Nurse-led multifactorial care in community-dwelling older people

Outcomes on daily functioning, experiences and costs

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The overall aim of this thesis was 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 values, health priorities and experiences of older people with nurse-led multifactorial care; and third by the assessing per capita healthcare costs. In this chapter, the results of these three aims will be summarised and possible explanations for the findings will be discussed. Furthermore, potential implications for clinical practice, education and research will be addressed.

The general health and daily functioning of community-dwelling older people (chapter 2)

As part of the National Care for the Elderly Programme, we evaluated the effects of nurse-led multifactorial care in a cluster randomised controlled trial (RCT). The primary outcome of the intervention, a three-step patient-centered approach (the FIT (Functiebehoud In Transitie) care model), was the onset of new disabilities in community-dwelling older people. We found no evidence that a one-year individualised multifactorial intervention programme with nurse-led care coordination resulted in prevention or postponement of new disabilities in community-dwelling older people at increased risk of functional decline. Additionally, the intervention was not more effective than current primary care in The Netherlands for health-related quality of life, emotional wellbeing, self-perceived quality of life, falls, number of hospitalisations, mortality.

We carefully followed the steps of the Medical Research Council (MRC) framework to develop, pilot, evaluate and implement our trial to study the effectiveness of nurse-led multifactorial care. As a first step, we studied all available evidence, developed a screening instrument to identify older people at increased risk for functional decline (ISAR-PC), and performed a pilot study to assess the feasibility of the intervention (step 2). In the third step we evaluated the effectiveness of the intervention. The results of the evaluation study robustly excluded clinically relevant effects of the intervention on the primary outcome. Specifically, the 95% confidence interval around the mean difference between the two treatment groups (-0.07; 95% CI, −0.22 to 0.07) excluded the predefined functional decline of -0.5 points by a wide margin. Yet, there are several possible explanations why the FIT study did not reveal an effect of a one-year nurse-led multifactorial intervention on the primary and secondary outcomes: 1) insufficient alignment between intervention and outcomes, 2) the potential for improvement of proactive primary care for older people in the Netherlands and 3) the adaptation time of new interventions. These possible explanations will be further elaborated.
Insufficient alignment between intervention and outcomes
Disability is a broad concept \(^3\). The primary outcome of the FIT study was the onset of new disabilities, measured with the modified Katz-ADL index score \(^4\). The modified Katz-ADL index score includes a wide range of possible impairments and therefore a sum score may be difficult to interpret or compare across older people \(^5\). Part of the intervention was a comprehensive geriatric assessment (CGA). This CGA covered physical, psychological, functional and social domains. Participants received interventions for geriatric conditions within these domains, such as pain, incontinence, mobility, depressive symptoms, and loneliness. However, these interventions may not sufficiently affect the onset of new disabilities, number of hospitalisations or mortality to yield an effect during this one-year intervention.

The potential for improvement of proactive primary care for older people in the Netherlands
The quality of primary care provision for older people in the Netherlands is considered to be high \(^6\). Free and easy accessibility, multidisciplinary collaboration with other primary care professionals and secondary care contributes to this high-quality primary healthcare delivery for older people in the Netherlands. Our RCT on the effects of nurse-led multifactorial care resulted in neutral effects on the prevention or postponement of new disabilities. Other studies in the Netherlands and countries with high primary care standards also yielded neutral findings \(^7\text{--}^{12}\). Nevertheless, there may still be room for improvement in the provision of care for older people, since, overall, much of the care is delivered on demand (reactive) rather than within a more prevention approach (proactive), which may harbour additional benefit towards preservation of daily functioning.

The adaptation of new interventions takes time
The nurse-led intervention lasted one year. The combination of implementing a new intervention and the possibility to find an effect on daily functioning within one year might not be possible. The intervention required a transition from reactive to proactive care that GP’s, nurses and older people may need to adapt to. Those changes in practice may take longer than one year. CCRNs were not used to proactively assess geriatric conditions. The process of decision making based on recognition and prioritisation by the older person was also new to nurses. Therefore our educational strategy was based on the pyramid of Miller \(^13\). Miller’s pyramid traditionally has four stages; 1) knows, 2) knows how, 3) shows and 4) does. We started with a 10 day training \(^14\), with the first two steps from the pyramid of Miller; 1) knows and 2) knows how. The first home visits with attending coaches were aimed to 3) show and 4) do, according to the pyramid of Miller. After the 10 day training, regular intervision sessions were arranged to reflect on situations in daily practice. Despite this training and follow-up sessions, it may have taken several months to apply
and even longer to expect results on the care and treatment plans that were developed. The questions on recognition and prioritizing used in the FIT study also represented a new approach to older people that was part of this ‘culture change’, asking for additional time to adopt for older people and might therefore have longer time needed to learn a new way of being patient. For instance, older people came to realize that some geriatric conditions are risk factors for the onset of new disabilities and that preventive measures, on top of regular treatment, could have the potential of decelerating their functional decline.

**Community dwelling older peoples’ values, health priorities and experiences with nurse-led multifactorial care (chapter 3-6)**

If we further focus on how older people value what is important for them, the recognition of geriatric conditions, the experiences with the intervention, and the minimal important change in daily function, we may develop a better understanding of the mechanisms that contributed to the neutral trial results and to find new approaches to improve patient-centered care in daily practice.

**Personal views of community-dwelling older people with and without multiple chronic conditions**

The CGA started with five questions on personal views on ageing and included 1) What does it mean for you to get older? 2) Do you worry about things? 3) What do you think the future will be like? 4) What, in your opinion, is needed for healthy ageing? and 5) What does quality of life mean to you? Frequent responses included 1) the association of ageing with functional disabilities and deterioration, 2) the acceptance of ageing as an inevitable and unalterable reality and 3) worries about functional disabilities and family. Healthy lifestyles, staying active, keeping social contacts and a positive attitude were considered prerequisites to healthy ageing. Older people with multiple chronic conditions (MCC) mostly addressed the same personal views as older people without MCC. An important difference was that older people with MCC had more worries, had a more negative view on the future and especially feared further functional decline. Many factors addressed by older people focus on the social perspective on health, such as maintaining social contacts and being able to do what one wants to do. Embedding the personal views of older people in a CGA is also incorporated in the model of shared decision making in older people. According to this model it is important to prepare, to perform and to interpret a CGA, regarding recognition and prioritisation of geriatric conditions, resulting in relevant values for older people. These values are relevant when formulating goals.

**Recognition of identified geriatric conditions**

CGA in community-dwelling older people with an increased risk of functional
Chapter 9 | General discussion

decline detected many geriatric conditions, yet resulted in low recognition rates of these geriatric conditions. The median number of identified geriatric conditions per participant was 8 (IQR 6–11) and the median number of geriatric conditions that were recognised was 1 (IQR 0–2). Out of 32 geriatric conditions, functional dependency was the most commonly identified geriatric condition. Pain was the most widely recognised condition. Other conditions such as hypertension, constipation and alcohol or substance misuse were rarely recognised as a problem by older people. Maintaining overall functioning was regarded as key value in the context of ageing and impending functional decline (chapter 3). However, we observed that while functional disabilities were most often identified, only few older persons recognised this as a problem. These results are in line with the new definition of health, presented by Huber et al., in which not solely the absence of physical limitations are important, but rather the ability to adapt and self-manage in the face of social, physical, and emotional challenges. Low recognition rates might also be related to the acceptance of ageing, which was often mentioned by older people (chapter 4). Adaptation to functional limitations is also mentioned in the concept of successful ageing and resilience. These concepts focus on a person’s lifelong search to find a balance between limitations and opportunities, also encompassing a more psychosocial view on health. The personal views of older people and the recognition rates from the outcomes of the CGA reflect the importance and need of attention to psychosocial wellbeing of community-dwelling older people by the CCRN or GP. Psychosocial functioning might therefore deserve to be more strongly embedded in the CGA.

Community-dwelling older peoples’ experiences with nurse-led comprehensive geriatric assessment and care coordination

In-depth interviews with older people on the experience with nurse-led comprehensive geriatric assessment and care coordination yielded an overarching theme ‘appreciation to be looked after’ by their own GP practice. This main theme branched out into four subthemes: 1) lowering the threshold to the GP practice, 2) attention for psychosocial functioning, 3) reassurance through check-ups and 4) professional care and task delegation between nurse and GP. Participants appreciated nurse-led care coordination because of the feeling of being looked after. Community-dwelling older people valued nurses paying attention to their psychosocial functioning and checking their general health. However, they felt that surveillance of all medical care should remain in the hands of the GP and can not be shifted towards nurses.

Minimal important change and minimal detectable change

To improve our understanding of what constituted relevant functional decline for older people, we calculated both the minimal important change (MIC) and the minimal detectable change (MDC) of the Katz-ADL index score and the
Lawton IADL scale, using both anchor-based and distributional methods for community-dwelling older people with at least one (I)ADL disability. The MIC of both the Katz-ADL index and the Lawton IADL scale were around half a point. The MDC was, however, well above one point on both instruments. There was substantial variation across methods for both the MIC and the MDC. Both instruments have a narrow score-range, which might have influenced the estimated MIC and MDC values. Although the Katz-ADL index score and the Lawton IADL scale are frequently used in both clinical practice and research, both scales were developed to study results of (clinical) treatment in older people on group level, and were not designed to measure change and responsiveness at an individual level. Therefore, the use of different outcome measurements, such as walking speed and hand grip strength for disability might reflect a more individually relevant estimate of overall functioning.

Assessment of per capita healthcare costs of older people (chapter 7-8)

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, we explored the economic impact of disability in older people. Furthermore, due to interventions for acutely admitted older patients, length of hospital stay (LOS) in the Netherlands has declined. Therefore, we explored changes in the in-hospital mortality and 30-day post-discharge mortality. These results may contribute to the improvement of transitional care between hospital and home and prevention of acute hospitalisation.

Transitions in functional disability and healthcare costs among community-dwelling older people

We defined four transitions in disability at 12-months of follow-up: 1) stable without limitations – participants without limitations at baseline or at follow-up; 2) stable with limitation(s) – participants with the same number of limitations at baseline and follow-up; 3) functional improvement – participants with fewer limitations at follow-up than at baseline; and 4) functional decline – participants with more limitations at follow-up than at baseline. During 12 months of follow-up, older people in different categories of functional disability have different healthcare costs. Participants who experienced functional decline had the highest mean excess healthcare costs and this group consisted of 25% of the total population. Hospitalisation costs were the most important contributor to the overall healthcare costs in all groups, especially for participants with the largest functional decline. Hence, prevention of hospitalisation could lead to reduction in overall healthcare costs.
Changes in the in-hospital mortality and 30-day post-discharge-mortality

Older people acutely admitted to a hospital in the Netherlands had lower probabilities of dying between admission and 30 days post-discharge in 2009 compared to 2000. This decline was largely due to the lower in-hospital mortality rates over time, while up to 30 days post-discharge mortality rates depended on the diagnosis and either declined, remained unchanged or increased. In the past decades, a multitude of measures and innovations have contributed to lower in-hospital mortality rates, reducing the LOS and improving care for older people during hospitalisation. Examples include system-wide patient safety interventions that have been implemented, such as medication reconciliation, improved handovers and malnutrition prevention programs. However, there is increasing awareness that older hospital patients are especially vulnerable during the transition from hospital to home. Geriatric conditions, such as malnutrition and functional dependence, are often not addressed and/or resolved after hospital discharge, leading to an increased risk for readmission and mortality.

The results of chapter 7 and 8 highlight the need for the development of interventions that address the needs of older people in the post-discharge period to further reduce post-discharge mortality and functional decline. This points towards further integration into proactive primary care for older people. Transitional care interventions, extended collaboration with pharmacists, and better handovers to the GP or CCRN may help to reduce this post-discharge mortality and promote recovery. If daily functioning and mortality from discharge to 30 days post-discharge become a more important quality indicator and a shared responsibility of primary and secondary care, primary care organisations and hospitals might invest more in developing optimal handover and care during the transition from hospital to home.

Methodological considerations

Performing an RCT in a changing landscape of primary care for older people

The active involvement of older people in the design and evaluation of the study is a strength of our cluster randomised trial. Other strengths are the high participation rate, the high adherence rate to the structured study protocol, and the evidence-based toolkit we developed for nurses. However, we designed our complex healthcare intervention in a time of a changing landscape of primary care for older people in the Netherlands. Overall, care for older people (also in the control group) probably improved during the intervention period, because principles of effective care for older people became already incorporated in daily practice, such as a focus on proactive care. Furthermore, due to the growth of the older population and rising
related healthcare costs, a common policy response to the consequences of an ageing population has been to encourage older people to live in their own homes, a process known as ageing in place. Ageing in place, in which admittance to residential care is postponed as long as possible, is generally expected to result in cost savings because home care is less expensive than residential care. Since 2013, current government policies aim for an accelerated reduction of residential care facilities. One of the consequences of the ageing-in-place concept in The Netherlands is that older people with multiple chronic conditions and functional disabilities are now living at home instead of in a residential care facility. For GPs, this meant an increase in the number of complex older patients. This could have contributed to a relatively large group of older people at increased risk of functional decline with limited potential on preventive interventions on preservation of daily functioning. On the other hand, the effect of a relatively large group of older people at increased risk of functional decline might be limited by the participation of a slightly less frail population, ‘the worried well’, relatively healthy older people who participate to be reassured. Those older people may be more likely to participate in preventive primary care interventions compared to older people at high risk for adverse outcomes.

Finding the optimal target population
From the literature, it appeared that exclusively focusing on frail older people may not be efficient, because older people without or only mild disabilities who are at increased risk of functional decline are the most likely to benefit from preventive interventions. Therefore, we focused on a population at increased risk for functional decline, including a somewhat younger population (70-74 years). However, some included older people were really fit. They, nor their CCRN or GP, did see the need of prevention of geriatric conditions as there were no real needs or recognised problems. Focusing on a better targeted population may result in more efficient care and treatment. For example by focusing on older age and/or a life event, such as the death of spouse, fall and acute hospital admission. Intensive coaching after such a life event may result in prevention of crisis, acute hospital (re)admission or mortality.

Outcome assessment
The main aim of the FIT study was to prevent or postpone new disabilities. The intervention focused on a patient-centered individualised care plan. The CGA contained 32 possible geriatric conditions. Recognition and personal prioritisation should contribute to the individualised care plan with higher chance of success. Addressing geriatric conditions that older people consider important may increase adherence to the intervention and facilitate implementation. However this patient-centered individualised focus may not have affected the onset of new disabilities. From the in-depth interviews...
(chapter 5) it appears that older people were not aware of the purpose of the home visits. If a more patient-centered approach is desired, then other evaluation methods should probably be used. Using other measures with a closer relation to the individual outcome, such as goal-attainment scaling (GAS) might better suit a patient-centered approach. GAS is a clinimetric tool that describes goal achievement for individual patients. GAS has demonstrated to detect clinically important change in the evaluation of complex interventions in older people.

**Implications**

The results of this thesis have several implications for clinical practice, education and future research.

**Clinical practice**

Older people live longer at home with more complex healthcare needs and functional limitations. This development, called ‘ageing in place’, might have consequences for the wellbeing of older people with complex care needs at home. Those older people are at higher risk to experience loneliness and decreased quality of life because of their limitations. Therefore, attention for their psychological wellbeing is needed. GPs experience an increased burden of older people with complex care needs. This increased complex care for older people increased the need for nurse-led care coordination, as the workload for solely a GP does seem too large to be able to handle the demand of care for older people in primary care. Therefore, GPs and CCRNs will become more and more part of a network of patients, informal care and healthcare professionals, both in primary and secondary care, who exchange knowledge and skills and collaborate in order to continually improve the quality of care for older people. Those networks of extended collaboration between patients, informal care, CCRNs, GP’s, nursing home physicians, pharmacists and hospitals may lead to improved quality of care, reduced acute hospitalisation and lower functional decline, which might have impact on wellbeing and quality of life of older people.

**Education**

In our trial we observed that CCRNs needed time to adapt to their new roles (chapter 2). The CCRNs were expected to work proactively, following the principles of shared decision making, focus on geriatric conditions and build a steady collaboration with the GPs. In order to have well-prepared nurses in the future, it is recommended to start with training on these themes during the bachelor phase of nursing students. To have the competences to build a steady collaboration with other (primary) care professionals, interprofessional education strategies might contribute to more knowledge and improved collaboration between GP’s, CCRNs and other network related professionals.
Interprofessional education and team based learning strategies in both undergraduate and postgraduate education might have the potential to improve quality of care for older people. Finally, the growing amount of older people living longer in the community with more complex healthcare needs urges the need for higher educated CCRNs. However, it has been showed that undergraduate nursing students do not want to work with older people in community care. Therefore, there is an urgent need for role models and early practice experiences in care for older people to give a realistic impression of working with older people in community care.

Research
Maybe it is not possible to emerge an effect of a complex healthcare intervention with one fixed outcome measure. Therefore, outcome measures in future research should incorporate outcomes relevant to the individual older person. Furthermore, the potential of task delegation from GPs to nurses warrants further investigation. According to the perspective of older people, there are possibilities in task delegation. The balance between the experience of older people to be looked after (by a nurse and/or GP) on the one hand and the importance of reducing costs on the other hand is a challenge for further research. With the adoption of nurse-led care coordination for older people in the Netherlands, a study of this kind will not be easy to carry out again in the Netherlands. Therefore, it might be recommended to replicate this study in a setting or country where nurse-led care coordination for community-dwelling older people is not yet common practice. Then, to enhance the effect of the intervention, more emphasis should be put on preventive interventions that can directly or indirectly postpone new disabilities, such as promoting physical activity. Furthermore, the intervention should have a long follow-up period, because many preventative interventions (eg, fall prevention or blood pressure reduction) usually require many years to reveal any outcomes. Crucial is the target group, because too little or too much frailty in older people in the intervention group will result in too little effect. Finally, the use of qualitative methods should be incorporated in quantitative analyses of complex interventions as qualitative methods contribute to the acceptability of nurse-led multifactorial care.

Final conclusion
In this thesis we focused on three aims: improving the general health and daily functioning of community-dwelling older people, exploring the experiences of older people with nurse-led multifactorial care, and assessing per capita healthcare costs of older people. First, nurse-led multifactorial care in community-dwelling older people did not result in the prevention of functional decline, reduction of mortality, improved quality of life and healthcare utilisation. Second, CGA detected many geriatric conditions, yet resulted in low recognition rates of these geriatric conditions by older people.
Nevertheless, older people appreciated the home visits, especially because of the feeling of being looked after. Third, hospitalisation costs were the most important contributor to the overall healthcare costs, especially for participants with most functional decline. Furthermore, the in-hospital mortality in older patients decreased between 2000 and 2009, while the results for mortality from discharge to 30 days post-discharge in older patients depended on the diagnosis and either declined, remained unchanged or increased. Despite our tailor-made multifactorial intervention programme with nurse-led care coordination was not more effective than current primary care in the Netherlands for the onset of new disabilities, our study results reveal that shared decision making and collaboration with older people has the potential to improve overall quality of care and to change clinical practice, education and research in the near future.
References


