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REVIEW

Models of Integrated Acute Care for Older Adult Inpatients That Incorporate Integrative Health: An Integrative Review

Eric Bonvin[1], Elodie Perruchoud[2], Nadine Tacchini-Jacquier[1], Jean Perrenoud[1], Pauline Melly[2], Sacha Celik[3], Michèle Jean[4], Henk Verloo[2]

[1]Valais Hospital Directorate 1950 SION, Valais, Switzerland; [2]School of Health Sciences – Nursing Science (HES-SO – Valais) 1950 SION, Valais, Switzerland; [3]Old Age Psychiatry - Saint-Amé Clinic 1890 Saint-Maurice, Valais, Switzerland; [4]Geriatrics - Saint-Amé Clinic 1890 Saint-Maurice, Valais, Switzerland

Correspondence: Henk Verloo, Email henk.verloo@hevs.ch

Background: The use of integrated acute care for older adult inpatients is a growing field, especially the use of integrative health-care practices for managing complex, chronic, age-related health conditions. Scientific evidence suggests that these practices should be incorporated into older adult inpatients' daily care.

Aim: Conduct an integrative review of studies on integrated acute-care models for older adult inpatients that incorporate integrative health services.

Methods: We searched Medline Ovid ALL, Embase.com, CINAHL, APA PsycINFO Ovid, Web of Science Core Collection, ProQuest Dissertations & Theses A&I, Cochrane Library, and CAMBase bibliographic databases for studies, published between 1990 and 2023, on integrated acute-care models for older adult inpatients that incorporated integrative health services. The search associated the domains of acute care, geriatrics, internal medicine, rehabilitation, hospitalization, geriatric psychiatry, integrated/integrative care, care models, practices and coordination, interprofessionalism and multidisciplinarity, collaborative practices, and complementary therapies. The review was completed in June 2024.

Results: We retained 32 studies conducted in North America, Europe, Australia, and Asia, including 46,899 older adult inpatients, 39 physicians, 148 nurses, 695 allied health-care professionals, and 358 informal caregivers. Three integrated acute care models were identified: the Acute Care for Elders model, the Integrated General Hospital model, and the Transitional Care model. Three integrated acute psychogeriatric-care models were identified: the Admiral Nursing model, the Lewy body dementia Admiral nursing service model, and the Care for Acute Mentally Infirm Elders model. A single, hybrid, Integrated, People-Centred Health Services model for acute and community health care was identified. We found the Scaling Integrated Care in Context model for measuring integrated care development within health-care systems.

Conclusion: Few studies have investigated integrated acute-care models incorporating integrative health services for older adult inpatients. Existing acute-care models including integrative medicine should be explored further, and new, more inclusive models should be developed.

Keywords: integrated care, integration, acute care, geriatrics, geriatric psychiatry, complementary medicine, integrative health, care models

Introduction

The demographic shift towards an ever-older population is strongly associated with a substantial increase in multimorbidity, manifesting itself in older adults' physical and mental decline and strains on current health-care systems providing episodic care.[1] Health-care systems often provide fragmented care via highly specialised health disciplines operating in silos.[2] Older adult inpatients often present with multiple chronic medical and social-care problems requiring simultaneous, coordinated interventions involving several professional disciplines and medical specialities.[2] Initiated by

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the United Nations (UN) General Assembly and led by the World Health Organization (WHO) in its WHO Global Strategy and Action Plan, the UN Decade of Healthy Ageing (2021–2030) aims to reduce health inequalities and improve the quality of life of older adult patients living at home and their families.[3] Numerous action plans have been developed to promote comprehensive approaches to person-centred, integrated health and social-care that foster health-care pathways integrating hospital, community health, long-term care and specialist medical-care services into one seamless whole that strengthens the overall system's functional capacities and abilities.[4–7]

The term "integrated care" appeared at the end of the 1970s, initially in child and adolescent health and in the long-term care of older adults.[8] Although the term was initially used in the context of community health-care, it has since been used in other care contexts, too. In the 1990s, integrated care approaches were developed as a means of improving the accessibility, continuity and quality of care for people with complex needs.[9,10] Integrated care ensures the continuum of care within and between different levels of care and institutions within health-care and long-term care systems (including at home)—it is integrated according to older adults' needs throughout their life course.[11]

Although the literature reports multiple definitions of integrated care, our review adopted the WHO's:

> an approach to strengthen people-centred health systems through the promotion of the comprehensive delivery of quality services across the life course, designed according to the multidimensional needs of the population and the individual and delivered by a coordinated multidisciplinary team of providers working across settings and levels of care. It should be effectively managed to ensure optimal outcomes and the appropriate use of resources based on the best available evidence, with feedback loops to continuously improve performance, tackle upstream causes of ill health, and promote well-being through intersectoral and multisectoral actions.[12]

Since 2019, national and regional strategies have encouraged better health-care coordination between institutions to reduce service fragmentation, improve overall health system performance and ensure the continuum of care.[13,14] Although, few studies have investigated integrated care initiatives within acute care hospitals, those that did highlighted their beneficial results for older adult inpatients, including shorter lengths of stay, fewer readmissions and greater satisfaction among patients and their families. Nevertheless, integrated care remains far less common in hospital care than in community care.[14,15] Following the same dynamic as integrated care, integrative health practices have become increasingly predominant across health-care systems.[16,17] Several studies have mentioned the joint use of conventional medicine and integrative health practices in acute-care settings to improve the health and well-being of older adult patients.[16,18,19] Many countries recognise the need to develop high-quality, safe and effective comprehensive, integrative health-care approaches.[19] Older adults increasingly use integrative health strategies, with the University of Michigan's Institute for Health-care Policy and Innovation estimating that two in three adults aged 50–80 were using at least one integrative health strategy to prevent or treat a health concern in 2022.[20] The present integrative review uses the National Center for Complementary and Integrative Health's definition of complementary and integrative health: "a group of diverse medical and health care systems, practices, and products that are not presently considered part of conventional medicine".[18] This involves

> diagnosis, treatment, and prevention that complement conventional medicine by adding to a common good, addressing a need not being addressed by conventional wisdom, or broadening the conceptual frameworks of medicine.[21]

The use of integrative health in hospitals is hampered by several barriers, such as fears about the risk of interactions between integrative health therapies and conventional treatments, especially older adult inpatients' drug treatments,[22] the lack of guidelines available to support the use of integrative health therapies,[23,24] health-care professionals' negative perceptions or lack of knowledge,[25,26] and disparities in terms of funding, the reimbursement of care services and the sharing of responsibilities.[27,28] Although integrated care approaches incorporating integrative health seem to be promising means of improving older adult inpatients' independence and well-being, few studies have investigated these two approaches in tandem.

Integrating Complementary and Integrative Medicine

Older adults increasingly accept and use complementary and integrative medicine (CIM).[29] Indeed, they have been widely used in many different cultures for centuries and include homeopathies and ancient healing traditions, such as traditional oriental medicine (eg, traditional Chinese medicine, acupuncture, shiatsu), Indian systems of health care (eg, Ayurveda, yoga), and Native American healing practices (eg, sweat lodges, talking circles).[30] CIM practices share the belief that well-being is a state of equilibrium between the spheres of spiritual, physical, and mental or emotional functioning. That state can be achieved by leading a balanced, healthy lifestyle ensured by proper nutrition, exercise, sleep habits, and the ability to regulate stress responses via meditation or other mind–body practices.[31] CIM is often considered safer and more natural than conventional medicine when addressing common health conditions.[32,33] Some CIM practices fall into the category of lifestyle medicine, where individuals are empowered to make healthier choices about their diet, exercise, sleep, and stress management.[34–36] Although the terms alternative, complementary, and integrative are often used interchangeably, the National Center for Complementary and Integrative Health (NCCIH) defines them as follows: alternative medicine refers to a set of medical practices (eg, traditional, oriental, mind–body) based on insufficient evidence but used in place of conventional medicine; complementary medicine refers to a non-mainstream practice that is used together with conventional medicine;[37] and integrative medicine is an approach to health-care that uses conventional medicine and appropriate complementary therapies (ie, integrative medicine strategies) to care for the whole person. Integrative medicine strategies include chiropractic care, massage therapy, acupuncture, and meditation.[38] CIM emphasizes a holistic, patient-focused approach to health-care and well-being, targeting the whole person rather than any organ system.[38] The NCCIH has identified three categories of complementary and integrative approaches: (1) natural products (ie, herbal medicines, botanicals, vitamins, minerals, probiotics, and other dietary supplements); (2) mind and body practices (ie, massage therapy, meditation, yoga, acupuncture, chiropractic/osteopathic manipulation, hypnotherapy, tai chi, qigong, healing touch, and relaxation exercises); and (3) other complementary approaches (ie, indigenous healing practices, Chinese medicine, Ayurvedic medicine, and naturopathy). CIM is most frequently used for treating chronic somatic and mental health conditions, such as chronic pain syndrome, anxiety, or depression,[39–41] particularly when these conditions are not responding adequately to conventional approaches. Few studies, however, have looked specifically at the prevalence and effectiveness of using CIM for older adult inpatients hospitalized for acute geriatric or mental health disorders. The most commonly used types of CIM are acupuncture, herbal therapies, high-dose vitamins, massage therapy, relaxation techniques and hypnosis, guided imagery, mindfulness-based stress reduction, yoga, and prayer or other spiritual practices.[38] Although current trends suggest an increase in the use of CIM among older adults living in their own homes, less is known about how that use is considered and integrated into their care and treatment plans during hospitalization, regardless of whether that is for an acute physical (eg, heart disease, cancer, stroke, lung disease, diabetes) or mental disorder (eg, depression, anxiety). Despite the available evidence, CIM is rarely included in health-care systems' standard treatments on any large scale, except for acupuncture and chiropractic care. In Switzerland, baseline health insurance schemes do not reimburse CIM; in other countries, it remains unaffordable for many older adults living on a limited income.[42] This review sought to identify studies reporting the use of any CIM during older adults' hospitalizations in geriatrics, psychogeriatrics, internal medicine, and rehabilitation units. The work also examines older adults' use of CIM before, during, and after their hospital stays.

This integrative review's first aim was to identify and explore publications on integrated care models that incorporated integrative health approaches in acute hospital settings for geriatric somatic and mental care. Its second aim was to identify tools for measuring maturity in the development of health-care institutions' and systems' ability to provide integrated care. The following questions guided our research: Which models of integrated care incorporating integrative health approaches are used in acute care hospitals for older adult inpatients and in their geriatric somatic and psychiatric wards during the transition between hospital and the community? How can a health-care institution's or a health-care system's level of development, maturity, or readiness to apply integrated care approaches be measured?

Methods

Design

Based on Toronto and Remington's step-by-step Guide to Conducting an Integrative Review, we summarized existing studies using the following steps: (1) formulating a review question, (2) systematically searching the literature, (3) critically appraising the research retained, (4) analyzing and synthesizing the literature, (5) discussing new knowledge, and (6) developing a dissemination plan for the findings.[43]

Eligibility Criteria

The review considered publications that focussed on older inpatients, whether men or women, aged 65 or more, hospitalised in geriatrics, old age psychiatry or rehabilitation units for any physical or mental disorder, and who received integrated care whether or not integrative health was used at hospital admission, during hospitalisation, or was planned at hospital discharge.

Types of Studies and Scientific Reports

We included cross-sectional, epidemiological, methodological, retrospective and prospective cohort studies, randomised, non-randomised, pragmatic, experimental, mixed-methods studies and qualitative research designs. Conference abstracts, letters to editors and book recensions were excluded.

Search Strategy

An initial search for models of integrated acute care among older inpatients incorporating integrative medicine or health services was conducted by two medical librarians (PM & JP) in September 2023 in the following bibliographic databases: Medline Ovid ALL, PubMed, Embase.com, CINAHL, APA PsycINFO Ovid, Web of Science Core Collection, ProQuest Dissertations & Theses A&I, Cochrane Library and CAMBase. No language restrictions were set. This search strategy was associated with the concepts of "integrated care", "hospitalisation", "old age" and "complementary therapy". An additional search was conducted in December 2023 to more broadly explore models of integrated acute care for older inpatients while combining the fundamental concepts of "integrated care", "hospitalisation", "old age", and "models". We examined the following databases: Medline Ovid ALL, PubMed, Embase.com, CINAHL, APA PsycINFO Ovid, Web of Science Core Collection, ProQuest Dissertations & Theses A&I, and Cochrane Library, with no language restrictions. The search of relevant publication date was set on 1th Januari 1990 until June 2024. Additional French and English searches were conducted using Google Scholar. Figure 1 provides an overview of these search strategies, and Supplementary File 1 presents the search equations in detail (Supplementary File 1).

Studies Retrieved

Our search strategy retrieved 11,678 references after eliminating 2148 duplicates identified in the first search and 474 identified in the second. Based on screening their titles and abstracts, 80 articles from the first search and 116 articles from the second search were evaluated. Twenty articles from the first search and 12 from the second were retained for inclusion, providing 32 articles for our integrative review, including four publications with a hybrid focus on primary and acute care settings that provided information on Switzerland's context of integrated care (Figure 1).

Study Screening and Data Extraction

Three researchers (EP, NT and HV) screened the references imported into Rayyan® using titles and abstracts to identify studies that met the inclusion criteria. After reaching a consensus on the findings of their independent screening processes, the full-text articles of potentially relevant studies were obtained. The same researchers independently screened the full-text articles, labelling them for inclusion or exclusion. They discussed and resolved disagreements to reach a consensus about the final list of studies included, which were then managed in an EndNote™ library. The research team developed Microsoft Excel spreadsheets to tabulate data on the studies and to assess each study's quality. The following information was extracted from each relevant study included and put into an appropriate usable form: (1)

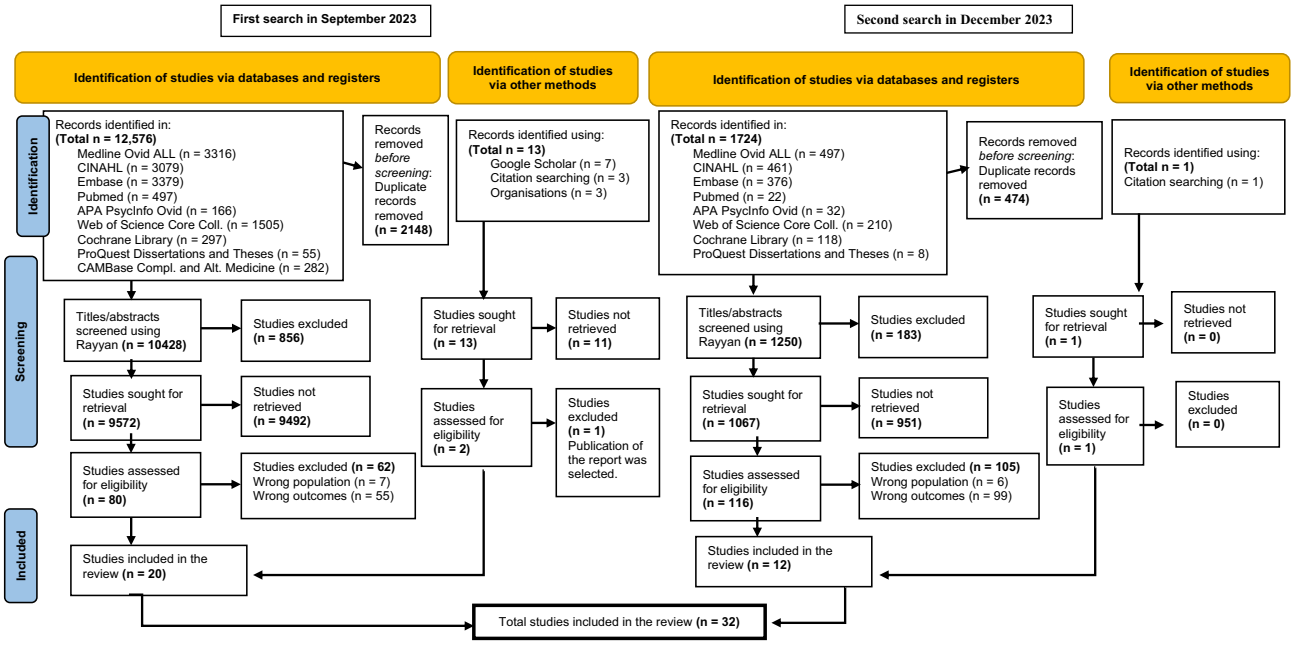

Figure 1 Summary search strategy flow diagram based on the PRISMA 2020 recommendations.
Notes: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71.[44]

study authors, year of publication and country where the study was conducted; (2) name of the model involved; (3) study design; (4) study context, setting and sample size; (5) partners involved; (6) research objectives; and (7) principal results.

Methodological Quality

EP, NT and HV used five tools to independently assess the methodological quality of the studies retained. Relevant versions of the Newcastle–Ottawa Scale (NOS) for assessing the quality of non-randomised studies in meta-analyses were used to assess cohort and cross-sectional studies.[45] The risk of bias in randomised controlled trials was assessed using the Revised Cochrane Risk of Bias tool (RoB 2.0).[46] The Risk Of Bias In Non-randomised Studies of Interventions (ROBINS-I) assessment tool was used for quasi-experimental studies.[47] The Mixed Methods Appraisal Tool (MMAT) was used to measure the quality criteria in mixed-methods studies.[48] Finally, the JBI Critical Appraisal Tools were used to assess qualitative descriptive studies and case studies.[49] Any disagreements on quality assessments were resolved through discussion and consultation with the co-authors. However, studies were not excluded based on their quality assessments, as we wanted to provide an overview of all the available information. Quality assessments of the studies retained can be found in Supplementary File 2.

Data Analysis

A first analysis presents an overview of the studies retained, including the author(s), year, country, study design, population, health-care setting, objectives, and main results (Table 1). A second analysis includes the integrated care models in acute-care settings, with or without integrative medicine, the stakeholders/health-care professionals involved, and outcomes (Table 2). Finally, we analyzed the studies with reference to the 12 dimensions of the Scaling Integrated Care in Context (SCIROCCO) tool. The studies included were analyzed with reference to the 12 dimensions of the SCIROCCO tool and are presented in Table 3. Descriptive statistics were computed to document the overall sample size and distributions of the participants involved (patients, informal caregivers, health-care professionals and health-care services), including their sociodemographic details and professional characteristics.

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Table 1 Characteristics of the Studies Retained

No	Authors and Year	Country	Design	Population	Setting	Objectives	Main Results
1	Sumner et al 2023,[50]	Singapore	Sequential convergent mixed-methods study	N = 226 hospital staff (physicians, nurses, pharmacists, social workers, human resources staff, therapists, care managers)	Alexandra Hospital	To identify factors impacting the implementation and effectiveness of the IGH model from staff perspectives.	The model challenged traditional team structures and empowered staff to expand their roles and responsibilities through a flatter, more collegial team structure.
2	Lee et al 2023,[51]	South Korea	Randomised controlled trial	N total = 32 older adults discharged from hospital; n = 16 in the intervention group; n = 16 in the control group	University hospital in Seoul	To evaluate the transitional care programme's effectiveness (discharge readiness, family interactions, community resource utilisation and transition response).	The Re-home Program improved patient outcomes (fewer clinical and emergency visits) by helping frail older adult patients be prepared for discharge and improving family interactions and ties.
3	Carron et al 2023,[52]	Switzerland	Multiple case studies	N = 8 integrated care initiatives	Primary care	To describe a series of current Swiss initiatives to improve care coordination in primary care.	Different models are described: independent multi-professional GPs' practices/health centres and regional integrated delivery systems. Financial and legal reforms must be introduced in Switzerland to promote integrated care practices.
4	Norman & Sinha 2022,[53]	Canada	Retrospective cohort study	N total = 3046 ACE older adults with an acute medical illness; n ACE unit = 1499; n bed-spaced = 1547	28-bed ACE unit at Mount Sinai Hospital	To compare the outcomes of patients admitted to a dedicated ACE unit with those of patients not admitted to a bed-spaced unit following ACE protocols.	ACE in a dedicated unit with a trained interprofessional team delivered superior care compared to a unit following a set of ACE protocols.
5	Abbott et al 2022,[54]	United Kingdom	Descriptive study	Older adults with dementia	An acute care hospital and Exeter Medical School	To develop a set of evidence-based recommendations for adapting services to help organisations deliver person-centred dementia care.	Evidence helped to develop some actions to improve dementia care on hospital wards: increasing the workforce's capacities, creating environments that support familiarisation, more social interactions, inclusive carer policies, and developing a culture of knowledge sharing.

6	Brown et al 2022,[55]	United Kingdom	Qualitative descriptive study	Older adults with Lewy body dementia; N = 14 family carer interviews	Lewy body dementia Admiral Nurse service	To explore family carers' experiences of the Lewy body dementia Admiral Nurse service.	Admiral Nurses specialise in dementia and improve the quality of life of families affected by it. They follow a biopsychosocial approach that includes providing advice, information, and psychological and emotional support while coordinating and navigating health- and social-care services.
7	Pineiro-Fernandez et al 2022,[56]	Spain	Prospective cohort study	N = 156 older adults with frequent hospital readmissions and multimorbidity	Lucus Augusti University Hospital	To evaluate a specific programme for integrated hospital care designed to reduce future readmissions.	A personalised, integrated care programme with a follow-up and monitoring programme reduced readmissions and emergency visits by patients with complex care needs and enabled individualised decision-making.
8	Cheong et al 2021,[57]	Singapore	Qualitative descriptive study	N = 10 nurses from the Care for Acute Mentally Infirm Elders (CAMIE) unit	Khoo Teck Puat Hospital	To study the hospital's CAMIE unit from the perspectives and experiences of nurses working with patients with dementia.	The nurses implementing person-centred dementia care thought that it was feasible in their acute-care setting.
9	Peytremann-Bridevaux et al 2021,[58]	Switzerland	Quantitative cross-sectional survey	N = 642 integrated care stakeholders (physicians, health-care professionals, managers, administrators, project managers)	Primary care	To assess development in the Swiss health-care system's maturity or readiness for integrated care using the Scaling Integrated Care in Context (SCIROCCO) tool.	The findings reflected the Swiss health-care system's overall limited maturity in the development of integrated care.
10	Aldridge et al 2020,[59]	United Kingdom	Case study	An Admiral Nurse who had received a total of 214 referrals in one year	Lister Hospital	To describe the Admiral Nurse's role and impact.	Admiral Nurses should be seen as essential, not optional, components of dementia care provision in order to meet the complex needs of people with dementia and their families across all settings.
11	Ha et al 2020,[60]	Singapore	Quasi-experiment within-subject study	N = 344 caregiver–older adult dyads (with Alzheimer's = 45.6% or mixed dementia = 28.2%)	Not mentioned	To evaluate the cost-effectiveness of the CARITAS association's services and their impact on patient and caregiver outcomes.	The services provided to patients and caregivers ranged from hospital-based interventions to home-based care.

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Table 1 (Continued).

No	Authors and Year	Country	Design	Population	Setting	Objectives	Main Results
12	Booth et al 2019,[61]	USA	Pre–post-intervention pilot study	N total = 161 older adults with acute illness; n preintervention = 48; n postintervention = 113	A 1152-bed hospital	To describe the development, implementation and pilot outcomes of the Virtual ACE Intervention in two medical–surgical units.	The Virtual ACE Intervention was a feasible model for disseminating the principles used by ACE units to non-ACE units, and it could lead to increased adherence to care processes and improved clinical outcomes.
13	Kripalani et al 2019,[62]	USA	Quasi-experimental study	N total = 7038 hospitalised adults; n = 762 hospitalisations involving coordinators; n = 6276 hospitalisations under usual care	Vanderbilt University Medical Center	To describe a multi-component transitional care intervention based on the Ideal Transition in Care (ITC) model and evaluate its effectiveness in reducing 30-day and 90-day hospital readmissions and costs.	An evidence-based, multi-component intervention delivered by nurse Transition Care Coordinators (TCCs) reduced 30-day and 90-day readmissions and associated health-care costs.
14	Grooten et al 2019,[63]	Belgium	Methodological study	General population	Primary and secondary contexts of care in Europe	To test the functionality of the Scaling Integrated Care in Context (SCIROCCO) tool for assessing the maturity of integrated care's development within different regions.	The SCIROCCO tool provided insights into the strengths and weaknesses of integrated care. Structural validity (all 12 items showed high factor loadings > 0.60 to the identified factor). Cronbach's alpha = 0.92 and the ordinal alpha = 0.94, showing a high level of internal consistency for all 12 items)
15	Berchtold et al 2019,[13]	Switzerland	Guideline report	General population	All Swiss health-care settings	To present measures enabling Swiss cantons to strengthen care integration and propose a compilation of regulations, incentives, steering and communication tools to strengthen the integration of care.	Integrated care axioms: priority (people's needs guide care integration); care provision (coordination and networking); financing (integrated financing and remuneration models); digitisation (use of digital tools); partnership and empowerment (partnerships with patients); governance and regulation (promotion by the Confederation, cantons and municipalities).

16	SCIROCCO Exchange 2019,[64]	European Union	Methodological study	General population	European Union health-care system contexts	Three primary objectives: to evaluate the maturity of health-care and social-care systems' development towards integrated care; to identify the requirements for developing specific good practices in integrated care; to support twinning and coaching activities between regions and organisations to enable the successful adoption of integrated care.	Development of an assessment questionnaire (online maturity assessment questionnaire organised across 12 domains related to integrated care readiness); spider diagram (helps users understand the strengths and weaknesses of their regional context).
17	Schiff et al 2018,[65]	Israel	Qualitative descriptive study	The general population (mean age = 47.4); N = 7383 complementary medicine treatment sessions over seven years	Bnai Zion Medical Center Complementary Medicine Service	To explore the risk and safety considerations associated with integrating a complementary medicine (CM) service into a hospital setting.	Safety management issues must be addressed before introducing CM services into hospitals and throughout their operation.
18	Sinha et al 2018,[66]	Canada	Quasi-experimental time-series analysis	N = 12,008 older adults with an acute illness	Mount Sinai Hospital	To evaluate outcomes after the first five years of implementing Mount Sinai Hospital's ACE Strategy.	It is essential to develop collaborative processes that are evidence-informed, goal-directed, data- and results-driven, and guided by an inclusive Geriatrics Committee made up of committed clinicians and administrators.
19	Tay et al 2018,[67]	Singapore	Prospective cohort study	N total = 230 older adults with dementia; n = 170 in a CAMIE unit; n = 60 on wards providing usual care.	Khoo Teck Puat Hospital	To evaluate the effectiveness of an acute hospital's CAMIE unit after adopting a person-centred care protocol versus conventional geriatric care as the control.	Person-centred care for patients with dementia in an acute care hospital resulted in better well-being and function than usual care.
20	Naylor et al 2018,[68]	USA	Mixed-methods study	N = 582 transitional care nurse clinicians in health-care institutions and community-based organisations	Community-based organisations throughout the USA	To examine transitional care (TC) practitioners' perceptions regarding the effectiveness of their organisations' TC programmes compared to standard care.	Very few organisations implemented all ten components of the Transitional Care Model (TCM).

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Table 1 (Continued).

No	Authors and Year	Country	Design	Population	Setting	Objectives	Main Results
21	Pauly et al 2018,[69]	USA	Quasi-experimental study	N total = 202 older adults with a cognitive impairment; n = 65 in the Augmented Standard Care (ASC) group; n = 71 in the Resource Nurse Care (RNC) group, n = 66 in the Transitional Care Model (TCM) group	Three hospitals in southeastern Pennsylvania	To compare the post-acute-care costs of three care management interventions.	The TCM, which includes inputs by specialised nurses during hospitalisation and post-discharge, can reduce both the amount of other post-acute-care interventions and the total cost of care compared with alternative models.
22	Schusselé Filliettaz et al 2018,[70]	Switzerland	Quantitative cross-sectional survey	N = 155 integrated care initiatives	Primary care	To produce a comprehensive overview of the integrated care initiatives used in Switzerland.	Stakeholders should support existing initiatives and facilitate their development. This will require systems thinking and contributions from all the actors in the health-care system.
23	Sanchez et al 2017,[71]	Spain	Case study	Staff from the Geriatrics Service (ten geriatricians, one occupational therapist, three nurses, nine clinical assistants, one social worker, one information and communication technologies manager)	Hospital Universitario de Getafe in Madrid	To perform an in-depth analysis of the programme and validate the dedicated information management tool (an integrated Health Information System)	Introducing and using a health information system that entails efficiency, avoids information duplicity and enhances information availability is essential.
24	Low et al 2017,[72]	Singapore	Randomised controlled trial	N total = 840 older adults at a high risk of unplanned hospital readmissions; n = 420 in the intervention programme; n = 420 in the control group	Singapore General Hospital	To evaluate whether a novel application of the Integrated Practice Unit concept for organising a modified virtual ward model incorporating pre-hospital discharge transitional care could reduce patient readmissions.	The addition of a pre-discharge hospital phase improved the model's effectiveness.
25	Heim et al 2016,[73]	Netherlands	Qualitative action-research study	N total = 1933 frail and non-frail older adults; n = 339 in the pre-programme group	Four hospitals in the Leiden region	To report on the results of an action-research project, including the development, implementation and outcomes of a transitional care programme.	Incorporating professionals' practices and expectations leads to feasible innovations in integrated patient-centred care.
26	Buurman et al 2016,[74]	Netherlands	Randomised controlled trial	N total = 674 older adult patients; n = 337 intervention group; n = 337 Comprehensive Geriatric Assessment (CGA) only group	Three hospitals in Amsterdam	To test whether a CGA intervention, followed by the Transitional Care Bridge programme, could improve an activities of daily living (ADLs) intervention better than a systematic CGA alone.	A systematic CGA, followed by a transitional care programme, might improve patient safety during the vulnerable period shortly after hospital discharge.

27	Alvarez et al 2016,[75]	USA	Quantitative descriptive study	N = 5753 Medicare beneficiaries with multiple chronic conditions	Six Chicago-area sites	To describe the social-work-led Bridge Model of transitional care.	Social or non-medical issues are frequently involved in readmission events.
28	Weaver & Gavin 2014,[76]	New Zealand	Quantitative descriptive study	N = a target population of around 160 older adults per month	Middlemore Hospital	To evaluate the model's outcomes.	There was a reduction in hospital length of stay when using the ACE model. Implementing a new model requires the support of a dedicated project manager and improvement adviser.
29	Knutson et al 2013,[77]	USA	Descriptive study	N = 1923 older adults with acute illness referred to an Integrative Healthcare (IH) Program	Abbott Northwestern Hospital	To describe the development and growth of an integrative health-care programme in an acute-care hospital setting.	The programme flourished because of the unique relationship between the IHP's leadership, hospital administrators, philanthropic partners and institutional buy-in. The care model is a nursing framework based on the belief that nursing is the key to bridging from conventional paradigms to the world of Complementary and Alternative Medicine.
30	Flood et al 2013,[78]	USA	Retrospective cohort study	N = 818 older adults with acute illness; n ACE Group = 428; n Usual Care Unit = 390	Birmingham (UAB) Hospital	To compare direct costs from an interdisciplinary ACE unit with a multidisciplinary usual care unit.	The ACE model can seamlessly interface with non-geriatrician attending physicians.
31	Hung et al 2013,[79]	USA	Prospective cohort study	N = 173 matched pairs of older adults with acute illness to either the MACE service or medicine service (usual care)	Mount Sinai Hospital	To evaluate the impact of the Mobile Acute Care of the Elderly (MACE) service.	The MACE model could be a viable alternative to usual care because it can seamlessly integrate into a hospital's workflow without requiring a dedicated ward or unit.
32	Barnes et al 2012,[80]	USA	Randomised controlled trial	N total = 1632 older adults with acute illness; n ACE Intervention Group = 858; n Usual-care Control Group = 774	University Hospitals of Cleveland	Evaluate the results of integrating an ACE model.	The practices of Acute Care for Elders Units can provide hospitals with effective strategies for lowering costs while preserving the quality of care for hospitalised older adults.

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Table 2 Models of Integrated Care in Acute Hospitals and Community Health-Care and Those Incorporating Integrative Health

Model or Clinical Practice Integrated care	Integrative Health (Complementary Medicine)	Setting	Partnering Professions and Institutions Involved	Outcomes
The Hospital-Based Integrative Healthcare (IH) programme[77]	Aromatherapy, massage, acupuncture, acupressure, guided imagery, chiropractic therapy, reflective listening, relaxation techniques, energy work, reflexology, music therapy, art care and craniosacral therapy.	Acute hospital care	IH practitioners; IH services by clinical community nurses; family; policy (the Minnesota Board of Nursing broadened the programme's scope of practice to include the use of CAM)	• Patients received a mean of 1.8 different therapies during an IH practitioner's visit, with the most common combination being aromatherapy and massage therapy. • Hospitalisations involving an IH referral were an average of 3.9 days longer ($p < 0.001$).
Safety Management Model for the integration of a complementary medicine (CM) service in a hospital setting[65]	Reflexology, acupuncture, hypnosis and guided imagery.	Acute hospital care	CM practitioners (integrative physicians, hypnotists, acupuncturists); the head of the CM service was an integrative physician specialising in internal medicine and integrative health services	• The prevention of safety-related incidents thanks to the appropriate selection of CM practitioners and services: practitioners had to be university graduates and to have actively practised their type of CM for at least five years after graduation; practitioners underwent annual evaluations of their knowledge of safety-related issues with their CM. • The prevention of the recurrence of safety-related incidents: obligation to report every 'irregular' incident that occurred or almost occurred; every incident was discussed, and measures were taken to prevent its recurrence; safety protocols were put in place for each treatment.

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Acute Care of Elders [53,66,76,78,80] The Virtual ACE Intervention[61] MACE: Mobile Acute Care of the Elderly[79]	N/A	Acute hospital care	Family members, allied health professionals (physiotherapists, occupational therapists, social workers, pharmacists, dieticians), community partners, emergency department partners, ambulatory care partners	• In-hospital mortality rates were 5.4% in the ACE Unit and 6.9% in bed-spaced areas ($p = 0.11$).[53] • Regarding adverse events, the ACE model reduced post-admission nosocomial pressure ulcers by 93%, falls by 66% and urinary catheter use by 50%.[66] MACE patients were less likely to experience adverse events (9.5% vs 17.0%; $p = 0.04$).[79] • Activities of daily living: performing basic activities of daily living 30 days after discharge was 60.9% (SD = 21.1) among the MACE group and 56.5 (SD = 27.0) among the usual-care group.[79] • Patients from the ACE unit were more likely to be discharged home (73.4% vs 69.4%, $p = 0.01$);[53] (78.1% vs 69.7%)[66] and likely to remain well at home after discharge.[76] • Mean hospital length of stay was shorter for the ACE group (6.7 days) than for the usual-care group (7.3 days) ($p = 0.004$);[80] length of stay dropped from the baseline of 25 days in May 2013 to 19 days 12 months after ACE started.[26] Mean hospital length of stay was shorter for those in the MACE group (4.6 days; SD = 3.3) than for the usual-care group (6.8 days; SD = 7.6; $p = 0.001$).[79] • 30-day readmissions were 13.4% lower among the ACE group[66] than among usual-care patients (7.9% vs 12.8%; $p = 0.02$).[78] MACE group patients' 30-day readmissions were 15.4% but 22.4% for usual care patients (OR = 0.67, 95% confidence interval [95% CI], 0.35–1.25).[79] • The ACE group's direct cost of care per patient was 22.5% lower[66] (USD 9,477 per patient) than the usual-care group's cost (USD 10,451 per patient), or an approximate cost saving of USD 1,000 per patient ($p < 0.001$).[80] • Satisfaction: ACE group patients were more satisfied (97.3%);[66] 7.4 points (95% CI, 2.9–11.9) than among MACE group patients ($p < 0.001$).[79]
The Integrated General Hospital (IGH) model[50]	N/A	Acute hospital care	Allied health professionals (pharmacists, social workers, human resources managers, therapists, care managers)	• 81% of staff agreed that the IGH model improved patients' outcomes. • 98% of staff felt that multidisciplinary meetings led to better discharge planning. • 46% of staff felt the IGH model did not reduce costs or use human resources more efficiently.
The dementia care pointers for service change (CARITAS)[54]	N/A	Psychogeriatric hospital care	Family, professional mental health services, community volunteers	N/A

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Table 2 (Continued).

Model or Clinical Practice Integrated care	Integrative Health (Complementary Medicine)	Setting	Partnering Professions and Institutions Involved	Outcomes
Admiral Nursing model[59] Lewy body dementia (LBD) Admiral Nursing Service[55]	N/A	Psychogeriatric hospital and community care	Family, GP, social-care professionals, community services	• Better quality of life for people with dementia and their family caregivers.[59] • A more cohesive service between acute and community care.[59] • Family caregivers were better able to support the people they cared for and to relieve the emotional stress associated with caring.[55] • A better consideration of the needs of the family.[59] • Reductions in lengths of stay, inappropriate admissions and failed discharges.[59] • More staff confidence in delivering dementia care.[59]
Care for Acute Mentally Infirm Elders (CAMIE)[57,67]	N/A	Psychogeriatric hospital care	Family, volunteers, allied health professionals (social workers, dieticians, pharmacists, physiotherapists, and occupational, speech and music therapists)	• CAMIE unit patients showed significantly more improvements in: well-being $F(1, 227) = 22.79$, $p < 0.001$; quality of life $F(1, 227) = 5.86$, $p = 0.016$; functional independence in personal care and mobility $F(1, 227) = 9.89$, $p = 0.002$; and significantly greater reductions in agitation $F(1,227) = 4.10$, $p = 0.044$.[67] • Better outcomes came at the modest cost of SGD 100 more per patient per day.[67] • Nursing staff perceived positive experiences, eg meaningful connections with patients, more confidence and better competencies.[57]
Returning Home or Re-home programme[51]	N/A	Transitional care	Family, community resources, medical services, government policies partners.	• Decreased depression scores in the experimental group ($\beta = -1.27$, $p < 0.001$ at 12 weeks). • Rate of unplanned emergency department visits: 0% for the experimental group and 30.7% for the control group ($x2 = 5.057$, $p = 0.049$). • Community resource use at 12 weeks was higher in the experimental group ($t = 4.267$, $p < 0.001$). • Improved empowerment ($\beta = 6.79$, $p = 0.032$) and connectedness scores ($\beta = 7.33$, $p = 0.037$) in the experimental group. • Family interaction scores in the experimental group were higher ($\beta = 3.30$, $p = 0.045$).

The Integrated Care Programme (ICP) for older inpatients and outpatients[71]	N/A	Transitional care	Occupational therapists, social workers, liaison team members, community carers, outpatient clinics, day hospitals, primary care physicians	• Unnecessary hospitalisations fell by 400 patients per year. • The Health Information System enhanced patient safety, care delivery promptness and appropriateness, and reduced paperwork. • Average length of stay in inpatient settings fell by 2.3 days (9.1 vs 6.8). • Cost savings of EUR 1.5 million.
Personalised Integrated Care programme for individuals with frequent hospital readmissions and multimorbidity[56]	N/A	Transitional care	Family, primary care team, social workers	• Reduction in emergency department visits ($p < 0.001$); mean 6 months before inclusion in the programme = 3.1 (SD = 2) versus mean 6 months after inclusion = 1.0 (SD = 1.2); mean 12 months before inclusion = 4.6 (SD = 2.7) versus mean 12 months after inclusion = 1.4 (SD = 1.6). • Reduction in hospital readmissions ($p < 0.001$); mean 6 months before inclusion in the programme = 2.4 (SD = 1.4) versus mean 6 months after inclusion = 0.8 (SD = 1.1); mean 12 months before inclusion = 3.4 (SD = 1.7) versus mean 12 months after inclusion = 1.1 (SD = 1.5).
The Ideal Transition in Care (ITC) model[62]	N/A	Transitional care	Social and community support services, case managers, social workers, clinical pharmacists, primary care physicians	• Mortality was lower under TCC Care than under usual care at 30 days (0.5% vs 1.5%; $p = 0.048$) and at 90 days (1.6% vs 3.9%; $p = 0.002$). • Patients under TCC Care had a lower readmission rate at 30 days (9.4% for overall TCC Care vs 18.8% for usual care; $p < 0.001$) and at 90 days (19.8% vs 31.5%; $p < 0.001$). • Costs were lower for TCC Care than under usual care at 30 days (mean payment = USD 2,467 vs USD 7,994; $p < 0.001$) and at 90 days (mean payment = USD 6,942 vs USD 15,721; $p < 0.001$).
The Transitional Care Model (TCM)[68]	N/A	Transitional care	Family, community-based practitioners, social workers, the Coalition for Evidence-Based Policy, case managers	Three commonly-reported local adaptations of the TCM's components: • Delivering services from hospital to home: use of in-person hospital visits and telephone follow-up only (n = 64). • Relying on Advance Practice Nurses: substitution of other staff members, including registered nurses (78%), social workers (36%), case managers (28%). • Continuity of care: 43% reported that information transfers about patients' care plans did not happen consistently. • The TCM model led to a reduction in hospital readmissions (79.5% of respondents), better control over costs (39.8% of respondents), better quality services (36.6% of respondents)

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Table 2 (Continued).

Model or Clinical Practice Integrated care	Integrative Health (Complementary Medicine)	Setting	Partnering Professions and Institutions Involved	Outcomes
Integrated Practice Units (IPU)[72]	N/A	Transitional care	Family, physiotherapists, occupational therapists, pharmacists, social workers, family physicians, primary care providers, administrators	• 28% reduction in the 180-day follow-up mortality rate in the intervention group (HR 0.72; 95% CI, 0.61–0.86; $p < 0.001$). • 30-day emergency department attendance reduction in the intervention group, IRR 0.60 (95% CI, 0.46–0.79, $p < 0.001$). • 30-day readmission reduction in the intervention group, IRR 0.67 (95% CI, 0.52–0.86, $p < 0.001$). • 30-day post-discharge: mean 1.37 fewer hospital bed days in the intervention group ($p < 0.001$), and 2.42 days and 3.60 days fewer at 90 days and 180 days post-discharge, respectively ($p = 0.004$). • Cost savings of USD 1,250,655 for the intervention group.
Netherlands' Regional Transitional Care programme[73]	N/A	Transitional care	General practitioners, physiotherapists, nursing homes, rehabilitation facilities, home-care providers, scientists	Four components that need priority attention: • Risk management to improve the identification of frailty among hospitalised older adult patients. • Delivery of integrated, multidisciplinary, function-oriented care—care is well accommodated between disciplines. • Specific geriatric interventions: developing agreement on responsibilities in geriatric care within and between the various disciplines and levels and developing a systematic approach to assessing the types of care frail older adults need after discharge. • Optimisation of transfers between centres to secure the optimal continuity of care.
The Transitional Care Bridge programme[74]	N/A	Transitional care	Family general practitioners, home care organisations, physical therapists, dieticians, nursing homes	Lower risk of time to death being within six months after hospital admission (HR 0.75; 95% CI, 0.56–0.99; $p = 0.045$).
The Bridge Model of Transitional Care[75]	N/A	Transitional care	Family, community professionals, social workers	Bridge programme participants had 30.7% fewer admissions out to 30 days than the usual-care group, 9.4% fewer out to 60 days and 13.9% fewer out to 90 days.
CARITAS Integrated Dementia Care Model[60]	N/A	Psychogeriatric transitional care	Family, case managers, community and home-based services	• Improvements in patients' quality of life from 0.909 to 0.968 ($z = 12.7$; $p < 0.001$); improvements in patients' behavioural problems overall from 33.0 to 22.0 ($z = 5.49$; $p < 0.001$), and related to 'memory' (from 16.0 to 10.0, $z = 5.40$; $p < 0.001$), 'disruption' (from 6.00 to 4.00, $z = 2.39$; $p = 0.017$), and 'depression' (from 5.00 to 4.00, $z = 4.54$; $p < 0.001$; variance from 0 to 15). • Reduction in caregiver burden from the baseline (25.0) to 4.2 months later (17.0) ($z = 4.52$; $p < 0.001$). • A mean score of 42.9/48 for caregiver satisfaction.

Transitional Care Model for Hospitalised Cognitively Impaired Older Adults[69]	N/A	Psychogeriatric transitional care	Family, social workers, community services, policies (the discharge planning department for referrals)	The Transitional Care Model group cost less than the Augmented Standard Care group at 30 days ($p < 0.001$) and 180 days ($p = 0.03$) post-hospital discharge.
Swiss Integrated Care Initiatives	N/A	Primary care	Family, physiotherapists, occupational therapists, dieticians, nutritionists, pharmacists, community psychological services, policies	• System-level barriers included inadequate payment, funding and reimbursement systems and insufficient time.[52,70] • Barriers at the individual level included healthcare professionals' desire to protect their 'territory', resistance to change and difficulties in information sharing.[52,70] • Physicians (91% of initiatives) and nurses (87% of initiatives) were the most frequent professional groups involved in initiatives; among the nine possible financing sources, respondents reported that the three most prevalent were health assurance funds (65%), public health departments (59%) and healthcare organisations (57%).[70] • Results assessed using the SCIROCCO tool: the Swiss healthcare system's 'maturity' for dealing with integrated care was rated as being on the lower side; the 'Funding' dimension was rated lowest (1 = 'Funding is available but mainly for pilot projects and testing'), whereas the dimension of 'Information and eHealth Services' had the highest rating (3 = 'eHealth Services to support integrated care are piloted but there is no region-wide coverage yet').[58]

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Table 3 Analyses for the Retrieved Studies Linked to the 12 SCIROCCO Dimensions Model.[64]

Study No	Readiness to Change	Structure and Governance	eHealth Services (digital Infrastructure)	Standardisation and Simplification	Funding	Removal of Inhibitors	Population Approach	Citizen Empowerment	Evaluation Method	Breadth of Ambition	Innovation Management	Capacity Building
1	–	–	–	–	–	–	–	–	✓	✓	–	–
2	–	✓	–	✓	✓	–	–	✓	✓	✓	✓	–
3	–	–	–	–	–	–	✓	✓	–	✓	–	✓
4	–	–	–	–	–	–	–	–	–	✓	–	✓
5	✓	✓	–	✓	–	✓	–	✓	–	–	✓	✓
6	–	✓	✓	✓	✓	–	✓	✓	–	–	–	✓
7	–	–	✓	–	–	–	–	✓	–	✓	–	✓
8	–	–	–	–	–	–	–	–	–	–	–	✓
9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
10[51]	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
11	–	–	–	–	–	–	–	–	✓	✓	–	✓
12	–	✓	✓	✓	–	✓	–	–	✓	–	✓	✓
13	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
14	N/A											
15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
16	N/A											
17	N/A											
18	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓
19	–	–	–	–	–	–	–	✓	–	–	✓	✓
20	–	✓	–	✓	✓	–	✓	✓	–	✓	✓	✓
21	–	✓	✓	✓	✓	–	–	✓	✓	✓	✓	✓
22												
23	✓	–	✓	✓	–	✓	✓	–	✓	✓	✓	✓

24	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
25	–	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓
26	–	–	–	✓	–	–	✓	–	✓	✓	✓	✓
27	–	–	–	–	✓	✓	✓	–	–	✓	–	✓
28	–	–	✓	✓	✓	✓	–	–	✓	–	✓	✓
29	N/A											
30	–	–	–	✓	–	–	–	–	✓	–	✓	–
31	–	–	–	✓	–	–	–	–	✓	✓	✓	✓
32	–	✓	✓	✓	✓	✓	–	–	✓	–	✓	✓

Note: ✓,present; not present, N/A, not applicable.

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Results

Characteristics of the Studies Retrieved

The 32 studies included were conducted in the USA (n = 9), Singapore (n = 5), Switzerland (n = 4), the United Kingdom (n = 3), Canada (n = 2), Netherlands (n = 2), Spain (n = 2), New Zealand (n = 1), South Korea (n = 1), Israel (n = 1), Belgium (n = 1) and one joint publication covered the countries of the European Union (n = 1). They were published between 2012 and 2023. A diversity of study designs was used to explore the phenomenon of integrated care in the different countries' health-care systems. These included five cohort studies, five quasi-experimental studies, four quantitative descriptive studies, four randomised controlled trials, three qualitative descriptive studies, three case studies, two descriptive studies, two mixed-methods studies, two methodological studies, one guideline report and one action-research project. The research populations were divided into three categories: 1) older adult inpatients and their families or informal caregivers; 2) health-care professionals and workers; and 3) local and regional health-care providers. The studies retained (including the validation studies) comprised 46,899 participants, including 39 physicians, 148 nurses, 695 other health-care professionals and 358 informal caregivers. Other health-care providers included community health-care workers, family physicians, pharmacists, social workers and allied health-care professionals (eg occupational therapists, physiotherapists, dieticians, care managers and complementary medicine practitioners). Table 1 describes the studies retained for this review in detail.

Dimensions Reported in the Studies on Integrated Care Models in Acute Care

Several studies have described the components of the integrated care concept.[81,82] Valentijn et al (2015) reported that the 59 key characteristics attributed to integrated care are divided into the four dimensions of the Rainbow Model of Integrated Care.[82] Gonzalez-Ortiz et al (2018) proposed a list of 175 items classified into twelve domains. The first six domains, as proposed by the Chronic Care Model (CCM), are the health-care system, community resources and policies, self-management support, delivery system design, decision support systems, and clinical information systems. The six other domains are leadership, governance, performance monitoring, organisational culture, contextual factors and social capital.[81] Although the Scaling Integrated Care in Context (SCIROCCO) tool is a model of the maturity of integrated care, it was developed to facilitate knowledge transfer about the implementation of integrated care and to measure the level of maturity in the development of identified components of integrated care providers and structures.[63] The studies included in this integrative review highlighted several integrated care models in acute hospitals, community health-care and integrative health. Table 2 describes the integrated care models retained for our integrative review. From this perspective, different authors and public health services have defined integrated acute care. Busetto et al (2017) defined the three critical components of integrated acute care for older adults as multidisciplinary organisations and collaborative practices, comprehensive geriatric assessments, and a specific cost reimbursement system.[83] Castelli et al (2023) defined six key components: the interface between primary care and hospital care, internal hospital processes, the use of information technology, funding, resources such as workloads, and professional roles and behaviours[84] (Table 2).

Models of Integrated Care Incorporating Integrative Health Services

Only two of our retained publications proposed integrated acute care models that incorporated integrative health.[65,77] The safety management model for incorporating complementary medicine (CM) services in a hospital setting employs reflexology, acupuncture, hypnosis and guided imagery. This model proposes three significant areas requiring safety management when using integrative health in a hospital environment: (1) the prevention of safety-related incidents via the selection of appropriate integrative health practices and practitioners, (2) actual adverse incidents, and (3) the prevention of their recurrence using both hospital and integrative health service safety protocols.[65] The second integrated acute care model reported is the Hospital-Based Integrative Healthcare (IH) Program, which includes aromatherapy, massage, acupuncture, acupressure, guided imagery, chiropractic therapy, reflective listening, relaxation techniques, energy work, reflexology, music therapy, art care and craniosacral therapy. The critical elements of this model are organising the care team into a triad (an IH nurse clinician, a massage therapist and an acupuncturist), providing ongoing training in IH for all care staff, and providing IH mentors for care staff and patients to facilitate the implementation of IH

approaches into patients' daily care routines. Nurses' abilities to use holistic care models foster relationships between IH practitioners and care professionals and optimise the care environment.[77] Although integrative health therapies generate significant added value for older adult inpatients' physical and psychological health, they only seem to be used sporadically during hospital stays[17,18,24] (Table 2).

Models of Integrated Care in Hospitals

We only identified two models among the few studies that investigated integrated models of care in acute care hospitals: the Acute Care for Elders (ACE) model[53,61,66,76,78–80] and the Integrated General Hospital (IGH) model.[50] The ACE model uses an interdisciplinary approach, is organised in specific hospital units, and incorporates the principles of continuous improvement in quality, care safety and overall older adult inpatient assessment. The ACE model's main objectives are to ensure care centred on the individual and involving their relatives and to provide a specialised environment adapted to the needs of older adult inpatients (eg carpeted floors, handrails, meeting areas for patients and their entourage, welcoming rooms). Furthermore, the model seeks to reduce the occurrence of undesirable events during hospitalisation (eg bedsores, urinary tract infections, use of restraint measures), to maintain and improve the older adult inpatient's quality of life, to maintain and improve their functional status (eg activities of daily living, mobility, nutrition, mood, sleep, cognition, etc), and to plan quality transitional care for hospital discharge from the moment of admission[53,61,66,76,78–80] (Table 2).

The Integrated General Hospital (IGH) model is a general practitioner-led care model where a principal physician is identified for every patient, and they maintain follow-up in outpatient settings. The principles guiding the IGH model include; (1) "Holistic Care", where the model focuses on managing patients holistically rather than based on medical specialities; (2) "Single-Site Care", where the IGH model provides both acute and post-acute care at a single site, enhancing care continuity by eliminating inter-site transfers; and (3) the "One Patient, One Care Team principle", where the IGH model follows the principle of assigning one care team to each patient. This team proactively reviews older adults' care arrangements and minimises unnecessary visits to specialists in other hospitals. Information technology infrastructure was identified as a key limitation, with difficult access to external partners outside the hospital who continue to care for the patient after discharge. The IGH model challenged traditional team structures and empowered staff to expand their roles and responsibilities.[50] We found no hospital-based integrated care models in advanced psychiatry. However, person-centred acute psychogeriatric care models have components similar to integrated care. For this reason, the dementia care pointers for service change,[54] the Admiral Nursing model,[59] the Lewy body dementia Admiral nursing service[55] and the Care for Acute Mentally Infirm Elders (CAMIE) model[57,67] were all considered in this review. These models highlight the importance of using a holistic approach to meet the biopsychosocial needs of the person with dementia and their relatives, of fostering a close interdisciplinary partnership with them, of providing ongoing dementia training for all nursing staff based on best practices in dementia care, and of promoting a dementia-friendly environment[54,55,57,59,67] (Table 2).

Transitional Integrated Care Models Rooted in Hospital Settings

Transitional care models (TCMs) are designed to ensure the coordination and continuity of care when patients are transferred between different care settings or levels of care in the same institution. "Transfer" refers to the relatively short time that begins with a patient's preparation to leave a facility and ends when the patient is admitted to the next facility.[68] TCMs are considered to be integrated care because these two concepts combine the same key elements. These include multidisciplinary collaboration, a comprehensive geriatric assessment, the promotion of and education in self-management, the implementation of health and social interventions focused on the patient and their entourage, and meeting their needs and expectations during hospitalisation, at discharge and during the patient's more or less long-term follow-up in the community.[68]

The Transitional Care Model (TCM) developed by Naylor et al (2008) is an American model developed specifically to prevent complications and strengthen care coordination before, during and after the hospital discharge of older adults with several chronic illnesses.[85] Eight other transitional integrated care models rooted in hospital settings were identified, including two American models (the Ideal Transition in Care (ITC) model[62] and the Bridge Model of Transitional

Care[75]), two Asian models (the Returning Home or Re-home programme[51] and the Integrated Practice Units (IPU) model[72]) and four European models (the Integrated Care Programme (ICP) for older inpatients and outpatients,[71] the Personalised Integrated Care programme for individuals with frequent hospital readmissions and multimorbidity,[56] the Netherlands' Regional Transitional Care Programme[73] and the Transitional Care Bridge programme).[74] All these models share common objectives: interdisciplinary collaboration, person-centred care, the identification of older adults at risk, the promotion of care coordination and continuity, active involvement and the education of patients and their families, and the promotion of self-management.[51,56,62,68,71–75]

Different health-care professionals are responsible for different models, including community nurses,[51,71,74] case manager nurses,[56] hospital registered nurses,[62] advanced practice registered nurses,[68] family physicians[72,73] and social workers.[75]

Two transitional integrated old age psychiatric care models rooted in hospital settings have been put forward in the domain of advanced-age psychiatry: the CARITAS Integrated Dementia Care Model[60] and the Transitional Care Model for Hospitalised Cognitively Impaired Older Adults.[69] These two models represent hospital–community care partnerships that endeavour to provide person-centred dementia care through ambulatory clinic consultations, case management, patient and caregiver engagement, and caregiver education and support, all within more or less long-term follow-up[60,69] (Table 2).

Impact and Outcomes of Integrated Care Models in Acute-Care Settings

As reported by Sumner et al, implementing integrated care models in acute-care settings can positively impact hospital admission rates, lengths of stay, and, potentially, patient satisfaction and readmission, the continuity of care, and coordinated home care.[50,62] Additionally, integrated care models can significantly reduce hospital admissions among older adult patients with chronic conditions such as heart diseases.[56] Reducing hospital admission rates and lengths of hospital stay will also save health-care systems money.[86] Shorter hospital stays is the most significant outcome of integrated care.[56] Reducing the number of days patients spend in acute hospital care is essential as prolonged stays increase the risk of hospital-acquired infections and disrupt patient flows due to a lack of beds.[87] Improving the exchange of patient information between hospitals and primary care following a hospital admission enables quicker follow-up once the patient has been discharged. This follow-up includes prevention interventions against further illnesses and, thus, readmissions to hospital.[52] Lee et al reported that better communication between family caregivers also enabled better care coordination with the other stakeholders involved.[51]

Measuring Integrated Care's Level of Maturity

Three publications reported on the construction, validation and use of the Scaling Integrated Care in Context (SCIROCCO) tool to measure the level of maturity in the development of integrated care in health-care institutions and systems.[58,63,64] The tool was developed by the European Innovation Partnership on Active and Healthy Ageing's B3 Action Group on Integrated Care. It was designed to facilitate knowledge transfer and learning about the implementation and scaling up of integrated care across Europe's different regions.[63] The SCIROCCO tool includes an online questionnaire to assess integrated care's level of maturity, as organised across 12 domains covering various aspects related to how ready institutions are to deliver integrated care: Readiness to Change, Structure and Governance, eHealth Services, Standardisation and Simplification, Funding, Removal of Inhibitors, Population Approach, Citizen Empowerment, Evaluation Methods, Breadth of Ambition, Innovation Management and Capacity Building. Each dimension is assessed on a six-point scale with scores ranging from 0–5.[58] The tool also allows diagrams to be shared and compared with other users, facilitating consensus-building.[64] The tool has measured the maturity of integrated care systems in more than 60 regions and organisations across Europe and beyond—including Australia, New Zealand, Singapore, Canada, and the USA. It is not a specific tool for assessing acute or community health-care services.[64] Table 3 presents the SCIROCCO tool dimensions of maturation in the retrieved studies.

Methodological Quality of the Studies Retained

Three cohort studies were rated of high methodological quality (8–9 stars),[67,78,79] three were of moderate quality (6–7 stars),[53,56,58] and three were of low quality (< 6 stars on the Newcastle–Ottawa Scale)[70,75,76] (Supplementary File 2: Table S1). In the overall assessment, randomised controlled trials were rated as of some concern about their methodological risk of bias

with a randomisation criterion at low risk of bias but a selection of reported results that was more of a concern[51,72,74,80] (Supplementary File 1: Table S2). The different evaluation domains used for the quasi-experimental studies mostly scored "moderate"[60–62,66,69] (Supplementary File 1: Table S3). The two mixed-methods studies were of high methodological quality[50,68] (Supplementary File 1: Table S4), and the qualitative studies and case reports were mainly evaluated as being of moderate quality[52,55,57,59,65,71] (Supplementary File 2: Table S5). Finally, given their design, it was not relevant to assess the methodological quality of the qualitative and methodological validation studies.[13,54,63,64,73,77]

Discussion

This review searched for studies investigating models of integrated care designed for older adult patients in acute care settings and incorporating integrative health services. Despite the large sample of references found using our literature search strategy, few of the studies corresponded to our selection criteria involving acute health-care settings that incorporated integrative health services. The public health concept of integrated care has mainly been investigated in the field of primary care.[88,89] Little research has been conducted in acute-care settings that provide integrated care, coordinate that care and collaborate with multiple stakeholders, including integrative health services.

Despite numerous investigations and implementation studies that have demonstrated the effectiveness and efficiency of integrated primary health-care models, many acute-care programmes continue to use disease-oriented approaches to care provision in hospitals.[12,90] There has recently been more significant interest in how integrated care should be people-centred, embracing older adult patients as partners in their own care and ensuring that services are well coordinated around their needs.[12,91,92] Those studies reported that integrated care strategies provide better outcomes thanks to the collaboration and coordination between acute, preventative and community health-care actors.[6,88,93]

Surprisingly, models of acute integrated care that incorporate integrative health services remain under-investigated despite previous research in primary care demonstrating their efficiency and effectiveness.[94–96] However, many studies have been conducted to assess the effectiveness of integrative health services for older adults, such as Tai Chi[60] and acupuncture,[97] although those studies were not exhaustive.

Vellas (2023) emphasised the importance of the early detection of older adults' intrinsic abilities and the need to deepen our understanding of the biology of advanced age and age-related diseases in order to maintain their function.[98] Acute-care hospitals should take on a more central, regional role in the implementation of integrated care by coordinating out-of-hospital health-care service providers to ensure safe care management for patients facing higher levels of risk in the community. This could enable older adult patients to remain independent in their homes for longer or be discharged earlier during their recovery. This is all the more important for very frail patients for whom interventions must occur before it is too late for them to regain their independence. By strengthening their interface with community-based support, hospitals could help manage the health-care system's demands and improve patient flows, benefiting both patients and hospitals as independent entities.[99,100]

Integrated models of care could become essential parts of the solution to health-care systems' growing financial challenges.[101] Primary and acute integrated care models could help respond to the significant shift in global demographics that has seen age-related and long-term chronic conditions replace infectious diseases as the most significant challenges facing national health-care and social-care systems.[94,102] These changes mean that the economic burden of chronic illness may reach almost three-quarters of all health expenditures.[103,104] The future of health-care systems, especially in acute-care settings, will be fashioned by the need to optimise the health-care of ageing populations. Current approaches to care focusing on curative, specialist-led, hospital-based services must be more cohesive and require updating.[105] Integrated care in acute-care settings that incorporate integrative health services could be considered a means to promote the transformative health-care objectives of improving patients' experiences, health outcomes and clinician well-being while lowering costs and ensuring health equity.[106] The use of integrative health in acute hospitals is a new paradigm with unknown parameters, including fears of the risk of interactions between integrative health therapies and conventional treatments, especially drug treatments for older adult inpatients,[22] a lack of guidelines available to support the use of integrative health therapies,[23,24] negative perceptions or a lack of knowledge on the part of many health-care professionals,[25,26] and differences in terms of funding, reimbursements for the health services provided and the sharing of responsibilities.[27,28] Integrated care models in acute care should go beyond these barriers and beyond the traditional boundaries set for health-care and social-care systems. Indeed, they should embrace the social determinants of

ill health by bringing together a more comprehensive range of resources, including integrative health services, to promote public health, prevent ill health and ensure older adult patients' well-being.[12]

Two of the studies in this review investigated the impact of the primary care Integrated Care for Older PEople (ICOPE) model, which is based on three key elements: person-centred assessments (evaluating the older adult's intrinsic abilities), integrated care (considering the older adult's physical, mental, social, geographical and personal environment), and personalised care plans (implementing interventions based on each older adult's specific needs).[58,63]

Finally, monitoring the development of an integrated care model's level of maturity within particular health-care systems should be encouraged. The European Union's SCIROCCO initiative seems well suited to helping introduce integrated care into both acute-care and community health-care settings.[63] Further research involving the SCIROCCO model should be conducted to optimally adapt this tool for different health-care providers, contexts or systems.

Limitations

This integrative review has some relevant limitations. Firstly, despite a thorough literature search using Toronto and Remington's step-by-step Guide to Conducting an Integrative Review,[43] our review may have missed some studies that met all the selection criteria due to study search errors or the investigators' mistakes. Secondly, there may have been some biases in the investigators' reporting of the findings from the selected studies. Thirdly, the heterogeneity in the studies retained—whether in terms of their conceptualisation of integrated care, differences between the health-care systems, countries and populations studied, or between methods of data collection, measurement and analysis—may have made comparisons between the models more difficult and led to a lack of consistency.

Nevertheless, our integrative review also has several strengths. On average, the studies included in it were of good methodological quality, thus ensuring the reliability and validity of its synthesised findings. Furthermore, having identified many studies with different designs, from various countries and in a variety of contexts of care, including grey literature, we were able to explore our research question in great depth.

Conclusions

This integrative review investigated integrated care models for older inpatients that incorporated integrative health care. It provides valuable information to nurses, general practitioners, policymakers, and other stakeholders in the integrated care of older adult inpatients in acute-care settings. Despite our exhaustive search of the existing literature, there appear to be few integrated care models relevant to acute-care hospital settings that incorporate integrative health approaches. Implementing integrated care models in acute-care hospital settings is still embryonic, and more research should be conducted to increase the relevance of these holistic approaches. Additionally, the validated (if slightly European-focused) SCIROCCO tool to assess the development of integrated care's level of maturity in a particular health context could be instrumental in guiding the introduction and follow-up of integrative care in closer coordination with other health-care institutions and professionals, simplifying processes shared with other health-care providers, community-based services and social care. Based on the outcomes of the studies retrieved, the principal beneficial effects reported were substantially fewer readmissions and shorter hospital stays. Integrated care models, with or without integrative care, should apply a collaborative approach involving patients, informal and formal health-care professionals, and the broader health-care system. Health-care professionals should be better informed and trained about implementing integrated care models incorporating integrative health services and the benefits these bring.

Consent to Publication

All the authors have agreed to publish this version of the manuscript.

Author Contributions

All the authors made significant contributions to the work reported, whether that was in the study's conception, design, execution, data acquisition, analysis and interpretation, or all these areas. They all took part in drafting, revising, or critically reviewing the article, and gave their final approval of the version to be published. They all agreed to submit the article to the Journal for Multidisciplinary Research and to be accountable for all aspects of the work.

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Disclosure

The authors report no conflicts of interest in this work.

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