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Exploration of understanding of integrated care from a public health perspective: A scoping review

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Abstract

Background: Many health care systems attempt to develop an integrated care approach that is a whole population health-oriented system. However, knowledge of strategies to support this effort are scarce and fragmented. The aim of the current paper is to investigate existing concepts of integrated care and their elements from a public health perspective and to propose an elaborated approach that could be applied to explore the public health orientation of integrated care.
Design and methods: We applied a scoping review approach. A literature search was conducted in Embase, Medline, CINAHL, Scopus and Web of Science for the period 2000–2020 yielding 16 studies for inclusion.
Results: Across the papers, 14 frameworks were identified. Nine of these referred to the Chronic Care Model (CCM). Service delivery, person-centeredness, IT systems design and utilization and decision support were identified as the core elements of most of the included frameworks. The descriptions of these elements were mainly clinical-oriented focusing particularly on clinical care processes and treatment of diseases instead of wider determinants of population health.
Conclusions: A synthesized model is proposed that emphasizes the importance of mapping the unique needs and characteristics of the population it aims to serve, leans on the social determinants approach with a commitment to individual and community empowerment, health literacy and suggests reorienting services to meet the expressed needs of the population.

Keywords

Frameworks, models, public health, integrated care, health care systems

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Introduction

Over the past decade, integrated care has become an integral part of health policy reform worldwide. As healthcare providers face multiple challenges in the present health care systems, it is believed that integrated care services would facilitate the system to provide a higher quality of care at a fewer cost while maintaining or improving the health and satisfaction of the citizens and patients.[1–3]

Integrated care is a broad concept with a multi-component set of ideas and approaches aimed at improving service efficiency, patient experience, quality of care, and outcome.[4–6] There is a conceptual diversity within the field of integrated care:

- Integrated care refers to both the methods that might be used to organize, fund, and deliver healthcare and related services and the interrelated goals of better outcomes, experiences, and use of resources.[4,7,8]
- Integrated care can be understood as an emerging set of approaches including multidisciplinary management and strategic partnership.[9]
- Integrated care is an organizing principle for the delivery of care that strives to improve patient care and experience through improved coordination.

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- A significant amount of focus has also been placed on the various levels of integration activity, which might refer to actions occurring at the system-level (macro), the organizational-level (meso), or the clinical-level (micro).[10]
- Vertical and horizontal integration are used to define different types of integration. Vertical integration relates to care delivery across service areas within a single organization, while horizontal integration coordinates care across settings.[4,11]

Care coordination, collaborative care, and comprehensive care are only few of the terms that are conceptually related to integrated care that are highlighted in the literature. There is some overlap between these definitions and concepts; however, the description of integrated care remains inconsistent and unclear. In recent years, a body of research has described various efforts to analyze the complexity of integrated care and the development of integrated care frameworks/models.[2,4,12,13] According to Hughes et al.[14] integrated care is an organizing principle for healthcare delivery that aims to optimize patient care by means of intensifying coordination between services. The World Health Organization (WHO) defined integrated care as "Health services that are managed and delivered so that people receive a continuum of health promotion, disease prevention, diagnosis, treatment, disease management, rehabilitation and palliative care services, coordinated across the different levels and sites of care within and beyond the health sector, and according to their needs throughout the life course."[15] Preventive services included in WHO definitions of integrated care are usually provided via public health which is part of a health system. Instead of supporting a fragmented and sometimes disjointed approach to management of specific health issues, WHO recommends that preventive health and social care services should aim at preventing and managing decreases in intrinsic capability and enhancing health of the people.[16] However, the evidence for strategies to achieve care integration across health system remains limited.[17–19] In this paper we understand public health as defined by Winslow "the art and science of preventing disease, prolonging life and promoting health through the organized efforts of society."[20] Contemporary public health has been discussed widely for example, by Kickbusch and Baum[21–23] and is described as the totality of the activities organized by societies collectively (though led by governments) to protect people from disease and to promote their health. This includes promotion of equity between different groups of the society, working across all sectors, and adaption of policies supporting health. The new public health is based on a belief that the participation of communities in activities to promote health is as essential to the success of those activities as is the participation of expert. Kickbusch[22] also suggests combining the social determinants approach with a commitment to individual and community empowerment. By addressing social determinants of health, public health often goes beyond the scope of health care challenging integrated care concepts to include social care services, health promotion, disease prevention into integration activities/processes. One of the many benefits of the public health approach is identifying community health needs and reorienting health care delivery and services to address these needs.[17,18,24] Few integrated care frameworks focus on the importance of addressing population health rather than it being concentrated within the boundaries of traditional health care services to support shifting away from fragmentation toward public health.[18,25,26]

The present evidence and previous reviews do not reveal the perspectives of public health in the literature regarding concepts and frameworks of integrated care. Since integrated care is a collective process, its implementation and performance depend on, for example, the collaboration between individuals and organizations, such as citizens, patients, their families, professionals, organizations and governments. Although working together, these actors may have different views, interests and objectives that should be incorporated into the concept of integrated care.

Aims of the review

The aim of this study is to explore and understand integrated care from a public health perspective by systematically mapping and analyzing the existing concepts and frameworks and revealing the gaps. Furthermore, based on the findings, to propose a model that could be applied to analyze public health orientation of integrated care.

Methods

We adopted a scoping review method described by Arksey and O'Malley[27] to map out the study. The framework of Arksey and O'Malley is underpinned by the view upheld by proponents of systematic reviews that the methods used throughout the different stages are conducted in a rigorous and transparent way and that the review process is documented in sufficient detail to enable the study to be replicated by others. This explicit approach increases the reliability of the findings and responds to any suggestion that the study lacks methodological rigor. Levac et al.[28] and Daudt et al.[29] address the strengths and limitations of scoping review methodology and encourage consistency in methods across scoping studies. One of the strengths are the scoping review's ability to provide an overview of the state of evidence in a field. It may include a wide range of study designs and methodologies and it is a tool for mapping broad and diverse topics. For example, Levac et al. point out that a limitation is Arksey and O'Malley's framework's inability to provide an assessment of the quality of the literature. The assessment itself is a significant task and should be

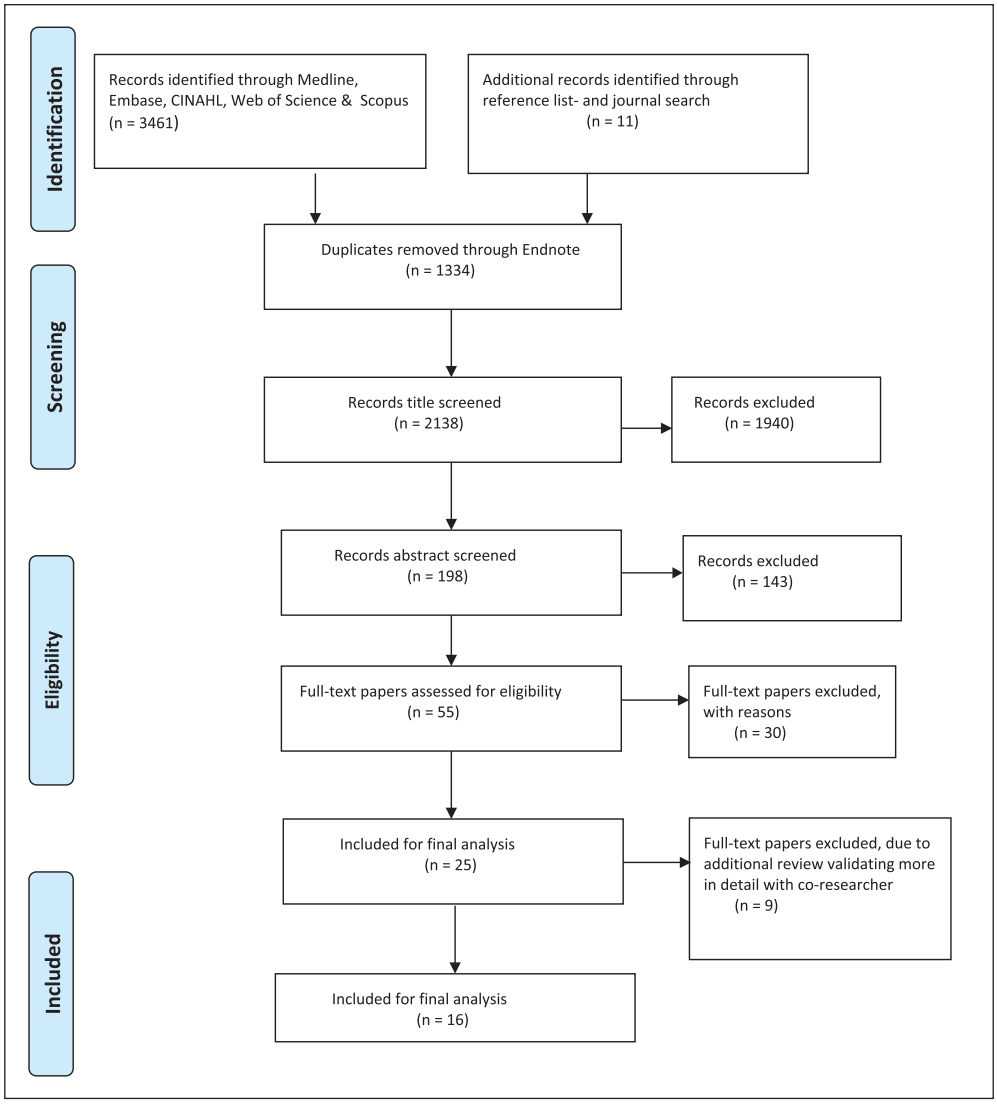

Figure 1. Flow chart of the literature search process.

performed using validated instruments. We have applied the PRISMA-ScR for checking the rigor of our methodology.[30] We conducted the present scoping review by applying the original framework developed by Arksey and O'Malley because it was a clearly and systematically described approach[27] fitting well into mapping the field of interest:

Step 1: Identifying the research question

The starting point was to identify the detailed review question to be addressed as this guides the way that search strategies are built. Usually the format of PEO (population, exposure, outcome) helps review researchers to formulate the research question.[36] However, in our study the format was not applicable because we were mainly interested in mapping theorical concepts and their connections. We developed instead the research question in our team and derived keywords to applied and inserted them into a block search. This scoping study was guided by the following research questions: (a) What concepts, and definitions are used in investigating integrated care? (b) What are the domains/elements of these approaches? (c) What are the common key domains across the frameworks that can be adapted in the analysis of integrated care in a country context (Denmark in this case)?

Step 2: Identifying potentially relevant frameworks for the review

We identified articles describing the use of framework and elements of integrated care in several ways: (a) We searched Embase, Medline, CINAHL, Scopus and Web of

Science databases in September-October 2020 with initial keywords "integrated care," "chronic disease," "framework," "effect," and "public health" First, we applied the search term public health, and then we added more specific search terms that characterize public health elements. Furthermore, all five of the keywords mentioned above were initially searched separately in the mentioned databases. A combined search of the separate searches was completed with the Boolean operator AND. (b) Further on, we included sub-keywords connected with the Boolean operator OR. The sub-keywords were for example "delivery of health care," "integrated care," "shared care" or "intersectoral collaboration." To narrow down the search we added sub-keywords "conceptual framework," "model," "health plan implementation," "assessment," or "impact." We discussed search criteria and databases with the consultation of a health science librarian. These searches used both subject headings and general terms both narrower terms and related terms and adapted terms for the other databases that included the concepts of shared care, coordinated care, collaborative care. We also searched manually the bibliographies of the found framework articles and identified further articles for inclusion in the review. We hand-searched by title and abstract the reference lists of the articles published in key journals in the field of integrated care (*International Journal of integrated care, Journal of integrated care, International Journal of care coordination and BMC health service research)*.

Step 3: Study selection

Once the relevant literature was identified through the initial search the following exclusion and inclusion criteria was applied to the article title and abstracts: Studies that mention in any way public health, integrated care, coordination, collaboration in healthcare system, implementation of integrated care, a model (i.e. framework, theory) or concrete key elements of integrated care is described. To select the relevant frameworks, the description should have included information about whether the framework addresses contextual factors and/ or elements of its design (e.g. personal, relationship-oriented, technical means of integration. Articles written in English or Danish, and used data from 2000 to 2020 were included. The exclusion was based on duplication or a failure to fulfill the core focus of the review and articles describing practical strategies such as strategies of access to care specific for measuring hospital activity for patients.

A total of 3461 studies were initially identified and saved in EndNote; of these 2137 remained for title screening after 1334 duplicates were excluded (PRISMA flow chart, Figure 1). The title screening excluded 1940 studies based on the inclusion criteria, including 197 papers for abstract screening. Of these, 143 were excluded based on the inclusion criteria, and 54 included studies for the final synthesizing (analysis) were read in full. An assessment against the inclusion criteria was carried out, which resulted in the rejection of 30 studies that were not relevant to the research question reason for rejection. At this point two researchers (A.A and C.C) performed a verification of the eligibility of inclusion of studies and consequently some more studies were rejected.

Nine papers were excluded after full-text reading, together with one co-researcher. The excluded papers did not describe any form of elements, rather integrated care process. We also excluded empirical studies on effectiveness of integrated care, and one particular study was excluded as it was a midterm report and did not provide information on building integrated care. Papers on economic analysis, self-assessment analysis, analysis of E-health, and ones measuring hospital activity for patients were excluded. Papers were also excluded because the aim was to evaluate the impact in terms of use of health services, clinical outcomes, functional status. Economic assessment, evaluation of impact Experimental study, empirical study not presenting a framework.

Step 4: Charting the data

According to Arksey and O'Malley.[27] charting is a technique to sort through the data for synthesis and interpretation. We developed a data extraction matrix (Table 1), which allowed us to compare information that we found crucial to understanding the identified frameworks and elements that the publications referred to. We recorded data on study characteristics (year of publication, aim, study design, study setting, the definition of integrated care, framework (models) and their elements. Data extraction was repeatedly complemented until it was found to be satisfactory

Step 5: collating, summarizing, and reporting the results

We illustrate framework development in a format of a timeline (Figure 2). To illustrate the interconnectedness of the frameworks, we present the chronology in a format of sentinel events leading to the elaborated framework. After this, we structured the results of the analysis of the included studies into a mind map of categories and their common domains across the frameworks (Figure 3).

Step 6: Consultation with stakeholders and experts

The conduct of this scoping study was done in collaboration with the researchers'team. We, for example, discussed, and reviewed keywords and refined them, if necessary. We also constantly reviewed and discussed the

Table 1. Data extraction.

Author; Year; Country;	Aim	Study design	Tools to support integrated care	Participants	Definition of integrated care	Models and framework of integrated care	Elements	Conclusion
Struckmann et al. 2018	To identify relevant models and elements of integrated care for multi-morbidity. To subsequently identify which of these models and elements are applied in integrated care programs for multi-morbidity	Scoping review (methodology of Amstromg et al.)	None		"The management and delivery of health services such that people receive a continuum of health promotion, health protection and disease prevention services, as well as diagnosis, treatment, long-term care, rehabilitation, and palliative care services through the different levels and sites of care within the health system and according to their needs"	Wagner et al. (1996) Chronic care model (CCM); John Hopkins University (2001) Guided care model (GCM) Roughead et al. (2011) Multidisciplinary, person-centered, integrated and coordinated model of care Muth et al. (2014) Adriane principles Sampalli et al. (2012) Integrated model of care	(CCM) and GCM) were most often referred to. elements most included were; self-management, comprehensive assessment, interdisciplinary care and person-centered care	Most programs identified build on CCM (chronic care model)
Briggs et al. 2018	To identify and describe the key elements of integrated care models for elderly people reported in the literature	Review of reviews using systematic search method	None		"services that are managed and delivered so that people receive a continuum of health promotion, disease prevention, diagnosis, treatment, disease-management, rehabilitation and palliative care services, coordinated across the different levels and sites of care within and beyond the health sector, and according to their needs throughout the life course"	WHO Integrated care for older people (ICOPE)	Elements comprehensive assessments and integrated care plans; shared decision-making and goal setting; support for self-management; multidisciplinary teams; unified information or data-sharing systems; community linkages or integration; and supportive leadership, governance and financing mechanisms.	Elements of integrated care focus particularly on micro level care integration. Lack of meso and macro level integration

(continued)

Table 1. (continued)

Author; Year; Country;	Aim	Study design	Tools to support integrated care	Participants	Definition of integrated care	Models and framework of integrated care	Elements	Conclusion
Nolte et al. 2016 Denmark, Germany, The Netherland's	To understand the processes behind successful projects that achieved in some form "routinization" and informed system-wide integrated care strategies	Case study	A policy framework Contractual arrangements that support the creation of a secure environment with clear roles and responsibilities, allocation of tasks.	People with chronic conditions (COPD, type 2 diabetes, heart disease and older adult at risk of falls who reside in Østerbro; The population of Kinzigal region people enrolled (10.190); People with chronic disease (diabetes, COPD, CVD) in Masstricht region		Integrated effort for people living with chronic disease (SIKS); The gesundes Kinzigtal integrated care model, and Zio a care group All models build on the chronic care model (CCM)	Patient-centredness is at the core of the three integrated care models. Elements of the models incorporate Patient self-management support, shared decision-making and the development of care plans tailored to individuals' needs and preferences	Each model showed evidence of improvements on a number of service and patient outcomes shaping country-wide integrated care polices
Nuno et al. 2012	To highlight the current relevance of the innovative care for chronic conditions, as well as to assess its impact on health policy development and health care redesign to date	The authors reviewed the literature (not review)	None			World Health Organization (2002) The Innovative care for chronic conditions framework (ICCC) Wagner et al. (1996) Chronic care model (CCM)	Guiding principles of the ICCC framework; Evidence-based decision making, population health approach, focus on prevention, emphasis on quality of care and systemic quality, flexibility/adaptability, integration as a core and fractal of the framework	Great potential for the ICCC framework to serve as a road map, with special emphasis on integration and on the role of community and political environment

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Table 1. (continued)

Author; Year; Country;	Aim	Study design	Tools to support integrated care	Participants	Definition of integrated care	Models and framework of integrated care	Elements	Conclusion
Busetto et al. 2017 Germany	To analyze the implementation of integrated care at a German geriatric hospital and explore whether the use of a context-mechanism-outcomes based model provides insight into when and why beneficial outcomes can be achieved	Semistructured interviews with health staff	None	Patients with complex, multiple age-related conditions that are in temporary need of acute care before discharged to transferred to long-term facility.	"The management and delivery of health services such that people receive a continuum of health promotion, health protection and disease prevention services, as well as diagnosis, treatment, long-term care, rehabilitation, and palliative care services through the different levels and sites of care within the health system and according to their needs"	Wagner et al.(1996) Chronic care model (CCM)	Elements: Health system, self-management support, delivery system design, decision support, clinical information system and community	The main components of an integrated care intervention have been identified. Given the fact that not all CCM elements were implemented it is likely that the integrated care intervention has not reached its full potential yet and therefore it is recommended to increase efforts to implement structured self-management support strategies
Busetto et al. 2016 Germany	To investigate the leadership, management and delivery of integrated care What are the context, mechanism and outcomes of integrated care for people with type 2 diabetes? What are the relationships between context, mechanism and outcomes of integrated care for people with type 2 diabetes?	Systematic review	None		"The management and delivery of health services such that people receive a continuum of health promotion, health protection and disease prevention services, as well as diagnosis, treatment, long-term care, rehabilitation, and palliative care services through the different levels and sites of care within the health system and according to their needs"	Wagner et al.(1996) Chronic care model (CCM)	Elements of the model: Self-management support, delivery system design, decision support and clinical information system	The integrated care intervention for type 2 diabetes found most reported barriers to the implementation process to be related to the organizational context and most facilitators to be related to the social context. Increase of staff involvement and satisfaction will help to decrease the barriers ay the organizational context level

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Table 1. (continued)

Author; Year; Country;	Aim	Study design	Tools to support integrated care	Participants	Definition of integrated care	Models and framework of integrated care	Elements	Conclusion
Hughes et al. 2020 UK	To conduct systematic hermeneutic review of literature covering integrated care strategies and concepts	Systematic hermeneutic review	Health agreements (Denmark) Program of Research to Integrate Services for the Maintenance of Autonomy (Canada)		Integrated care refers to both the methods that might be used to organize, fund and deliver health and related services and the interrelated goals of better outcomes, experiences, and use of resources	Wagner et al. (1996) Chronic care model (CCM)	Elements of integrated care; Patient perspectives of integrated care, organizational strategies and policies to integrated care, conceptual models of integrated care and theoretical and critical analysis	Embracing ideas of complexity can open up opportunities for understanding integrated care as multiple, dynamic. Emergent, and inseparable from context
Koolen et al. 2018 The Netherlands	To design an integrated disease management model for patients with COPD	The COPDnet integrated care model was designed according to the guidelines of the European Pathway association	The COPDnet model includes a Quality Management System (QMS) and a set of regional network agreements about exacerbation management and palliative care.			Wagner et al. (1996) Koolen et al. (2018) The COPDnet integrated care model	Self-management support, decision support, delivery system design and clinical information system	Based om scientific theories and models, a new integrated disease management model was developed for COPD patients, named COPDnet
Palmer et al. 2019	To explain the methodology used to implement the integrated multi-morbidity care model and to describe how the pilot sites have adapted and applied the proposed methodology	Survey	None			The chronic care model The integrated multimorbidity care model	The integrated multimorbidity care model proposes 16 elements for the care and treatment of multimorbid patients. These components are categorized into five domains: Delivery of care; decision support; self-management support; information systems and technology; and social and community resources.	This common implementation strategy shows how care models can be adapted according to local and regional specificities.

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Table 1. (continued)

Author; Year; Country;	Aim	Study design	Tools to support integrated care	Participants	Definition of integrated care	Models and framework of integrated care	Elements	Conclusion
Vodopivec & Vrijhoef 2019	To offer insight into the strategies and interventions that are being used for designing and implementing integrated models of care rheumatoid arthritis patient group, and their outcomes.	Descriptive systematic literature review	None		"Health services that are managed and delivered so that people receive a continuum of health promotion, disease prevention, diagnosis, treatment, disease management, rehabilitation and palliative care services, coordinated across the different levels and sites of care within and beyond the health sector, and according to their needs throughout the life course"	WHO (2016) Framework on integrated people-centered health services (IPCHS).	The IPCHS is based on five interdependent elements: empowering and engaging people, strengthening governance and accountability, reorienting the model of care, coordinating services, creating an enabling environment.	Findings suggest that for rheumatoid arthritis, integrated care is in the early stages of development. Strategies focusing on patient outcomes and patient satisfaction were found to be prioritized
Ackermann 2010 US	To develop and implement an integrated framework go guide clinic-community linkages for the prevention of diabetes in an ongoing randomized effectiveness trial known as Clinical-community linkages (CC-Link) study	Cluster randomized effectiveness trial	None	2 general medicine clinics, 3 suburban clinics and 5 urban safety-net clinics. Community administrator (YMCA)		The chronic care model (CCM) The Clinic community-linkage (CC-Link) framework	Community resources and policies, healthcare organizational leadership and policies, self-management support, delivery system design, decision support and clinical information systems Exchange of organizational personnel either "inreach" or "outreach." Movement of patient or patient information either inreferral or outreferral	In this context, the CC-Link Framework evolved to focus on how best to develop and integrate structural resources defined by the Chronic Care model in order to help primary care teams implement and sustain strong community linkages for prevention.

(continued)

Table 1. (continued)

Author; Year; Country;	Aim	Study design	Tools to support integrated care	Participants	Definition of integrated care	Models and framework of integrated care	Elements	Conclusion
Mitchell al. 2015 Australia	To identify outcomes of different models that integrate specialist and primary care practitioners, and characteristics of models that delivered favorable clinical outcomes.	Systematic review	None		Integrated primary–secondary care was defined as vertically integrated models of care for managing chronic/complex chronic disease in individual patients, which involves direct interaction between primary and secondary care providers	Brisbane South Complex Diabetes Service; The Leuven Diabetes Project; Diabetes shared medical appointment system; GPwSI-led specialist diabetes clinics; North Dublin Diabetes Shared Care Model; Rural Diabetes Integrated Care Clinic; Auckland Heart Failure Management study; COPD chronic disease management program; Bristol GPwSI dermatology service; Managing Complex Primary Health Care	Integrated primary–secondary care elements (1) interdisciplinary teamwork; (2) communication and information exchange; (3) the use of shared care guidelines or pathways; (4) training and education; (5) access and accessibility; and (6) a viable funding model	Compared with usual care, integrated primary–secondary care can improve elements of disease control and service delivery at a modestly increased cost, although the impact on clinical outcomes is limited. Future trials of integrated care should incorporate design elements likely to maximize effectiveness
Berntsen et al. 2018 Norway	To explore, apply, refine and operationalize quality of care framework	Qualitative evaluative review Interviews	None	19 persons with long-tern, complex care needs		Person-centered integrated care quality framework (PC-IC)	Goal identification Care planning Care delivery Goal evaluation	Gaps in care that are invisible with event-based quality of care frameworks become apparent when evaluated by a long-term goal-driven PC-IC framework. The framework appears meaningful to persons with multi-morbidity.

(continued)

Table 1. (continued)

Author; Year; Country;	Aim	Study design	Tools to support integrated care	Participants	Definition of integrated care	Models and framework of integrated care	Elements	Conclusion
Vuik et al. 2016	To propose a framework for population strategies in integrated care- whole populations, subpopulations, and high-risk populations and show how patient segmentation can support these strategies	Development and Description of a framework	None			A Framework for patient segmentation in integrated care	Elements of the framework: Whole Population: Macro-level integration applies to the whole population. Subpopulation: Meso-level integration provides integrated care services to a specific subpopulation. Often this subpopulation is based on a long-term condition High-risk population: Micro-level integration focuses on selected individuals deemed to be at high risk of certain outcomes	Segmentation provides a range of benefits to policy makers and care providers who aspire to integrating health care. A segmentation data analysis can help select a homogeneous target population and tailor an intervention to different patient types within a population. policy makers should consider the significant benefits of patient segmentation analysis for integrated care and support its use
Busetto et al. 2015 The Netherlands	To provide an overview of the different types of integrated care interventions for type 2 diabetes and to report their outcomes	Systematic review	None		'the management and delivery of health services such that people receive a continuum of health promotion, health protection and disease prevention services, as well as diagnosis, treatment, long-term care, rehabilitation, and palliative care services through the different levels and sites of care within the health system and according to their needs'	The chronic care model (CCM)	Self-management support, delivery system design,decision support and clinical information system	Future research would benefit from a more uniform understanding of integrated care as well as intermediate outcome measurements that allow for the establishment of a chain of evidence from specific intervention types to specific outcomes achieved.

(continued)

Table 1. (continued)

Author; Year; Country;	Aim	Study design	Tools to support integrated care	Participants	Definition of integrated care	Models and framework of integrated care	Elements	Conclusion
Minkmann 2016 The Netherlands	To describe the results of multiple studies that resulted in a validated generic quality management model for integrated care. The Development Model for Integrated Care (DMIC)	A literature review, a Delphi study and concept mapping study	None			Development Model for Integrated Care (DMIC)	"quality care" (nine elements), "performance management" (16 elements), "inter-professional teamwork" (three elements), "delivery system" (18 elements), "roles and tasks" (eight elements), "patient-centredness" (nine elements), "commitment" (11 elements), "transparent entrepreneurship" (seven elements) and "result-focused learning" (12 elements).	The Development model for integrated care has the potential to serve as a research framework for integrated care, and the use as an evaluation tool on multiple levels

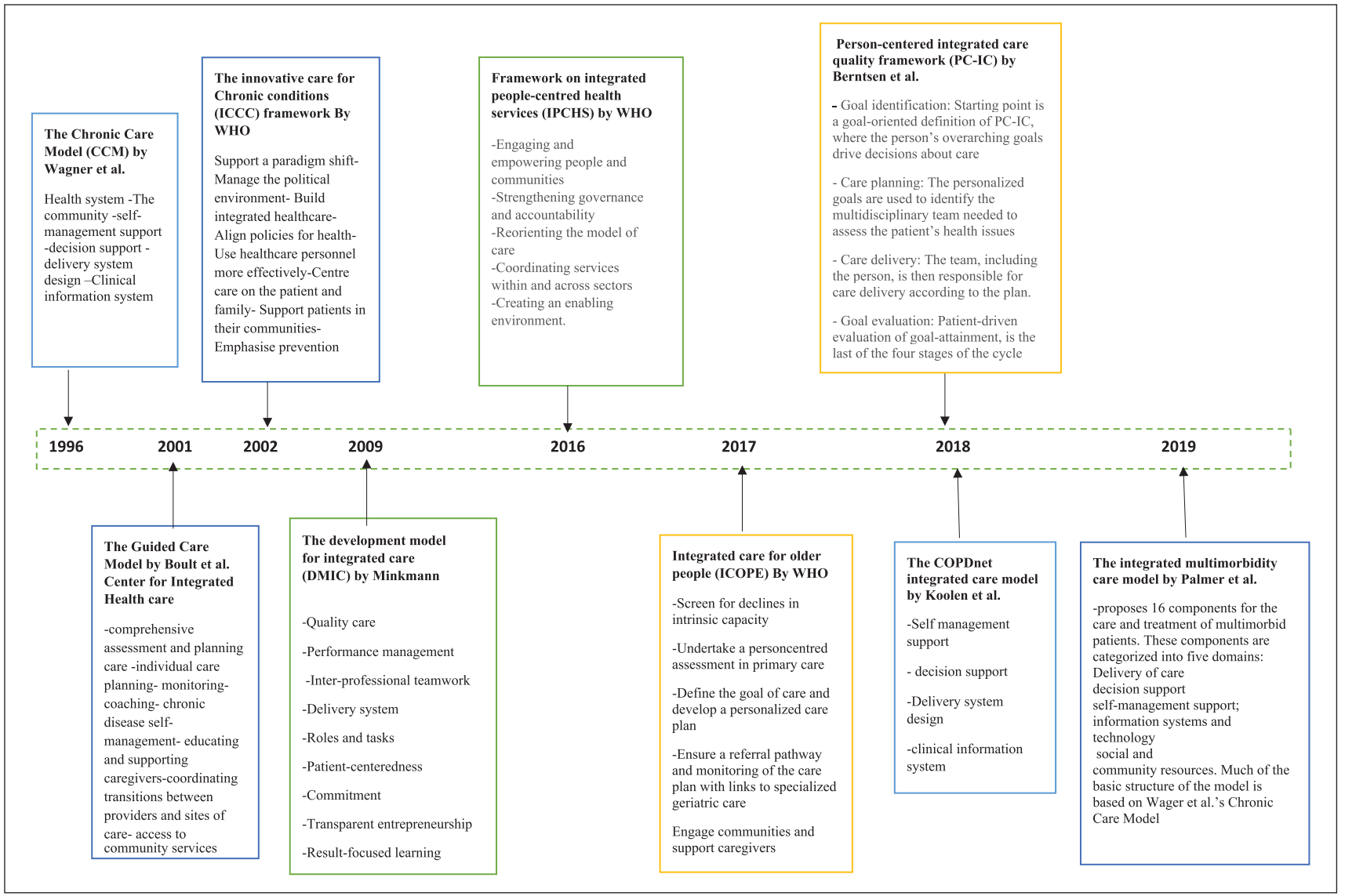

Figure 2. Sentinel events in the development of integrated care framework/models.

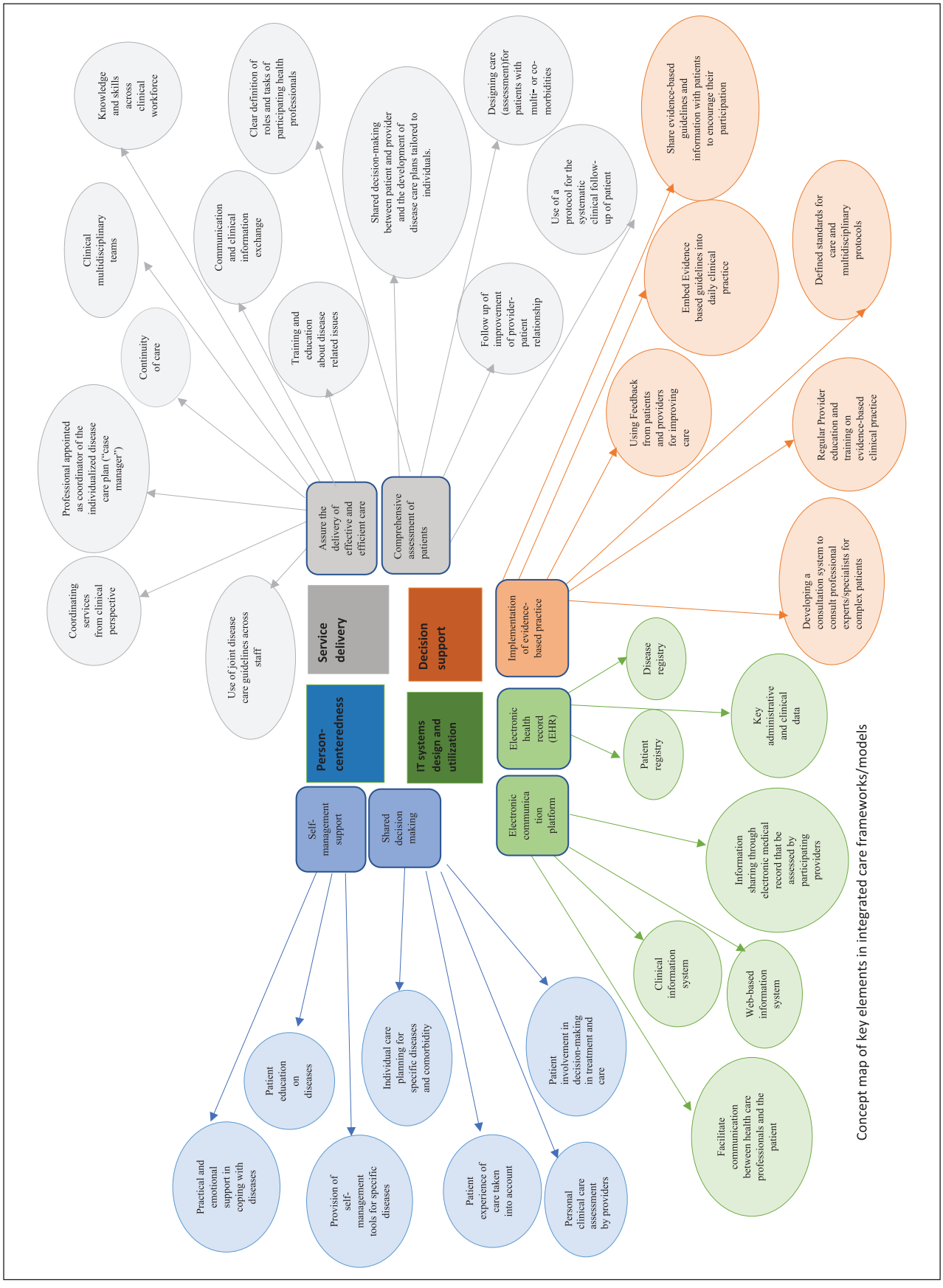

Figure 3. Concept map of key elements.

preliminary results and finalized together the final analysis steps to ensure construct face validity. After the final results were preliminary written, one external expert in the field of primary health care checked that our findings make sense.

Results

Altogether 16 papers were included in this review, which included seven systematic reviews, one literature review, one case study, one survey, two qualitative studies, one cluster-randomized effectiveness trial followed by three theoretical papers describing the development of models and frameworks. The papers were published between 2010 and 2020 and were conducted in Europe ($n=14$), the US ($n=1$), and Australia ($n=1$).

The sentinel events of the development of integrated care frameworks

Sentinel analysis. To illustrate the interconnectedness of the frameworks/models, we present a chronology of the frameworks that followed in the development chain (Figure 2). The frameworks/models describe the elements/domains for integrated care. Many of the presented frameworks are inspired by the Chronic Care Model developed by Ed Wagner in 1996,[31,32] which became a cornerstone to improve care delivery for chronically ill patients.

Synthesis of existing frameworks and models of integrated care

Among 14 models/frameworks were mentioned, applied, or recommended in the included papers, strikingly only two frameworks consider public health elements. Both models originate in WHO.[33,34] These frameworks include a population health approach and focus on prevention among its guiding principles. The frameworks are aimed at all phases in the prevention and management of chronic conditions and combine the principles of "integrated" and "people centered" care, its vision is to encourage and guide the paradigm shift of healthcare provision toward, amongst other aims, a system that better corresponds to the needs of people with chronic disease. The frameworks/models are summarized in Table 1.

Other models in the literature focus on integrated care for older people and specific diseases.[35–40] The approach supports providing health and social care services by promoting governance and integrated service models that maintain or prevent avoidable declines in older people's intrinsic capacity and functional ability. To achieve this, WHO suggests that systems and services need to be organized, coordinated, and delivered around the preferences, needs, and goals of older people, rather than the structural needs of services themselves.[36]

Few models had focused on integrated care specifically for multi-morbid persons. These models focused on several limitations currently faced in the treatment of multimorbid patients and they recognize that fragmented care may be due to a lack of integration. The literature shows that although many healthcare professionals are well trained to manage single chronic diseases by following official clinical guidelines for specific diseases, they are not specifically trained to handle patients with multimorbidity.[41–43]

Elements of existing integrated care frameworks

The findings of this study indicated that most of the elements identified were outside the focus of the public health perspective. The identified frameworks/models focused particularly on clinical processes, and there was a relative failure to address the wider determinants of health. We grouped the identified concepts/elements into four main categories and seven sub-categories. Figure 3 displays the concept map of the key elements of the existing integrated care frameworks/models.

Overall, most elements were connected to the *Service delivery* ($n=13$), as many articles described elements relating specifically to the care process. Within this component *continuity of care* was described as a key element to successful integrated care as it facilitates good communication and coordination among professionals and good quality over time. Another element which was frequently mentioned is *multidisciplinary teams* consisting of multidisciplinary staff group with different educational backgrounds and areas of expertise and who collaborated between health care providers and organizations across sectors. An element often mentioned was *the improvement of provider-patient relationship*, including improvement of the respectful interaction between the patient and the care provider, and establishment of shared decision-making. Another aspect that integration depends on is a *clear definition of roles and tasks of participating health professionals* which is mentioned in the literature. Overall, elements in service-delivery covered clinical perspectives of the patient pathways in the health care system focusing on the treatment of chronic diseases. Issues beyond treating diseases, such as health promotion or disease prevention elements were scarce.

Elements of *person-centeredness* ($n=7$) focus on integrated patient care process supporting and delivering care adjusted to (for instance multi-morbidity). The importance of involving patients and other caregivers in *shared decision-making* was highlighted in many of the included framework. Decision-making was often described as a process where the patient becomes more involved as a decision partner in the care process. Another element identified frequently is *self-management support* which is

found to be an important aspect in the care of patients with chronic health conditions. An effective self-management strategy should, include the initiation of behavioral change, be tailored individually, take the patient's perspective into account, and be adapted to the course of the patient's disease and comorbidities. Our findings showed that elements associated with person-centredness, were particularly oriented toward clinical service (treatment, rehabilitation, medication). Initiatives from public health perspective (such as instructions for physical activity, how to make citizens active in interventions how to advice patients to make an active role in changing their eating habits and making healthy choices etc.) were few. *IT systems design and utilization* compromise of ($n=7$) elements. *Electronic communication platform and electronic health record (EHR)* are the two sub-components. These elements are with the purpose of exchanging information between professionals, patients, and informal caregivers, and thereby optimize the care process. These were described as relevant in several studies. An EHR is used to register key administrative and clinical data of patients. Relevant clinical parameters for the evaluation of the individual health status at baseline, as well as the change of health status over time, is systematically registered in the EHR. The data may be used to support the clinical decision-making process at the individual level. An *electronic communication platform* is applied to facilitate digital communication between health care professionals and the patient. Our analysis did not identify any elements related to public health data or data-sharing of data on health behaviors, and social determinants such as socioeconomic status, housing stability, and nutrition habits.

Elements related to *decision support* were the least mentioned in the included literature ($n=6$). It is based on evidence-based guidelines providing clinical standards for high-quality chronic care. In addition, sharing evidence-based guidelines and information with patients was described to encourage patients' participation. The component decision was reported to aim at fostering the training of the multidisciplinary team, by defining standards for care and multidisciplinary protocols and developing a consultation system to consult professional experts. The findings showed that there were no suggestions about evidence-based decision-making in public health practice as part of integrated care.

A suggestion for exploring integrated care from a public health perspective

The literature reviewed in this study uncovered a range of concepts/elements associated with improvement of integrated care. Moreover, the development of models and frameworks to understand and guide thinking on integrated care has grown and evolved over time. Many health systems attempt to develop integrated and public health-oriented systems, but knowledge of interventions and strategies to support this effort is limited.[17,19,44] The results of this review clearly reveal some deficits in the existing models such as lack of actions to address the wider social determinants of health, non-existent focus on health promotion and prevention, non-explicit embracement of intersectoral action and partnerships, deficits in addressing health in vulnerable groups and in understanding the importance of community engagement. Based on our findings, we suggest an approach that could facilitate the development of integrated care to focus more toward the public health paradigm (away from the clinical care perspective). Kickbusch[22] and Baum[23] described contemporary public health as the totality of the activities organized by societies collectively (though led by governments) to protect people from disease and to promote their health. This includes promotion of equity between different groups of the society, working across all sectors, and adaption of policies supporting health. The contemporary public health is based on a belief that the participation of communities in activities to promote health is as essential to the success of those activities as is the participation of experts. Kickbusch also suggests combining the social determinants approach with a commitment to individual and community empowerment. The elements mentioned here were seemingly lacking from the existing frameworks. We therefore present here a complementary model that would fill the gaps in the existing models. Some of the identified core categories person-centered care, service delivery, IT system designs formed a starting point to elaborate an expanded understanding of integrated care toward the public health paradigm (Figure 4).

As presented in Figure 4 our understanding adapts elements that are missing in the current integrated care models/frameworks expanding integrated care beyond clinical care and treatment of chronic diseases. The text describing the new elements in the figure is highlighted. Our model suggests combining the social determinants approach with a commitment to individual and community empowerment, health literacy, identifying community health needs and reorienting health care delivery and services to address these needs.

Person-centeredness represent the perspective of improving citizens holistic well-being through the active engagement of service users. For example, it describes how service users should be engaged in shared decision-making and services planning purposes, as well as supported by providers to self-care and self-management and including efforts to improve their health literacy. Support for healthy behavior, guidelines on how to enable citizens to take an active role in interventions and participate in decision-making regarding their health, treatment, and life situation (employment, education, housing, family issues etc.) are some of the essential elements. Furthermore, the model emphasizes *community involvement as* citizens

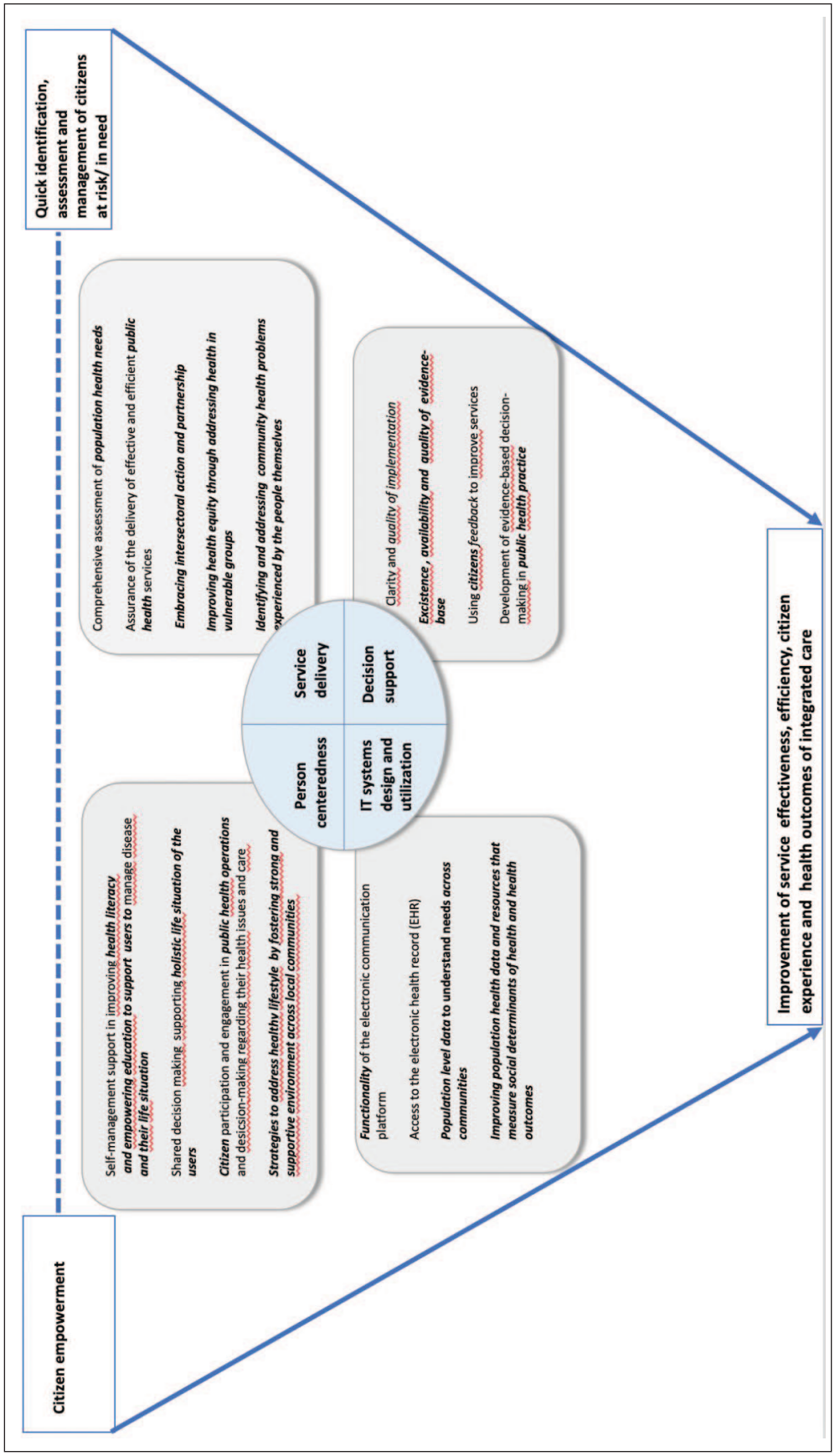

Figure 4. Suggestion for an integrated care model with a public health perspective.

participation and engagement in public health operation as crucial for integrated care development; this requires focusing holistically on the whole family and community and providing support, that empowers both the individual and their community within their environment. These elements are not only part of the health *care* system but are parts of the broader social determinants of health (and the essential public health operations)[21–23,45] that play an important role for the citizens' health and well-being.

Service delivery should aim to assure the delivery of effective and efficient public health services by working with other sectors (schools, employment, housing etc.) embracing intersectoral action and partnership. Conducting comprehensive community health assessments—can, for example, facilitate the planning and development of services, and ensure that health services are responsive to local community needs. Improving population health requires efforts to change behaviors and living conditions across communities including vulnerable groups (e.g. people living in deprived neighborhoods, the elderly, and children). Identifying and addressing community health problems experienced by the people themselves. It also means that accountability for population health is spread widely across these communities, not concentrated in single organizations or within the boundaries of traditional health and care services.

IT systems design and utilization aim at supporting decision-making for population health which requires expanding the fundamental types of data collected, analyzed, and used. Yet, notably absent in most current health IT systems are lack of comprehensive data on health, behaviors, and social determinants, which are more significant drivers of health than medical care service utilization. Data systems to support an effective flow of information among health system and community partners to gain a deeper knowledge of the needs of the population are needed.

Decision support should focus stronger on evidence-based decision making in public health practice. Some of the key components include making decisions based on the best available scientific evidence, using data and information systems systematically, applying program-planning frameworks, engaging the community in decision making, conducting sound evaluation, and disseminating or incorporating what is learned.

All domains/elements displayed in the model need to interact to achieve citizen empowerment together with quick identification, assessment, and management of citizens at risk and in need. This will result in improvement of service effectiveness, efficiency, citizen experience and health outcomes in integrated care. In terms of the content of the model, it can be agreed that it provides an analytical tool and importantly a planning tool for public health.

Discussion

Healthcare providers struggle with the question as to which elements are essential for developing, improving, and sustaining integrated care. However, there is no overview or consensus about a universal set of relevant domains/elements for integrated care.[5] Our study showed that integrated care is a polymorphous concept with several underlying concepts, possible interventions, and variation in practice. Despite differences in settings, there are some common concepts/elements in the frameworks which are important for the improvement and development of integrated care services. In the present study we identified and described 33 elements (Figure 3). When we compare the synthesized categories with existing frequently used frameworks/models like the chronic care model (CCM) there is a resemblance in for instance service delivery and decision support.[46] Research on integrated care seems to have focused on the service delivery of integrated care, with a recent shift toward person-centeredness as a way of shaping any aspect of processes and interaction with patients and their health providers.[5,47] A study conducted by Greenfield et al.[47] showed that person-centered and coordinated care is intended to address fragmentation and to activate patients to engage in care planning, decision making and self -management, moreover it is important to acknowledge the patient and their contextualized experiences.

Our findings highlight that integrated care elements focus particularly on clinical processes and there is a relative lack of evidence regarding public health elements addressing the social determinants of health. In case of people with multiple comorbidities, many of whom are people from lower socio-economic groups, the integrated care efforts have mainly focused on the medical condition not including social models of health to match people's circumstances.[35,36,41,42] This means that improving people's health requires integrated care efforts which are widely spread across communities, not concentrated in single organizations or within the boundaries of traditional health care services.[37–39,48] The emphasis on the clinical focus is consistent with findings in studies of the development of frameworks/models of care generally.[6,49] This emphasis most likely reflects the complexity of addressing the issues from the whole system perspective instead of solely from the clinical or organizational perspective.

A growing number of patients suffer from chronic and overlapping health conditions (e.g. multimorbidity). Therefore, the person and population health-centered view is essential, as it recognizes that most health and social problems are inter-related. This is especially important in the context of integrated care as the person-centered and population-centered perspective can link the health and social systems.[17,19,50] Goodwin[4] argues that new ideas have emerged which have taken our understanding of integrated care in a different direction. The two most fundamental are the recognition that engaging and empowering people and communities should be a central element to any integrated care strategy and that integrated care strategies might be most successful when it becomes population-oriented and

focusing on promoting health, by bringing together health and social care with other elements such as schools, housing, communities, employment etc. These ideas can be way forward to bringing community assets together to promote health, equity, empowerment, and wellbeing to populations. Our suggested model can therefore be applied to explore integrated care from a public health perspective.

The scoping review demonstrates that most of the described integrated care frameworks have emerged as articulated interventions intended to improve care for patients with chronic conditions, multi-morbidities, and patients from specific groups such as the elderly and frail. However, less emphasize has been put on public health elements, such as including focus on health promotion, prevention, embracing intersectoral action and partnerships. Furthermore, addressing health in vulnerable groups, addressing the social determinants of health, and understanding the need and solutions through community outreach are crucial.[17,19] Leutz[25] argues that the more severe demands are in terms of needs corresponds to an increase in the introduction of integrated care frameworks. The identification of specific country, setting and population, therefore should be a starting point in developing any integrated care strategy. The elements associated with successful integrated care frameworks/models include enabling patient engagement and self-management support, developing multidisciplinary team working culture, including public health, adopting evidence-based practice and the application of IT system designs. One of the key learnings have been that, while there are some common elements, which are essential for integrated care, ultimately all frameworks and models need to be contextualized to local needs and resources. Our findings show that the contemporary public health has rarely been incorporated to the identified models/frameworks including promotion of equity between different groups of the society, working across all sectors, and adaption of policies supporting health. According to Kickbusch and Baum[22,23] the new public health is based on a belief that the participation of communities in activities to promote health is essential. Furthermore, one of the greatest benefits of the public health approach is the identification of community health needs and reorienting health care delivery and services to address these needs. These elements were scarce in the included frameworks of our scoping review.

Strengths and limitations

To our knowledge, this is a novel attempt to develop a model with an explicit focus on public health elements to be utilized in the future analysis of integrated care. Our search strategy included only publications from scientific databases and thus potentially relevant gray literature was not included in the review. Some of the gray literature may have frameworks or reports that are not published. A quality assessment of the included studies was skipped (this does not include in Arksey & O'Malley's framework) due to the fact that our review was about mapping existing concepts and not about finding evidence of the effectiveness of interventions. This indicates that it is not necessarily reflective of the quality of research regarding these elements or their relative importance to only focus on how often a domain or element is mentioned in these papers; this demonstrates that they are frequently studied and mentioned in the context of integrated care.

Conclusions

The results of the scoping review show there is a need to develop integrated care models that include public health elements. The present study revealed that the identified frameworks/ models were particularly oriented toward clinical services (treatment, rehabilitation, medication). The focus was on multimorbid patients, patient care processes supporting and delivering care, and disease-oriented clinical parameters for the evaluation of the individual health status. There was a relative failure to address the wider social determinants of health, health promotion and vulnerable communities. In the present study a suggestion for a model was developed including stronger emphasis on public health elements. Our model present additional elements such as individual and community involvement, citizen empowerment and support of health literacy, stronger orientation to health promotion, disease prevention and health protection, embracement of intersectoral partnership, identification of vulnerable communities, identification and addressing of community health needs. Population level data to understand needs across communities and improving population health data and resources that measure social determinants of health and health outcomes as well as development of evidence-based decision-making in public health practice.

The improvement of integrated care continues to be complex as there is no consensus about a set of relevant elements for integrated care. While it was possible to identify some of the core elements of integrated care, we cannot conclude that one framework would support integrated care better than another. Any integrated framework/model development is strongly context bound meaning that, care can be successful if it does take into account the unique needs and characteristics of the population it aims to serve. Despite the significant interest in integrated care, the present review shows that integrated efforts have rarely included a broader perspective into health of local population.[18,19,44] Integrated health care encompassing public health or community health remains a neglected area in many European settings.

Significance for public health

Many health systems attempt to develop an integrated care approach that is a whole population health-oriented

system. However, knowledge of strategies to support this effort are scarce and fragmented. To achieve sustainable current and future health care systems, integrated care frameworks need to include a public health perspective to address the importance of mapping the unique need and characteristics of the population. The present study explores the elements that are necessary to complement the present understanding of integrated care and transform it toward public health paradigm comprising also a social determinants approach with a commitment to individual and community empowerment, health literacy, stronger orientation to health promotion, disease prevention, identification of vulnerable communities and embracing intersectoral action and partnership.

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