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The Characteristics and Outcomes of People with Dementia in Inpatient Mental Health Care: A Review

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ABSTRACT

Objectives: Inpatient mental health beds for people with dementia are a limited resource. Practitioners need an understanding of this population to provide high-quality care and design services. This review examines the characteristics, care, and outcomes of people with dementia admitted to inpatient mental health services.

Methods: Systematic searches of key databases were undertaken up to November 2021. Findings were grouped into categories and then synthesized into a narrative review.

Results: The review identified 36 international papers, the majority of which were retrospective audits. The literature describes significant psychiatric and medical comorbidity and significant risk of change in residence and death associated with admission.

Conclusions: We found a limited literature describing the characteristics, care, and outcomes of people with dementia in inpatient mental health services. The lack of research is striking given the complexity and vulnerability of this client group. More research is needed to describe the needs of this group, current and best practice to optimize care.

Clinical Implications: Professionals working in inpatient mental health services need to be aware of the evidence base available, consider how they evaluate patient outcomes, review their staffing and skills mix, and seek the views of patients and relatives in improving services.

KEYWORDS

Dementia; geriatric psychiatry; inpatient; mental health; LOS; medical burden; BPSD

Introduction

Dementia affects 55 million people worldwide and this number will increase as the population ages (World Health Organisation, 2021). Changes in behavior and mood are common, with up to 80% of people experiencing these during the course of their illness (Barnes et al., 2012; Bucher, Dubuc, von Gunten, Trottier, & Morin, 2016). From a psychiatric perspective, these are typically regarded as neuropsychiatric or non-cognitive dementia-related symptoms and from a psychosocial perspective as expressions of psychological distress arising from unmet needs (Wolverson et al., 2019). There are a variety of terms used describe changes in behavior in

dementia (Wolverson, Dunn, Moniz-Cook, Gove, & Diaz-Ponce, 2021), in this review the term distress behaviors is adopted.

Specific behaviors that challenge services and families providing care include; agitation, depression, apathy, delusions, hallucinations, aggression, restlessness, sexual disinhibition, anxiety, irritability, euphoria, and sleep disturbances. These experiences are debilitating and distressing for people living with dementia and their families (Black & Almeida, 2004) and are associated with earlier institutionalization (de Vugt et al., 2005), longer hospital stays (Sampson et al., 2014), increased morbidity, mortality, and more rapid progression of dementia (Kales, Gitlin, & Lyketsos, 2014). If

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Table 1. Patients in specialist dementia units.

Author (Date) Country	Measure of level of distress behavior	Average number medical conditions per patients	Psychotropic medication	Average length of stay	Discharge destination	Mortality
Akpaiffong et al. (1999) USA	Cohen-Mansfield White patients: 53.4 admission and 37.9 discharge Black patients: 48.9 admission and 38.8 discharge	White patients 4.51 Black patients 4.45	White patients: Antidepressants 72% Antipsychotics 76% Black patients: Antidepressants 60% Antipsychotics 87%	White 34 days Black 32 days	Not reported	Not reported
Aziz et al. (2018) UK	Not reported	2015 6.23	85–88% patients receiving polypharmacy	Not reported	Not reported	Not reported
Chan et al. (2009) USA	Not reported	2016 5.73	Mean number of medications per patient: 7.8 admission and 7.9 discharge	14 days	Not reported	Not reported
Edmans et al. (2021) UK	Not reported	Not reported	Percentage of admissions prescribed: Risperidone 38.9–57.3% Olanzapine 10.0–16.5% Quetiapine 7.8–22.2% Lorazepam 43.7–88.9% Diazepam 9.7–23.3%	Between 80.6–125.1 days	General hospital 8.0–22.1% Residential home 19.8–67.2% Home 10.6–50.0%	4.0–8.0%
Haw, Stoffels, Das Purkayastha & Sudad (2015) UK	BPSD was rated as severe in 68–89% cases by the treating clinician	Not reported	Percentage of patients prescribed antipsychotics: 2007–56%, 2012 76% Most commonly used antipsychotics: Olanzapine 39–50% Quetiapine 19–25% Risperidone 21–23%	Not reported	Not reported	Not reported
Koskas et al. (2011)* France	Neuropsychiatric Inventory conducted on admission but not discharge. 49–80% rated as displaying agitation or aggressiveness.	3–5	Not reported	Not reported	29–35% discharged home.	Not reported
Neville, Boyle & Ballion (1999) UK	Behavior problems accounted for 52% of the reasons given for admission. 34% reported behavior problems were aggression. 27% admissions had 3 or more behaviour problems reported.	Not reported	Not reported	42 days (range 1–418). Length of stay for people not discharged to usual place of residence was significantly longer.	39.3% discharged to their usual place of residence. 34.8% discharged home. 15.2% residential home. 31.2% nursing home.	9.4%
Pongan et al., (2017) France	Neuropsychiatric Inventory conducted on admission and discharge by care team. Mean 37.33–40.37 at admission. Mean 26.20–30.37 at discharge.	2.87	Mean number of psychotropic medications per patient: 2.12–2.20	Not reported	61.4% discharged home. 38.6% discharged into nursing home.	4.3% 3 months after discharge.

(Continued)

Table 1. (Continued).

Author (Date) Country	Measure of level of distress behavior	Average number medical conditions per patients	Psychotropic medication	Average length of stay	Discharge destination	Mortality
Rouch et al. (2017) France	Neuropsychiatric Inventory conducted at baseline and follow up. Mean 48.6 at baseline and 47.1 at follow up.	Not reported	Mean number of psychotropic medications: 1.99 at baseline, 2.28 at discharge and 2.22 at 1 year follow up.	Not reported	At 12 month follow up, 66.0% living in community and 35.8% living in nursing home.	22.6% died during the study: 5.9% during admission, 5.9% before 3 month follow up, 4.5% between 3–6 month follow up and 6.3% between 6–12 month follow up.
Saidlitz, Sourdet, Voisin & Vella (2017) France	Neuropsychiatric Inventory conducted before admission, at admission, at discharge and at follow up. 39.0 at admission and 26.6 at discharge. 25.0 at follow up.	Not reported	Mean number of psychotropics at discharge was 2.5.	39.9 days	15.6% home; 63.8% nursing home; 4.0% psychiatry; 14.6% other hospital; 2% died	2.0%
Wilkins et al. (2019) USA	Not reported	2.4	Not reported	29 days.	77.8% Home 11.1% Assisted living 11.1% Nursing care	All died within 6 months of discharge. Average time from discharge to death was 39 days.

Table 2. Patients with dementia in mixed older adult units.

Author (Date) Country	Measure of level distress behaviors	Average number of medical conditions per patient	Psychotropic medication	Average length of stay	Discharge destination	Mortality
Aartsma et al, (2019) South Africa	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Alanen et al, (2015) Finland	Neuropsychiatric Inventory 34.6 at admission and 19.5 at discharge.	Not reported	51.7% prescribed antipsychotics on admission, 71.9% prescribed antipsychotics on discharge.	Not reported	Not reported	Not reported
Brackenridge, Courtney, Jha & Lawrence (1997) UK	Not reported	Not reported	Not reported	36 days	14% Home care 38% Residential care 43% Nursing care	0
Chan, Chiu, Lam & Leung (2002) Hong Kong	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
Davis, Holman & Brameld (2000) Australia	Not reported	Not reported	Not reported	Not reported	Not reported	12% by one year follow up.
Djernes et al, (1998) Denmark	Sandman's Multidimensional Dementia Evaluation Program conducted at admission and discharge. Points for behavioral disorders. 0–9 36% admission, 47% discharge 10–19 46% admission, 39% discharge 20–29 7% admission, 14% discharge 30–39 11% admission, 0% discharge	1.3 somatic disorders	41–47% prescribed neuroleptics, 12–9% prescribed anxiolytics, 12–18% prescribed hypnotics and 0–3% prescribed antidepressants	Not reported	Not reported	Not reported
Ekiz, Videler & Alphen (2020) Netherlands	Neuropsychiatric Inventory – Severity subscale 9.82 at admission and 6.66 at discharge. Cohen-Mansfield Agitation Inventory 50.24 at admission and 45.71 at discharge.	Not reported	Not reported	Not reported	Not reported	Not reported
Freyne & Wrigley (1997) Ireland	70% with dementia admitted due to severe behavioral disturbance.	Not reported	Not reported	17 days	40% Home care 44% Nursing home 4% Acute hospital	1%
Harrison, Kernutt & Piperogluo (1988) Australia	Not reported	75% suffered from a significant physical disorder	Not reported	32 days.	Not reported	6%
Hassett, George, Harrigan (1999) Australia	Not reported	Not reported	Not reported	Non-English-speaking background: 35.6 days English-speaking background: 36.8 days	Not reported	Not reported

(Continued)

Table 2. (Continued).

Author (Date) Country	Measure of level distress behaviors	Average number of medical conditions per patient	Psychotropic medication	Average length of stay	Discharge destination	Mortality
Ismail et al., (2015) Canada	Reasons for admission: Threat or danger to self: 36% Threat or danger to others: 46% Inability to care for self: 89% Problem with addiction: 8% Specific psychiatric symptoms: 86% Neuropsychiatric Inventory conducted on admission but not discharge. 49–80% rated as displaying agitation or aggressiveness.	Not reported	Not reported	38.13 days.	Not reported	Not reported
Koskas et al. (2011)* France	Neuropsychiatric Inventory conducted on admission but not discharge. 49–80% rated as displaying agitation or aggressiveness.	3–5	Not reported	Not reported	29–35% discharged home.	Not reported
Livingston et al. (2020) UK	Not reported	92% had at least one comorbidity	72% were prescribed at least one antipsychotic	Not reported	Not reported	15%
Manu et al., (2013) USA	Not reported	3.8 42.3% patients with dementia had a significant deterioration requiring emergency transfer during admission. Not reported	Not reported	Not reported	Not reported	Not reported
Mei-Tai & Myers (1986) USA	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
McMinn and Hinton (2000) Australia	38% admitted due to aggression. 38% admitted due to wandering and aggression.	Not reported	Not reported	Not reported	53% long-stay psychogeriatric unit 46% nursing home Not reported	Not reported
Moss, Wilson, Harrigan & Ames (1995) Australia	Not reported	Not reported	Not reported	29 days	Not reported	0
Nahas et al., (1997) USA	Not reported	3.6	46% received antipsychotics	41.7 days (14–147)	Not reported	Not reported
Nirodi and Mitchell (2002) UK	Not reported	Not reported	55.7% received antipsychotics	Not reported	Not reported	Not reported
Paschali et al., (2017) Germany	62% patients reported as aggressive using SOAS-R had dementia	Not reported	Not reported	48.3 days	Not reported	Not reported
Pitkanen, Alanen, Kampman & Leinonen (2018) Finland	During admission, Neuropsychiatric Index score decreased from 33.9 to 18.2	Not reported	76.5% received antipsychotics	36 days	30.5% home 9.0% sheltered accommodation 14.4% residential care home 19.8% primary care unit 26.3% other	Not reported

(Continued)

Table 3. Dementia subtypes reported in patients in inpatient mental health settings.

Subtype of dementia	Prevalence rates
Alzheimer's disease	5.8%-75%
Vascular dementia	8.1%-63.4%
Mixed dementia	2.5%-44.4%
Lewy body dementia	2.4%-12%
Parkinson's disease dementia	2.4%-8%
Alcohol related dementia	2.2%-15%

these behaviors are so severe the person cannot be managed safely in any other setting, an admission to a mental health unit may occur for safety, treatment adjustment, and care planning (National Institute of Health and Clinical Excellence, 2016). In the UK, admission may be either to a specialist dementia unit, or to a mixed older adult unit where people with mental health difficulties, such as depression and schizophrenia are also treated (Gondhalekar, Bakkar, Chaplin, Parker, & Low, 2021). Availability of these beds is limited and admission relatively uncommon. Different ways of meeting the medical and psychiatric needs of patients are employed in general hospitals, most notably in the UK by the significant expansion of consultation/liason services for older adults and the use of delirium units or dedicated wards for patients with comorbid dementia. These general hospital models are beyond the scope of this review, which focuses on care for patients with dementia, specifically, in psychiatric hospitals.

Concerns have been reported regarding the quality of general hospital care for people with dementia (Alzheimer's Disease International, 2016) and of the significant risks and poor outcomes associated with hospitalization for people with dementia (Alzheimer's Society, 2016; Royal College of Psychiatrists, 2019). Admission to and outcomes of mental health inpatient care is much less well described. To date, there has been no review of the literature exploring the characteristics and needs of people with dementia admitted to inpatient mental health services. The focus of this review is to better understand inpatient geropsychiatric settings namely specialist dementia units and mixed older adult units as these are most common settings where individuals with dementia are hospitalized (Pinner, Hiller, Branton, & Ramakrishnan, 2011). These settings provide specialist expertise in the management of distress behaviors with intensive levels of

assessment, monitoring, and treatment when it is not possible to provide care elsewhere. This systematic review of people with dementia admitted to inpatient mental health units will examine:

- **Characteristics** – gender, age, marital status, type of dementia and severity of dementia;
- **Care** – reason for admission, medical needs, level of dependency, medication use, and family support;
- **Outcomes** – length of stay, discharge destination, treatment of distress, repeat admissions, and death.

We include a comparison between specialist dementia units and mixed older adult units, which treat both dementia and other mental illnesses.

Methods

Search strategy and selection criteria

Medline, PsycINFO and CINAHL were systematically searched using the following key terms; old* or elder* or geriatric* or senior* AND (Psychiatr* OR psychogeriatric* OR “mental health”) N2 (inpatient* OR ward* OR unit* OR acute) AND dementia OR alzheimer* OR “cognitive impairment” OR “memory loss”

Search strategies were developed by the project team and tailored to the databases. All databases were searched up to November 2021. Papers were selected if they fulfilled the following criteria:

Inclusion criteria

- Mental health units, which provide inpatient care for older people with dementia, either in specialist dementia units or mixed older adult units for both organic and functional diagnoses. Mixed units were only included if it was possible to extract data for people with dementia.
- A minimum of two clinical and/or demographic features relating to people with dementia per paper was set for inclusion in the review, as a number of papers simply reported the number of patients with dementia on a unit.
- A paper or letter describing original findings and published in a peer-reviewed journal.

Exclusion criteria:

- Research concerning long-stay hospitals, dementia units in care homes, general hospitals, adult mental health units, and outpatient clinics was not included. Novel units such as combined medical and mental health inpatient units were not included, as the aim was to focus on usual care. The care of people with dementia in medical units with psychiatric input has been covered by other reviews (Karrer, Schnell, Zeller, & Mayer, 2021).
- Studies where it was not possible to extract data solely for patients with dementia – for example, studies that report “organic” diagnoses together not separating dementia and delirium.
- Qualitative studies of practices on units.
- Studies comparing older adult inpatients with working age adult inpatients where it was not possible to extract data for patients with dementia
- Commentaries and editorials where no original findings were reported.

No date limits or limits on geographical location were set on the inclusion of papers. Abstracts of studies were appraised for inclusion by the first

author. In cases of uncertainty, papers were independently assessed by another member of the research team. References of selected studies were also hand-searched and a citation search was carried out using Google Scholar.

Data extraction and analysis

Information was extracted from studies using a data extraction template. We examined the description of the site, demographic, clinical factors, and outcomes of patients. Outcomes included were mortality, length of hospital stay, and place of residence on discharge. A narrative synthesis was undertaken which followed guidance from the ESRC methods program (Popay et al., 2006).

Results

The results of the database searches were manually screened and articles removed that did not fit the selection criteria (see Figure 1). At title and abstract screening the most common reason for excluding studies was that they were conducted in general hospital settings. During full-text screening articles were excluded because it was not possible to extract data for people with dementia. Two pilot studies of

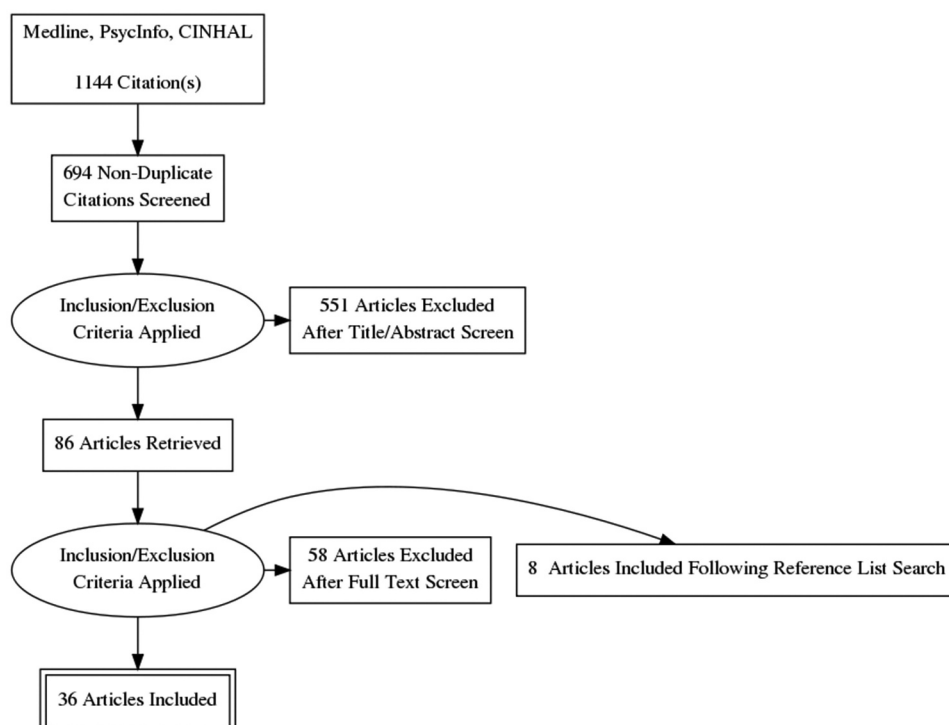


Figure 1. Study selection procedure.

novel combined medical and mental health inpatient units (Astell, Clark, & Hartley, 2008; Goldberg et al., 2013) and one study of care in a psychiatric intensive care unit (PICU) were excluded as they did not reflect standard/usual care.

Description of included studies

The 36 studies included were from worldwide locations, including; 18 European, nine North American, seven Australasian, one Asian, and one African study (see tables 1 and 2). Of the included studies, 33 were described as audits and 27 were retrospective studies using routine data. Only nine included data collected specifically for the study (Alanen, Pitkänen, Suontaka-Jamalainen, Kampman, & Leinonen, 2015; Djernes, Gulmann, Abelskov, Juul-Nielsen, & Sørensen, 1998; Ekiz, Videler, & Van Alphen, 2020; Koskas et al., 2011; McMinn & Hinton, 2000; Paschali et al., 2018; Pongan et al., 2017; Rouch et al., 2017; Saidlitz, Sourdet, Voisin, & Vellas, 2017). One study collected data at one time point (O'Connor et al., 2018), three studies compared data extracted at two time points (Aziz, Hill, & Kumar, 2018; Haw, Stoffels, Purkayastha, & Sudad, 2015; Koskas et al., 2011), the remainder collected data over a period of time ranging from one month (McMinn & Hinton, 2000) to seven years (Nirodi & Mitchell, 2002).

The characteristics and outcomes of single units were examined in 17 papers (Akpaffiong, Kunik, Hale, Molinari, & Orengo, 1999; Alanen et al., 2015; Brackenridge, Courtney, Jha, & Lawrence, 1997; Chan, Chiu, Lam, & Leung, 2002; Chan et al., 2009; Davis, Holman, & Brameld, 2000; Djernes et al., 1998; Freyne & Wrigley, 1997; Hassett, George, & Harrigan, 1999; Koskas et al., 2011; McMinn & Hinton, 2000; Mei-Tal & Meyers, 1986; Nahas, Kunik, Orengo, Molinari, & Workman, 1997; Pitkänen, Alanen, Kampman, & Leinonen, 2018; Saidlitz et al., 2017; Sajatovic, Friedman, Sabharwal, & Bingham, 2004; Wilkins, Goldstein, & Forester, 2019), 14 papers combined data from a number of units within one region (Aartsma et al., 2019; Aziz et al., 2018; Ekiz et al., 2020; Harrison, Kernutt, & Piperoglou, 1988; Haw et al., 2015; Ismail et al., 2015; Koskas et al., 2011;

Manu et al., 2013; Moss, Wilson, Harrigan, & Ames, 1995; Neville, Boyle, & Baillon, 1999; Nirodi & Mitchell, 2002; Paschali et al., 2018; Rockwood, Stolee, & Brahim, 1991) and five compared the practice of units across different regions or health-care providers (Edmans et al., 2021; Livingston et al., 2020; O'Connor et al., 2018; Pongan et al., 2017; Rouch et al., 2017).

Description of units

The characteristics, care and outcomes of mixed older adult units were described in 24 papers, whilst 12 reported data from specialist dementia units. There was little detail provided about the units. Only 15 papers reported the number of beds available. Specialist dementia units ranged in size from 16 beds (Wilkins et al., 2019) to 84 beds across three units (Aziz et al., 2018). Mixed older adult units ranged in size from seven beds (Brackenridge et al., 1997) to 24 beds (Paschali et al., 2018). Edmans et al. (2021) which described four units; on average there was one bed for every 250 people with dementia with admission rates of around 1 patient per week (Edmans et al., 2021). Three papers described the staffing on the units (S.S. Chan et al., 2002; Edmans et al., 2021; Rouch et al., 2017) and three commented on the built environment (Brackenridge et al., 1997; Koskas et al., 2011; McMinn & Hinton, 2000).

Patient characteristics

The combined data represented 3950 people with dementia in inpatient mental health care.

Gender

The gender of patients was reported in 23 papers. Nine reported a higher percentage of female patients (Alanen et al., 2015; Chan et al., 2002; 2009; Ismail et al., 2015; Manu et al., 2013; Pongan et al., 2017; Rouch et al., 2017; Sajatovic et al., 2004; Wilkins et al., 2019), Six reported a higher percentage of male patients (Akpaffiong et al., 1999; Davis et al., 2000; Edmans et al., 2021; Ekiz et al., 2020; McMinn & Hinton, 2000; Mei-Tal & Meyers, 1986) and eight had an evenly balance sample (Aziz et al., 2018; Brackenridge et al., 1997; Hassett et al., 1999; Nirodi & Mitchell, 2002;

Paschali et al., 2018; Pitkänen et al., 2018; Saidlitz et al., 2017; Smith, Hassett, Harrigan, & Fortune, 2010).

Ethnicity

Four reported details relating to the race or ethnicity of patients. The two papers on specialist dementia units (Akpaffiong et al., 1999; Chan et al., 2009), both based in the USA, reported a majority 73 to 86% White patient population. The mixed older adult units (Hassett et al., 1999; Smith et al., 2010) both based in Australia, reported a significant amount of their patient population were either born overseas or were from non-English speaking backgrounds.

Age

The age of patients was reported in 23 papers, with the mean age ranging from 73.8 to 86 years (Akpaffiong et al., 1999; Alanen et al., 2015; Aziz et al., 2018; Brackenridge et al., 1997; Chan et al., 2002; 2009; Ekiz et al., 2020; Ismail et al., 2015; Koskas et al., 2011; Livingston et al., 2020; Manu et al., 2013; Mei-Tal & Meyers, 1986; Nahas et al., 1997; Nirodi & Mitchell, 2002; Pitkänen et al., 2018; Pongan et al., 2017; Rouch et al., 2017; Saidlitz et al., 2017; Smith et al., 2010; Wilkins et al., 2019).

Marital status

Seven papers reported on the marital status of patients (Akpaffiong et al., 1999; Alanen et al., 2015; Brackenridge et al., 1997; Ekiz et al., 2020; Ismail et al., 2015; Pitkänen et al., 2018; Pongan et al., 2017). In five of these studies, the majority of patients were married. Across these seven studies, 24% to 71% of patients were widowed and 5% to 21% were divorced.

Type of dementia

The subtypes of dementia were reported in 23 studies (Aartsma et al., 2019; Akpaffiong et al., 1999; Alanen et al., 2015; Aziz et al., 2018; Brackenridge et al., 1997; Chan et al., 2002; 2009; Djernes et al., 1998; Edmans et al., 2021; Ekiz et al., 2020; Harrison et al., 1988; Livingston et al., 2020; McMinn & Hinton, 2000; Mei-Tal & Meyers, 1986; Moss et al., 1995; Nahas et al., 1997; Neville

et al., 1999; Nirodi & Mitchell, 2002; Paschali et al., 2018; Pitkänen et al., 2018; Rouch et al., 2017; Saidlitz et al., 2017; Wilkins et al., 2019) see table 3.

Severity of dementia

The severity of dementia was reported in 11 studies. Seven studies (Akpaffiong et al., 1999; Alanen et al., 2015; Brackenridge et al., 1997; Chan et al., 2009; Djernes et al., 1998; Koskas et al., 2011; Pitkänen et al., 2018) reported this using the Mini Mental State Exam (MMSE (Folstein, Robins, & Helzer, 1983)), with average scores ranging from 9.3 to 22.1 points, indicating that inpatient units were caring for people with severe (<10) and mild (21 to 25) dementia. One study (Pongan et al., 2017) used the Clinical Dementia Rating (CDR (Morris, 1997)), concluding that patients had moderate or severe cognitive impairment.

Patient needs

Reason for admission

In describing units and their function, papers made reference to the treatment of distress behaviors (Aartsma et al., 2019; Freyne & Wrigley, 1997; Moss et al., 1995), where these symptoms had “significant consequences for both the patient and his family environment” (Pongan et al., 2014). Behavioral reasons for admission were investigated in nine papers (25%) (Alanen et al., 2015; Ismail et al., 2015; Koskas et al., 2011; McMinn & Hinton, 2000; Neville et al., 1999; Paschali et al., 2018; Pitkänen et al., 2018; Rockwood et al., 1991; Saidlitz et al., 2017). The frequency and severity of distress behaviors was rated in nine studies; six of these (Alanen et al., 2015; Koskas et al., 2011; Pitkänen et al., 2018; Pongan et al., 2017; Rouch et al., 2017; Saidlitz et al., 2017) used the Neuropsychiatric Inventory (NPI; (Cummings et al., 1994)) with average global scores across studies from 33.9 (Pitkänen et al., 2018) to 40.5 (Rouch et al., 2017) where the scale is scored with a range of 0 to 144. Two studies (Akpaffiong et al., 1999; Nahas et al., 1997) used the Cohen-Mansfield Agitation Inventory (Cohen-Mansfield, Marx, & Rosenthal, 1989) and one (Paschali et al., 2018) used Staff Observation Aggression Scale-Revision (Palmstierna & Wistedt, 1987).

We can get an idea of the distress behaviors being treated on admission from the nine studies examining reasons for admission and the studies reporting distress measures, behaviors documented as a reason for admission include aggression (Akpaffiong et al., 1999; Harrison et al., 1988; Haw et al., 2015; Koskas et al., 2011; Neville et al., 1999; Rockwood et al., 1991; Wilkins et al., 2019) and agitation (Haw et al., 2015; Koskas et al., 2011; Mei-Tal & Meyers, 1986; Wilkins et al., 2019), sexual disinhibition (Harrison et al., 1988; Haw et al., 2015), self-neglect (Freyne & Wrigley, 1997; Ismail et al., 2015), paranoid delusions (Freyne & Wrigley, 1997; Mei-Tal & Meyers, 1986), euphoria and agitation (Mei-Tal & Meyers, 1986), wandering (Koskas et al., 2011; Rockwood et al., 1991), problems with addiction/dependency (Ismail et al., 2015) and involvement in the criminal justice system (Ismail et al., 2015). Ismail et al. (2015) reported that 46% of patients were a threat or danger to others and 89% a danger to themselves. Suicidal ideation and suicidal behavior were not listed as a reason for admission in any study. One study described 27% of patients with three or more distress behaviors on admission (Neville et al., 1999) and another reported an average of 3.6 distress behaviors per patient (Nirodi & Mitchell, 2002). High rates depression comorbid with dementia were also described as a reason for admission (Mei-Tal & Meyers, 1986). One study reported that 77.5% of patients with dementia also had “comorbid maladaptive personality traits” (Ekiz et al., 2020).

Family intervention and support

In explaining the role and function of units, carer distress (Freyne & Wrigley, 1997; Pongan et al., 2017; Rockwood et al., 1991; Wilkins et al., 2019) and illness (Freyne & Wrigley, 1997; Neville et al., 1999) were described as common reasons for admission. One study reported measures of caregiver distress (Pongan et al., 2017), which they found did not predict discharge destination. No studies reported family carer interventions, although four (11%) (Akpaffiong et al., 1999; Nahas et al., 1997; Rouch et al., 2017; Sajatovic et al., 2004) referred to family education and psychological support as part of their usual treatment.

Active medical problems

Medical comorbidity was reported in 11 papers (31%). The most frequently recorded health conditions were cerebrovascular disease, hypertension, chronic cardiac disease, diabetes, chronic kidney disease, folate deficiency, and anemia. The average number of comorbidities reported per person ranged from 1.3 (Djernes et al., 1998) to 6.23 (Aziz et al., 2018). Transfer to acute medical wards for treatment was common with one study reporting that 42.3% of patients had a significant medical deterioration during their admission requiring emergency transfer (Manu et al., 2013). Transfer to the acute hospital was associated with a significantly longer length of stay (Neville et al., 1999). Two papers reported on data from the EVITAL study where 41.1% of patients were diagnosed with an acute illness during their admission (Rouch et al., 2017). Higher rates of acute somatic diseases were present in people discharged into nursing care (67.9%) than in those discharged home (55.1%) (Pongan et al., 2017).

Features of inpatient care

Medication management

Medication use was reported in 13 studies (43%). The mean number of repeat daily medications (all medications not just dementia related) reported per patient ranged from 7.8 (Chan et al., 2009) to 10.88 (Aziz et al., 2018). The average number of medications prescribed per patient for all conditions increased from admission to discharge (Chan et al., 2009). In the study by Aziz et al. (2018), p. 95% of patients had received medication with a high risk of an adverse drug reaction (defined as events leading to admission to hospital, death, and drug-to-drug interactions).

Nirodi and Mitchell (2002) reported that 98% of patients were prescribed a psychotropic medication and Saidlitz et al. (2017) found that 52.3% had received four or more psychotropic medications on admission (typically antipsychotics, benzodiazepines, and carbamates). On mixed older adult units nearly all patients with dementia (98%) were prescribed psychotropic medications during their period of hospitalization (Nirodi & Mitchell, 2002), with a mean of 2.2 psychotropic medications a day reported (Nahas et al., 1997).

Three studies demonstrated an increase in the number of prescribed psychotropic medications from admission to discharge (sChan et al., 2009; Nirodi & Mitchell, 2002; Rouch et al., 2017), with one paper reporting a mean of 2.74 new psychotropic drugs prescribed to each patient during their admission (Nirodi & Mitchell, 2002). One study reported a significant decrease in the prescriptions of antipsychotics, benzodiazepines, and carbamates; however, prescriptions for antidepressants, hypnotics, and antiepileptic medications were significantly higher at discharge (Saidlitz et al., 2017). The mean number of prescribed psychotropic medications that patients were discharged with (2.28) remained largely the same 12 months after discharge in one study (2.22) (Rouch et al., 2017).

Haw et al. (2015) reported that 76% of patients were prescribed an antipsychotic (Haw et al., 2015). The most commonly prescribed antipsychotics were Risperidone (Edmans et al., 2021) and Olanzapine (Haw et al., 2015). A significant number of people were admitted to inpatient units (38.9% to 57.3%) having been already prescribed antipsychotic medication (Edmans et al., 2021). Rates of antipsychotic prescribing and dosages increased from admission to discharge in two studies (Alanen et al., 2015; Pitkänen et al., 2018). Antipsychotic polypharmacy (haloperidol and olanzapine, zuclopenthixol and quetiapine and haloperidol and zuclopenthixol) increased from 2007 to 2012 in one audit and was thought to reflect the increasing complexity of patient needs (Haw et al., 2015).

Antidepressants were prescribed to between 24.6% (Nirodi & Mitchell, 2002) and 72% of patients (Akpaffiong et al., 1999). The number of patients prescribed antidepressants reduced from admission to discharge in one study (Pitkänen et al., 2018). ECT was used to treat depression in two patients with dementia in one study (Nahas et al., 1997).

The use of when required (PRN) psychotropic medication was reported in three (8.3%) studies (McMinn & Hinton, 2000; Nirodi & Mitchell, 2002; O'Connor et al., 2018). McMinn and Hinton (2000) found PRN was used on average 3.62 times a day per person, with higher rates of

PRN use among men than women. Nearly double the number of PRN medications were administered (6.05) when patients did not have access to outdoor areas. Nirodi and Mitchell (2002) report a mean a 0.9 PRN drug prescriptions per patient with dementia. O'Connor et al. (2018) reviewed 239 PRN prescriptions and found the medication indication was only specified in 63.6% of prescriptions.

Prescribing was described in four (11%) international papers (UK, USA, and Australia) (Aziz et al., 2018; Chan et al., 2009; Nirodi & Mitchell, 2002; O'Connor et al., 2018). One medication audit (Aziz et al., 2018) found that 25% drugs were inappropriately prescribed and could be stopped as defined by the STOP/START criteria (O'Mahony et al., 2014). The most common drugs inappropriately prescribed were benzodiazepines, antipsychotics, and opiates. On a mixed older adult unit, errors were found to be common in prescribing, particularly for psychotropic PRN medication and were more common for patients with dementia (Nirodi & Mitchell, 2002). Nirodi and Mitchell (2002) reported that 20% of prescriptions for patients with dementia were illegible and among prescriptions of regular medication, 33% contained missing information (dose, frequency, or, indications for use). In a review of prescribing across units in one region of Australia, problematic areas concerned the gathering of information at admission about patients' psychotropic prescribing histories and the handing over of information at discharge concerning newly prescribed medications and the reasons for stopping medications, including any adverse reactions (O'Connor et al., 2018). Two studies outlined audits that successfully improved prescribing practices (Aziz et al., 2018; Chan et al., 2009), but noted that sustaining these changes would require continued efforts.

High levels of dependency

Five studies (Alanen et al., 2015; Brackenridge et al., 1997; Chan et al., 2009; Djernes et al., 1998; Pitkänen et al., 2018) explored the daily functioning of patients. The research exploring the impact of admission on activities of daily living (ADL) and levels of dependency is conflicting. Four studies reported no evidence of a reduction in levels of

functioning and autonomy following admission (Alanen et al., 2015; Brackenridge et al., 1997; Chan et al., 2009; Djernes et al., 1998), while one reported a significant decline (Pitkänen et al., 2018).

Outcomes

Length of stay

Average length of stay was reported in 13 papers (Akpaffiong et al., 1999; Brackenridge et al., 1997; Chan et al., 2009; Edmans et al., 2021; Freyne & Wrigley, 1997; Ismail et al., 2015; Nahas et al., 1997; Neville et al., 1999; Paschali et al., 2018; Pitkänen et al., 2018; Saidlitz et al., 2017; Sajatovic et al., 2004; Wilkins et al., 2019). Overall, a mean admission duration of 41.3 days was reported, with a range of admission lengths from 1 to 795 days. Papers from the USA generally reported much shorter admissions (see table one and two). There appears to be a cohort of patients who had much longer admissions: 2.5% of people in four UK units had admissions of over a year in duration (Edmans et al., 2021). One paper reported longer admission durations when patients were not being discharged to their usual address (Patterson & Compton, 1989). Similar average length of stay was reported for White patients (34 days) and Black patients (32 days) (Akpaffiong et al., 1999).

Treatment of distress behaviors

Eight papers compared measures of behavior at admission and discharge and reported a reduction in distress behaviors on standardized scales (Akpaffiong et al., 1999; Alanen et al., 2015; Djernes et al., 1998; Nahas et al., 1997; Pitkänen et al., 2018; Rockwood et al., 1991; Rouch et al., 2017; Saidlitz et al., 2017). This improvement was reported in both White and Black patients (Akpaffiong et al., 1999). Distress behaviors remained improved following discharge at 21 day follow-up (Saidlitz et al., 2017) and one year post discharge (Rouch et al., 2017). A reduction in measures of depression from admission to discharge was reported by two studies (Akpaffiong et al., 1999; Nahas et al., 1997), while another reported no improvement (Djernes et al., 1998).

Discharge destination

Discharge locations were reported by 10 papers (Brackenridge et al., 1997; Edmans et al., 2021; Koskas et al., 2011; McMinn & Hinton, 2000; Neville et al., 1999; Pitkänen et al., 2018; Pongan et al., 2017; Rouch et al., 2017; Saidlitz et al., 2017; Wilkins et al., 2019). Rates of discharge home varied considerably with 10.6% to 50% of patients returning home (Edmans et al., 2021). Of those patients returning home, the majority had a new or increased package of care (Neville et al., 1999). Entry to or return to long-term institutional care following inpatient care was common with reports of between 14.4% (Pitkänen et al., 2018) to 67.2% (Edmans et al., 2021) of patients entering care settings. Delayed discharges as a result of lack of suitable placements were reported as an issue (Neville et al., 1999). A smaller group of patients were discharged to long-stay mental health settings (McMinn & Hinton, 2000; Sajatovic et al., 2004). Discharge to a general hospital (Edmans et al., 2021; Pitkänen et al., 2018; Saidlitz et al., 2017) was also reported (8% to 19.8% of patients).

Repeat admissions

Readmission rates following discharge for people with dementia were reported in two papers. One paper reported that patients who were discharged home were more likely to be hospitalized again over the next three months (26.7%) compared to those who were discharged to nursing care (3.7%) and that re-admissions for distress behaviors was seen in 11.6% of people who returned home (Pongan et al., 2017). In examining the readmission rate to their specialist dementia unit of 8.5% after one month and 20.1% after three months (Saidlitz et al., 2017), one paper found no patient factors (length of stay, measure of behavior severity, measures of dependence in activities of daily living, or number of medications taken) at admission or discharge were found to predict readmission.

Death

The number of people who died in inpatient units during their admission ranged from 2% (Saidlitz et al., 2017) to 8% (Edmans et al., 2021) with higher rates reported during the COVID-19 pandemic (Livingston et al., 2020). In examining deaths following discharge, one study reported that 5.9% of

people died before three month follow-up; 4.5% of people died between three and six month follow-up and 6.3% of people died between six and 12 month follow-up (Rouch et al., 2017).

Discussion

We found a limited literature describing the characteristics, care, and outcomes of people with dementia in inpatient mental health services. The literature was mixed in methods, size, and outcomes described, however we were able to synthesize the available evidence describing the characteristics of people admitted, the types of treatment received, and broad outcomes on discharge.

Characteristics of admission and discharge

The primary reason for admission was the management of distress behaviors in dementia, posing significant risks and leading to distress for people with dementia and their families. The majority of patients were over 70, with dementia of Alzheimer's type being the most common diagnosis. Admission length of several weeks was common, and in some cases much longer. Repeat admission was rare. Discharge was commonly a point of transition from independent living to long-term care, often at the end of an unplanned admission. The literature did not describe whether alternatives, for example, planned transition to institutional care directly from home requiring only one change of environment rather than two, were possible or would improve outcomes. Higher rates of readmission were noted when patients were discharged to independent living. Further research is needed to explore whether improving behavioral care at home and during transitions between settings (home to residential care) may be a way to prevent the need for inpatient psychiatric care.

Medical comorbidity is common in this population. This appears to lead to high levels of clinical need resulting in transfer of patients to medical wards. Transfer was a common occurrence, and was associated with longer admissions. The population admitted to these units also includes a significant number who are in the last year of their life, and indeed for between 2% and 8% of

people these units are their place of death. This indicates there are substantial medical and palliative needs which should be reflected in the competencies and training of staff on these units (Burton et al., 2016; Patrick, Donaldson, & Short, 2020). The geographical and organizational isolation of mental health units and acute medical care facilities, may make it more likely that access to such skills is restricted.

Service model

We identified two common service designs, specialist dementia units, and mixed older age units (Gondhalekar et al.). We found only one study, which compared these settings (Koskas et al., 2011). This small pilot project found no evidence to support one setting being more effective than the other. The patient needs and staff skills required to effectively support the two patient groups would appear different however. For example, patients with severe dementia and distress behaviors in secondary care have specific care needs (feeding, dressing, tailored care approaches, etc.) that require staff with specific dementia training, expertise, mentoring, and time to deliver care (Handley, Bunn, & Goodman, 2017). These needs differ somewhat from patients on mental health inpatient units, where common diagnoses include depression, schizophrenia, or mania each; of which need a different nursing approach and environment.

A further alternative model is caring for this patient group in a general hospital setting with psychiatric support and this approach has been subject to previous systematic review. This suggested advantage over care being delivered in a general hospital setting, but also that evidence was limited (McCausland et al., 2019). We found no work comparing outcomes from this setting with outcomes from specialist mental health units.

Treatment

While the findings offer some encouraging evidence that these facilities are successful in achieving their goal of treating distress behaviors in dementia, they are limited in their ability to comment on how this was achieved due to lack of information on interventions and outcomes and studies looking at

their interaction. That dedicated units, such as those described here could be therapeutic in itself is an idea first mooted nearly 30 years ago and though more units now exist as we demonstrate in this review, their evaluation has been limited (Lewis et al., 1993). Similarly, small studies looking at specific interventions such as Snoezelen rooms have been published but not followed by larger trials or incorporation in to best practice (Staal et al., 2007).

Medication-based approaches were commonly described, particularly the use of antipsychotics. The finding that risperidone and olanzapine were the most commonly prescribed antipsychotics should be of some reassurance, as these have the best evidence for effectiveness (National Institute for Health and Clinical Excellence, 2018; Schneider et al., 2006). However, the prevalence of prescribing in other psychotropic categories, and overall accumulation of psychotropic prescriptions during admissions, is a concern, given the more limited evidence of effectiveness of these other medication classes, and the vulnerability of this group of patients to adverse effects (Tampi, Tampi, Balachandran, & Srinivasan, 2016). The observed heterogeneity in treatment approaches is likely to be a result of the lack of specific guidelines to clinicians in this area. The patients admitted to inpatient mental health care are likely to have complex needs, and by the time of admission there may have been many unsuccessful attempts to manage the situation. Such guidance does exist (Alzheimer's Society, 2011) but may have been exhausted by this point, leaving clinicians to choose treatment approaches based on their own preference and influences.

Another striking finding, given the universal instruction in guidelines on treatment of distress behaviors to adopt non-pharmacological approaches (James & Moniz-Cook, 2018; National Institute for Health and Care Excellence, 2019), is the absence of any comment on this aspect of management in any of the studies. Environmental factors and staff skills and training are vital to creating a unit milieu that promotes adaptive behaviors, and there has been much research into this in long-term care settings, and evidence that interventions based on these components can be effective (Moniz-Cook et al., 2017). A complex intervention

of medication review and person-centered care training for staff can improve quality of life, reduce antipsychotic prescribing and agitation in care home residents in a cost-effective way (Ballard et al., 2018). Whether similar approaches translate to inpatient mental health units, where medication is reviewed at least weekly and staff may have higher baseline levels of training and staff-to-patient ratios, is unknown. However, descriptions of settings in the studies reviewed were largely limited.

It may be that people in these units are too distressed to take part in traditional non-pharmacological interventions, such as cognitive stimulation therapy or music therapy. Indeed, the majority of psychosocial interventions have been designed to prevent distress occurring. When someone is extremely distressed psychosocial interventions are likely to be centered around skilled communication strategies and de-escalation skills, which are much harder to define. The lack of research into psychosocial interventions in these settings may also reflect the challenges in conduct research in such an acute setting and the associated ethical issues.

Outcomes

The facilities appear to be effective in their primary purpose; reducing the level of distress behaviors. However, indicators of quality were notably absent in most studies. While improvement in scales measuring the severity of distress behaviors was noted, there was often little comment on the potential for adverse consequences of the chosen treatment approaches. Some studies examined measures of prescribing quality, frequent errors, and inappropriate medication use were found to be common. Only one study (Edmans et al., 2021) reported adverse incidents, such as assaults and falls. Given the apparent reliance on pharmacological treatment strategies, their limited effectiveness, and tangible associated risks (side effects, falls, stroke, increased mortality), there is a clear need for better evidence to support clinicians' decision-making, and greater monitoring for negative outcomes. Outcome measurement is hampered by a lack of agreed outcomes for both benefit and harm. Work with patients, carers, and professionals to

determine what constitutes measurable outcomes indicating benefit and harm would seem a priority to allow any further future evaluation.

Limitations

Most of the articles reviewed were service evaluations, which were limited in their scope. These evaluations did not look to compare practice to externally validated standards of care, but simply described aspects of the setting or patient population that was accessing it.

The lack of a single agreed nomenclature to describe inpatient units that cater for patients with dementia, makes a fully inclusive search challenging. We kept our focus to units that specialized in distress behaviors in dementia. Given the limited literature base, we did not set a time period on our searches and consequently some of the papers included are old and may not reflect current practice.

Most of the articles included in this review were audits. While these are a useful source of information they are subject to less rigorous governance potentially increasing the risk of bias. In particular, audits tend to be conducted in units where a particular concern about an outcome has been identified, and therefore they may not represent the wider/national picture. Many of the articles were of small samples, and many reflected practice on a single units or single region.

The articles come from a number of countries operating differing health-care models and with different cultures toward older people, mental illness, and managing dementia. It would be informative to compare and contrast practices in different countries, however the included papers provided very few details about their units and there models of care, future work should try to set the context for their service more clearly. There is significant heterogeneity between the data collection methods employed and outcomes presented from one article to another, which limits our ability to draw conclusions from the data. Overall, these factors limit the generalizability of the data presented. For some of the findings, there was consistency across different studies covering a wide geographical range, which should give some reassurance as to their wider relevance. The studies also

cover several decades and in this time there have been significant changes in care provision, for example, the reduction in inpatient beds and the increase of community-intensive support teams in the UK, which means findings from older studies may no longer be applicable.

We found no study that considered patient and family experiences of the care received, which maybe reflective of the outcomes considered important at the time of publication. Patient and family feedback has become an increasingly important metric of care quality that supports organizational and individual learning (National Institute for Health Research, 2019) and should not be overlooked in the future.

Conclusions

We present a systematic review of the literature describing the characteristics, care, and outcomes of people with dementia in inpatient mental health care. The limited amount and quality of evidence available is in direct contrast to the prevalence and severity of need in this vulnerable population.

The units presented are generally successful in their primary purpose: admitting and treating people with distress behaviors of dementia prior to a successful discharge. Evidence of the quality of care provided is less clear. Pharmacological treatment approaches are common, with some evidence for concerns over the quality and appropriateness of medication choices. We found evidence that this was a population with complex needs arising from medical comorbidity, including palliative care needs, and little assurance that settings were suitably skilled to manage this. We found two common models of care delivery, specialist dementia units, and mixed older adult units, but no evidence to guide, which may be more effective. We found no evidence that the experiences or concerns of patients and their families has been collected and acted upon in service design or delivery. These findings establish that the lack of evidence to inform best practice in caring for this extremely vulnerable group of patients.

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Data Availability Statement

The authors confirm that the data supporting the findings of this study are available within the article and its supplementary materials.

Description of authors' roles

The research team designed the review and agreed the review question together. E. Wolverson and R. Dunning carried out the search, selected the papers, conducted the data extraction, and drafted the paper. The analysis was undertaken by E. Wolverson and verified by R. Dunning, with any discrepancies being verified by the rest of the team. All authors contributed to the drafting of the paper and agreed on the final paper for publication.

Clinical implications

- (1) Clinicians should be aware of the current evidence regarding these units and its limitations
- (2) For those working on these units consideration should be given to the routine collection of outcome data
- (3) More data is needed to establish an evidence base for the use of a range of team-based environmental and psychosocial interventions on inpatient psychiatric units
- (4) Staffing and skill mix should be reviewed to make sure that the complex needs of these patients can be met. In particular, consideration should be given to the complexity of medical and psychiatric problems where access to a range of staff with specialist skills is likely to be needed.
- (5) Patients and carers should be consulted and included in service improvement

This review has highlighted the lack of research concerning these services. From our review important questions for further examination would include, what are the most

appropriate outcome measures to evaluate quality of care in this setting and what are the interventions, which maximize quality and what are the resources needed to deliver these? More specifically, we have identified consistent mortality on these units and attention might be given specifically to the delivery and quality of palliative care. It is important these issues are considered, added to and prioritized by engaging with patients, carers, and professional staff.

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