Impact of person-centered and integrated care for community-living older adults on quality of care and service use and costs
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General introduction
The main objective of this thesis was to evaluate the effectiveness of Embrace, a person-centered and integrated primary-care program for older adults, in terms of perceived quality of care, as well as service use and costs. A second objective was to gain insight into the change in professional roles, especially the new role of case manager, which might contribute to a better understanding of the effectiveness of such a new service. This first chapter describes the key concepts and the objectives of this thesis, and contains the research questions and outline of the thesis.

Ageing population and changes in healthcare needs

One of humanity’s major successes is the substantial increase in life expectancy. This has led to a major increase in the proportion of older adults in the general population. Better hygiene, improved living conditions, healthier nutrition, and better medical care have led to a significant increase in life expectancy at birth since the early nineteenth century. However, old-age mortality has decreased only recently, due to ongoing improvements in healthcare delivery, leading to an increased life expectancy for those 65 years and older. At the same time, fertility rates have decreased over the last few decades. It is therefore expected that the world population of those 65 years and older will increase by 160% between 2008 and 2040, whereas the population of those 80 years and older will increase by 233%. Estimates are that in 2040 approximately 26% of the inhabitants of the Netherlands will be 65 years or older, with one third of them 80 years of age and over.

These demographic transitions have also led to changes in the nature and scope of demands for healthcare. Although life expectancy has increased, the number of years spent in good health has not increased proportionally. As a result, people are living longer but relatively more are doing so with disabilities. Almost a quarter of older adults have four or more chronic conditions, and nearly a third of older adults are limited in their movement or experience at least one limitation in the activities of daily life. Moreover, the prevalence of multiple chronic and geriatric conditions, such as cognitive impairment, falls, incontinence, depression, and loneliness, is still increasing among older adults. The
care and support for these people with multiple conditions usually does not fit standardized treatment plans, and, in most cases, several different professionals are involved.\textsuperscript{6,11} As a result, current organization of care and support is complex and requires a high level of coordination.\textsuperscript{12} Moreover, many older adults are unable to advocate for themselves and may have no one to do so on their behalf.\textsuperscript{13}

Simultaneously, modern societies are being challenged to contain healthcare expenditures that threaten to spiral out of control.\textsuperscript{14} In the past few decades, total expenditure on healthcare as a percentage of Gross Domestic Product (GDP) has increased more than economic growth within the countries of the Organization for Economic Co-operation and Development. In the Netherlands in 2012, about 11.8\% of GDP was spent on healthcare, with 4.1\% of this going to long-term care. It has been extrapolated that, without policy changes, total healthcare costs will continue to rise to more than 22\% of GDP in 2040, with 9\% of this being spent on long-term care.\textsuperscript{15} At the same time, an ever-smaller proportion of the population will have to bear these costs for this increasing proportion of older adults.\textsuperscript{14}

**Healthcare fragmentation and incompatibility with changing demands**

Healthcare systems in most developed countries have a history of responding to acute and short-term care problems, and therefore they are not yet able to address the comprehensive and changing long-term demands for care of older adults.\textsuperscript{16} Specializations, technological improvements and structural barriers have led to fragmentation of care and support.\textsuperscript{17-19} In addition, the financing of healthcare systems has become as fragmented as the provision of care and support. As a result, the healthcare landscape in many countries is dominated by competing providers and financers of care (including social care) and support. Each of these organizations has its own objectives, obligations, and capabilities, accompanied by dedicated funding streams.\textsuperscript{20,21} As an example, a brief explanation of the Dutch healthcare system is presented in Box 1.

Specialization, structural barriers, and competition between organizations hamper essential improvements in the quality of care and
lead to inefficient use of resources.\textsuperscript{20,22-26} Multiple organizations provide and finance part of the care and support for the older adult, but this leads to various conflicts of interest, discontinuity of care, poor flows of information, and misaligned incentives within and between financers and providers of care and support.\textsuperscript{21} Care coordination is not part of most reimbursement systems, despite its growing importance, and, as such, there have been almost no incentives to take up the role of coordinator or to deal efficiently with available resources.\textsuperscript{13,27} Professionals, finding themselves part of manufacturing-inspired productivity models of care and support, primarily focus on technical skills and procedures related to a specific part of care, while unintentionally losing touch with the person’s holistic demands and requirements.\textsuperscript{24}

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\textbf{Box 1 The Dutch healthcare system} \\
The Dutch healthcare system is a complex, government-regulated, combined private and social insurance-based system. It is divided into social, primary, secondary, and long-term care.\textsuperscript{28} \\
- Social care is covered by the Social Support Act (in Dutch: \textit{Wet Maatschappelijke Ondersteuning}). It is the responsibility of the municipalities, which are mainly tax-funded. Social care includes care for and support of people who are in need of domestic help, personal care, day care, and sheltered housing, and also includes support for caregivers. \\
- Primary and secondary care is covered by the Health Insurance Act (in Dutch: \textit{Zorgverzekeringswet}). It is mandatory for all citizens to have basic health insurance as provided by private insurers; this can be complemented by an optional supplemental insurance. The statutory benefits package is regulated under public law and covers almost all primary and secondary care, such as access to a general practitioner (GP) and specialist care, hospital admissions, prescription drugs, paramedical care, etc. In most instances, patients enter the primary-care system through a visit to their GP, who acts as a gatekeeper for secondary care. \\
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Long-term care is covered by the Chronic Care Act (in Dutch: *Wet Langdurige Zorg*) and is tax-funded, with additional patient copayment. Long-term care and support is provided to people who are certified by the state, and need intensive care or close supervision. It includes long-term stay in an institution, personal care, and nursing support at home.

**Overcoming fragmentation: person-centered and integrated care**

To improve public health, improve the patient experience, and reduce per capita costs, a fundamental change in the way health services are managed, delivered, and funded is needed. It is assumed that person-centered and integrated care (see Box 2) will help to overcome fragmentation, improve quality of care and outcomes, and increase the sustainability of healthcare systems. Person-centered care places older adults, their informal networks, and their communities at the center of the healthcare landscape. This focus will help the system to shift, organize, and coordinate care into an integrated service, according to the health-related needs and expectations of older adults, their informal networks, and the community. Adapting person-centered and integrated-care approaches, as such, requires a strong primary-care foundation for the healthcare system.

**Box 2 Definitions of person-centered care and integrated care**

*Integrated health services* are, as defined by the World Health Organization, “health services that are managed and delivered in a way that ensures that people receive a continuum of health promotion, disease prevention, diagnosis, treatment, disease management, rehabilitation and palliative care services, at the different levels and sites of care within the health system, and according to their needs throughout their life course.”
Person-centered health services are, as defined by the World Health Organization, “an approach to care that consciously adopts the perspectives of individuals, families and communities, and sees them as participants as well as beneficiaries of trusted health systems that respond to their needs and preferences in humane and holistic ways. People-centred care requires that people have the education and support they need to make decisions and participate in their own care. It is organized around the health needs and expectations of people rather than diseases.”

Primary care: the cornerstone for redesigning care and support

As underlined in the Alma-Ata Declaration (1978), primary care has been identified as the cornerstone for improving the health of all individuals and families in the community. Primary care is defined as “the first level of contact of individuals, the family and community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process.” In most healthcare systems, various types of professionals contribute to the delivery of primary care. Examples of these are general practitioners (GPs), paramedics, psychologists, dentists, nurses and nurse specialists, and social workers. Implementation of person-centered and integrated care will therefore require coordinating the efforts of all professionals involved in the care and support of people living in the community.

In the Netherlands, GPs have an essential role in primary care. As such, they have increasingly played the role of a mediator between the community and other professionals and organizations within the healthcare system, thus supporting older adults navigating the healthcare landscape. Most of the simple and easy-to-solve health problems are dealt with by GPs or other primary-care providers, while more complex problems are referred by the GP to (medical) specialists. Thus, the GP is the gatekeeper of the system. In recent years GPs have been part of
several integrated-care programs for specific chronic conditions, such as diabetes and COPD. However, in order to be able to provide person-centered and integrated care for older adults living in the community, new models of care and support are needed.

**Integrating care and support: the Chronic Care Model**

The Chronic Care Model (CCM) is a well-known and evidence-based framework that has guided organizations in improving chronic illness care. The CCM combines community services with healthcare. It has four evidence-based and interdependent key elements: self-management support, delivery-system design, decision support, and clinical information systems. The CCM aims at improving quality of care on three levels: structure, process, and outcomes (see Box 3):

- **Structure**: the embedded key elements regarding community resources, policies, and health system organization of care
- **Process**: the productive interactions between a well-prepared, proactive practice team, and an informed and activated patient
- **Outcome**: the improved outcomes.

Implementation of the CCM has been shown to be effective in terms of disease-specific outcomes and service use, as well as cost for chronic conditions such as diabetes, heart failure, and lung diseases. However, evidence for the effectiveness of the CCM on more general patient outcome measurements is scarce. The few studies that have implemented the whole model have mainly targeted one specific chronic condition, and most studies have implemented only one or a few elements of the CCM. The effectiveness of the complete and comprehensive CCM for a specific group of older adults has been evaluated in a study on the Guided Care model, in which the impact of this model on the results for the older adults and their caregivers, quality of care, and costs was investigated. Patient involvement improved, while caregiver burden was reduced. Care coordination improved, and positive effects were found on the use of home care.
Box 3 Definition of quality of care
Quality of care, as defined by the Institute of Medicine, is “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.” In line with this definition, the IOM proposed six specific aims for improvement: Healthcare should be safe, effective, timely, patient-centered, equitable, and efficient. The classic model to assess quality of care has been described by Donabedian. He stated that “a good structure increases the likelihood of good process, and good process increases the likelihood of good outcome,” proposing that quality of care should be evaluated at the level of structure, process, and outcome.

- **Structure** refers to the organizational factors (material and social instrumentalities) that define the health system under which care is provided. Structural features of healthcare provide the opportunity for individuals to receive care but do not guarantee it.
- **Processes** of care comprise the actual delivery and receipt of (appropriate and necessary) care and involve interactions between users and providers.
- **Outcomes** are consequences of care, primarily changes in health status that can be attributed to that care. Structure as well as processes may influence outcome, indirectly or directly.

Person-centered health services: population segmentation

Person-centered care is organized around the health needs and expectations of people rather than around diseases. It is well known that the health status and needs of older adults can change quickly, taking a sudden turn for the worse. Furthermore, preventive and proactive care may help to delay declining health status among older adults. Therefore, services for older adults could be even more effective if they targeted the general population of older adults. Delivering the
same intensity of care to all older adults is, however, neither needed nor sustainable. To be able to provide person-centered care and support, integrated-care models should be combined with population segmentation or stratification models. Such models enable organizations to stratify populations in homogeneous groups, and to provide a suitable level of care and support for the separate groups, while taking the older adults’ needs as a starting point.

An example of such a model is the Kaiser Permanente (KP) Triangle. The Kaiser Permanente Triangle is a Population Health Management model that segments a population, based on risk for health-related problems and accompanying healthcare needs. This model distinguishes three risk levels with corresponding care intensity levels. At the first level, self-management support is offered to people who are at a relatively low risk for healthcare needs. At the second level, the people involved have increased levels of risk for complex care needs, and receive disease management or care management. The third level consists of high-complexity patients who receive intensive case management. Preventive care and self-management support is provided at all three levels. The long-term challenge is to achieve a flattening of the pyramid, a larger proportion of low-risk patients. This may be achieved by investing in care coordination, self-management support, and prevention.

**Embrace**

Embrace (in Dutch: “SamenOud”) is a person-centered and integrated-care service, developed for all community-living older adults. Embrace combines the CCM with the Kaiser Permanente Triangle. Based on self-reported levels of “case complexity” and level of “frailty,” participating older adults are grouped into three risk profiles: “Complex care needs,” “Frail,” and “Robust.” Care and support are offered by a multidisciplinary Elderly Care Team, with the intensity level depending on the risk profile of the older individual. An Elderly Care Team is assembled for each participating GP practice. The team consists of the GP, an elderly care physician (also known as a nursing home physician), a community nurse, and a social worker. This Elderly Care Team provides older adults with
comprehensive, person-centered, proactive and preventive care and support.

All Elderly Care Team members have completed a training program. The initial training program for GPs (three days) focuses on team and population management, and on essential themes such as multimorbidity and polypharmacy. Social workers and district nurses receive specific training in case management, shared decision-making, etc., during an eight-day initial training program. All members of the various Elderly Care Teams receive monthly on-the-job coaching during meetings of their team.

Participants with the risk profiles “Frail” and “Complex care needs” receive individual care and support from a case manager, the district nurse, or a social worker, who visits the older adults at home and focuses on the older adults’ self-defined problems such as mobility of joint functions, emotional well-being, and exercise tolerance. Older adults within the risk profile “Robust” are monitored by the Elderly Care Team, which reviews their medical files and medications at least once a year. All participating older adults are offered a self-management support and prevention program that emphasizes preventive measures and endorses a healthy lifestyle, while maintaining self-management abilities. Furthermore, an electronic record system for multidisciplinary collaboration has been developed, in which a number of decision support tools are embedded.

Summary

The current healthcare system is facing the challenge of coping with changing demands, while maintaining quality of care at a lower cost. A fundamental change in the way health services are managed, delivered, and funded is needed. Embrace, a person-centered and integrated-care service which provides preventive and proactive care and support for all community-living older adults, attempts to provide such novel health services. The added value of this new service needs to be evaluated as regards patient experiences, specifically perceived quality of care and cost-effectiveness, using suitable measurement instruments.
Objectives of this thesis

The main objective of this thesis was to evaluate the effectiveness of person-centered and integrated primary care for older adults in terms of perceived quality of care, as well as service use and costs. A second objective was to gain insight into the change in professional roles, especially the new role of case manager, which might contribute to a better understanding of the effectiveness of such a new service. This resulted in the following research questions:

1. How to assess older adults’ perceived quality of care in a person-centered and integrated care service that is based on the Chronic Care Model and targeting the population of community-living older adults?
2. What are the effects of Embrace on the quality of person-centered and integrated care and support, as perceived by older adults after one year?
3. What is the change in the level of implementation of Embrace over a one-year period, as perceived by participating professionals?
4. What are the experiences of community nurses and social workers with regard to their new professional roles as case managers in Embrace?
5. What is the cost effectiveness of Embrace after one year?

Outline

In Chapter 2, we provide the study protocol for the Embrace study, in which we describe the intervention Embrace, the design of the randomized controlled trial (RCT), and the measurement instruments used. Next, in Chapter 3, we describe the development of the Patient Assessment of Integrated Elderly Care questionnaire, designed to evaluate the quality of integrated and person-centered care (research question 1). In Chapter 4, we present the results of the studies on the effectiveness of Embrace on quality of care as perceived by older adults (RCT) and the level of implementation of integrated care as reported by the members of the Elderly Care Teams (pretest-posttest study) (research questions 2 and
3). In **Chapter 5**, we present the results of the qualitative study on case managers’ experiences in their professional role as a case manager (research question 4). In **Chapter 6**, the results of the cost-effectiveness study of Embrace (research question 5) are presented. In **Chapter 7**, the main results of the thesis are summarized and discussed, followed by a consideration of some methodological issues, and recommendations for practice and suggestions for future research.
References


