies and services that will help promote the well-being of patients with BPSD from RACFs.

ACKNOWLEDGEMENTS

The authors acknowledge Shahid Ullah for his support with the statistical analysis. Open access publishing facilitated by Flinders University, as part of the Wiley - Flinders University agreement via the Council of Australian University Librarians.

CONFLICT OF INTEREST STATEMENT

No conflicts of interest declared.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ETHICS STATEMENT

Southern Adelaide Local Health Network Research Ethics Committee determined that this study was a Quality Improvement activity and did not require a formal ethics review (QI ID 2160).

REFERENCES

1. World Health Organization. Dementia. 2023. Accessed 27 November, 2023. https://www.who.int/news-room/fact-sheets/detail/dementia
2. Australian Institute of Health and Welfare. Dementia in Australia. 2023. Accessed 27 November, 2023. https://www.aihw.gov.au/reports/dementia/dementia-in-aus/contents/summary
3. Cummings JL, Mega M, Gray K, Rosenberg-Thompson S, Carusi DA, Gornbein J. The neuropsychiatric inventory: comprehensive assessment of psychopathology in dementia. *Neurology*. 1994;44(12):2308-2314.
4. Steinberg M, Shao H, Zandi P, et al. Point and 5-year period prevalence of neuropsychiatric symptoms in dementia: the Cache County study. *Int J Geriatr Psychiatry*. 2008;23(2):170-177.
5. Canevelli M, Adali N, Cantet C, et al. Impact of behavioral subsyndromes on cognitive decline in Alzheimer's disease: data from the ICTUS study. *J Neurol*. 2013;260(7):1859-1865. doi:10.1007/s00415-013-6893-3
6. Cohen-Mansfield J. Agitated behavior in persons with dementia: the relationship between type of behavior, its frequency, and its disruptiveness. *J Psychiatr Res*. 2008;43(1):64-69.
7. Burgio L. Interventions for the behavioral complications of Alzheimer's disease: behavioral approaches. *Int Psychogeriatr*. 1996;8(Suppl 1):45-52.
8. Rabins PV, Mace NL, Lucas MJ. The impact of dementia on the family. *JAMA*. 1982;248(3):333-335.
9. Rodney V. Nurse stress associated with aggression in people with dementia: its relationship to hardiness, cognitive appraisal and coping. *J Adv Nurs*. 2000;31(1):172-180.
10. Dawson P, Kline K, Wiancko DC, Wells D. Preventing excess disability in patients with Alzheimer's disease. *Geriatr Nurs*. 1986;7(6):298-301.
11. *Assessment and Management of Behaviours and Psychological Symptoms Associated with Dementia (BPSD) – A Summary Handbook*. Nsw Ministry of Health; 2022.
12. Clinical practice guidelines and principles of care for people with dementia. 2016. Accessed 27 November, 2023. https://cdpc.sydney.edu.au
13. Dementia support Australia. Accessed 27 November, 2023. https://www.dementia.com.au/dbmas
14. Psychopharmacopeia. Antipsychotic dose conversion calculator. Accessed 18 August 2023. https://psychopharmacopeia.com/antipsychotic_conversion.php
15. MDCalc. Benzodiazepine conversion calculator. Accessed 18 August 2023. https://www.mdcalc.com/calc/10091/benzodiazepine-conversion-calculator
16. Tintinalli JESJ, Cline DM, Ma OJ, Cydulka RK, Meckler GD. *Tintanalli's Emergency Medicine: A Comprehensive Study Guide*. 7th ed. McGraw-Hill; 2011.
17. Lieberman JA, Tasman A. *Handbook of Psychiatric Drugs*. John Wiley & Sons Incorporated; 2006.
18. Kitamura T, Kitamura M, Hino S, Kurata K. Predictors of time to discharge in patients hospitalized for behavioral and psychological symptoms of dementia. *Dement Geriatr Cogn Dis Extra*. 2013;3(1):86-95.
19. American Geriatrics Society updated beers criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc*. 2012;60(4):616-631.
20. Tampi RR, Tampi DJ, Balachandran S, Srinivasan S. Antipsychotic use in dementia: a systematic review of benefits and risks from meta-analyses. *Ther Adv Chronic Dis*. 2016;7(5):229-245.
21. Yeh YC, Ouyang WC. Mood stabilizers for the treatment of behavioral and psychological symptoms of dementia: an update review. *Kaohsiung J Med Sci*. 2012;28(4):185-193.
22. Sival RC, Haffmans PM, Jansen PA, Duursma SA, Eikelenboom P. Sodium valproate in the treatment of aggressive behavior in patients with dementia–a randomized placebo controlled clinical trial. *Int J Geriatr Psychiatry*. 2002;17(6):579-585.
23. Konovalov S, Muralee S, Tampi RR. Anticonvulsants for the treatment of behavioral and psychological symptoms of dementia: a literature review. *Int Psychogeriatr*. 2008;20(2):293-308.

24. Seitz DP, Adunuri N, Gill SS, Gruneir A, Herrmann N, Rochon P. Antidepressants for agitation and psychosis in dementia. *Cochrane Database Syst Rev*. 2011;(2):Cd008191.
25. Leonpacher AK, Peters ME, Drye LT, et al. Effects of citalopram on neuropsychiatric symptoms in Alzheimer's dementia: evidence from the CitAD study. *Am J Psychiatry*. 2016;173(5):473-480.
26. Schneider LS, Frangakis C, Drye LT, et al. Heterogeneity of treatment response to citalopram for patients with Alzheimer's disease with aggression or agitation: the CitAD randomized clinical trial. *Am J Psychiatry*. 2016;173(5):465-472.
27. Husebo BS, Ballard C, Sandvik R, Nilsen OB, Aarsland D. Efficacy of treating pain to reduce behavioural disturbances in residents of nursing homes with dementia: cluster randomised clinical trial. *BMJ*. 2011;343:d4065.
28. Brown R, Howard R, Candy B, Sampson EL. Opioids for agitation in dementia. *Cochrane Database Syst Rev*. 2015;(5):Cd009705.
29. Djekovic K, Clowes K, Spalding N, Waite L. A retrospective study of the behavioural and psychological symptoms of dementia in patients admitted to a specialist dementia care unit. *Australas J Ageing*. 2022;41(4):e397-e405.
30. Brodaty H, Draper BM, Low LF. Behavioural and psychological symptoms of dementia: a seven-tiered model of service delivery. *Med J Aust*. 2003;178(5):231-234.

How to cite this article: Pajaro A, To T, Whitehead C. Factors associated with length of stay in patients from residential aged care facilities admitted for behavioural and psychological symptoms of dementia. *Australas J Ageing*. 2025;44:e70044. doi:10.1111/ajag.70044