Nurse-led multifactorial care in community-dwelling older people
Outcomes on daily functioning, experiences and costs
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Citation for published version (APA):
Chapter 1 General introduction
Optimal care for older people is one of the greatest challenges in healthcare. Worldwide, the proportion of older people (≥ 65 years) will rise from 426 million older people in 2010 (8% of the total world population) to one billion older people in 2050 (16% of the total world population). In the Netherlands, the proportion of older people will rise from 2.6 million in 2010 (16% of the total Dutch population) to 4.8 million in 2050 (27% of the total Dutch population). In this ageing population it is a challenge to prevent or postpone new disabilities and to improve the years spent in good overall health.

The onset of new disabilities in older people
Ageing is often accompanied by multiple chronic conditions (MCC) and the onset of new disabilities in daily functioning. Disability is defined as difficulty in carrying out (instrumental) activities of daily living (I)ADL, essential for self-care and living independently at home, such as bathing, dressing and cooking. In developed societies, around 20% of people aged 70 years or older, and 50% aged 85 years and older has one or more difficulties in basic ADLs. The annual onset of new disabilities in people aged 75 and older is estimated around 12% and many of them recover from those disabilities, yet more are prone to developing new disabilities in the following year. Disability in older people can be caused by several modifiable factors. In the literature, risk factors for new disabilities that may be amenable by interventions are multifactorial: previous disability, depression, comorbidity, polypharmacy, obesity, reduced social contact, physical inactivity and visual impairment. Disability in older people is associated with an increased risk of institutionalisation, increased healthcare utilisation and costs and poor quality of life.

Interventions to prevent or postpone disability in community-dwelling older people
The onset of new disabilities in community-dwelling older people might be prevented or postponed by multifactorial interventions. However, the effectiveness of those multifactorial interventions remain controversial. Previous meta-analyses and reviews demonstrated that interventions with beneficial effects on daily functioning include screening a population that is at risk of functional decline, comprehensive geriatric assessment (CGA), and multiple follow-up visits. In the past decades, such comprehensive care programs to prevent or postpone disability in community-dwelling older have become common practice in several Western countries such as the United Kingdom. However, until 2008, such programs had not been implemented nor evaluated on a large scale in the Netherlands yet.

Towards improved primary care for older people in the Netherlands
In 2008, the Health Council of the Netherlands stated that the current
healthcare provision for older people was inadequate, fragmented and not designed to meet the needs of older people with MCC. Hence, in 2008 the Dutch Government launched the National Care for the Elderly Programme, that aimed to improve the quality of care for older people by developing coordinated and integrated care that is better suited to the individual needs and preferences of older people. In 2009, a second report of the Health Council focused specifically on daily functioning of older people. It was suggested that a more preventive approach in primary care (proactive care), compared to the demand driven care for older people (reactive) is needed to maintain daily functioning and timely identify values, needs and preferences of community-dwelling older people. For that reason, the FIT (Functiebehoud in Transitie) study started in 2010 with the aim to improve primary care for community-dwelling older people in the Netherlands.

The FIT study
Design of a cluster randomised trial
As part of the National Care for the Elderly Programme, a cluster randomised controlled trial (RCT) was designed and initiated in order to evaluate the effects of nurse-led multifactorial care to prevent or postpone new disabilities in community-dwelling older people. A theoretical framework designed by the UK Medical Research Council (MRC) was used that includes the development, piloting, evaluation and implementation of a complex intervention (Figure 1).

![Diagram of the development and evaluation process](image-url)
We designed a three-step FIT care model (Figure 2). The first step was the selection of the target population. From the literature, it appears that older people with no or only mild disabilities were most likely to benefit from interventions to postpone disability \(^\text{18}\). Therefore we needed a self-reporting, generic, easy-to-apply, and validated instrument for primary care to identify older people at increased risk of functional decline. We modified and validated the Identification of Seniors At Risk (ISAR) screening questionnaire to identify older people at increased risk of functional decline in primary care \(^\text{27}\). This resulted in the ISAR-Primary Care (ISAR-PC) screening instrument. The second step in the FIT care model was a comprehensive geriatric assessment (CGA), including recognition and prioritisation of geriatric conditions by older people. The third step was to make an individually tailored care and treatment plan including multifactorial interventions coordinated by a trained community-care registered nurse (CCRN).

![Figure 2. Fit care model](image)

In 2010 we started our trial in the region of Noord-Kennemerland and Ijmuiden \(^\text{28}\). Twenty-four general practices participated in this RCT, of which eleven were assigned to the intervention group and thirteen were assigned to the control group. All participants were screened with the ISAR-PC screening instrument according to step 1 of the FIT care model. Step 2 and 3 were part of the intervention and consisted of a CGA, value clarification, recognition and prioritisation of identified geriatric condition by the older person, and, if favored by the older person, individually tailored multifactorial interventions coordinated by a trained CCRN with multiple follow-up home visits.
Chapter 1 | General introduction

**Community dwelling older peoples’ values, health priorities and experiences with nurse-led multifactorial care**

Comprehensive geriatric assessment (CGA) is an important part of the FIT care model. CGA is a multidisciplinary, systematic procedure addressing the physical, psychological, functional and social conditions of older people to identify existing geriatric conditions. This assessment facilitates shared decision making and drafting of a tailored care and treatment plan \(29, 30\). The CGA starts with five questions about what is perceived important in terms of ageing, worries, the future, healthy ageing and quality of life. The presence of MCC in older people influences their goals, preferences and expectations of medical treatment \(31\). Therefore, especially for older people with MCC, it is necessary to explore their preferences before starting treatment.

After addressing these five questions, the CCRN systematically assessed potential physical, psychological, functional and social geriatric conditions and the participants’ priorities and goals. Little is known regarding the prevalence of identified geriatric conditions and the extent to which geriatric conditions are recognised as relevant problems by community-dwelling older people. This limits our understanding of the needs community-dwelling older people have and the choices they may like to make with regard to care and treatment.

**Minimal important change and minimal detectable change in daily functioning**

In daily practice (as part of a CGA) and in research (as an outcome measure), the Katz-activities of daily living (ADL) index score and the Lawton instrumental activities of daily living (IADL) scale are frequently used as self-reporting instruments to identify daily functioning \(32\). However, the interpretability of these instruments is unknown. To determine the interpretability of the Katz-ADL index score and the Lawton IADL scale the smallest change in score on activities of daily living (ADL) and instrumental activities in daily living (I)ADL functioning that is perceived as important by the older person and the smallest change in (I)ADL that can be detected by the instruments (beyond measurement error), are important \(33\).

**Assessment of per capita healthcare costs of older people**

Nurse-led multifactorial care in primary care may enable reductions in healthcare utilisation as it has the potential to prevent hospitalisation and early admission to a nursing home, which are important drivers of healthcare costs and are associated with changes in ADL and IADL functioning. Therefore, it is important to identify the ‘high cost’ group, specify major cost drivers and study the association between healthcare costs and transitions in disability in community-dwelling older people in the Netherlands. Acute hospitalisation in older people is associated with changes in ADL and IADL functioning \(34\).
Acutely hospitalised older people are at high risk for poor outcomes during hospital stay and after discharge, such as functional decline and mortality. In the past two decades, interventions to identify acutely admitted older patients who are at risk for functional decline and to achieve medication reconciliation have contributed to a decline in the in-hospital mortality of older patients and reduced length of hospital stay (LOS) in the Netherlands from weeks to days. However, the influence of improved treatment strategies and new patient safety procedures on the in-hospital and 30-day post-discharge mortality for the most common acute diagnoses in older patients is still unknown.

**Aims of this thesis**

The overall aim of this thesis is to improve primary care for community-dwelling older people in the Netherlands. First, by improving the general health and daily functioning of community-dwelling older people; second, by exploring the experiences of older people with nurse-led multifactorial care; and third by assessing per capita healthcare costs of older people. Consequently, the following research questions were formulated:

1. What are the effects of nurse-led multifactorial care on the onset of new disabilities in community-dwelling older people?
2. What are personal views of community-dwelling older people in terms of ageing, worries, the future, healthy ageing and quality of life and how do multiple chronic conditions affect those personal views?
3. What is the prevalence of geriatric conditions in community-dwelling older people at increased risk of functional decline and what CGA-identified geriatric conditions do older people recognise as relevant problems?
4. What are community-dwelling older peoples’ experiences and views on nurse-led comprehensive geriatric assessment and care coordination?
5. What are the minimal important change and the minimal detectable change of the Katz-ADL index score and the Lawton IADL scale in community-dwelling older people?
6. What is the association between healthcare costs and transitions in functional disability in community-dwelling older people?
7. What are the changes over time in the in-hospital mortality and mortality from discharge to 30 days post-discharge for the most frequently encountered hospital diagnoses (acute myocardial infarction, heart failure, stroke, chronic obstructive pulmonary disease, pneumonia and hip fracture) in acutely admitted older patients?
Outline of this thesis

In chapter 2 the effects of nurse-led multifactorial care on the onset of new disabilities in community-dwelling older people are presented. Chapter 3 describes how multiple chronic conditions affect patients preferences and the process of shared decision making in community-dwelling older people and chapter 4 reports on the prevalence and recognition of geriatric conditions identified by community-dwelling older people with an increased risk of functional decline. Chapter 5 presents the experiences of older people living at home, regarding nurse-led comprehensive geriatric assessment and care coordination. Chapter 6 focusses on the accuracy and clinical meaning of (changes in) scores of the Katz-ADL index score and Lawton IADL scale in community-dwelling older people. Chapter 7 presents the costs associated with transitions in disability in a population of community-dwelling older people. Chapter 8 provides an overview of changes in hospital mortality and 30-day post discharge mortality between 2000 and 2009 in older patients acutely hospitalised in the Netherlands. Finally, chapter 9 presents a general discussion of the main findings of this thesis, including its strengths and limitations and implications for clinical practice, education and research.
References


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