Embracing the perspectives of older adults in organising and evaluating person-centred and integrated care

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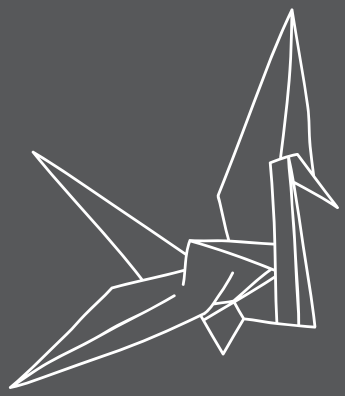

General Discussion

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Person-centred and integrated care models such as the Chronic Care Model are often mentioned as solutions to the complex problem of how to support the population of older adults to age in place. However, the effects of these models are heterogeneous and evidence of their impact on community-living older adults is scarce. This thesis examined the impact of receiving person-centred and integrated care and support from Embrace, a new service that is based on a combination of the Chronic Care Model and a population segmentation model – the Kaiser Permanente Triangle.

The objectives of this thesis were, therefore, to gain insight into the consequences of ageing and the needs of older adults, to study the impact of receiving care and support from Embrace, and to examine the extent to which Embrace meets the needs of older adults. This chapter will first summarise and discuss the main findings with respect to each research question. Following this, we will discuss the findings at a general level, as well as the main methodological issues. Finally, we will end with a discussion of the implications for practice and future research, and will present our general conclusions.

MAIN FINDINGS

This thesis examined the consequences of ageing and the impact of Embrace. The main findings are summarised below for each research question.

Research question 1 (Chapter 2) • What are the most relevant health-related problems of community-living older adults?
The results of a Delphi study on the most relevant health-related problems of community-living older adults aged 75 and older without dementia resulted in a Core Set of 30 categories from the International Classification of Functioning, Disability and Health (ICF). This set covered all ICF components, illustrating that older adults experience a diversity of health-related problems.

A validation study resulted in a final version of the Geriatric ICF Core Set and included fourteen Body Functions categories, nine Activities and Participation categories, and six Environmental Factors categories. In the validation study, the most frequently reported problems by older adults were related to the Body Functions component, and more specifically related to Mobility (*b710 Mobility of joint functions*, 70% and *b455 Exercise*

tolerance functions, 62%) and Emotional Functioning (*b152 Emotional functions*, 65%). In addition, two categories from the Activities and Participation component had a relatively high prevalence (*d450 Walking*, 60% and d*410 Changing basic body position*, 56%). The prevalence of problems in the remaining Activities and Participation categories was fairly low, varying from 8% to 25%. Also, the prevalence of lack of support regarding Environmental Factors categories was low, varying from 14% to 25%.

Research question 2 (Chapter 3) • What is the prevalence, severity and change in health-related problems as experienced by community-living older adults receiving twelve months of person-centred and integrated care and support from Embrace?
Results from a pretest-posttest study using the Geriatric ICF Core Set (GeriatrICS) showed that health-related problems of older adults could be grouped into six clusters of disabilities: 'Mental Functions', 'Physical Health', 'Mobility', 'Personal Care', 'Nutrition' and 'Support'. The most prevalent and severe problems at baseline were grouped into the Mental Functions (*b152 Emotional functions*) and Mobility clusters.

After twelve months, the changes in prevalence for the whole group varied. The largest decreases were found for items related to Mental Functions (*b152 Emotional functions*), Nutrition (*d560 Drinking*) and Support, while the prevalence of the Mobility-related items increased. Severity scores showed an overall decrease after twelve months, except for items related to Personal Care.

For those with a problem at baseline, the baseline severity scores were highest for Mental Functions and Mobility. Older adults with a problem at baseline generally showed clear, positive changes after twelve months. The largest reductions in the number of older adults with persistent problems were related to Personal Care, Nutrition and Support. Severity scores decreased for all items, with the largest decreases related to Nutrition and Support.

A comparison of subgroups of participants showed that frail older adults with a problem had higher baseline severity scores than those with complex care needs experiencing a problem. However, differences in changes between frail individuals and those with complex care needs were small.

Research question 3 (Chapter 5) • What are the effects of person-centred care and support from Embrace on patient-reported outcomes in the domains of 'Health', 'Wellbeing' and 'Self-management'?

A randomised controlled trial (RCT) evaluating the effects of Embrace on patient-reported outcomes at twelve months (of which the design was presented in Chapter 4) found no clear benefits for the domains of Health, Wellbeing and Self-management. Only some minor differences in effects were found. Embrace participants showed a significantly greater, but not clinically relevant, improvement on the PIH-OA Knowledge subscale (B=0.48, 95% confidence interval [CI] 0.12 to 0.85, p=0.009, effect size [ES]=0.14), and a trivial deterioration in overall activities of daily living (ADL) (B=0.15, 95% CI 0.00 to 0.31, p=0.047, ES=0.10) and physical ADL performance (B=0.09, 95% CI 0.02 to 0.16, p=0.011, ES=0.13) compared to care as usual. A similar heterogeneous picture was found per risk profile.

Research question 4 (Chapter 6) • What are the opinions and experiences of community-living older adults with respect to ageing and person-centred and integrated care and support?

A qualitative study consisting of semi-structured interviews with 23 community-living older adults receiving person-centred and integrated care and support from Embrace resulted in two models: one on their experiences with ageing and the second on their experiences with Embrace.

The first model, on the consequences of ageing, showed that the prospect of becoming dependent and losing control is a key concept in the lives of older adults. Robust older adults in general felt healthy but feared the consequences of ageing. Frail older adults and older adults with complex care needs, in contrast, already struggled with deteriorating health, increasing dependence, fewer social contacts and loss of control. Furthermore, all of the older adults reported several fears (whether actual or expected) related to deteriorating health and mobility problems, for example the fear of becoming dependent on others, fear of falling and fear of losing control.

The second model showed that Embrace appears to have reduced these negative feelings by providing support and by monitoring, informing and encouraging the older adults. A prerequisite for these interactions to be productive was an equal and confidential relationship with the case manager. The interactions enhanced the older adults' sense of control, safety and security – all important conditions for being able to age in place. A comparison of the two models suggested that Embrace met the needs of older adults and that Embrace was indeed patient-centred.

DISCUSSION OF MAIN FINDINGS

Three main themes emerge from the findings reported in this thesis. These themes address the health-related problems of older adults, their ability to deal with these problems and the usefulness of segmenting older adults when providing person-centred care and support. In addition to a discussion of these three themes below, we will also discuss the impact of person-centred and integrated care and support for older adults.

Health-related problems of older adults are multidimensional

In this thesis we first focused on the consequences of ageing and, more specifically, on the health-related problems of older adults and their needs. Insight into these problems, as well as the needs of older adults, served as the starting point for the Embrace professionals to deliver individual, person-centred care and support.

This thesis confirmed the multidimensionality of the health-related problems of older adults, as previously reported in the literature. In Chapter 2, we developed a Geriatric ICF Core Set (GeriatrICS) that covered the most relevant health-related problems of older adults. This Core Set included all components of the International Classification of Functioning, Disability and Health (ICF) and covered fourteen Body Functions categories, nine Activities and Participation categories and six Environmental Factors categories. We found that health-related problems reported by older adults could be grouped into six clusters of disabilities: 'Mental Functions', 'Physical Health', 'Mobility', 'Personal Care', 'Nutrition' and 'Support' (Chapter 3). The clusters found in our study are comparable to current geriatric assessment tools.[1-5] The findings also add to the idea of a multidimensional model of health for older adults, covering daily living activities, physical status, emotional health and social engagement.[6]

Our results thus provide support for a more extensive examination of older adults' health-related problems and needs, in addition to focusing on medical diagnoses and each separate disease. Healthcare providers should take all aspects of health and disability into account, including someone's environment and level of social participation. The results also fit with the principles of person-centred care from a holistic perspective, focusing on someone's needs and preferences.[7] They support the WHO definition of health as 'a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity'.[8]

Dealing with the negative consequences of ageing

Although ageing is associated with changes and losses in several domains, many older adults are able to deal with the resulting changes and age successfully.[9] The results of this thesis provide support for three important aspects in 'dealing with the consequences of ageing': remaining in control, coping and self-management.

We found that remaining in control is an essential aspect for older adults in dealing with the consequences of ageing. Interviews with older adults (Chapter 6) showed that they felt that Embrace reinforced their ability to stay in control due to interactions with Embrace professionals, which also enhanced their sense of being safe and secure. Our findings are in line with those in a study on preventive home visits for older adults, which showed that, amongst others, it increased the older adults' sense of security and feeling of control over their situation.[10] Our findings are also in line with those of Boström et al. (2013), who showed that a sense of control, secure relationships and perceived health were significantly related to a sense of security.[11] In addition, Petersson et al. (2011) found that having a sense of security means having control, not being afraid to be alone and being able to handle difficult situations[12] – aspects which all seem to have improved due to Embrace. Our results are promising because ageing is in general related to decreased levels of control. Losing control may negatively affect an individual's health condition, may intensify the sense of dependence,[13-15] and predicts health perceptions, hospital admissions and longevity.[16]

Coping is another important aspect of dealing with the consequences of ageing. In Chapter 3, we found that those with 'newly' registered problems (frail older adults) had relatively high severity scores compared to those with persistent problems (older adults with complex care needs). Consistent with what has been previously reported in the literature,[17,18] this suggests that the frail older adults may have just started to adjust to the consequences of ageing, whereas those with complex care needs may already have adapted to their situation to some extent and used appropriate coping strategies. Both groups showed decreases in their perceived severity of health-related problems after twelve months (Chapter 3), whereas no changes were found in their health status as measured with self-report questionnaires (Chapter 5). This suggests that both frail older adults and those with complex care needs have adjusted their coping strategies, perhaps by accepting the situation, which is the main coping strategy of older adults in relation to ageing and failing health.[19] We found that older adults mentioned important elements of proactive coping (Chapter 6, qualitative study), which is an essential coping strategy for older adults in relation to successful ageing.[9] The interviews showed that older adults talked about the future with their case manager, formulated plans together and were informed about the

care and support options available, which is congruent with the definition of proactive coping as 'strategies to prevent future stressors or to minimize their effects'.[9]

A third aspect of dealing with the consequences of ageing is the self-management of older adults, although our results are inconclusive on this topic. Self-management interventions often focus on dealing with the consequences of diseases.[20] In contrast, self-management support from Embrace is directed at remaining in control and staying healthy as long as possible. Robust older adults appreciated the stimulation of their self-management abilities through receiving information and being encouraged to participate in social activities through the Embrace Self-management support and prevention programme (as described in Chapter 6). Older adults from the other two Embrace profiles mainly experienced self-management stimulation through being encouraged to participate in social activities and being given information by their case managers. These interactions – combined with being supported and being monitored – led to a sense of being in control and of being safe and secure, which is one of the main goals of the Self-management support and prevention programme of Embrace. Although the qualitative study did not show improvements in self-management behaviour itself (Chapter 6), previous research suggests that greater involvement in the organisation of their care – as perceived by the older adults (Chapter 6) – may lead to improvements in self-management behaviour.[21] Despite these encouraging findings, the experimental study (Chapter 5) did not show clear improvements in self-management abilities or behaviour. Previous studies on the effects of integrated care on self-management behaviour and abilities are rare, with most studies focused on the effects on clinical outcomes related to self-management.[e.g. 22] The results of the few studies on the effects of integrated care on self-management behaviour and abilities that included chronically ill patients[23] have also been inconsistent. For example, one study on COPD patients showed positive effects on self-management behaviour,[24] while another COPD study showed no effects.[25] We will further discuss this issue in the Methodological Considerations section below.

In summary, we found that three aspects were important for healthy ageing and ageing in place: feeling in control, coping and self-management. These aspects are quite likely to be interrelated, but the directions of the interrelationships remain unclear. Our findings largely support the definition of health proposed by Huber et al. (2011): 'Health is the ability to adapt [coping] and to self-manage, in the face of social, physical and emotional challenges'.[26] However, 'control' is not mentioned in this definition.

A study by Claassens et al. (2014) provides insights into the association between the three aspects. This study showed that self-management and coping strategies are important for 'perceived control in healthcare', which is the feeling or belief that healthcare is under control. Furthermore, perceived control in health care is related to feeling secure, which is corroborated by the results of our qualitative study (Chapter 6).[27] Further insights are thus needed into the interrelationships between the three aspects mentioned and their contribution to the process of 'dealing with the consequences of ageing'.

Segmentation using risk profiling supports the task of meeting older adults' needs

Embrace used segmentation to stratify older adults into 'risk profiles', as the elderly are a heterogeneous population with varying and changing health-related problems and needs. These risk profiles were based on the complexity of care needs and the level of frailty, and comprised homogeneous groups of older adults with a comparable risk of health problems and healthcare needs.[28-34] The intensity of care and support was then adapted to the risk profile and the individual's needs. By using segmentation we were also able to perform subgroup analyses for each risk profile.

The results of our studies support the utility of this segmentation as the three Embrace risk profiles do seem to cover three distinct subgroups of older adults at different levels of risk with regard to health-related problems. Frail older adults and those with complex care needs experienced deteriorating health (Chapter 6), of which the latter reported less severe health-related problems than the frail older adults (Chapter 3). Robust older adults, in contrast, were positive about their health but feared the negative consequences of ageing (Chapter 6). Moreover, baseline data from the RCT showed that the different risk profiles varied in self-reported health, wellbeing and self-management (we did not provide the data in this thesis). Our findings complement those of Algilani et al. (2016), who found that optimal functioning of older adults varies between individuals and depends on someone's health and physical status, as well as related preferences, thoughts and experiences.[35] Furthermore, our study showed that segmentation of the population of older adults based on non-medical data reported by older adults themselves is a feasible tool for the identification of homogeneous groups of older adults, whereas previous studies mainly used segmentation based on medical health data.[33,36]

Our findings thus support the idea that the segmentation of older adults into homogeneous risk groups based on self-reported data may serve as a starting point for delivering and tailoring care and support to the individual's situation and needs, meeting the criteria for person-centred care.[7]

Impact of person-centred and integrated care and support for older adults

We did not find short-term (one year) benefits of person-centred and integrated care based on self-reported outcomes of older adults for the domains Health, Wellbeing and Self-management (Chapter 5), but findings from the qualitative study (Chapter 6) and the quantitative study using the GeriatrICS (Chapter 3) were promising regarding the beneficial effects of Embrace. Older adults felt safe and secure and more in control due to Embrace. The number and the perceived severity of their health-related problems had declined after twelve months – probably due to the support of the Elderly Care Team and better coping strategies.

The lack of effects found in our RCT (Chapter 5) fits the heterogeneous findings of other RCTs on person-centred and integrated care. One RCT on the 'Guided Care' model for older adults – which is based on the Chronic Care Model (CCM) – showed no significant effect on self-rated mental and physical health.[37] Another CCM-based RCT, the 'frail older Adults: Care in Transition-study', also showed no effects on (health-related) quality of life, ADL, psychological wellbeing, self-rated health and social functioning. Only small intervention effects were found for instrumental ADL.[38] However, both models comprised only people who were already frail or had complex care needs. RCTs on integrated care programmes for community-living older adults yielded mixed findings. Physical function, for example, improved in some studies,[39-42] whereas it did not change in others.[43-45] In addition, the effects of integrated care on the quality of life were mixed,[40,44] one reporting no effects.[45] The health status of older adults also did not change after receiving integrated care.[46] The findings on the effects of separate intervention elements, such as case management, home visits and geriatric assessment, on health-related outcomes for older people were also heterogenous.[47-53]

The results of our qualitative study (Chapter 6), however, are promising regarding the potential impact of Embrace on patient outcomes, but these results are difficult to compare with those of other studies. Studies of the experiences of older adults with integrated care to date have solely focused on specific elements of care, such as home visits[26] or involvement in care.[27]

The improvements after twelve months found in the pretest-posttest study using the GeriatrICS (Chapter 3) are also encouraging, as normal ageing is associated with decreases in physical, cognitive and social functioning by default.[54-56] However, this study had a one-arm pretest-posttest design which strongly limits the potential to make causal inferences.[57]

Several explanations for the lack of effects in the RCT versus the promising findings in the qualitative study and pretest-posttest study can be postulated. First, the results of the RCT may have been false negative. Perhaps the self-report measurement instruments used in the RCT were not specific enough for this type of intervention and may have lacked the sensitivity required to detect changes in clinical practice.[58] Moreover, we had to deal with the heterogeneity and instability of the older population, which increased measurement error, thereby reducing the likelihood of observing effects in the RCT.[29] Also, because the Dutch healthcare system is already of quite a high standard, the contrast in the RCT between our intervention and care as usual groups may have been too small to detect differences.[59] In addition, we randomised within GP practices, which increased the risk of contamination. However, regular GP visits only take about ten minutes,[60] leaving little time to discuss the topic of concern – let alone other health-related topics.[61] Second, the results of the pretest-posttest study with the GeriatrICS may have been undeservedly positive. Due to the design of this study, the potential for causal inferences based on the results is limited.[57] Chance findings because of multiple comparisons may have occurred.[62] Third, the qualitative and quantitative studies may have measured different aspects of health, wellbeing and self-management,[63] making findings incomparable.

In conclusion, we found no significant short-term changes in self-rated health, wellbeing and self-management of older adults receiving care and support from Embrace compared to care as usual. However, Embrace may have improved older adults' coping behaviour (i.e. their ability to deal with the consequences of ageing), resulting in fewer and less severe health-related problems, a greater feeling of being in control and a feeling of being safe and secure. These findings may be promising regarding long-term changes in self-reported outcomes.

Methodological considerations

We used both quantitative and qualitative research methods to examine the consequences of ageing and the impact of Embrace, that is, 'mixed methods'. Below, we will discuss the advantages of this mixed methods approach, before discussing the strengths and limitations of both methods regarding the quality of the samples, the quality of the information obtained and causality, if applicable.

Mixed methods: combining quantitative and qualitative methods

An important strength of this thesis was the use of both quantitative and qualitative research methods to determine the needs of older adults and to assess whether Embrace met those needs. Formerly, RCTs were considered to provide the highest grade of evidence.[64,65] Today, however, it is acknowledged that combining quantitative and qualitative methods – 'mixed methods research' – could be highly valuable in the evaluation of complex health and social care interventions. Qualitative studies may help us to understand processes, while quantitative data may generally test hypotheses. Both methods complement and enhance each other, combining their strengths in mixed methods research.[64,66-68]

In this thesis we embedded a qualitative study into a quantitative study by conducting interviews with RCT participants who received care and support from Embrace.[66] By conducting a qualitative study alongside the RCT and the other quantitative studies, we were able to improve our understanding of the effects of and processes involved in the intervention.[64] If we had solely focused on the outcomes of the RCT, we would have been likely to reject the efficacy of the intervention. The qualitative study, however, nuanced the RCT outcomes, as its findings shed light on the mechanisms and interactions occurring during the intervention and the experiences of participants with ageing and with Embrace.[63]

One limitation of the mixed methods approach used in this thesis is that we did not fully integrate, relate or combine the quantitative and qualitative data, for example by using the outcomes of the first qualitative data analysis for further data collection decisions.[69] However, we have attempted to integrate the data in this Discussion section by 'triangulation', that is, we have combined the findings of the studies conducted in order to gain a more complete picture incorporating various perspectives.[70]

Strengths and limitations of the quantitative methods

Quality of the sample

One strength of this thesis was the use of a population-based sample of community-living older adults. The sample used in the RCT – including community-living older adults aged 75 and over and registered with one of the fifteen participating general practitioners – was the basis for all studies performed in this thesis. The response rate in the RCT was 48.7% (n=1,456), which is a realistic percentage for a study including older adults.[71,72] The main reasons for not participating were: having a partner with poor health, being in good health and thus not considering participation necessary, the questionnaire length and simple lack of interest. One possible limitation is selection bias, as non-respondents in the RCT differed from

respondents (all p-values <0.01) regarding gender (more women declined to participate), age (older participants consented less often) and degree of urbanisation (more rural participants declined to participate). However, there were no differences between the intervention and control groups at baseline, limiting the effects of potential selection bias on the findings regarding effectiveness. Furthermore, we had to deal with a loss to follow-up of 22.3% in the RCT. Attrition was higher for participants who were older, more frail, had more complex care needs and poorer health (all p-values <0.01). However, there were no significant differences in dropout rates between the intervention and control groups, both for the whole sample and for each profile, making it unlikely that this would have influenced the findings of the RCT.

Another strength of the studies described in this thesis was the segmentation into risk profiles, which enabled us to perform predefined subgroup analyses to examine the impact of integrated care in subgroups at different levels of risk with regard to health problems and healthcare needs, using the most sensitive primary and secondary outcome measurements for each stratum.[73] In the studies on the GeriatrICS (Chapters 2 and 3), however, we only included frail older adults and those with complex care needs who were assigned to the intervention group, since they were at risk of experiencing health-related problems.

A limitation of the pretest-posttest GeriatrICS study (Chapter 3) was that we had to deal with a loss to follow-up of nearly 50%. However, there were no statistically significant differences in baseline characteristics and baseline severity scores between those included and those lost to follow-up, except that dropouts scored significantly worse compared to participants on 'experienced health today', and participants scored worse on *b152 Emotional functions* and *b710 Mobility*.

Quality of the information obtained

An important strength regarding the quality of the data was the use of self-report measurement instruments specifically developed to fit the person-centred and integrated care service. These self-report measurement instruments took the perspectives of the older adults into account, thereby confirming the person-centredness of the studies. The GeriatrICS was used during history-taking to assess the self-reported health-related problems of older adults. This instrument proved to be sensitive in detecting changes over time and provided insight into the differences between frail participants and participants with complex care needs. The Partners in Health (PIH) scale for older adults – a specifically developed version of the PIH for the evaluation of self-management behaviour in older adults – was also sensitive to change, as shown by the RCT.[74]

A potential limitation was the number of missing values present in all quantitative studies, which might have caused problems with the robustness of the findings.[75] In the RCT, we had a relatively low number of missing values due to extensive follow-up in the case of missing data. Missing values ranged from 0.0% to 12.7%, with 37 of the 42 scales and subscales (88%) having less than 5.0% missing values. We used multiple imputation techniques to replace the missing values and the mean change in deterioration of completed cases to impute missing scale scores due to loss to follow-up. Subsequent sensitivity analyses with complete cases showed virtually the same pattern of results.

Causality

We performed a well-designed RCT with segmentation of participants and a balancing procedure to study the effects of Embrace, allowing causal inferences (Chapters 4 and 5). RCTs are known to be the best quantitative method to determine the effects of an intervention.[65] There were no statistically significant differences in baseline characteristics between the intervention and control groups. We performed multilevel analyses in order to take the GP and patient level into account. Results showed that there were no differences in effects between GPs.

A limitation of the quantitative studies was the relatively short follow-up period of twelve months.[76] In addition, randomisation within GP practices may have led to contamination. The effect of this is mitigated, however, by the fact that most of the Embrace intervention was delivered by professionals other than the GP, which greatly limits the potential impact of contamination. Finally, in the pretest-posttest study on the changes in prevalence and severity of health-related problems (Chapter 3), a control group was lacking, which precludes a causal interpretation of the results.[57]

Strengths and limitations of the qualitative method

Quality of the sample

One strength of the qualitative study (Chapter 6) was the inclusion of a diverse sample of older adults. We applied the maximum-variation sampling strategy,[77] taking into account the participant's gender, the Embrace risk profile and the degree of urbanisation of the municipality in which the participant was living. This resulted in a diverse study sample of 23 participants aged between 75 and 89, with whom we conducted eighteen interviews. Theoretical saturation was reached, indicating that an adequate sample size was used.[78] The representativeness of the sample, however, may be limited – as it is in all qualitative

research. Nevertheless, generalisation was not the goal of this qualitative research, but rather obtaining information on a broad range of experiences.[77]

Quality of the information obtained

We were able to study in-depth the experiences of older adults with ageing and with Embrace by performing semi-structured interviews. To assess the quality of the qualitative data, we used the qualitative concept of 'trustworthiness' as an equivalent to the quantitative concepts of 'validity' and 'reliability'. The trustworthiness of a qualitative study includes the following criteria: credibility, dependability, confirmability and transferability. These criteria correspond with the quantitative criteria: internal validity, reliability, objectivity and generalisability respectively.[79,80]

'Credibility' is the confidence in the 'truth' of the findings.[79,80] We attempted to enhance credibility by applying maximum-variation sampling,[77] including participants regardless of their opinions about Embrace. Furthermore, credibility was enhanced by thorough development of the interview guide by qualitative research experts and Embrace researchers, and subsequent testing in two pilot interviews by two trained interviewers. In addition, theoretical saturation was reached after eighteen interviews. Finally, credibility was strengthened by presenting several quotations from the participants and discussing the findings in the light of previous research. A possible threat to credibility was the fact that some older adults experienced difficulties reflecting on their experiences with Embrace. However, the interviewers obtained clear answers to the interview questions and research questions.

'Dependability' means that the findings are consistent and can be repeated. [79,80] This was enhanced by the thorough description of the extensive and iterative qualitative data collection and analysis procedures, including checking the transcripts for completeness and accuracy, multiple coding, deduction of themes by experienced qualitative researchers, and discussion of results with the research team. These procedures also enhanced 'confirmability', which is the extent to which the study findings are the result of experiences and ideas of respondents and not researcher bias, motivation or interest.[79,80]

One limitation may be the transferability of the results to other settings or groups, as we only interviewed older adults living in the eastern part of Groningen and receiving person-centred and integrated care and support from Embrace.[79,80]

IMPLICATIONS

In this section, we will discuss the implications of this thesis for practice and future research.

Implications for practice

Our findings confirm that health-related problems of older adults are multidimensional. Professionals working in elderly care and support should therefore take into account all clusters of disabilities experienced by older adults, including mental functions, physical health, mobility, personal care, nutrition and support. These findings also support the inclusion of both district nurses and social workers as case managers for older adults because health-related problems are not solely medically oriented but also include participation, socially related and environmental issues. Special attention needs to be paid to mobility and emotional problems, as a great number of older adults suffer from problems in these domains.

Our findings also indicate that ageing is associated with the development of age-related fears. Elderly care professionals should anticipate these fears in the course of providing care and support. They should, nevertheless, emphasise that some fears might not be realistic. The focus should be on providing information about and coping with the consequences of ageing, the importance of self-management, and explaining the advantages and disadvantages of potential interventions.

Our results further suggest that care and support for older adults should be adapted to the needs of the individual. Segmentation of the group of older adults into risk profiles could serve that purpose and could be a practical starting point for the delivery of person-centred and integrated care and support. Healthcare services could be developed to efficiently match the needs of individuals within the risk profiles. A broad assessment should be part of the care process for frail older adults and those with complex care needs in order to truly meet the needs of an individual, for example by using the GeriatrICS, which was specifically developed to assess health-related problems from the perspective of the older adults themselves.

Based on the studies described in this thesis, along with other Embrace-related studies,[81,82] the implementation of integrated care services for older adults can be provisionally recommended, while further research is being conducted concurrently to support the promising initial findings. The RCT found no clear advantages of Embrace regarding

self-reported outcomes of older adults for the domains of Health, Wellbeing and Self-management. Moreover, Embrace could not be proven cost-effective over the short observation period of one year.[82] However, the perceived quality of care improved[81] and the results of our studies on the health-related problems and experiences of older adults receiving Embrace care and support also provided a promising glance at the impact of Embrace. The number and severity of health-related problems experienced by older adults decreased, and feelings of being in control and feeling safe and secure increased. These are all essential elements for ageing in place, a major point of interest of the Dutch government.[83] Limited funding often necessitates short-term interventions, although complex interventions such as Embrace may take longer to show results. Consequently, simultaneous research should be conducted on the long-term effects of Embrace, its working mechanisms and processes. Furthermore, when deciding on which interventions to implement, policymakers should not solely focus on the outcomes of quantitative studies, such as RCTs, but should also take into account the outcomes of qualitative studies and other 'lower ranked' designs.

Currently, Embrace is being implemented in the Dutch primary care system. Links with specialised care should be reinforced to increase the potential impact of Embrace.

Implications for research

This thesis demonstrated that health-related problems of frail older adults and those with complex care needs could be grouped into six clusters of disabilities. Future research should provide insight into the health-related problems of robust older adults, as we did not include this subgroup in our research on that topic.

We found that the three aspects of control, coping and self-management are important for healthy ageing and ageing in place. Future research should confirm whether these aspects are indeed the most important elements in providing person-centred and integrated elderly care and how these aspects are interrelated.

This thesis provided evidence that segmentation into risk profiles supports the task of meeting older adults' needs. Future studies should further validate the risk profiles used in the Embrace studies. In addition, differences at baseline and differences in impact between the risk profiles should be further investigated.

We found that combining quantitative and qualitative research methods – 'mixed methods' – was very useful for evaluating the impact of integrated care for older adults. Future studies on the impact of integrated care models should therefore adopt both research methods, as quantitative research methods provide insight into the effects of an intervention, while qualitative research may provide greater detail on the personal experiences of participants and thereby improve our understanding of the effects or lack thereof. In this research, triangulation of the data should be applied, for example by developing a mixed methods matrix, in order to gain a more complete picture of the impact of interventions such as Embrace.[70,84]

Although the qualitative study presented in this thesis elucidated to some extent the context of the trial and the underlying processes of Embrace, a more detailed process evaluation might better explain trial outcomes and lead to a greater understanding of the working elements of Embrace and the degree of implementation.[76,85]

In this thesis, the short-term, one-year impact of Embrace was investigated. Long-term research is needed to confirm whether the impact remains the same. Furthermore, future studies should investigate which measurement instruments are most sensitive to change and are feasible for the evaluation of long-term effects of integrated elderly care. For that purpose, a condensed version of the GeriatrICS, still including all six clusters of disabilities, could be developed and evaluated. Moreover, other sensitive measurement instruments for the community-living older population should be developed.

The Embrace study was performed in three semi-rural municipalities in the eastern part of the Province of Groningen, the Netherlands, an area that is known for its cultural and socioeconomic deprivation.[86] As people from lower social classes and lower education have poorer health[87] and are more likely to be affected by multimorbidity,[88] our studies should be replicated in other regions of the Netherlands and in other geographical areas, cultures and healthcare systems.

CONCLUSION

This thesis showed that the person-centred and integrated care service known as Embrace met the needs of older adults living in the community, but did not lead to quantifiable advantages in self-reported health, wellbeing and self-management compared to care as usual over a short-term period of one year. Older adults reported that the prospect of becoming dependent and losing control was a key concept in their lives, and they experienced a wide variety of problems, especially regarding mental functions and mobility. Person-centred and integrated care and support from Embrace resulted in the ability to better deal with the consequences of ageing. Older adults reported fewer and less severe health-related problems, felt safe, secure and more in control due to Embrace – probably due to the support of the Elderly Care Team and better coping strategies. In summary, person-centred and integrated care services such as Embrace should consider the perspectives of older adults on ageing, their health-related problems and associated needs as a starting point for the delivery of services. Combining qualitative and quantitative research methods – incorporating patient experiences and self-reported data – seems to be the best method to evaluate the short-term effects of person-centred and integrated care services.

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