

A systematic review of interventions to improve acute hospital care for people with dementia

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Research article

Keywords: Dementia, Cognitive impairment, Acute hospital, Acute care, Systematic review

Posted Date: January 14th, 2021

DOI: <https://doi.org/10.21203/rs.2.22248/v3>

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Version of Record: A version of this preprint was published at Geriatric Nursing on May 1st, 2021. See the published version at <https://doi.org/10.1016/j.gerinurse.2021.03.006>.

Abstract

The aim of this study was to provide an overview of interventions targeting hospital care of patients with dementia. We conducted a systematic review, including interventional study designs. We searched five electronic databases, conducted a hand search and performed citation tracking. To assess risk of bias, we used Cochrane Collaboration's tool, ROBANS and AMSTAR. We narratively summarized the outcomes.

The findings of twenty studies indicated a broad range of interventions and outcomes. We categorised the interventions into eight intervention types. Educational programmes were the most reported intervention type and resulted in improved staff outcomes. Family-/person-centred care programmes, use of specially trained nurses and delirium management programmes were effective in improving patient-related outcomes.

However, current evidence is insufficient to declare which interventions are effective in improving dementia care in acute hospitals. Future research should focus on relevant patient and family caregiver outcomes and must to consider the complexity of the interventions.

Trial registration: PROSPERO: CRD42018111032.

Background

Prevalence rates for dementia in the acute hospital setting vary in the literature. According to estimations, about 20-25% of hospital patients are affected by dementia.^{1,2} It might be assumed that these numbers are underestimated as about 56% of dementia cases are not diagnosed or recognised by healthcare staff.³ In the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) dementia is described as "major neurocognitive disorder".⁴ The International Classification of Diseases (ICD-11) defines dementia as "acquired brain syndrome characterized by a decline from a previous level of cognitive functioning with impairment in two or more cognitive domains (such as memory, executive functions, attention, language, social cognition and judgment, psychomotor speed, visuo-perceptual or visuospatial abilities)". Cognitive impairment influences a person's independence.⁵ The psychological and social needs of persons with dementia are love, comfort, attachment, occupation, inclusion and identity.⁶

Acute care is defined as "short-term medical treatment, usually in a hospital, for patients having an acute illness or injury or recovering from surgery".⁷ Acute care hospitals are described as institutions with rigid cultures characterized by inflexible routines and schedules. As a consequence, older persons are disadvantaged by this system.⁸ Since individual needs of people with dementia are not met in acute care hospitals, they may not receive adequate care.^{9,10} Structural aspects, such as a lack of staff knowledge, time constraints due to inadequate staffing levels, an unsupportive practice culture and the physical environment of the hospital, are reasons for this problem.⁹ Furthermore, people with dementia are separated from familiar persons, may have pain, do not know where they are and what is happening.¹¹ Thus, people with dementia may react with emotional distress and exhibit behaviours, such as agitation, crying, restlessness, aggression, anger or calling and shouting.¹¹ Hospital stays have negative effects on symptoms of dementia, e.g. decreased cognitive function and independence.² An analysis of 19269 hospital admissions indicated that people with dementia have significantly longer hospital stays than patients without cognitive impairment in the same age group. They are also more likely to be discharged to a nursing home for the first time.¹² Furthermore, people with dementia have a high risk of developing delirium during their acute hospital stay. Margiotta, Bianchetti, Ranieri and Trabucchi¹³ showed that 59% of patients with dementia and 13% of patients without dementia were affected by delirium. Delirium causes prolonged hospital stays, a lower cognitive and functional status and a higher mortality rate.^{13,12}

This problematic situation resulted in many initiatives to improve the care of patients with dementia in the acute hospital setting. Recent literature reviews have summarized crucial aspects of good quality of care for persons with cognitive impairment in acute care hospitals.^{14,9} Staff knowledge and confidence, supportive practice culture, adequate physical environment, clinical experts and supportive leaders, family- and person-centredness as well as adequate assessments and interventions were identified as factors contributing to good quality of care for persons with dementia.^{14,9} Naef et al.⁹ pointed out that there are promising strategies to promote good quality of care. These strategies need to be systematically reviewed and comprise, for example, tools fostering person- and family-centred care, specific nursing roles or special hospital units. Efforts to improve care for patients with dementia in the acute hospital include specific interventions and their scientific evaluation. By intervention we understand organisational strategies, programmes, and/or treatments and actions performed by healthcare professionals.

There are systematic reviews focusing on specific interventions for persons with dementia in the acute hospital setting, e.g. on educational and training interventions¹⁵ or on special care units for patients with dementia.¹⁶ The systematic review by Feast et al.¹⁷ describes the effectiveness of different interventions. However, it is restricted with regard to reported outcomes. To our knowledge, there is no systematic review providing an overview of existing interventional studies and systematic reviews in this field, including all types of interventions and outcomes. When developing new interventions for people with dementia in acute care hospitals, it is, however, crucial to have a comprehensive overview of previously investigated interventions and reported outcomes in this field.

Objective

The aim of this review was to provide a systematic overview of interventions targeted to improve the care of patients with dementia and cognitive impairment on regular wards (all wards except intensive care units and emergency departments) in acute care hospitals. This review will show which kinds of interventions were tested in this field, which outcomes were reported, and which effects were achieved. This knowledge can contribute to developing improved and evidence-based care for people with dementia in acute care hospitals.

We conducted a systematic review of interventional studies and systematic reviews to gather the best possible evidence for developing research-based dementia care in acute care hospitals.

This review is part of a larger project aiming to develop a care model for persons with dementia in the acute hospital setting in Switzerland. Recent knowledge about investigated interventions will inform the development of this care model and will be important for elaborating and evaluating other initiatives, programmes or interventions in this field.

Methods

Criteria for considering studies for this review

We included articles with (1) interventional study design (randomised controlled trials, controlled clinical trials, before-after studies) and systematic reviews of interventional studies assignable to a specific intervention type, (2) published in journals, books or as grey literature in (3) English or German (4) since 2009. It was our aim to get the most up to date body of evidence from the last ten years. This is necessary since dementia care has changed in the last decade, e.g. regarding the development of national dementia strategies, nursing education or initiatives to improve hospital care for people with dementia. We included studies if they (5) were conducted in the acute hospital setting and (6) examined any intervention targeting the care situation of (7) patients with dementia (including all types and stages and all ages) in this setting. We also included studies focussing on patients with cognitive impairment in general since the dementia diagnosis is often not known in the hospital setting¹. Outcomes of interest were any patient outcomes and any formal or informal caregiver outcomes. Since patient outcomes may be influenced by various factors (e.g. caregivers' knowledge, interactions between the person and the formal or informal caregiver), patient-related outcomes as well outcomes related to formal and informal caregivers were of interest.

We excluded trials with (1) no interventional study design, as well as (2) abstracts and (3) conference proceedings. We did not include studies focussing on interventions outside the acute hospital setting (interventions to avoid hospital admissions or post-discharge interventions), studies addressing pharmacological interventions or exclusively persons with delirium (without dementia) (4). We also excluded studies investigating interventions conducted in the psychiatric setting, special dementia units (except if the special dementia unit was the intervention), intensive care units or emergency departments.

Two reviewers independently screened the titles and abstracts. Afterwards, we obtained the full texts of the remaining references and the two reviewers read them independently. We solved all conflicts by discussion. The flow chart (Figure 1) shows the selection process depicting the number of identified, excluded and included references in detail.

Search strategy

We conducted a comprehensive literature search from January to March 2019. In June 2020, we updated the search. The following electronic databases were searched (from 01/2009 until 06/2020): CINAHL, MEDLINE via PubMed, Web of Science, PsycINFO via Ovid and the Cochrane Library. Furthermore, we performed forward and backward citation tracking of included studies using the Scopus database. Additionally, we conducted a free web search in Google Scholar as well as a hand search of relevant journals not indexed in the databases (Journal/ISSN: *Pflegezeitschrift*/2520-1816, *HeilberufeScience*/2190-2100, *Angewandte Gerontologie Appliquée*/2297-5179 and *Klinische Pflegeforschung*/2365-7863).

We used the following search terms in combination with the operators AND and OR: dementia, Alzheimer, hospital, acute care, acute hospital care, inpatients, hospital units, experimental studies, quasi-experimental studies, randomized controlled trial, controlled clinical trial, randomised, random allocation, trial, experiment, quasi-experiment, clinical trial, intervention, before-after, pretest-posttest, nonrandomized, evaluation and repeated measures design. We used MeSH terms where available and used them as search terms as well. With this sensitive approach we aimed to find all relevant interventional studies in the field of dementia in hospitals. The search strings for all databases are available in Additional file 1.

One author developed the search strategy and another author checked it by means of the PRESS-Guideline¹⁸ before we conducted the search. Both authors are experienced in developing search strategies, particularly in the field of dementia care research. We registered the review protocol in PROSPERO (<https://www.crd.york.ac.uk/PROSPERO/>): CRD42018111032.

Data extraction and analysis

We extracted data with a predefined data extraction sheet. From each study, one author extracted general information (year, country and publication type), aim, study design, setting, intervention and comparisons, characteristics of the participants (as well as inclusion and exclusion criteria), outcomes and measures and the findings. A research assistant checked the data extraction concerning accuracy by reviewing and comparing extracted data with data in the articles. Due to the heterogeneity of interventions and outcome measures, we did not undertake a meta-analysis. We performed a narrative synthesis of included studies.

Risk of bias assessment

To assess the risk of bias of randomised controlled trials, we used the Cochrane Collaboration's tool for assessing risk of bias in randomised trials.¹⁹ For non-randomised controlled trials and before-after studies, we used ROBANS.²⁰ Risk of bias of systematic reviews was assessed with AMSTAR 2.²¹ Two authors independently assessed risk of bias of included studies. We solved discrepancies by discussion.

Results

The initial search yielded 7303 records after duplicates were removed. We retrieved 70 records for the full-text review. In total, 20 articles met the inclusion criteria (see flow chart in Figure 1). Most of the interventional studies had a before-after design²²⁻³¹ (n = 10). One was a cluster-randomised controlled trial³², and two were controlled clinical trials.^{33,34} Seven of the studies were systematic reviews.^{15,16,35-39} The systematic reviews were published in 2015³⁶ (n = 1), 2017³⁵ (n = 1), 2019^{15,16,39} (n = 3) and 2020^{37,38}. The interventional studies were published between 2011 and 2019. Only three studies were published before 2015^{22,29,32}.

Of the interventional studies, five studies were conducted in Australia^{30,34,25,24,31}, three in the United States^{26,32,22}, two in the United Kingdom^{28,23} and each one in Canada³³, Germany²⁹ and Switzerland²⁷. Four systematic reviews were carried out in the UK^{15,16,36,35} and three in Australia^{39,37,38}. The included interventional studies presented a range of interventions for people with dementia in the acute hospital setting, including educational interventions for healthcare staff^{28,26,23,33,30} (n = 5), for healthcare staff and non-clinical staff³¹ (n=1) or for volunteers working with people with dementia in the hospital²⁹ (n = 1). Two studies focused on family-/person-centred programmes^{25,24}, and two studies on specially trained nurses^{32,34}. Further studies investigated a delirium management programme for people with cognitive impairment²⁷ (n = 1) and a special non-pharmacological intervention²² (n = 1). The systematic reviews focussed on educational interventions^{15,35} (n = 2), on volunteer programmes³⁸ (n=1), on special care units for people with dementia¹⁶ (n = 1), on palliative care consultation services for people with advanced dementia³⁹ (n=1), on interventions to improve caregiver readiness³⁷ (n=1), and on inpatient rehabilitation interventions for people with dementia after hip fracture on surgical units³⁶ (n = 1). Table 1 provides information about the characteristics of included studies.

Risk of bias of included studies

The main weakness of the non-randomized interventional studies was the selection of participants since most studies did not use a control group.^{29,28,26,31,23,30,24,25} Confounders were considered in four of the twelve studies.^{26,24,33,30} Blinding of outcome assessments was only fulfilled in two studies.^{28,22} The risk for selective outcome reporting was rated as high or unclear in all non-randomized studies. Furthermore, we estimated the overall risk of bias for the randomized controlled trial as high. One systematic review showed very good quality in nearly all domains.³⁶ The others were of good quality in several domains with concerns regarding some domains. A detailed description and risk of bias table is provided in additional file 2.

Educational programmes

Intervention characteristics

Three of the educational interventions for healthcare staff were aimed at different hospital professions (nurses, doctors, allied health professionals, occupational/physiotherapists).^{23,28,33} One focussed on both clinical and non-clinical staff.³¹ Two addressed communication skills and used experiential as well as interactive strategies.^{23,28} One addressed person-centred care, communication, self-protection and team/patient/family debriefing.³³ Another intervention aimed to prepare nurses and change leader nurses for implementing a systematic nurse-caregiver conversation.³⁰ One intervention introduced key communication strategies and screening for cognitive impairment.³¹ Furthermore, a visual cue was placed at the bedside to help staff identifying patients with cognitive impairment.³¹ One educational intervention was an online training programme for nursing assistants and allied healthcare workers. It contained information on dementia-friendly principles, communication, wandering and falls.²⁶ The volunteer educational programme reported by Eggenberger et al.²⁹ addressed life situations of older people, communication, dying in hospital, activities with people affected by dementia as well as the role and identity of volunteers. The two systematic reviews about educational interventions included interventions targeted at healthcare staff from different professions, with nurses representing the largest group.^{15,35} Details about intervention characteristics are displayed in Table 1.

Reported outcomes and effects

The following outcomes were assessed in the studies about educational interventions: knowledge, self-efficacy and confidence of staff, staff comfort, staff beliefs and attitudes, burnout, satisfaction with care for people with dementia, perceived organisational support, perceived equipment of hospital environment, perceived difficulty when caring for patients with dementia and their families, number of palliative care consultations and changes in aggressive incidents.

Four interventional studies identified a significant effect regarding knowledge of healthcare staff^{28,26,30} or volunteers²⁹. There was a significant increase in knowledge after the end of a two-day communication training course for nurses, doctors and allied health professionals²⁸ and after an online training tool for nursing assistants and allied health workers²⁶. The systematic reviews by Abley et al.¹⁵ and Scerri et al.³⁵ showed mixed results, though most included studies showed significant improvement in knowledge. Furthermore, self-rated evaluations of sense of competence, confidence and self-efficacy significantly improved in four interventional studies describing training programmes for healthcare professionals.^{28,33,23,31} One study with clinical and non-clinical staff reported significantly enhanced staff comfort.³¹ In the systematic review by Scerri et al.³⁵, staff confidence was significantly higher in five included studies, and self-efficacy was significantly elevated in two studies. In the review by Abley et al.¹⁵, both studies measuring dementia confidence reported significant increase in confidence immediately post-intervention. However, at 120 days post-intervention, confidence levels significantly declined.

Self-assessed communication skills did not improve in the volunteer training study.²⁹ In another study only three of 11 communication behaviours showed significant change.²⁸ Scerri et al.³⁵ described improved documentation and risk assessment as well as a reduced use of sedations. One study included in the

review by Scerri et al.³⁵ described less aggressive incidents pre-training compared to post-training.

Table 2 provides an overview of all reported outcomes and effects. Detailed information about findings of included studies and statistical data are included in additional file 3.

Special non-pharmacological interventions

Intervention characteristics

One study focused on “simple pleasures” interventions for hospital patients with late stage dementia. To reduce identified expressions of unmet needs, patients received, for example, balls filled with rice or fleece-covered warm water bottles.²²

Reported outcomes and effects

The study on “simple pleasures” interventions only reported outcomes related to agitation/aggression.²² Wierman et al.²² were not able to show a significant effect of “simple pleasures” interventions. However, they reported a trend towards an improvement regarding agitation. Table 2 provides an overview of all reported outcomes and effects.

Delirium management programme

Intervention characteristics

Hasemann et al.²⁷ investigated a nurse-led interdisciplinary programme to detect and treat delirium in patients with cognitive impairment. The programme contained an educational package, systematic screening of patients over 70 for cognitive impairment and the implementation of interdisciplinary interventions when delirium occurred.

Reported outcomes and effects

The study reported on outcomes regarding delirium severity/duration and benzodiazepine use.²⁷ Delirium severity decreased significantly on the adherent wards. This effect was evident from the first to the second day of delirium and over the complete course of the delirium. Table 2 provides an overview of all reported outcomes and effects.

Inpatient rehabilitation intervention

Intervention characteristics

The systematic review of rehabilitation strategies after hip fracture surgery included patients with any form of dementia. It investigated enhanced interdisciplinary inpatient (and home-based) rehabilitation and care models as well as geriatrician-led inpatient management³⁶.

Reported outcomes and effects

Smith et al.³⁶ reported on patient outcomes, such as functional performance and mortality, discharge destination and length of hospital stay. The results demonstrate that enhanced interdisciplinary rehabilitation showed a non-significant trend towards better functional performance due to the intervention. A greater proportion of participants in the intervention group regained pre-fracture walking levels and better ADL performance at 3 and 12 months but not at 24 months.³⁶ Mortality did not differ between the groups in two studies at 3 or 12 months.³⁶

In two studies comparing enhanced interdisciplinary inpatient and home-based rehabilitation with conventional rehabilitation, a difference between the groups in favour of the intervention was measured regarding discharge destination at 3 months but not at 12 months. There was a significant difference for people with mild or moderate dementia at 3 months but not at 12 months. No difference was shown for persons with severe dementia.³⁶ Table 2 provides an overview of all reported outcomes and effects.

Family-/person-centred programmes

Intervention characteristics

Two interventional studies addressed family-centred programmes based on the ‘TOP5 strategy’. To enhance person-centred care, staff defined up to five personalised care strategies with family caregivers.^{25,24} A systematic review focused on interventions (e.g. nurse education sessions) supporting family caregivers of inpatients with dementia. The aim was to assist caregivers in resuming their role as caregivers after discharge.³⁷

Reported outcomes and effects

Two interventional studies and one systematic review focussing on family- or person-centred programmes reported on a broad range of outcomes, e.g. use of one-to-one nursing care, antipsychotic medication, staff confidence, average length of stay, anxiety, quality of life or family caregiver burden.

One-to-one nursing care used “in cases where regular staffing levels are not equipped to provide care, leaving the patient, other patients or staff at risk of negative outcomes”²⁵, significantly decreased in two studies.^{25,24}

One study showed significantly improved staff confidence in caring for patients with dementia after introducing the intervention compared to pre-implementation. This effect lasted between 6 and 12 months.²⁴ Another study showed no difference in the level of confidence at three time points and no improvement of staff comfort in engaging with family carers.²⁵ The systematic review focusing on interventions to prepare caregivers for fulfilling their role after hospital discharge showed no significant improvement in quality of life, anxiety, depression or family caregiver burden.³⁷ The family-centred programme investigated by Luxford et al. improved family caregivers’ satisfaction regarding communication with staff.²⁴ Table 3 provides an overview of all reported outcomes and effects.

Use of specially trained nurses and consultation services

Intervention characteristics

One study investigated the upskill of registered nurses to so-called “cognition champions” who should develop action plans for practice change.³⁴ Another study compared a transition programme conducted by advanced practice nurses with the help of ‘resource nurses’ (upskilled registered nurses) and an augmented standard care programme (research assistants communicating cognitive screening results to staff).³² One systematic review focused on interventions providing palliative care consultation services by specialised healthcare professionals for people with advanced dementia with the aim to influence advance care planning.³⁹

Reported outcomes and effects

The programme studied by Naylor et al.³² included an intervention for the transition from hospital to home, led by an advanced practice nurse. The study focused on outcomes regarding rehospitalisation of patients with cognitive impairment. Besides patient outcomes, such as agitation or confusion, Travers et al.³⁴ also reported on staff outcomes, e.g. staff behaviour and assessment of cognitive impairment.

The systematic review by Kelly et al. addressed the behaviour of staff and relatives regarding advanced care planning and health system processes like hospital length of stay or emergency visits.³⁹

The “cognition champions” intervention led to a significant increase in the number of patients assessed for cognitive impairment by means of a standardized tool at the time of hospital admission. The frequency of nurses’ informal assessment of patients’ cognitive impairment showed no significant effect.³⁴ Furthermore, no significant change was observed in nurses’ behaviours on acute care hospital wards based on five pre-defined behaviours, e.g. explaining an action in easily understandable terms.³⁴ Regarding patient outcomes, Travers et al.³⁴ did not observe a significant change in patient activity (number of patients doing nothing versus number of patients engaged in some activity), signs of agitation or pain in the “cognition champions” programme. Concerning the outcomes for relatives of people with dementia, palliative care consultation services resulted in improved satisfaction with end-of-life care and in a change in advanced care planning behaviour.³⁹

Patients receiving a transitional care model intervention led by an advanced practice nurse experienced a longer time to first rehospitalisation or death than patients in the augmented standard care group or in the resource nurse care programme. This difference was statistically significant at 30 and 60 days between augmented standard care and the transitional care model.³² With regard to system-related processes (e.g. hospital length of stay, emergency visits or hospice referrals), two studies in the systematic review by Kelly et al. showed an improvement, whereas two studies revealed no improvement.³⁹ Table 3 provides an overview of the outcomes and the effects.

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Volunteer programme

Intervention characteristics

The systematic review addressing volunteer-delivered programmes to support people with dementia and/or delirium in acute hospitals included, for example, support with regard to orientation and interaction, mobilisation, provision of non-pharmacological approaches to manage distress or assisting with hydration and nutrition.³⁸

Reported outcomes and effects

The systematic review reported staff outcomes (level of hope) and a range of patient outcomes like mortality, length of stay, delirium incidence and delirium severity. Regarding staff outcomes, volunteer programmes showed improved levels of hope in volunteers, whereas staff level of hope did not change. Patient outcomes improved regarding delirium incidence, delirium severity and functional status. Furthermore, patients received more analgesics. No improvement was reported for mortality, length of stay, number of falls and residential aged care placement after hospital discharge.³⁸ Table 3 provides an overview of the outcomes and the effects.

Special care units for people with dementia

Intervention characteristics

The systematic review comparing special care units in general hospitals for patients with dementia to standard care wards included acute care hospital inpatients of any age with any form of dementia.¹⁶

Reported outcomes and effects

Patient outcomes, such as mortality, length of stay, delirium incidence or use of antipsychotic medications, as well as staff outcomes, e.g. documentation of treatment decisions, drug history or discharge plans, were reported. Family caregiver outcomes were strain and psychological well-being. No significant differences regarding mortality were found between special care units and standard care wards.¹⁶

Special care units showed non-significant improvements in readmission rates. Patients on special care units were more likely to be discharged to their own home than to a care home (although this was not statistically significant).¹⁶ Although patients on special care units were significantly often in a positive mood or engaged, no significant difference was found regarding the rates of behavioural and psychological symptoms of dementia.¹⁶ Incidence of delirium was slightly but not significantly higher on the special care units. New prescriptions of antipsychotic medications were moderately but not significantly higher.¹⁶ Furthermore, no significant differences were shown for carer strain and carer psychological well-being¹⁶ Table 3 provides an overview of the outcomes and the effects.

Discussion

This systematic review provides a comprehensive overview of interventional studies and systematic reviews of interventions targeting the care situation of patients with dementia in acute care hospitals. The findings indicate a broad range of different interventions, outcomes and measurements. We categorised the interventions into eight intervention types: educational programmes, special non-pharmacological interventions, delirium management programmes, inpatient rehabilitation interventions, family-/person-centred programmes, use of specially trained nurses, volunteer programmes and special care units.

Educational programmes were the most commonly reported intervention type among the included studies. Six interventional studies and two systematic reviews (including 17 studies relevant to this review) focused on dementia education for healthcare professionals in the acute hospital setting. Due to high risk of bias in some domains (e.g. no control group and no blinding of outcome assessment), results of the studies on educational programmes should be interpreted cautiously.

Studies addressing educational interventions predominantly reported staff-related outcomes, e.g. knowledge, sense of competence, confidence, beliefs and attitudes. These outcomes significantly improved in most of the studies. With regard to more complex staff outcomes, such as a change of behaviour or practice, the majority of studies did not show any improvements. This demonstrates that enhanced knowledge does not necessarily mean better clinical expertise. As Benner, Tanner and Chesla⁴⁰ pointed out, it is not possible to address interpersonal responsibilities and situational discernment by means of technique or formal knowledge alone. Furthermore, patient outcomes were reported only in one study, while outcomes related to relatives were not reported at all. Thus, the impact of these interventions for applied practice remains unclear. The results do not demonstrate to what amount healthcare professionals' accumulated knowledge and improved attitudes reached patients with dementia and their relatives. A critical synthesis of the evidence about dementia care education in hospitals pointed out that sustainability of effects was "largely unknown" due to poor follow-up outcomes⁴¹. The results of our review confirm this statement. Furthermore, Abley et al.¹⁵ demonstrated that staff knowledge and staff confidence remained stable in three hospitals after four months but significantly declined in one hospital. Scerri et al.³⁵ reported that long-term sustainability of educational interventions was unclear. In contrast, Sampson et al.²³ showed improved sense of competence in healthcare staff three months after education. Another study included in our review indicated increased knowledge of healthcare staff after six months.³⁰

Updating staff education seems important to promote long-term sustainability of the intervention effect. The optimal duration of education updates is still unclear. Future studies should focus on this issue by investigating long-term follow-up of educational interventions in dementia care in the acute hospital setting.

In addition, to ensure that staff knowledge and confidence as well as modified practice reach the patients, it is crucial to combine educational interventions with other interventions. Our review provides an overview of such interventions. Three included studies reported on family-/person-centred programmes in which important care principles or care pathways were defined and discussed with families. It is notable that one study did not investigate family caregiver outcomes at all.²⁵ Another study described family caregiver outcomes regarding satisfaction with staff communication. Satisfaction improved due to the implemented programme.²⁴ However, high risk of bias in some domains have to be considered when interpreting these results (no control group, no blinding, selective outcome reporting). Outcomes representing person-centredness as defined by McCormack and McCance⁴² (e.g. satisfaction with care, involvement in care, well-being and creating a therapeutic culture) were not sufficiently considered in the included primary studies. The systematic review by Pritchard et al.³⁷ about interventions to support family caregivers' readiness for discharge home indicated that family caregiver outcomes (e.g. quality of life, anxiety, depression and caregiver burden) did not improve. Reasons for this might be the complexity of the intervention, different influencing factors (personal characteristics of involved persons, and attitudes of healthcare professionals), and organisational culture.³⁷ Thus, the complexity of interventions for people with dementia in the acute care hospital should be considered when developing and implementing new programmes.

Furthermore, study designs not adapted to the complexity of interventions are not appropriate for evaluation. Thus, alternative study designs like pragmatic RCTs, realist RCTs or natural experiments integrating process evaluations should be considered.⁴³

To improve the effectiveness and sustainability of interventions, comprehensive planning is necessary. Thereby, it is necessary to take into account different relevant sources. Using the model for developing complex nursing interventions is recommendable.⁴⁴ Embedded pragmatic trials are one option to sustainably implement interventions in practice.⁴⁵

Across all studies, outcomes related to family caregivers were rarely reported. Only two interventional studies and one systematic review investigated caregiver-related outcomes.

A meta-synthesis of qualitative studies shows that relatives of people with dementia experience many negative aspects of care in the hospital. They are worried and highly burdened.⁴⁶ Family caregivers are crucial for providing person-centred care for people with dementia.⁴⁷ Thus, they are underrepresented in the included interventional studies.

In contrast, a broad variety of patient-related outcomes was reported: mortality, length of hospital stays, readmission to hospital, incidence of falls, functional performance, delirium severity/duration/incidence, agitation as well as behavioural and psychological symptoms of dementia. Recent literature has shown that people with dementia have a high risk for longer hospital stays⁴⁸, delirium¹³, functional decline⁴⁹ and reacting with behavioural and psychological symptoms.² Thus, important consequences of a hospital stay for people with dementia are covered by these outcomes. Regarding the clinically relevant outcome of delirium, specially trained nurses were not able to reduce acute confusion.³⁴ However, volunteer programmes resulted in lower delirium incidence and severity.³⁸ The delirium management programme for people with dementia reduced delirium severity but not delirium duration.²⁷ Inpatient rehabilitation interventions showed no improvement regarding delirium incidence.³⁶ Furthermore, specially trained nurses were not able to reduce agitation.³⁴ Rates of behavioural symptoms did not improve in special care units for people with dementia.¹⁶

When interpreting these results, the high risk of bias in some domains has to be considered. The programmes were probably not sufficiently effective to improve clinically relevant patient outcomes. The difficulty of considering the complexity of the intervention and the influencing factors could be one reason for this. Furthermore, it is questionable whether these studies measured outcomes that could be really influenced by the intervention and whether they focused on outcomes relevant for patients.

A meta-synthesis of qualitative studies focussed on the perspective of persons with dementia on their acute care hospital stay. Hospital care and the hospital environment caused anxiety, distress, lack of control, worries about the future, distrust, feelings of social exclusion, and uncertainty.⁵⁰ These aspects were not addressed in the reported outcomes. Thus, the patient perspective has not been sufficiently considered. When developing new interventions in this field, relevant outcomes should be considered from different perspectives. Given the identified aspects for good quality of care for persons with cognitive impairment in acute care hospitals in recent literature⁹, it becomes clear that the interventions in our review are related to following aspects: staff knowledge and confidence (educational programmes), family- and person-centredness (family-/person-centred programmes), clinical experts (specially trained nurses) and adequate physical environment (special care units). Furthermore, Naef et al.⁹ described caring relationships (addressed in the family-/person-centred care interventions), adequate assessments (addressed in the use of specially trained nurses and educational interventions) and interventions (educational interventions) as well as continuous and collaborative care (addressed in the use of specially trained nurses, family-/person-centred programmes and volunteer programmes). Although different healthcare professionals were involved, interprofessional collaboration was not specifically addressed in educational interventions. According to Naef et al.⁹, supportive clinical leadership and practice culture are important for providing high quality of care for persons with dementia. These aspects were not addressed in the included interventional studies. The existing practice culture with rigid task-oriented routines may have a substantial impact on the effectiveness of the interventions. If adequately educated professionals are not supported in practice, this will negatively influence the effectiveness of educational interventions. Rigid routines make it impossible to effectively implement person-centred interventions. Previous studies have shown that healthcare professionals find it particularly difficult to provide adequate care for people with dementia due to the existing practice culture.⁵¹ Thus, without changing the existing practice culture on the whole, the effectiveness of singular interventions aiming to improve person-centred care (e.g. TOP 5 strategy) or special non-pharmacological interventions could be at risk.

This underlines the complexity of interventions in this field. Therefore, future research should consider the complexity and the influencing factors. It is necessary to question the suitability of common study designs to evaluate complex interventions in the given context. Therefore, it seems reasonable to choose highly flexible study designs taking into account different relevant perspectives. A well-planned evaluation including a qualitative part and a process evaluation seems to be essential.

Strengths and limitations

A strength of this review is the broad and comprehensive search with a study selection independently performed by two researchers. With this sensitive approach, we were able to provide a systematic overview of interventional studies in dementia care in the acute hospital setting. Since complex interventions are frequently not evaluated by means of conventional methodological approaches (e.g. randomised controlled trials⁴³), we opened our inclusion criteria for all studies implementing an intervention and testing it with quantitative methods.

However, due to excluding qualitative findings, cohort studies and case studies, we probably were not able to identify the most complex interventions in this field. The inclusion of different intervention types was restricted by our selection of study designs. Therefore, it was possible to include only those intervention

types which were evaluated in the included studies. Furthermore, the included studies are very heterogenous, thereby rendering comparisons difficult and data pooling impossible.

To avoid excluding relevant studies, we decided to include also studies with persons affected by "cognitive impairment" and representing symptoms of dementia without diagnosis because in the acute hospital setting, the dementia diagnosis is not always known. However, inclusion and exclusion of studies concerning this criterion was not always highly selective.

Conclusions

This systematic review of interventions to improve hospital care for people with dementia provides a comprehensive overview of reported interventions, outcomes and effects. Interventions, such as the use of specially trained nurses, family-/person-centred programmes and delirium management programmes, proved to have an influence on some outcomes related to organisation, staff, family caregiver and patients. Educational interventions were commonly investigated and showed improvements, particularly in staff outcomes, including knowledge and confidence. However, several reported results should be interpreted with caution due to high risk of bias. The evidence is not sufficient to declare which interventions are effective in improving care for people with dementia in acute care hospitals.

Future research should focus on developing multicomponent interventions, thereby considering various relevant perspectives. Furthermore, research should report relevant patient and family caregiver outcomes. The high complexity of interventions and different influencing factors (e.g. organisational culture) should be taken into account in this field. Moreover, interventions addressing the family or relatives of persons with dementia are needed. Focusing interprofessional collaboration and the entire practice culture is required as well.

Declarations

Funding

Funding for this study was obtained from the Nursing Science Foundation Switzerland (Stiftung Pflegewissenschaft Schweiz). The funding body had no influence on the study design, the collection and analysis process, the interpretation of the data or the writing of the manuscript.

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Tables

Table 1: Characteristics of included studies

| Author, Year, Country, Study Design Aim | Participants | Intervention and Comparison | Outcomes (Systematic Reviews) Outcomes and Measures, Timepoint (Interventional studies) | | | | | | |
|--|---|---|--|---------------|-----------------|---|---|--|--|
| Educational programmes | | | | | | | | | |
| <p>Abley et al., 2019, UK, Systematic review</p> <p>To review the evidence on educational interventions about hospital care for older people with cognitive impairment</p> | <p>Healthcare professionals at in-patient and out-patient wards and departments in general hospitals</p> <p>Participants were not described in further detail.</p> | <p>Dementia care training:</p> <ol style="list-style-type: none"> 1. classroom teaching ranging from 2-10 hours 2. specially designed educational DVD 3. dementia training in the ED <p>Delirium and dementia training:</p> <ol style="list-style-type: none"> 1. three online learning modules with access to an educational resource officer, aimed specifically at nurses 2. one other module was aimed at all disciplines and involved attending two face-to-face study days <p>Comparison: NI</p> | <p>Staff:</p> <ol style="list-style-type: none"> 1. Dementia knowledge 2. Dementia confidence 3. Self-efficacy 4. Beliefs and attitudes 5. Communication techniques 6. Palliative care consultations | | | | | | |
| <p>Eggenberger et al., 2013, Germany, Before-after study</p> <p>To present the preliminary evaluation results of a volunteer training programme</p> | <p>Volunteers (n = 17):</p> <table border="0"> <tr> <td style="border-right: 1px solid black;"><u>Age:</u> Mean (range)</td> <td><u>Sex:</u> n (%)</td> </tr> <tr> <td style="border-right: 1px solid black;">60.5 (48-79)</td> <td>Female: 16 (94)</td> </tr> <tr> <td style="border-right: 1px solid black;">-</td> <td>-</td> </tr> </table> | <u>Age:</u> Mean (range) | <u>Sex:</u> n (%) | 60.5 (48-79) | Female: 16 (94) | - | - | <p>Volunteer training: Two-day and two half-day education sessions for volunteers from a multi-professional training team. Content: dementia, life situations of older people, gerontology, communication with people with dementia, ethical decisions, dying in hospital, activities with people with dementia, care of people with dementia, nutrition, role and identity of volunteers and ward routines</p> | <p>Volunteers:</p> <ol style="list-style-type: none"> 1. Skills and attitudes (self-assessment questionnaire) 2. Knowledge about dementia and the hospital (knowledge test) <p>Timepoint: Before the training (T1) and after the training (T2)</p> |
| <u>Age:</u> Mean (range) | <u>Sex:</u> n (%) | | | | | | | | |
| 60.5 (48-79) | Female: 16 (94) | | | | | | | | |
| - | - | | | | | | | | |
| <p>Hobday et al., 2017, US, Before-after study</p> <p>To determine whether dementia care knowledge significantly increased following completion of the CARES Dementia Friendly Hospital Programme</p> | <p>Nursing assistants and allied hospital workers (n = 25):</p> <table border="0"> <tr> <td style="border-right: 1px solid black;"><u>Age:</u> Mean (range)</td> <td><u>Sex:</u> n (%)</td> </tr> <tr> <td style="border-right: 1px solid black;">41.36 (13.29)</td> <td>Female: 24 (96)</td> </tr> <tr> <td style="border-right: 1px solid black;">-</td> <td>-</td> </tr> </table> | <u>Age:</u> Mean (range) | <u>Sex:</u> n (%) | 41.36 (13.29) | Female: 24 (96) | - | - | <p>The CARES (C = connect with the person, A = assess behaviour, R = respond appropriately, E = evaluate what works, S = share with others) Dementia Friendly Hospital Programme. This was an online training programme with four modules: introduction to dementia-friendly care, communicating with patients, dementia-related behaviour, wandering and falls. The programme contained audio-narrated texts, video scenarios and case studies with real case scenarios.</p> | <p>Staff:</p> <ol style="list-style-type: none"> 1. Dementia care knowledge (self-developed measure) <p>Timepoint: Pre-course and after course. The average duration between the two tests was 7.96 days.</p> |
| <u>Age:</u> Mean (range) | <u>Sex:</u> n (%) | | | | | | | | |
| 41.36 (13.29) | Female: 24 (96) | | | | | | | | |
| - | - | | | | | | | | |
| <p>Murray et al., 2019, Australia, Before-after study</p> <p>To evaluate the impact of a clinical and non-clinical staff education program designed to improve awareness of and communication with patients with cognitive impairment.</p> | <p>Nurses (n=909), non-clinical staff (n=315), medical staff (n=245), allied health professionals (n=210), others (n=69) participated in the educational sessions.</p> <p>n= 957 completed the pre-education survey, n=418 completed the post-education survey.</p> <table border="0"> <tr> <td style="border-right: 1px solid black;"><u>Age:</u></td> <td><u>Sex:</u></td> </tr> <tr> <td style="border-right: 1px solid black;">NI</td> <td>NI</td> </tr> <tr> <td style="border-right: 1px solid black;">-</td> <td>-</td> </tr> </table> | <u>Age:</u> | <u>Sex:</u> | NI | NI | - | - | <p>Dementia Care in Hospitals Program (DCHP) included:</p> <ol style="list-style-type: none"> (1) Screening for cognitive impairment of all patients aged 65 years and older (or 50 years and over for an Aboriginal or Torres Strait Islander patient) using a validated screening tool; (2) Use of a cognitive impairment identifier placed above the patient's bedside to alert staff of patients with cognitive impairment; (3) Employment of a set of nine key communication strategies by all staff (clinical and non-clinical) who engaged with patients. <p>Hospital training was based on a train the trainer approach delivered by the DCHP team. The hospitals then commenced an implementation of the training to all relevant staff with direct patient contact.</p> | <p>Staff:</p> <ol style="list-style-type: none"> 1. Satisfaction (Staff satisfaction survey) 2. Confidence 3. Comfort in providing care for patients with cognitive impairment <p>Timepoint: Before and after implementation of the DCHP educational training programme (six-month period)</p> |
| <u>Age:</u> | <u>Sex:</u> | | | | | | | | |
| NI | NI | | | | | | | | |
| - | - | | | | | | | | |
| <p>O'Brien et al., 2018, UK, Before-after study</p> <p>To evaluate the effectiveness and acceptability of a communication skills training intervention</p> | <p>Nurses, doctors and allied health professionals (n = 43):</p> <table border="0"> <tr> <td style="border-right: 1px solid black;"><u>Age:</u></td> <td><u>Sex:</u> n (%)</td> </tr> <tr> <td style="border-right: 1px solid black;">NI</td> <td>Female: 40 (89)</td> </tr> <tr> <td style="border-right: 1px solid black;">-</td> <td>-</td> </tr> </table> | <u>Age:</u> | <u>Sex:</u> n (%) | NI | Female: 40 (89) | - | - | <p>VOICE for Dementia training: This was a systematically developed dementia training programme based on actual evidence and expert views. It was a two-day course (with a one-month interval between the sessions) containing communication skills training with simulations, real video data, small group discussions, e-learning and reflective practice</p> | <p>Staff:</p> <ol style="list-style-type: none"> 1. Confidence in caring for a person with dementia (The Confidence in Dementia Scale and three additional questions) 2. Knowledge of communication in dementia (Dementia Communication Knowledge Test) 3. Communication behaviours simulated situations rated by two blinded raters along structured checklists) |
| <u>Age:</u> | <u>Sex:</u> n (%) | | | | | | | | |
| NI | Female: 40 (89) | | | | | | | | |
| - | - | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|-----------------|-------------------|-----------------|----------------|-------------------|----------------|--|---|-------------------|--|---|--|-----------------|--|--------------|--|-----|--|--------------|--|------------------|--|------------------|--|------------------|--|------------------|--|----------------|--|--------------|--|--|---|
| | | | <p>4. Emotional Tone (Emotional Tone Rating Scale)</p> <p>-</p> <p>Timepoint: Administered before training and at the end of the second day of training</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Sampson et al., 2017, UK, Before-after study</p> <p>To evaluate the impact of a systemwide training programme in dementia care for acute hospital staff</p> | <p>Nurses, healthcare assistants, doctors, facilities, students and allied health professionals (n = 1417):</p> <p>-</p> <table border="0"> <tr> <td><u>Age:</u> (n = 1557) n (%)</td> <td><u>Sex:</u> (n = 1593) n (%)</td> </tr> <tr> <td>18-24: 166 (11)</td> <td>Female: 1289 (81)</td> </tr> <tr> <td>25-34: 520 (33)</td> <td>-</td> </tr> <tr> <td>35-44: 404 (26)</td> <td></td> </tr> <tr> <td>45-54: 303 (19)</td> <td></td> </tr> <tr> <td>55+: 164 (11)</td> <td></td> </tr> </table> <p>Completers (n = 353) (age, sex and roles unclear)</p> | <u>Age:</u> (n = 1557) n (%) | <u>Sex:</u> (n = 1593) n (%) | 18-24: 166 (11) | Female: 1289 (81) | 25-34: 520 (33) | - | 35-44: 404 (26) | | 45-54: 303 (19) | | 55+: 164 (11) | | <p>A dementia communication skills training course developed by a general hospital lead nurse and a dementia training specialist with clinical working groups. There were 24 targeted, interactive and experiential dementia training modules, lasting between 30 minutes and one hour, along with a one-hour basic module for all staff. Modules were further developed by project leads and clinicians over eight consultation meetings.</p> <p>Train-the-trainer programme: Key staff delivered the dementia training locally. Before that, they attended workshops with experienced dementia trainers for two days.</p> | <p>Staff:</p> <p>1. Sense of competence (The Sense of Competence in Dementia Care staff questionnaire)</p> <p>Timepoint: Before training and three months after the training</p> | | | | | | | | | | | | | | | | | | | | | | |
| <u>Age:</u> (n = 1557) n (%) | <u>Sex:</u> (n = 1593) n (%) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18-24: 166 (11) | Female: 1289 (81) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25-34: 520 (33) | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35-44: 404 (26) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45-54: 303 (19) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 55+: 164 (11) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Schindel Martin et al., 2016, Canada, CCT</p> <p>To investigate an education programme on acute care staff's self-efficacy related to the delivery of person-centred dementia care</p> | <p>Nursing staff, health care aides and occupational/physiotherapists (n = 745):</p> <table border="0"> <tr> <td><u>Age:</u> n (%)</td> <td><u>Sex:</u> n (%)</td> </tr> <tr> <td>IG:</td> <td>Female:</td> </tr> <tr> <td><20: 1 (0.2)</td> <td>IG: 422 (90.4)</td> </tr> <tr> <td>20-29: 116 (24.9)</td> <td>CG: 256 (92.4)</td> </tr> <tr> <td>30-39: 104 (22.3)</td> <td>-</td> </tr> <tr> <td>40-49: 132 (28.3)</td> <td></td> </tr> <tr> <td>50-59: 87 (18.7)</td> <td></td> </tr> <tr> <td>60-64: 25 (5.4)</td> <td></td> </tr> <tr> <td>65+: 1 (0.2)</td> <td></td> </tr> <tr> <td>CG:</td> <td></td> </tr> <tr> <td><20: 0 (0.0)</td> <td></td> </tr> <tr> <td>20-29: 72 (26.1)</td> <td></td> </tr> <tr> <td>30-39: 69 (25.0)</td> <td></td> </tr> <tr> <td>40-49: 78 (28.3)</td> <td></td> </tr> <tr> <td>50-59: 55 (19.9)</td> <td></td> </tr> <tr> <td>60-64: 2 (0.7)</td> <td></td> </tr> <tr> <td>65+: 0 (0.0)</td> <td></td> </tr> </table> | <u>Age:</u> n (%) | <u>Sex:</u> n (%) | IG: | Female: | <20: 1 (0.2) | IG: 422 (90.4) | 20-29: 116 (24.9) | CG: 256 (92.4) | 30-39: 104 (22.3) | - | 40-49: 132 (28.3) | | 50-59: 87 (18.7) | | 60-64: 25 (5.4) | | 65+: 1 (0.2) | | CG: | | <20: 0 (0.0) | | 20-29: 72 (26.1) | | 30-39: 69 (25.0) | | 40-49: 78 (28.3) | | 50-59: 55 (19.9) | | 60-64: 2 (0.7) | | 65+: 0 (0.0) | | <p>The "Gentle Persuasive Approach" (GPA) Education Programme was a dementia-specific, face-to-face standardized educational programme. It consisted of four modules: person-centred care principles, brain changes common in dementia and delirium, communication and interpersonal strategies, staff-specific self-protective skills as well as team/patient/family debriefing and reassurance techniques. GPA coaching teams delivered the education during 7.5-hour single-days sessions for interdepartmental groups of 18-20.</p> <p>Comparison: Standard educational supports from clinical educators when requested by staff in specific cases</p> | <p>Staff:</p> <p>1. Self-efficacy in dementia care (Self-Perceived Behavioural Management Self-Efficacy Profile)</p> <p>Timepoint: Immediate pre- and post-education interventions and six to eight weeks later</p> |
| <u>Age:</u> n (%) | <u>Sex:</u> n (%) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IG: | Female: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <20: 1 (0.2) | IG: 422 (90.4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20-29: 116 (24.9) | CG: 256 (92.4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30-39: 104 (22.3) | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40-49: 132 (28.3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50-59: 87 (18.7) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60-64: 25 (5.4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 20-29: 72 (26.1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30-39: 69 (25.0) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40-49: 78 (28.3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50-59: 55 (19.9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60-64: 2 (0.7) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 65+: 0 (0.0) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Scerri et al., 2017, UK, Systematic review</p> <p>To collect the current evidence on dementia training programmes for staff working in general hospitals</p> | <p>Healthcare staff (predominately nurses) and Dementia Champions working in a general hospital. A few studies included ancillary staff (such as porters and security staff).</p> | <p>Dementia training programmes: Most programmes were based on a needs analysis and aimed not only to provide knowledge and skills but also to empower hospital staff. The most used theoretical approach was the person-centred care model from Kitwood. Duration varied between 2 hours and 12 days. Most programmes were held in repeated face-to-face sessions (duration: 30-45 minutes).</p> <p>Comparison: NI</p> | <p>Patient:</p> <p>1. Reduction in aggressive behaviour of patients</p> <p>Staff:</p> <p>1. Knowledge</p> <p>2. Changes in beliefs about challenging behaviour</p> <p>3. Self-efficacy</p> <p>4. Confidence</p> <p>5. Burnout</p> <p>6. Satisfaction with working with people with dementia</p> <p>7. Attitudes towards people with dementia</p> <p>8. Change in staff behaviours and practices</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Toye et al., 2019, Australia, Before-after study</p> <p>To implement a systematic nurse-caregiver conversation, examining the success of educational preparation of staff</p> | <p>Nurses (n = 26):</p> <table border="0"> <tr> <td><u>Age:</u> n (%)</td> <td><u>Sex:</u></td> </tr> <tr> <td>20-30: 13 (50)</td> <td>NI</td> </tr> <tr> <td>31-40: 4 (15.4)</td> <td>-</td> </tr> <tr> <td>41+: 9 (34.6)</td> <td></td> </tr> </table> | <u>Age:</u> n (%) | <u>Sex:</u> | 20-30: 13 (50) | NI | 31-40: 4 (15.4) | - | 41+: 9 (34.6) | | <p>A systematic nurse-caregiver conversation to support person-centred care in the hospital. The aim was that nurses would initiate contact with the caregiver; provide informational resources to that caregiver in the form of a packet that included information sheets and a letter explaining the information to be sought from caregivers; and engage in a pre-planned conversation with them to elicit information to support person-centred care. This was supported by a caregiver-nurse conversation checklist. The information was documented to inform the multidisciplinary team. The process was supported by seven defined change leader nurses from the ward.</p> <p>Preparation for the seven change leader nurses: Two days of sessions addressed their capability, opportunity and motivation. Behaviour change techniques were included in the training.</p> | <p>Staff:</p> <p>1. Knowledge of Alzheimer's disease (Alzheimer's Disease Knowledge Scale)</p> <p>2. Knowledge of dementia (Dementia Knowledge Assessment Tool Version 2)</p> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <u>Age:</u> n (%) | <u>Sex:</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20-30: 13 (50) | NI | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31-40: 4 (15.4) | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 41+: 9 (34.6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| | | Preparation for nurses: Sessions addressed knowledge of dementia, risks faced by people with dementia in hospitals, person-centred care and the steps of the planned new practice. | Timepoint: Survey was conducted at T1 (baseline), T2 (immediately after education) and T3 (about six months after education) | | | | | | |
| Special non-pharmacological interventions | | | | | | | | | |
| Wierman et al., 2011, US, Before-after study To assess the feasibility of "simple pleasures" interventions in the hospital setting and their impact on agitation in patients with late-stage dementia | Hospitalised patients with late stage dementia (n = 13): <table border="1"> <tr> <td><u>Age:</u> Mean Group A: 84 Group B: 86</td> <td><u>Sex:</u> % Female: Group A: 64 Group B: 33</td> </tr> <tr> <td><u>Average length of stay:</u> Group A: 3 days Group B: 4.5 days</td> <td></td> </tr> </table> | <u>Age:</u> Mean Group A: 84 Group B: 86 | <u>Sex:</u> % Female: Group A: 64 Group B: 33 | <u>Average length of stay:</u> Group A: 3 days Group B: 4.5 days | | "Simple pleasures" interventions were distributed to specifically target identified behaviours for each patient. Education was provided to the hospital nursing staff about the items and their use. A knitted ball or "squeezie", i.e. a ball made of fabric and filled with rice, seeds or beads, was given to all patients to target generalized anxiety and restlessness. One additional item from the list below was distributed by the evaluating geriatric team member based on the patient's behaviours: -Wave machines to target repetitive hand movements -A stuffed butterfly, fish or animal to target verbal repetitiveness -Activity aprons and sensory vests to target repetitive motor patterns or pulling at medical devices -Fleece-covered warm water bottles or warmed fabric bags filled with rice to target screaming -A fleece muff to target general agitation and anxiety -Look-inside tackle boxes and/or purses in which treasures were safely contained to target hand restlessness or wandering The patient was seen by a geriatric team member every 48 hours to ensure the items were still present and to re-educate the nursing staff on their use. Group A received the intervention at the initial evaluation, group B received it 24 hours after the initial evaluation. | Patient: 1. Agitation (Cohen Mansfield Agitation Inventory) Timepoint: Conducted within 24 hours of initial assessment and then every 48 to 72 hours | | |
| <u>Age:</u> Mean Group A: 84 Group B: 86 | <u>Sex:</u> % Female: Group A: 64 Group B: 33 | | | | | | | | |
| <u>Average length of stay:</u> Group A: 3 days Group B: 4.5 days | | | | | | | | | |
| Delirium management programme | | | | | | | | | |
| Hasemann et al., 2016, Switzerland, Before-after study To investigate the influence of a screening and action algorithm on the development of delirium severity and duration in patients with cognitive impairment and on the use of prescribed benzodiazepines | <u>Patients with dementia</u> (n = 268): <table border="1"> <tr> <td><u>Age:</u> Mean (SD) IG: 81.8 (6.3) CG: 81.6 (6.3) -</td> <td><u>Sex:</u> n (%) IG: Female: 76 (55.1) CG: Female: 71 (54.6)</td> </tr> <tr> <td><u>Initial Swiss mini-mental status:</u> Median (Min;Max) IG: 22 (0;29) CG: 24 (8;29) -</td> <td><u>Clock drawing test:</u> Median (Min;Max) IG: 4 (0;7) CG: 5 (0;6) -</td> </tr> <tr> <td><u>Delirium risk:</u> Median (Min;Max) IG: medium risk CG: medium risk -</td> <td><u>Hospitalisation duration:</u> Median (Min;Max) IG: 10.3 (1.3;48.9) CG: 9.7 (3.2;36.7) -</td> </tr> </table> | <u>Age:</u> Mean (SD) IG: 81.8 (6.3) CG: 81.6 (6.3) - | <u>Sex:</u> n (%) IG: Female: 76 (55.1) CG: Female: 71 (54.6) | <u>Initial Swiss mini-mental status:</u> Median (Min;Max) IG: 22 (0;29) CG: 24 (8;29) - | <u>Clock drawing test:</u> Median (Min;Max) IG: 4 (0;7) CG: 5 (0;6) - | <u>Delirium risk:</u> Median (Min;Max) IG: medium risk CG: medium risk - | <u>Hospitalisation duration:</u> Median (Min;Max) IG: 10.3 (1.3;48.9) CG: 9.7 (3.2;36.7) - | The "Dem Del" was a nurse-led intervention with six components: (1) An educational package for nurses and physicians regarding cognitive impairment and delirium (professions separated from each other). Support was provided by specially trained ward nurses and case conferences by the study team. (2) On admission, nurses screened all patients aged 70 and over for cognitive impairment. Signs of cognitive impairment were discussed with the physicians within a short period of time. (3) Based on the nurses' screening results, the physicians prescribed or revised PRN medication for delirium according to the prepared recommendation of the hospital. (4) A priority list of evidence-based interdisciplinary measures to prevent and treat delirium in patients at risk was provided to the staff. (5) Nurses screened for symptoms of delirium on every shift using the Delirium Observation Screening Scale for five days after admission. If there was a suspicion of delirium, the nurse conducted an in-depth assessment. (6) If delirium was identified, prescribed medication was administered, and the interdisciplinary intervention was implemented. Comparison: Care as usual | Patient: 1. Delirium severity (Delirium Rating Scale, Revised-98) 2. Delirium duration (daily chart review) 3. Prescribed and administered medications (daily chart review) Timepoint: Daily assessment |
| <u>Age:</u> Mean (SD) IG: 81.8 (6.3) CG: 81.6 (6.3) - | <u>Sex:</u> n (%) IG: Female: 76 (55.1) CG: Female: 71 (54.6) | | | | | | | | |
| <u>Initial Swiss mini-mental status:</u> Median (Min;Max) IG: 22 (0;29) CG: 24 (8;29) - | <u>Clock drawing test:</u> Median (Min;Max) IG: 4 (0;7) CG: 5 (0;6) - | | | | | | | | |
| <u>Delirium risk:</u> Median (Min;Max) IG: medium risk CG: medium risk - | <u>Hospitalisation duration:</u> Median (Min;Max) IG: 10.3 (1.3;48.9) CG: 9.7 (3.2;36.7) - | | | | | | | | |
| Inpatient rehabilitation intervention | | | | | | | | | |
| Smith et al., 2015, UK, Systematic review To investigate the effectiveness of models of care, including enhanced rehabilitation strategies for people with dementia following hip fracture surgery | Persons 65 years and older with any form of dementia who underwent hip fracture surgery for a proximal femoral fracture | 1. Enhanced interdisciplinary inpatient rehabilitation and care models 2. Enhanced interdisciplinary inpatient and home-based rehabilitation and care models 3. Geriatrician-led inpatient management (compared to orthopaedic-led management) Comparison: Usual care (including conventional rehabilitation) | Patient: 1. Functional performance 2. Mortality 3. Complications 4. Length of hospital stay 5. Number of prescribed drugs on discharge 6. Discharge destination 7. Frequency of hospital admissions 8. Attendance in the emergency room 9. Incidence of falls 10. Incidence of delirium | | | | | | |
| Family-/person-centred programmes | | | | | | | | | |
| Isaac et al., 2018, Australia, Before-after study To investigate whether the TOP 5 strategy could improve patients' | Patients with dementia (n = NI) and staff (n = 43): | The TOP 5 initiative comprised the ward nursing staff talking to the carer and obtaining non-clinical information from the carer to help personalise the care of the patient. The carer was encouraged to identify up to five personalised care strategies that could be utilised by staff. The information was documented on the TOP5 strategy form, which was in a prominent position in the patient's bedside notes. | Patient: 1. Total number of falls 2. Average length of stay | | | | | | |

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| <p>hospital experience and positively impact health service provision and outcomes. The impact of the TOP 5 intervention on carer and staff experiences was also investigated.</p> | <p><u>Age:</u> NI</p> <p><u>Sex:</u> NI</p> | <p>This was accompanied by education sessions for staff regarding the TOP 5 intervention and related topics (a total of 44 education sessions in an eight-month period during baseline data collection, with 30 education sessions during the pilot phase)</p> | <p>3. Use of 'specials' (one-to-one nursing care)</p> <p>4. Complaints made to the hospital specifically related to communication issues</p> <p>-</p> <p>Staff:</p> <p>1. Perceptions of confidence (questions on a 4-point Likert scale)</p> <p>2. Comfort engaging with family carers (questions on a 4-point Likert scale)</p> <p>Timepoint: Data collection at baseline (for 12 months pre-intervention), in the pilot phase (14 months) and in the establishment phase (12 months)</p> |
| <p>Luxford et al., 2015, Australia Before-after study</p> <p>To investigate the impact of the TOP 5 clinician-carer communication tool on patient safety indicators and on staffing for one-to-one nursing</p> | <p>Patients with dementia, relatives and staff (n = 798):</p> <p>-</p> <p><u>Age:</u> NI</p> <p><u>Sex:</u> NI</p> <p>-</p> <p>Staff surveys were returned at three time points.</p> | <p>TOP 5 engaged clinical staff in a structured process with carers to elicit and record up to five important non-clinical tips and management strategies to aid communication and support personalized care. The five tips were recorded on a one-page form, which was then attached to the patient's charts at the bedside.</p> <p>Each hospital identified a local implementation team to champion TOP 5 use. Staff education was provided in the use of TOP 5 at each hospital.</p> | <p>Patient:</p> <p>1. Falls (electronic data sources)</p> <p>2. Antipsychotic drug use (electronic data sources)</p> <p>Timepoint: Monthly data assessment</p> <p>-</p> <p>Relatives:</p> <p>1. Satisfaction with clinician communication (survey with Likert scale)</p> <p>-</p> <p>Staff:</p> <p>1. Overall knowledge about dementia</p> <p>2. Views about management of patients with dementia</p> <p>3. Views about the role of the carer as an information source</p> <p>4. Value placed on carer input for patients with dementia</p> <p>5. Views about obtaining key strategies from carers to help manage care</p> <p>6. Level of confidence in caring for patients with dementia</p> <p>7. Level of comfort in engaging with carers (all staff outcomes were assessed with a survey with Likert scale)</p> <p>Timepoint: Survey data were collected pre-intervention at 6 and 12 months</p> <p>Organisation:</p> <p>1. One-to-one nursing (monthly data from hospitals)</p> |
| <p>Pritchard et al., 2020, Australia, Systematic Review</p> | <p>Informal caregivers of hospital inpatients with dementia</p> | <p>Interventions for caregivers during hospitalisation, with follow-ups after discharge home. All interventions provided information and supported the caregivers to assist them to return to their role as caregivers following discharge.</p> | <p>Relatives:</p> <p>1. Anxiety</p> |

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| To explore programmes provided to caregivers of inpatients with dementia to assist with readiness to provide care following discharge | (spouse/partner, family member, friend/other). | Examples of programmes: 5- hour training session with caregivers, a 4-week 15-hour per week programme of group and individual interventions, individualised nurse education sessions. | <ol style="list-style-type: none"> 2. Depression 3. Burden 4. Quality of life | | | | | | | | | | | | | | | | | | | | |
| Specially trained nurses and consultation services | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Kelly et al., 2019, Australia, Systematic Review</p> <p>To test the efficacy of Advanced Care Planning for people with dementia.</p> | Individuals with advanced dementia, with decision-making being carried through substitute decision-makers. | Palliative care consultation service conducted one on one with caregivers of individuals with advanced dementia during the acute hospital stay and with follow-ups in the community setting. The consultation services were provided by a mix of specially trained nursing and medical staff or an advance practice nurse alone. | <p>Patient:</p> <ol style="list-style-type: none"> 1. Emergency visits 2. Hospice referrals 3. Hospital and intensive care unit length of stay <p>Relatives:</p> <ol style="list-style-type: none"> 1. Satisfaction with end-of-life care 2. Advanced care planning behaviour <p>Staff:</p> <ol style="list-style-type: none"> 1. Improved adherence to previously expressed wishes | | | | | | | | | | | | | | | | | | | | |
| <p>Naylor et al., 2014, US, Cluster RCT</p> <p>To compare the effectiveness of three evidence-based interventions of varying intensity designed to improve outcomes of hospitalized cognitively impaired older adults</p> | <p>Hospitalised, community-dwelling older people who planned to return home after hospital stay (n = 202):</p> <table border="1" data-bbox="354 825 634 1228"> <tr> <td><u>Age:</u> Mean (SD, range)</td> <td><u>Sex:</u> n (%)</td> </tr> <tr> <td>ASC: 80.8 (6.4; 68-98)</td> <td>Female:</td> </tr> <tr> <td>RNC: 80.9 (6.4; 65-98)</td> <td>ASC: 39 (60)</td> </tr> <tr> <td>TCM: 79.4 (6.6; 68-96)</td> <td>RNC: 47 (66.2)</td> </tr> <tr> <td></td> <td>TCM: 40 (60.6)</td> </tr> <tr> <td><u>MMSE:</u> Mean (SD)</td> <td><u>Delirium present:</u></td> </tr> <tr> <td>ASC: 22.9 (4.8)</td> <td>ASC: n = 12 (18.5)</td> </tr> <tr> <td>RNC: 20.9 (1.2)</td> <td>RNC: n = 21 (29.6)</td> </tr> <tr> <td>TCM: 21.7 (5.9)</td> <td>TCM: n = 12 (18.2)</td> </tr> <tr> <td>-</td> <td>-</td> </tr> </table> | <u>Age:</u> Mean (SD, range) | <u>Sex:</u> n (%) | ASC: 80.8 (6.4; 68-98) | Female: | RNC: 80.9 (6.4; 65-98) | ASC: 39 (60) | TCM: 79.4 (6.6; 68-96) | RNC: 47 (66.2) | | TCM: 40 (60.6) | <u>MMSE:</u> Mean (SD) | <u>Delirium present:</u> | ASC: 22.9 (4.8) | ASC: n = 12 (18.5) | RNC: 20.9 (1.2) | RNC: n = 21 (29.6) | TCM: 21.7 (5.9) | TCM: n = 12 (18.2) | - | - | <p>Augmented Standard Care (ASC): Within 24 hours of hospitalisation cognitive screening was completed by research assistants; delirium assessment continued throughout hospitalization. Within two hours of assessments, research assistants communicated cognitive findings to nurses, physicians and social workers and documented findings in patients' medical records.</p> <p>Resource Nurse Care (RNC): After a web-based training and a test, 59 hospital employed RNs were considered as resource nurses. These resource nurses provided direct care and/or coached other nurses involved in the care of enrolled patients during the hospital stay. Throughout the study, resource nurses participated in seminars provided by the study team.</p> <p>Transitional Care Model (TCM): Master's prepared APNs implemented the intervention. In addition to the orientation designed for resource nurses, APNs completed TCM-specific web-based modules and individualized clinical experiences. The TCM protocol consisted of hospital and home visits, at least one physician follow-up visit, telephone outreach and availability seven days a week. Two full-time and one part-time APN implemented the TCM protocol.</p> <p>Comparison: The three interventions were compared to each other.</p> | <p>Patient:</p> <ol style="list-style-type: none"> 1. Time to first rehospitalisation or death (from date of hospital discharge to date of event) 2. Total number and days of all-cause rehospitalisation (reported to research assistants during in-person interviews with caregivers and validated using medical records) <p>Timepoint: 30-day increments through six months post-index hospital discharge</p> <ol style="list-style-type: none"> 1. Rehospitalisation rates per patient (total number of hospitalisations divided by the total days at risk multiplied by time period days) 2. Functional status (in-person interviews with caregivers: basic activities of daily living, instrumental activities of daily living) <p>Timepoint: Baseline, 2, 6, 12 and 26 weeks post-index hospitalization</p> |
| <u>Age:</u> Mean (SD, range) | <u>Sex:</u> n (%) | | | | | | | | | | | | | | | | | | | | | | |
| ASC: 80.8 (6.4; 68-98) | Female: | | | | | | | | | | | | | | | | | | | | | | |
| RNC: 80.9 (6.4; 65-98) | ASC: 39 (60) | | | | | | | | | | | | | | | | | | | | | | |
| TCM: 79.4 (6.6; 68-96) | RNC: 47 (66.2) | | | | | | | | | | | | | | | | | | | | | | |
| | TCM: 40 (60.6) | | | | | | | | | | | | | | | | | | | | | | |
| <u>MMSE:</u> Mean (SD) | <u>Delirium present:</u> | | | | | | | | | | | | | | | | | | | | | | |
| ASC: 22.9 (4.8) | ASC: n = 12 (18.5) | | | | | | | | | | | | | | | | | | | | | | |
| RNC: 20.9 (1.2) | RNC: n = 21 (29.6) | | | | | | | | | | | | | | | | | | | | | | |
| TCM: 21.7 (5.9) | TCM: n = 12 (18.2) | | | | | | | | | | | | | | | | | | | | | | |
| - | - | | | | | | | | | | | | | | | | | | | | | | |
| <p>Travers et al., 2018, Australia, CCT</p> <p>To investigate patient outcomes of the Cognition Champions Programme</p> | Patients with dementia (n = 181): | <p>The CogChamps Programme aimed to upskill RNs to improve the capacity of an acute-care nursing workforce to recognize patients with cognitive impairment and provide high quality care. The CogChamps were provided in-depth education on caring for cognitively impaired patients in hospital and were encouraged to develop 'Action Plans for Practice Change'.</p> <p>Comparison: Standard care in a comparable hospital</p> | <p>Patient:</p> <ol style="list-style-type: none"> 1. Prescribed medication 2. Activity 3. Signs of agitation/pain 4. Confusion/disorientation 5. Mealtime difficulty 6. Adverse outcomes for patients <p>Staff:</p> <ol style="list-style-type: none"> 1. Number of patients assessed for cognitive impairment at admission to hospital | | | | | | | | | | | | | | | | | | | | |

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| | <p><u>Age:</u> M (SD, range) IG: 80.4 (7.9, 65-97) CG: 84.51 (6.9, 65-95)</p> | <p><u>Sex:</u> n (%) Female: IG: 55 (42.3) CG: 25 (49)</p> | | <ol style="list-style-type: none"> 2. Number of occasions patients who showed confusion were reoriented by nurse 3. Number of occasions patients who experienced meal-time difficulty received appropriate assistance 4. How often the nurses introduced herself/himself when approaching the patient 5. How often the nurse addressed the patient by her/his name when approaching the patient 6. Nurse explained the action/procedure in easy to understand terms (all outcomes were assessed by a chart audit/observations by trained research nurses) <p>Timepoint: Baseline (pre-intervention), Time 2 (immediately following the CogChamps' education), Time 3 (post action plan implementation), and at Follow-Up (three months following the withdrawal of the research team)</p> |
| Volunteer programme | | | | |
| <p>Pritchard et al., 2020, Australia, Systematic review</p> <p>To synthesize and critically appraise the literature on volunteer-delivered programmes aimed at supporting people with dementia and/or delirium.</p> | <p>Patients with dementia and/or delirium (≥ 60 years) admitted to acute hospital because of an acute illness.</p> | <p>Different volunteer programmes</p> <p>e.g.: HELP (and adapted versions): Older inpatients with delirium risk are referred to a volunteer programme with, e.g. reality orientation, therapeutic activities for cognitive impairment, supervised and regular mobilisation, non-pharmacological approaches to manage distress. The programme is performed by HELP staff and trained volunteers with a maximum of four patients per volunteer shift of 3-4 hours.</p> <p>e.g.: Volunteer Dementia and Delirium Care programme: Volunteer delivered person-centred care programme with support of orientation and interaction, provision of therapeutic activities, promotion of hearing and visual aids, assisting with hydration and nutrition and encouraging walking.</p> | <p>Patient:</p> <ol style="list-style-type: none"> 1. Delirium incidence 2. Delirium severity 3. Delirium days (duration) 4. Cognition 5. Length of stay 6. Activities of daily living 7. Aged Care Placement 8. Readmissions 9. Falls 10. Death 11. Costs | |
| Special care units | | | | |
| <p>McCausland et al., 2019, UK, Systematic review</p> <p>To determine whether acute hospital SIDUs are effective in improving outcomes for patients living with dementia compared to SWCs</p> | <p>Inpatients of an acute hospital of any age with any form of dementia</p> <p>-</p> | <p>SIDU in general hospitals (specialist medical and mental health unit, specialist geriatric medicine ward)</p> <p>Comparison: Standard care ward</p> | <p>Patient:</p> <ol style="list-style-type: none"> 1. Mortality 2. Length of stay 3. Readmission rate 4. Rates of BPSD 5. Incidence of delirium 6. New antipsychotic medications 7. Overall antipsychotic prescription rate 8. Days spent at home 9. Discharged to home 10. Barthel Index score 11. Cognitive impairment 12. Quality of life 13. Positive mood/engaged | |

| | | | |
|--|--|--|---|
| | | | <p>14. Patient active and interacting with others</p> <p>Relatives:</p> <ol style="list-style-type: none"> 1. Carer strain 2. Carer psychological well-being <p>-</p> <p>Staff:</p> <ol style="list-style-type: none"> 1. Documentation of treatment decisions 2. Accurate drug history 3. Accurate co-morbidities documented 4. Collateral history taken regarding cognition 5. Single plan for discharge 6. Resuscitation status documented |
|--|--|--|---|

Abbreviations: ADL = activities of daily living, APN = advanced practice nurse, ASC = Augmented Standard Care, BPSD = behavioural and psychological symptoms of dementia, CCT = controlled clinical trial, CG = comparison group, CHOPs= Confused Hospitalised Older Person: CI = cognitive impairment, DCHP= Dementia Care Hospitals Program, ED = emergency department, Fam-FFC = family-centred function focused care, FCG = family caregivers, FFC = function focused care, GPA = Gentle Persuasive Approach, HELP= Hospital Elder Life Program , IG = intervention group, MD = mean difference, MMSE = mini mental state examination, NI = no information available, PRN= pro re nata, RN = registered nurse, RNC = Resource Nurse Care, RCT = randomised controlled trial, SD = standard deviation, SIDU = special inpatient dementia unit, SWC = standard inpatient ward care, TCM = Transitional Care Model, UK = United Kingdom, US = United States

We have only reported on quantitative findings. Data were only extracted for dementia-specific issues, e.g. if a systematic review included studies about delirium interventions, we have not reported these results.

Table 2: Reported outcomes and effects I

| | Educational Programmes | | | | | | | | | | Special non-pharmacological interventions |
|-------------------------|---|--------------------|---------------|---------------|----------------|----------------|------------------------|-------------|-------------------|--------------------|---|
| | | Eggenberger et al. | Hobday et al. | Murray et al. | O'Brien et al. | Sampson et al. | Schindel Martin et al. | Toye et al. | Abley et al. (SR) | Scerri et al. (SR) | |
| Staff Outcomes | Knowledge | # | # | | # | | | # | # | #g | |
| | Self-efficacy/confidence/competence | # | | # | # | # | # | | # | #g | |
| | Change in behaviour/practice/skills | " | | | " | | | | #g | # | |
| | Comfort | | | # | | | | | | | |
| | Beliefs and attitudes | | | | | | | | # | #g | |
| | Perceived organisational support | | | # | | | | | | | |
| | Perceived equipment of hospital environment | | | # | | | | | | | |
| | Perceived difficulty in dementia care | | | #g | | | | | | | |
| | Satisfaction | | | # | | | | | | # | |
| | Burnout | | | | | | | | | " | |
| | Palliative care consultations | | | | | | | | X | | |
| Patient Outcomes | Aggressive behaviour | | | | | | | | | X | Agitation/Aggression |
| | | | | | | | | | | | |
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= significant improvement
 " = no significant effect or mixed effects (significant on only single items, improvement described but not significant)
 \$ = significant decline
 #g = significant improvement in some but not all of the included studies (concerning SR) or significant improvement just for one investigated trial
 X = Outcome was assessed, but significance was not described
 / = Determination of the effect on this outcome was not possible because of imprecision in the results

Abbreviations: SR= Systematic Review

Table 3: Reported outcomes and effects II

| | Family/person-centred programmes | | | Specially trained nurses and consultation services | | | Volunteer Programme | | Special Care Unit | | |
|----------------------------------|-------------------------------------|--------------|----------------|--|---|-------------------|---------------------|----------------|--------------------------------------|-----------------------|--|
| | | Isaac et al. | Luxford et al. | Pritchard et al. (SR) | | Kelly et al. (SR) | Naylor et al. | Travers et al. | | Pritchard et al. (SR) | M C e t S |
| Or | One-to-one care | # | # | | | | | | | | |
| Staff Outcomes | Confidence | " | # | | Nurse addresses patients name | | | " | Volunteers' level of hope | # | Documentation of treatment decisions |
| | Obtain strategies from family | | # | | Nurse introduces her/himself | | | " | Staff's level of hope | " | Accurate drug history |
| | Comfort engaging with family carers | " | | | Nurse explains action in easy terms | | | " | | | Accurate co-morbidities documented |
| | Anti-psychotic medication use | | #g | | Adherence to previously expressed wishes | " | | | | | Collateral history taken regarding cognition |
| | | | | | | | | | | | Single plan for discharge |
| Patient Outcomes | Number of falls | # | #g | | Patient activity | | | " | Mortality | " | Mortality |
| | Average length of stay | " | | | Signs of agitation/pain | | | " | Length of stay | " | Length of stay |
| | Complaints | " | | | Confusion/disorientation | | | " | Readmission rate | #g | Readmission rate |
| | | | | | Patients experienced mealtime difficulty | | | " | Delirium incidence | # | Rates of BPSD |
| | | | | | Newly prescribed benzodiazepines | | | " | Delirium severity | # | Delirium incidence |
| | | | | | Newly prescribed antipsychotics | | | " | Number of falls | " | New antipsychotic medications |
| | | | | | Time to first rehospitalisation/death | | # | | Prescription of analgesic medication | # | Overall antipsychotic prescription rate |
| | | | | | Total number of rehospitalisations | | # | | Prescription of anti-psychotics | #g | Days spent at home |
| | | | | | Rehospitalisation rate per patient | | # | | Residential aged care placement | " | Discharged to their own home |
| | | | | | Functional status/ADL | | " | | Functional status/ADL | # | Discharged to new care home |
| | | | | | Analgesia use | | | # | | | Functional status/ADL |
| | | | | | Patients were reoriented by nurses | | | " | | | Cognitive impairment |
| | | | | | Patients with mealtime difficulty received appropriate assistance | | | " | | | Patient quality of life |
| | | | | | Patients assessed for CI with standardized tool | | | # | | | Patient positive mood |
| | | | | | Informal assessment of patients' CI | | | " | | | Patient active and interacting with others |
| | | | | Emergency visits | #g | | | | | | |
| | | | | Hospice referral | #g | | | | | | |
| | | | | Hospital Length of Stay | #g | | | | | | |
| Family Caregiver Outcomes | Quality of life | | | " | Advance care planning behaviour | # | | | | | Carer strain |
| | Anxiety | | | " | Satisfaction with end-of-life care | # | | | | | Carer psychological well-being |
| | Depression | | | " | | | | | | | |
| | Burden | | | " | | | | | | | |

