



University of Groningen

Goal planning in person-centred care supports older adults receiving case management to attain their health-related goals

Rietkerk, Wanda; Uittenbroek, Ronald J; Gerritsen, Debby L; Slaets, Joris P J; Zuidema, Sytse U; Wynia, Klaske

Published in:
Disability and Rehabilitation

DOI:
[10.1080/09638288.2019.1672813](https://doi.org/10.1080/09638288.2019.1672813)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2019

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Rietkerk, W., Uittenbroek, R. J., Gerritsen, D. L., Slaets, J. P. J., Zuidema, S. U., & Wynia, K. (2019). Goal planning in person-centred care supports older adults receiving case management to attain their health-related goals. *Disability and Rehabilitation*. <https://doi.org/10.1080/09638288.2019.1672813>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.



Goal planning in person-centred care supports older adults receiving case management to attain their health-related goals

Wanda Rietkerk, Ronald J. Uittenbroek, Debby L. Gerritsen, Joris P. J. Slaets, Sytse U. Zuidema & Klaske Wynia

To cite this article: Wanda Rietkerk, Ronald J. Uittenbroek, Debby L. Gerritsen, Joris P. J. Slaets, Sytse U. Zuidema & Klaske Wynia (2019): Goal planning in person-centred care supports older adults receiving case management to attain their health-related goals, *Disability and Rehabilitation*, DOI: [10.1080/09638288.2019.1672813](https://doi.org/10.1080/09638288.2019.1672813)

To link to this article: <https://doi.org/10.1080/09638288.2019.1672813>



© 2019 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



[View supplementary material](#)



Published online: 07 Oct 2019.



[Submit your article to this journal](#)



Article views: 205




[View related articles](#)



[View Crossmark data](#)

Goal planning in person-centred care supports older adults receiving case management to attain their health-related goals

Wanda Rietkerk^a , Ronald J. Uittenbroek^b, Debby L. Gerritsen^c, Joris P. J. Slaets^{d,e}, Sytse U. Zuidema^a and Klaske Wynia^{ft}

^aDepartment of General Practice and Elderly Care Medicine, University Medical Center Groningen, University of Groningen, Groningen, the Netherlands; ^bDepartment of Health and Social Studies, Windesheim University of Applied Sciences, Zwolle, the Netherlands; ^cDepartment of Primary and Community Care and Radboud Alzheimer Centre, Radboud University Medical Center, Radboud Institute for Health Sciences, Nijmegen, the Netherlands; ^dFaculty of Medical Sciences, University Medical Center Groningen, University of Groningen, Groningen, the Netherlands; ^eLeyden Academy on Vitality and Ageing, Leiden, the Netherlands; ^fDepartment of Health Sciences, Community and Occupational Medicine, University Medical Center Groningen, University of Groningen, Groningen, the Netherlands

ABSTRACT

Purpose: Care for older adults should preferably be provided in a person-centred way that includes goal planning. The aim of the present cohort study is to gain an insight into the results of goal planning, in a person-centred care setting for community-living older adults.

Materials and methods: Within Embrace, a person-centred and integrated care service, older adults set goals with the aim to improve health-related problems. For every goal, they rated severity scores ranging from 0 (no problem) to 10 (extremely severe): a baseline score, a target score and, within one year, an end score to evaluate these goals. The differences between baseline and end scores (goal progress) and target and end scores (goal attainment), and the percentage of goals attained were calculated and compared between health-related domains (i.e., mental health, physical health, mobility, and support).

Results: Among 233 older adults, 836 goal plans were formulated of which 74% (95% Confidence Interval: 71–77) were attained. Goals related to physical health were the most likely to be attained and goals for mobility and pain the least likely.

Conclusions: Older adults are able to attain health-related goals through collaborative goal planning. We recommend future integrated care programmes for older adults to incorporate goal-planning methods to achieve person-centred care.

ARTICLE HISTORY

Received 3 December 2018
Revised 22 September 2019
Accepted 23 September 2019

KEYWORDS

Older adults; goal planning; person-centred care; chronic care model; community-living

► IMPLICATIONS FOR REHABILITATION



- Older adults experiencing frailty or complex care needs and receiving individual support within an integrated care setting are able to formulate and attain goals using goal planning with severity scores.
- Goal plans of community-living older adults mostly aim at improving health-related problems concerning physical health, mobility, or support.
- Goals related to physical health are the most likely to be attained, while goals for mobility and pain are the least likely to be attained.

Introduction


Many older adults experience increasing dependence, decreasing social interaction, and a growing number of professionals involved in their care and support [1,2]. Due to these multi-domain consequences, older adults prefer individualized care that supports their unique constellation of problems, which is generally not supported by the current traditional organization of the healthcare system [3,4]. The aim of person-centred care is to put the person in the centre of the care and to match the person's needs and preferences in a holistic way [5–7]. Therefore, it uses methods that meet a person's individual needs and that enhance

a person's involvement in their own care. As a result, person-centred care aims to improve individual outcomes, support successful aging and reduce costs [5].

A common method to improve person-centeredness in health care is goal planning. Goal-planning promotes a person's health by enhancing self-efficacy [8] and can improve the impact of an intervention [9]. Goal planning in a care setting consists of two aspects, goal setting and care planning [9]. It supports communication between the patient and the care professional with the aim to capture a patient's specific values and circumstances as the basis for developing individualized goal plans [10]. In this

CONTACT Wanda Rietkerk  w.rietkerk@umcg.nl  Department of General Practice and Elderly Care Medicine, University Medical Center Groningen, University of Groningen, Groningen 9700 RB, the Netherlands

[†]Deceased.

 Supplemental data for this article can be accessed [here](#).

© 2019 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

way, patient autonomy [11] and patient-centered care is enhanced [10,12].

Another important advantage of goal planning is that it enables care professionals, patients and researchers to monitor the effects of care and support, and to quantify the impact of interventions [11]. For this, various goal setting instruments are developed [13]. With these instruments, people can score the severity of problems, set goals, and measure the degree of goal attainment over time. Common examples of these instruments are Goal Attainment Scaling (GAS) [14] and the Canadian Occupational Performance Measure (COPM) [15].

With these approaches the outcomes of patients with very heterogeneous symptoms can be aggregated. However, the statistical analysis and interpretation of GAS endpoints is challenging because the goals of individual patients may be unique and the number of goals across patients may vary [16]. For the COPM, feasibility was considered limited within out-patient settings and for older adult populations [13]. As a consequence, current practice and opinions differ substantially about the most feasible scoring instrument [13]. Therefore, we developed a goal-planning method using severity scores ranging from 0 to 10, equivalent to the COPM method and to commonly used and feasible pain rating scales [17].

Next to the scoring instrument debate, little evidence exists about the feasibility [18] and effects of goal setting with frail older adults [19]. Within this population, very heterogeneous needs and goals can exist [20]. Therefore, we decided to use the International Classification of Functioning, Disability and Health (ICF) to identify health-related problems, as this classification covers all domains of human functioning [21]. Because the complete classification is too broad for application within an assessment, we used the GeriatricS, an ICF-based assessment tool, reflecting the most relevant health-related problems in community-living older adults [22].

We hypothesized that community-living older adults, who participate in a person-centred and integrated health service, are able to address their health-related problems using a goal-planning method with severity scores. Therefore, the aim of the present study is to gain an insight into the results of goal planning using severity scores among community-living older adults participating in Embrace, a person-centred care health service for community-living older adults. We first examined the prevalence of goals set by older adults. We then examined goal progress and goal attainment. Finally, we compared the goal attainment results for older adults with different frailty levels and differences within ICF clusters to provide possible explanations for why goals were attained or not.

Materials and methods

Design and setting

We performed a pretest-posttest study with the intervention group of a randomized controlled trial which is part of Embrace [23]. Embrace (in Dutch: SamenOud) is a person-centred and integrated care and support service for community-living adults aged 75 years and older. The ultimate goal of Embrace is to prolong the ability of older adults to continue living in their own homes. After assessing the study protocol of the Embrace trial, the Medical Ethical Committee of the University Medical Center Groningen concluded that ethical approval was not required under the Dutch legislation in medical trials (Reference METc2011.108). The study was conducted in accordance with the Declaration of Helsinki and the Code of Conduct for Health

Research (2004). More details of the Embrace study have been published previously [23].

Sample

Participants were enrolled in the Embrace study during the first quarter of 2012. Of the 24 general practitioner practices invited, 15 decided to participate. All persons aged 75 years and older from these practices were invited to participate, of whom 1456 consented (48.7% response rate). After giving informed consent, participants provided demographic and health-related data through postal surveys. Participants were classified into three risk profiles to ensure a suitable care level. These were robust, frail, or complex care needs, according to the participant's self-reported complexity of care needs (INTERMED for the Elderly Self-Assessment (INTERMED-E-SA) [24]) and level of frailty (Groningen Frailty Indicator, GFI [25,26]). The robust risk profile included older adults without complex care needs (INTERMED-E-SA < 16) and with a relatively low frailty level (GFI < 5). The frail risk profile comprised older adults with a higher level of frailty who were at risk of developing complex care needs (INTERMED-E-SA < 16 and a GFI ≥ 5), while the complex care needs risk profile included older adults with care needs in multiple domains (INTERMED-E-SA ≥ 16, regardless of GFI score). These 1456 participating older adults were stratified into the three risk profiles. Subsequently they were randomized to the intervention or control group with balanced allocation on demographic and clinical characteristics. In total 747 older adults were randomized to Embrace intervention groups within the risk profiles: robust ($n = 438$), frail ($n = 122$), and complex care needs ($n = 187$).

Older adults with the robust profile were in good health, but at risk for the consequences of aging and therefore invited to participate in the "preventive and proactive self-management support program" with community group meetings that supported them to stay healthy as long as possible. They did not receive individual support from a case manager. Consequently, they developed no goal plan(s) and were therefore not eligible for inclusion in this study.

Older adults with the frail risk profile and those with complex care needs were eligible for inclusion in the current study because these older adults received individual support from a case manager and formulated goal plans. Included were older adults with at least one goal plan.

Embrace

Each general practice participating in Embrace set up a multidisciplinary Elderly Care Team comprising a general practitioner, an elderly care physician and two case managers. Elderly care physicians are doctors trained in, and consulted for, problems in the complex geriatric care pathway [27,28]. The case managers were a social worker (for older adults with the frail risk profile) or a district nurse (for older adults with the complex care needs risk profile). Case managers were trained to give individual support in collaborative goal setting with shared decision-making, among other skills. Frail older adults were visited once a month and older adults with complex care needs fortnightly by their case manager to develop, monitor, navigate, and evaluate their goal plans. One of the aims of the goal plans was to encourage the older adult to carry out activities by themselves or, if necessary, with help from a caregiver or professional. During the monthly meetings of the Elderly Care Team, the goal plans of the older adults were discussed when deemed necessary.

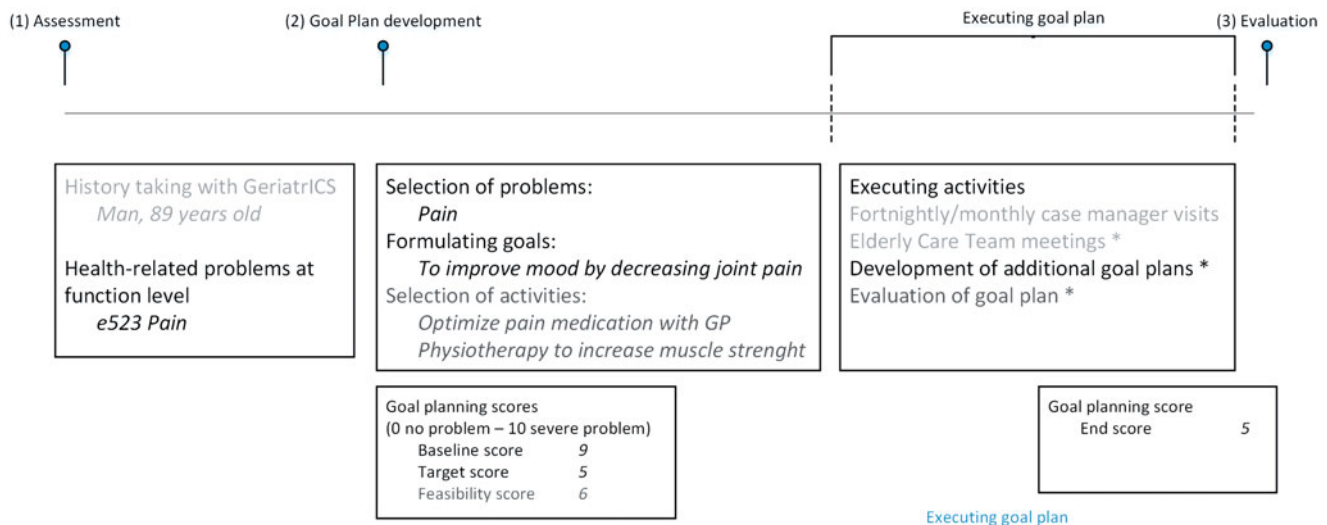


Figure 1. Overview of the goal-planning process within Embrace, with two goal plan examples. GeriatrICS = Geriatric ICF Core Set, or not to the editor's taste. Baseline score: The severity of a problem identified during the assessment. Target score: The score the older adult intended to attain by performing the planned activities to address the specific problem. End score: The severity of the health-related problem after at evaluation. Baseline score, target score, and end score are severity scores and range from 0 to 10 with higher scores indicating more severity. Feasibility score: The likeliness of a goal to be attained was rated to make older adult expectations explicit, discussed and adjusted accordingly. Score ranges from 0 (totally unlikely) to 10 (certainly feasible). Black: older adult in charge; Grey: older adult and the case manager mutually in charge; light grey: initiated by the case manager. In italic: example of care and goal plan.

Goal-planning procedure

The goal-planning procedure in the Embrace intervention group consisted of three steps: (1) geriatric assessment, (2) goal-plan development, and (3) goal-plan evaluation. In Figure 1, each of these steps is shown and illustrated with an example.

- During the first consultation, a comprehensive geriatric assessment was carried out by the case manager to identify health-related problems experienced by the older adult. The Geriatric ICF Core Set (GeriatrICS) was used [22] to guide this assessment. It consists of 29 categories from the ICF [21], covering the four ICF-components: Body Functions, Body Structures, Activities and Participation, and Environmental Factors. Consensus on the content of the Core Set was attained during a Delphi study by an expert panel with older adults and medical and non-medical health professionals. The Core Set was validated in clinical practice with participants of the Embrace studies [22]. The items in the GeriatrICS reflect the most relevant health-related problems among community-living older adults without dementia. The severity of problems identified during the assessment was rated by the older adults using a severity score. Scores could range from 0 to 10, with lower scores indicating a less severe problem. After a feasibility pilot, a ruler was added to support the older adults to determine the severity score of their health-related problem. This ruler was a 20 cm scale with images of faces (from happy to sad), adapted from the faces pain scale which is known to improve understanding of visual analogue scaling scores [29]. In case of possible cognitive limitations a relevant care giver (most of the time a spouse) participated in the assessments or visits of the case manager with the older adult.
- Subsequently, the older adult selected from the assessment all health-related problems that he or she aimed to improve. Next, the older adult formulated a goal for each of the selected problems using collaborative goal setting with the case manager, and set a target score. This target score resembled the score the older adult intended to attain by performing the planned activities to address the specific

- problem. To reach this goal, appropriate and feasible activities that were assumed to lead to the attainment of the goal were discussed and selected by the case manager and the older adult. These activities together with the health-related problem and the scores were considered the "goal plan." Finally, the feasibility of the goal plan was assessed. The older adult was asked by the case manager to provide a feasibility score per goal, with scoring options ranging from totally unlikely (score 0) to certainly feasible (score 10). The case managers were instructed to support the older adult to revise the target score or the selected activities if feasibility was insufficient (rated below 6) – in other words, with a low feasibility score, the goal seemed too difficult to achieve. To improve feasibility, either the target score was lowered or the selected actions were adjusted to improve feasibility. In this way, expectations of older adults were made explicit, discussed, and adjusted accordingly.
- Each goal plan was evaluated with the older adult within a predetermined time-frame or at the very least before the end of the 12-month intervention period. The severity of the health-related problem at that given time is the end score. The older adult rated this end score using the faces scale.

Each goal plan thus ultimately concerned a health-related problem with four scores (three severity scores (baseline score, end score, and target score) and a feasibility score) and activities and interventions required to obtain the target score. All goal plans were registered in an electronic client registry system.

Measurement instruments

At baseline, before the assessment with the case manager, older adults provided health-related information with validated self-assessment questionnaires.

Frailty was assessed using the Groningen Frailty Indicator (GFI). It comprises 15 items, divided over four domains: physical, social, cognitive, and psychological. The total score can range from 0 to 15, a higher score indicating a higher level of frailty [26].

Care complexity was measured with the INTERMED for the Elderly Self-Assessment (IM-E-SA). It comprises 20 items, divided over four domains: biological, psychological needs, social needs, and healthcare, approached from three different time perspectives: history, current state, and prognosis. The total score can range from 0 to 60, a higher score reflecting a higher level of complexity [24].

Activities of daily living (ADL) were measured by the modified Katz ADL index. It comprises 15 items and measures 8 physical and 7 instrumental ADL. The total score can range from 0 to 15, a higher score indicating worse functional status [30].

Health status was measured by the EQ-5D-3L [31]. It comprises five items, divided over five dimensions of health: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Scoring options ranged from “no problems” to “severe problems” on a three-point scale. Every score was aggregated to one score with the Dutch value set created by time-trade off principle [32]. Possible scores in this value set can range between -0.33 and 1 , with 1 indicating the best health status.

Analysis

Health-related problems were classified into the most suitable ICF category by the case managers using the ICF categories in the GeriatrICS or by using the ICF browser (<http://apps.who.int/classifications/icfbrowser/>). Two researchers (W.R., R.B.) independently checked the classification of the health-related problems into the ICF categories using the descriptions of the perceived problems given by the case managers and following the ICF linking rules [33]. In case of disagreement between the researchers, a third researcher (K.W.) was consulted. When a health-related problem could not be classified by the case manager, two researchers (W.R., K.W.) independently classified the problem into the most suitable ICF category following the ICF linking rules [33]. If there was no immediate agreement between both researchers, consensus was reached by discussion. Subsequently, to gain an insight into the domains of health-related problems, the ICF categories were grouped into one of the six corresponding clusters: Mental Health, Physical Health, Mobility, Personal Care, Nutrition, or Support [34].

A goal plan was included in the analysis when it was complete, meaning that there was a description of the health-related problem, a baseline score, a target score as well as an end score available. By calculating the difference between the target score and the end score, we determined the extent to which the goal was attained. Goal plans with end scores equal to or lower than target scores (differences \leq zero) indicated goal attainment. The proportion (with 95% confidence intervals (CI)) of goals attained for the total sample for each risk profile and for each ICF cluster was calculated. Goal progress was calculated by subtracting the baseline score from the end score. Differences \leq zero indicated goal progress.

The baseline characteristics of the older adults were described for each risk profile and difference were tested between risk profiles. Baseline differences were also assessed between the included older adults (i.e., older adults with at least one evaluated goal plan) compared to all older adults with at least one formulated goal plan. Nominal baseline characteristics were assessed with chi-square test using continuity correction. Differences in linear and ordinal baseline characteristics, target scores, and proportions of goals attained between the risk profiles were assessed with Mann-Whitney U test. Non-parametric statistical tests were used in light of the discrete level of data obtained with the

severity scores. The significance level was set at 0.05. Statistical analyses were conducted using SPSS 23 (Released 2015. IBM SPSS Statistics for Windows. Armonk, NY: IBM Corp.)

Results

Data available for analysis

Of the 747 older adults in the intervention group, 309 older adults were frail or had complex care needs, and were therefore eligible for inclusion (Figure 2). In total, 288 of these older adults had at least one goal plan. Of these 288 older adults, $n = 55$ did not evaluate any of their goal plans. Of the total 920 goal plans, 84 goal plans were not evaluated within the evaluation period of 12 months. Goal plans were mostly not evaluated due to loss to follow-up of the older adult, for example, due to admission to a nursing home or conversion to the robust profile (in which they received no case management nor follow-up assessments anymore). In addition, goals were sometimes not evaluated because the older adult was not able to rate the severity scores ($n = 2$ and 8 goal plans), not able to assign a goal ($n = 4$ and 12 goal plans) or had too severe cognitive impairments (2 goal plans). Therefore, 233 older adults were included in the study and 836 goal plans were included in the analysis.

Baseline characteristics of participants

The baseline characteristics of the 233 participants are shown in Table 1. The mean age of participants was 81.5 years, one-third was male and half was married. The most common educational level was (uncompleted) primary school or low-level vocational training. Older adults with the complex care needs risk profile had – as a result of the stratification – more chronic conditions, used more medications, had more (I)ADL constraints and a lower health-related quality of life compared to older adults with the frail risk profile. All these differences between the strata were statistically significant ($p \leq 0.001$).

Prevalence and classification of goal plans

The median number of goal plans for each older adult was 3 (IQR 2-5). There was no significant difference in the median number of goal plans between older adults with the complex care needs profile (median 3 IQR 2-5) and older adults with the frail profile (median 3 IQR 1-4, p values 0.06).

Three quarters of all goal plans could be classified using the ICF categories from the GeriatrICS and were grouped into one of the six predefined clusters. Three highly prevalent health-related problems were not captured in the GeriatrICS and therefore not part of any predefined cluster. These health-related problems could be classified using the ICF and were clustered into the ICF categories pain (25% of all older adults), looking after one's health (7%), and recreation and leisure (7%). Most older adults formulated goal plans within the physical health (64% of all older adults), mobility (50%), or support (49%) clusters, while problems in the personal care cluster had the lowest prevalence (3%). Figure 3 shows the prevalence of goal plans of each cluster or (new) ICF category among the total sample and for each risk profile. The prevalence of each ICF category within the clusters is shown in Supplementary Table S1.

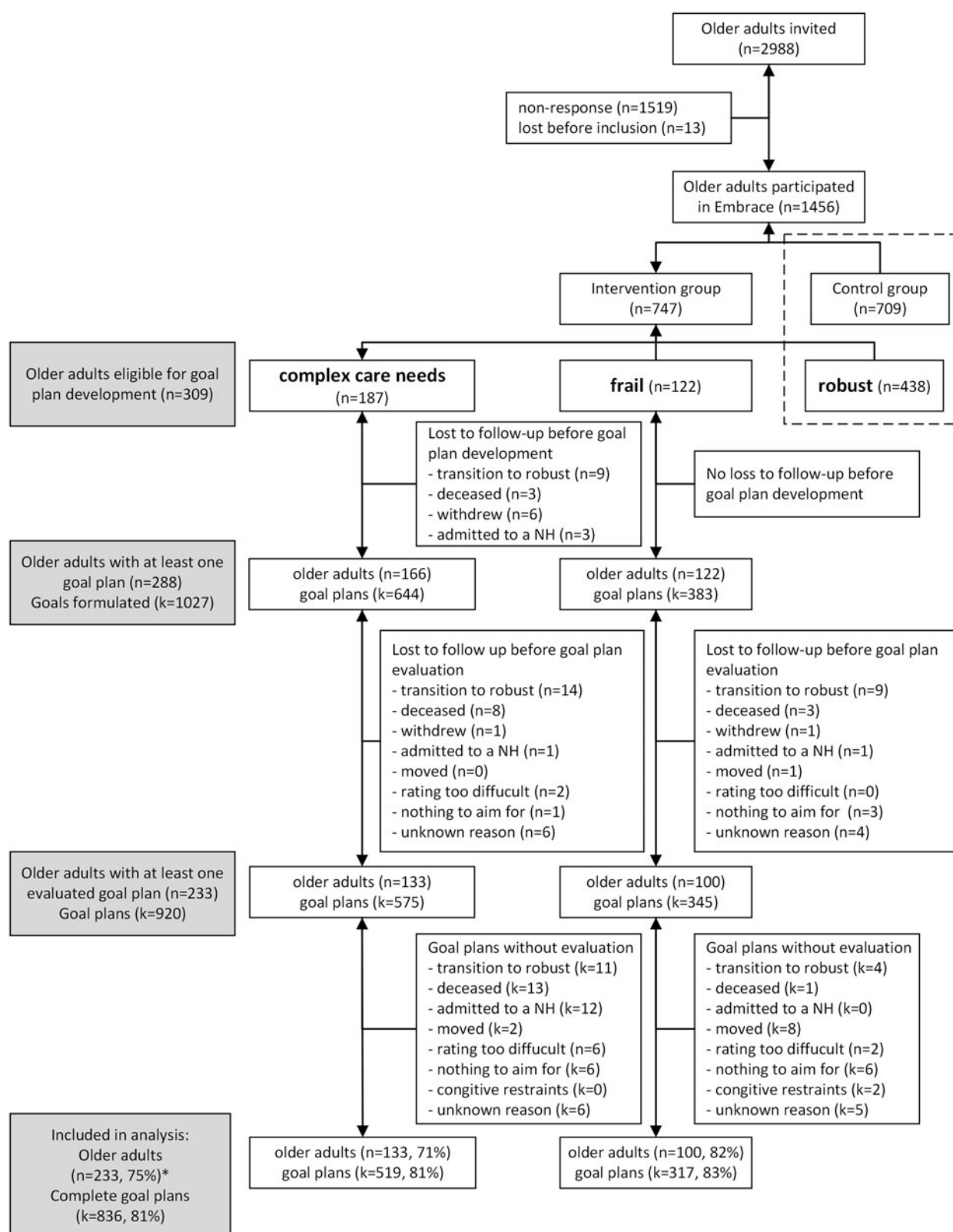


Figure 2. Flowchart of inclusion of eligible older adults (n), separated for the complex care needs and frail risk profiles, and their goal plans (k). *Proportion of older adults (and goal plans) included in analysis of the sample eligible for goal plan development. NH: nursing home; n: number of older adults; k: number of goal plans; within grey box: older adults from control group and robust care profile: they did not receive individual support from a case manager and therefore formulated no goals plan.

Results of goal planning for the total sample

Table 2 presents the goal-planning results for the total sample and for each risk profile. The mean baseline score for the health-related problems in the total sample was 6.0 (SD 2.0), while the

mean target score was 3.3 (SD 2.0). In total, 619 of the 836 goals (74%, CI 71–77) were attained. Of all the older adults, 89% (CI 84–92) were able to attain at least one goal. The end scores were, on average, 0.2 points higher than the target score (SD 1.9).

Table 1. Baseline characteristics for the total older adult sample and for each risk profile.

	Total <i>n</i> = 233	Complex care needs <i>n</i> = 133	Frail <i>n</i> = 100
Age, mean (SD)	81.5 (4.7)	81.5 (4.6)	81.5 (4.8)
Male gender	75 (32)	41 (31)	34 (34)
Married	115 (49)	70 (53)	45 (45)
Living situation			
Community-living with others	119 (51)	71 (53)	48 (48)
Community-living single	109 (47)	58 (44)	51 (51)
Residential care	4 (2)	4 (3)	1 (1)
Educational level			
(Less than) primary school or low vocational training	127 (54)	72 (54)	55 (55)
Secondary professional education	85 (37)	52 (39)	33 (33)
Higher professional education/university	20 (9)	8 (7)	12 (12)
Using more than three medications	182 (78)	111 (84)	71 (71)
Number of chronic conditions, median (IQR)	3 (2–4)	4 (2–5)	3 (1–4)
Frailty ^a , median (IQR)	6 (5–8)	7 (5–8)	6 (5–7)
Care complexity ^b , median (IQR)	16 (12–20)	19 (17–22)	12 (10–14)
(I)ADL constraints ^c , median (IQR)	3 (1–5)	4 (2–6)	1 (0–3)
Health status ^d , mean (SD)	0.68 (0.17)		0.76 (0.12)

Data are expressed as numbers (percentage) unless stated otherwise.

IQR: Inter Quartile Range; ADL: Activities of Daily Living.

^aGFI = Groningen Frailty Indicator (range 0–15), a higher score indicates more frail.

^bINTERMED SA – E = INTERMED for the Elderly Self-Assessment (range 0–60), a higher score indicates more case complexity.

^cModified KATZ ADL/IADL (range 0–15), a higher score indicates more (I)ADL constraints.

^dEQ-5D (range 0–1), a higher score indicates a better health-related quality of life.

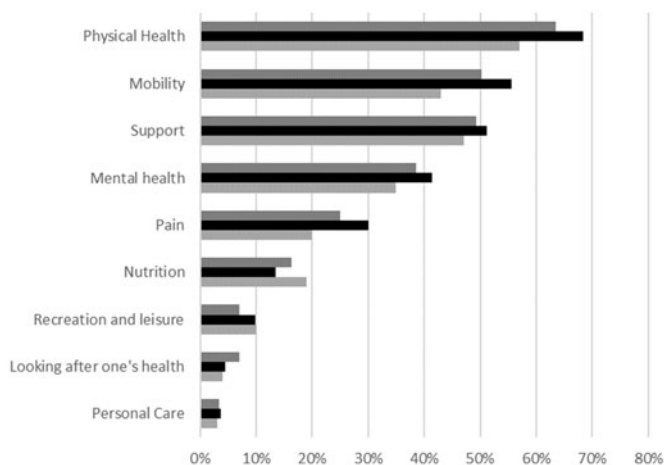


Figure 3. Prevalence of goal plans (*n* = 836) among older adults (*n* = 233) and for each risk profile, categorized into six predefined clusters and three other highly prevalent ICF-categories. Dark grey: total sample; black: complex care needs; light grey: frail.

The mean goal progress (difference between end score and baseline score) was 2.5 (SD 2.3).

The median length of a goal time-frame was 283 days. Seventy-seven per cent of goal plans were closed during the intervention year (in contrast to at the end of the intervention year). There was no difference in proportion of goal attainment between the goals closed during the intervention year compared to the goals closed at the end of the intervention year.

Differences between the risk profiles and goal clusters

The mean baseline scores at the start of the intervention were similar for both risk profiles (see Table 2). However, older adults with the complex care needs profile had lower target scores, meaning that a larger improvement was intended, compared to the frail older adults ($p < 0.001$). Nevertheless, the same proportions of goals attained (74%) were found in both risk profiles.

When comparing the results for the ICF clusters and ICF categories, the most severe health-related problem was pain (mean baseline score 6.7, SD 1.7), followed by mobility, mental health, and personal care. Lowest severity at the start was rated for recreation and leisure (4.8 SD 2.2). The highest proportions of goals were attained within the clusters of personal care and physical health (resp. 88% CI 53–98 and 78% CI 72–83), while the lowest proportions of goals were attained within the mobility cluster and the pain category (resp. 69%, CI 62–76 and 68%, CI 56–78). [Supplementary Table S1](#) shows a description of the results of the goal-planning process for each ICF-category within the GeriatrICS.

Discussion

The aim of this study was to gain an insight into the results of goal planning using severity scores in a person-centred care setting for community-living older adults. We found that older adults who were frail or had complex care needs and participated in a person-centred and integrated health service were able to attain almost three quarters of these goals, while the mean differences between target scores and end scores were trivial. Goal progress was at mean 2.5 points, which is commonly seen as an clinical important change on a 0–10 scale [35].

Most older adults formulated goal plans within the physical health, mobility, or support clusters, and the least within the self-care cluster. The high prevalence of goal in the first three clusters is not uncommon in the literature. For example, older adults who formulated life-goals mainly preferred maintenance of health, increased physical activity, and increased socialization [36]. Health is thus an important goal, even when seen in a broader life-goal perspective. Indeed, in the study of Waldersen et al. [37] among community-living older adults receiving occupational therapy at home, goals were mainly focused on mobility and the least on self-care. Similar to our results, in this study it was found that 72% of goals were attained.

Goals in the physical cluster were the most likely to be attained and goals in the pain and mobility clusters seemed the most difficult to attain. Again, Waldersen et al. also found that goals related to mobility (walking) and pain (within body functions) had the lowest attainability [37]. There is little evidence

Table 2. Goal-planning results.

	Goal plans, <i>n</i> =	Baseline score, mean (SD)	Target score, mean (SD)	End score, mean (SD)	Δ End – baseline score mean (SD) ^a	Δ End – target score mean (SD) ^a	Goal attainment % (CI)
Overall sample	836	6.0 (2.0)	3.3 (2.0)	3.5 (2.4)	–2.5 (2.3)	0.2 (1.9)	74 (71–77)
Risk profile:							
Complex care needs	519	6.0 (1.9)	3.1 (2.0)	3.4 (2.3)	–2.5 (2.6)	0.3 (1.7)	74 (70–78)
Frail	317	6.1 (2.2)	3.7 (2.1)	3.6 (2.4)	–2.6 (2.1)	–0.1 (2.1)	74 (69–79)
<i>p</i> Value for difference between risk profiles		0.25	<0.001	0.19	0.37	0.016	0.96
GeriatrICS clusters							
Mental health	110	6.1 (1.9)	4.0 (1.9)	4.1 (2.3)	–2.1 (2.3)	0.1 (1.9)	75 (66–82)
Physical health	233	5.9 (1.9)	3.2 (2.0)	3.1 (2.3)	–2.8 (2.2)	–0.1 (1.8)	78 (72–83)
Mobility	176	6.1 (1.9)	3.7 (1.9)	3.9 (2.4)	–2.3 (2.2)	0.2 (2.0)	69 (62–76)
Personal care	8	6.1 (1.6)	2.5 (1.8)	2.4 (1.7)	–3.8 (2.8)	–0.1 (1.1)	88 (53–98)
Nutrition	42	5.3 (2.1)	2.9 (1.8)	3.1 (2.1)	–2.2 (2.1)	0.1 (2.2)	74 (59–85)
Support	165	5.9 (2.3)	2.7 (2.2)	3.0 (2.4)	–2.9 (2.5)	0.4 (1.9)	75 (67–81)
Other ICF-categories							
Pain	68	6.7 (1.7)	3.9 (1.9)	4.3 (2.2)	–2.3 (2.0)	0.4 (2.0)	68 (56–78)
Looking after one's health	17	6.0 (2.6)	2.4 (2.2)	2.9 (2.5)	–3.1 (2.8)	0.6 (1.3)	76 (53–90)
Recreation and leisure	17	4.8 (2.2)	2.2 (2.0)	2.2 (2.0)	–2.5 (2.4)	0.0 (0.9)	76 (53–90)

Scores are rated by the older adult and can range from 0 to 10 with higher scores indicating more severity.

Δ End – baseline score (goal progress): a difference below zero represents goal progress.

Δ End – target score: a difference below zero represents a goal more improved than aimed for.

Goal attainment: the prevalence of goals with a Δ End – target score ≤ 0 .

^aDifference between the result for the ' Δ -columns' and extracting the respective scores is due to rounding off the results to the first decimal.

explaining the difference in goal attainability across clusters. The relatively good attainability of goals in the physical cluster is possibly due to the central role of the general practitioner in the Elderly Care Teams in this study. As they feel most able to solve problems in the physical domain compared to other domains [38]. Another explanation might be the persistent or stubborn character of pain [39–41] and psychological complaints [42] in contrast to physical complaints.

An important finding was that pain, although it was a prevalent (29%) and the most severe health-related problem, was not included in the GeriatrICS. It is known that pain is an important health-related problem among older adults [40,43,44] and it is more often overlooked within geriatric assessments [45]. In a thorough meta-analysis of qualitative literature, the “adaptation of older adults to the inevitable” and “the reluctance to pain medication” seems a barrier to report pain. This may be an explanation for why it was not included in the GeriatrICS after a Delphi procedure with expert panels of older adults and care professionals.

Methodological considerations

Important strengths of this study are the large sample of participating older adults and the large number of goal plans included in the analysis. By using the GeriatrICS, that is, based on ICF classification, we covered the broad scope of functioning and disabilities experienced by the individual participants [21]. By classification of the health-related problems in ICF clusters we created a beginning of a categorization of health-related goals for older adults [46].

Our goal setting method using severity scores considers many aspects of goal attainment, as proposed by Krasny-Pacini et al. [47]. The most important aspect we covered was the central role of the client in prioritizing, judging the relevance, and evaluating goals. This is very important when the aim is to develop person-centred care. Other proposed aspects we applied were training the case managers in goal setting, classification of health-related problems using ICF categories, providing a goal example in this paper and accounting for feasibility [47].

However, there were aspects which are considered important for the quality of goals and goal setting we were not able to

investigate. For example, time-specificity and measurability were not studied. Uni-dimensionality, meaning that a goal is solely about aiming to improve one aspect of a problem, is considered very important for fair evaluation of goals [16]. This was, however, difficult to achieve. Despite the fact that case managers were trained to avoid formulating multi-dimensional goals, not each goal plan was uni-dimensionally formulated.

Lastly, examiner bias could have been introduced, for the older adult rated the severity scores twice themselves. However, we tried to minimize this by asking the older adult to rate the end score using the ruler without reminding them at their baseline score. Keeping the person-centred aim in mind, this was the best way to capture true person reported and relevant outcomes [48,49].

Commonly used goal setting instruments all have their feasibility issues [13]. By introducing severity scoring from 0 to 10, we aimed for a clinometric measurement instrument which focuses on older adults' preferences to capture relevant outcomes [50]. The methodology is known for its easy adoption, also for people with cognitive impairments [13,17]. Nevertheless, case managers of Embrace indicated that older adults had difficulty judging the severity of their problems [51]. We are not aware of studies comparing different goal setting instruments for older adults. It is therefore interesting to study the difference in feasibility of our scoring method with other instruments.

We were not able to compare our results on the extent in which older adults in the intervention group attained their individual goals compared to the control group from the RCT of Embrace that received care as usual without assessments and goal planning. This might be seen as a potential limitation, as we were not able to account for the possibility of response shift, which is caused by the adaptive strategy that allows someone to feel good about their actual health status despite chronic illnesses [52–54]. However, studies concerning goal setting commonly lack control groups [55] or experience methodological problems [56]. Because goal setting is suggested to be effective in itself [57] it is difficult to create control groups with goal plans. Current literature lacks high quality evidence on the effects of goal setting for older adults on quality of life.

Another potential limitation is the exclusion of older adults with non-evaluated goal plans, which might mean that goal attainability was overestimated. However, the risk of selection bias seems minimized, as the older adults who were excluded after the goal setting procedure, did not differ from those who were included (concerning the variables in Table 1). Furthermore, the relatively low number of excluded goal plans was too small to have impact on the study results.

Future research and clinical implications

Future research should examine the effect of goal planning in person-centred care on quality of life, healthcare consumption, and costs. In this way, the added value of goal planning to person-centred care can be substantiated. Next to demonstrating this pragmatic value of goal setting, further work is required to explain the theoretical goal setting mechanism [58,59].

An important implication for clinical practice and future research results from the heterogeneity of the goal plans. This not only indicates that the range of problems experienced by older adults is broad, but also reinforces the importance of a broadly skilled case manager. To increase the rate of goal attainment it is advised to get an insight into the deployed interventions and raise the evidence-base of these interventions.

Conclusions

Older adults are able to formulate and attain health-related goals in a person-centred care setting by collaborative goal planning with their case manager. We therefore recommend that future person-centred and integrated care programmes for older adults incorporate goal-planning methods with severity scores to support person-centred care.

Acknowledgements

We would like to thank the older adults and case managers who participated in this study for their valuable contributions. We also like to thank Ronald Brans for data preparation and Boudewijn Kollen for statistical advice.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

The Embrace study was funded by the Netherlands Organisation for Health Research and Development [ZonMw: grant number 314010201; <http://www.zonmw.nl>]. The health care professionals involved are funded by the Dutch Healthcare Authority [NZA: file number 300-1021; <http://www.nza.nl>]. This report was supported by the Innovation fund Friesland Care Insurance (In Dutch: Innovatiefonds De Friesland Zorgverzekeraar), Leeuwarden, the Netherlands [under Grant 0710-14599/DS44]. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

ORCID

Wanda Rietkerk  <http://orcid.org/0000-0002-5528-6187>

Data availability statement

Dataset is available upon request from corresponding author.

References

- [1] Spoorenberg SLW, Wynia K, Fokkens AS, et al. Experiences of community-living older adults receiving integrated care based on the chronic care model: a qualitative study. *PLoS One*. 2015;10(10):e0137803.
- [2] Marengoni A, Angleman S, Melis R, et al. Aging with multimorbidity: a systematic review of the literature. *Ageing Res Rev*. 2011;10(4):430–439.
- [3] D'Avanzo B, Shaw R, Riva S, et al. Stakeholders' views and experiences of care and interventions for addressing frailty and pre-frailty: a meta-synthesis of qualitative evidence Virgili G, editor. *PLoS One*. 2017;12:e0180127.
- [4] Bayliss EA, Edwards AE, Steiner JF, et al. Processes of care desired by elderly patients with multimorbidities. *Fam Pract*. 2008;25(4):287–293.
- [5] World Health Organization. Global strategy on people-centred and integrated health services – Interim Report. 2015. Available from: <http://www.who.int/servicedeliverysafety/areas/people-centred-care/global-strategy/en/>
- [6] Mead N, Bower P. Patient-centredness: a conceptual framework and review of the empirical literature. *Soc Sci Med*. 2000;51(7):1087–1110.
- [7] Jesus TS, Bright F, Kayes N, et al. Person-centred rehabilitation: what exactly does it mean? Protocol for a scoping review with thematic analysis towards framing the concept and practice of person-centred rehabilitation. *BMJ Open*. 2016;6(7):e011959.
- [8] Ashford S, Edmunds J, French DP. What is the best way to change self-efficacy to promote lifestyle and recreational physical activity? A systematic review with meta-analysis. *Br J Health Psychol*. 2010;15(2):265–288.
- [9] Levack WMM, Taylor K, Siegert RJ, et al. Is goal planning in rehabilitation effective? A systematic review. *Clin Rehabil*. 2006;20(9):739–755.
- [10] Scholl I, Zill JM, Härter M, et al. An integrative model of patient-centeredness – a systematic review and concept analysis. *PLoS One*. 2014;9(9):e107828.
- [11] Levack WMM, Dean SG, Siegert RJ, et al. Purposes and mechanisms of goal planning in rehabilitation: the need for a critical distinction. *Disabil Rehabil*. 2006;28(12):741–749.
- [12] Schulman-Green DJ, Naik AD, Bradley EH, et al. Goal setting as a shared decision making strategy among clinicians and their older patients. *Patient Educ Couns*. 2006;63(1–2):145–151.
- [13] Stevens A, Beurskens A, Köke A, et al. The use of patient-specific measurement instruments in the process of goal-setting: a systematic review of available instruments and their feasibility. *Clin Rehabil*. 2013;27(11):1005–1019.
- [14] Kiresuk TJ, Sherman RE. Goal attainment scaling: a general method for evaluating comprehensive community mental health programs. *Community Ment Health J*. 1968;4(6):443–453.
- [15] Carswell A, McColl MA, Baptiste S, et al. The Canadian occupational performance measure: a research and clinical literature review. *Can J Occup Ther*. 2004;71(4):210–222.

- [16] Urach S, Gaasterland C, Posch M, et al. Statistical analysis of Goal Attainment Scaling endpoints in randomised trials. *Stat Methods Med Res.* 2019;26(6):1893–1910.
- [17] Kertzman S, Aladjem Z, Milo R, et al. The utility of the Visual Analogue Scale for the assessment of depressive mood in cognitively impaired patients. *Int J Geriatr Psychiatry.* 2004;19(8):789–796.
- [18] Toto PE, Skidmore ER, Terhorst L, et al. Goal Attainment Scaling (GAS) in geriatric primary care: a feasibility study. *Arch Gerontol Geriatr.* 2015;60(1):16–21.
- [19] Smit EB, Bouwstra H, Hertogh C, et al. Goal-setting in geriatric rehabilitation: a systematic review and meta-analysis. *Clin Rehabil.* 2019;33(3):395–407.
- [20] Rockwood K, Stolee P, Fox RA. Use of goal attainment scaling in measuring clinically important change in frail elderly. *J Clin Epidemiol.* 1993;46(10):1113–1118.
- [21] World Health Organization. International classification of functioning, disability and health. 2nd ed. Geneva: WHO; 2007.
- [22] Spooenberg SLW, Reijneveld SA, Middel B, et al. The Geriatric ICF Core Set reflecting health-related problems in community-living older adults aged 75 years and older without dementia: development and validation. *Disabil Rehabil.* 2015;37(25):2337–2343.
- [23] Spooenberg SLW, Uittenbroek RJ, Middel B, et al. Embrace, a model for integrated elderly care: study protocol of a randomized controlled trial on the effectiveness regarding patient outcomes, service use, costs, and quality of care. *BMC Geriatr.* 2013;13(1):62.
- [24] Peters LL, Boter H, Slaets JPJ, et al. Development and measurement properties of the self assessment version of the INTERMED for the elderly to assess case complexity. *J Psychosom Res.* 2013;74(6):518–522.
- [25] Steverink N, Slaets JPJ, Schuurmans H, et al. Measuring frailty: developing and testing the GFI (Groningen frailty indicator). *Gerontologist.* 2001;41:236–237.
- [26] Peters LL, Boter H, Buskens E, et al. Measurement properties of the Groningen frailty indicator in home-dwelling and institutionalized elderly people. *J Am Med Dir Assoc.* 2012;13(6):546–551.
- [27] Verenso BM, Hertogh C, Koopmans R, et al. Elderly care physicians in the Netherlands: professional profile and competencies; 2015:48. Available from: <http://www.verenso.nl/assets/Uploads/Downloads/Richtlijnen/VER0026-Professionalprofile-broch-DEF.pdf>
- [28] Koopmans R, Pellegrom M, van der Geer ER. The Dutch move beyond the concept of nursing home physician specialists. *J Am Med Dir Assoc.* 2017;18(9):746–749.
- [29] Kim EJ, Buschmann MT. Reliability and validity of the Faces Pain Scale with older adults. *Int J Nurs Stud.* 2006;43(4):447–456.
- [30] Katz S, Ford AB, Moskowitz RW, et al. Studies of illness in the aged. The index of ADL: a standardized measure of biological and psychosocial function. *J Am Med Assoc.* 1963;185:94.
- [31] Brooks R. EuroQol: the current state of play. *Health Policy (New York).* 1996;37(1):53–72.
- [32] Lamers LM, McDonnell J, Stalmeier PFM, et al. The Dutch tariff: results and arguments for an effective design for national EQ-5D valuation studies. *Health Econ.* 2006;15(10):1121–1132.
- [33] Cieza A, Geyh S, Chatterji S, et al. ICF linking rules: an update based on lessons learned. *J Rehabil Med.* 2005; 37(4):212–218.
- [34] Spooenberg SLW, Reijneveld S, Uittenbroek R, et al. Health-related problems and their 1-year's changes as assessed with the Geriatric ICF Core Set (GeriatricICS) in community-living frail older adults receiving person-centred and integrated care from Embrace. *Arch Phys Med Rehabil.* DOI: [10.1016/j.apmr.2019.02.014](https://doi.org/10.1016/j.apmr.2019.02.014)
- [35] Farrar JT, Young JP, LaMoreaux L, et al. Clinical importance of changes in chronic pain intensity measured on an 11-point numerical pain rating scale. *Pain.* 2001;94(2):149–158.
- [36] Howard EP, Louvar KE. Examining life goals of community-dwelling, low-income older adults. *Res Gerontol Nurs.* 2017; 10(5):205–214.
- [37] Waldersen BW, Wolff JL, Roberts L, et al. Functional goals and predictors of their attainment in low-income community-dwelling older adults. *Arch Phys Med Rehabil.* 2017; 98(5):896–903.
- [38] Herzog A, Gaertner B, Scheidt-Nave C, et al. 'We can do only what we have the means for' general practitioners' views of primary care for older people with complex health problems. *BMC Fam Pract.* 2015;16(1):35.
- [39] Moseley GL, Butler DS. Fifteen years of explaining pain: the past, present, and future. *J Pain.* 2015;16(9):807–813.
- [40] Thakral M, Shi L, Foust JB, et al. Pain quality descriptors in community-dwelling older adults with nonmalignant pain. *Pain.* 2016;157(12):2834–2842.
- [41] Crowe M, Gillon D, Jordan J, et al. Older peoples' strategies for coping with chronic non-malignant pain: a qualitative meta-synthesis. *Int J Nurs Stud.* 2017;68:40–50.
- [42] Moussavi S, Chatterji S, Verdes E, et al. Depression, chronic diseases, and decrements in health: results from the World Health Surveys. *Lancet.* 2007;370(9590):851–858.
- [43] Muntinga ME, Jansen APD, Schellevis FG, et al. Expanding access to pain care for frail, older people in primary care: a cross-sectional study. *BMC Nurs.* 2016;15(1):26.
- [44] Kruschinski C, Wiese B, Dierks M-L, et al. A geriatric assessment in general practice: prevalence, location, impact and doctor-patient perceptions of pain. *BMC Fam Pract.* 2016; 17(1):8.
- [45] Liberman O, Freud T, Peleg R, et al. Chronic pain and geriatric syndromes in community-dwelling patients aged ≥ 65 years. *J Pain Res.* 2018;11:1171–1180.
- [46] Ashford S, Williams H, Nair A, et al. Categorisation of goals set using Goal Attainment Scaling for treatment of leg spasticity: a multicentre analysis. *Disabil Rehabil.* 2019; 41(16):1925–1930.
- [47] Krasny-Pacini A, Evans J, Sohlberg MM, et al. Proposal of criteria for appraising Goal Attainment Scales used as outcome measures in rehabilitation research. *Arch Phys Med Rehabil.* 2016;97(1):157–170.
- [48] Goodwin C. Person-centered care: a definition and essential elements. *J Am Geriatr Soc.* 2016;64:15–18.
- [49] Bright FAS, Boland P, Rutherford SJ, et al. Implementing a client-centred approach in rehabilitation: an autoethnography. *Disabil Rehabil.* 2012;34(12):997–1004.
- [50] Sacristan JA. Patient-centered medicine and patient-oriented research: improving health outcomes for individual patients. *BMC Med Inf Decis Mak.* 2013;13:6.
- [51] Uittenbroek RJ, van der Mei SF, Slotman K, et al. Experiences of case managers in providing person-centered

- and integrated care based on the Chronic Care Model: a qualitative study on embrace. *PLoS One*. 2018;13(11): e0207109.
- [52] Carver CS, Scheier MF. Scaling back goals and recalibration of the affect system are processes in normal adaptive self-regulation: understanding “response shift” phenomena. *Soc Sci Med*. 2000;50(12):1715–1722.
- [53] Puvill T, Lindenberg J, Slaets JPJ, et al. How is change in physical health status reflected by reports of nurses and older people themselves? *J Gerontol A Biol Sci Med Sci*. 2017;72(4):579–585.
- [54] Siegert RJ, McPherson KM, Taylor WJ. Toward a cognitive-affective model of goal-setting in rehabilitation: is self-regulation theory a key step? *Disabil Rehabil*. 2004;26(20): 1175–1183.
- [55] Tang Yan HS, Clemson LM, Jarvis F, et al. Goal setting with caregivers of adults in the community: a mixed methods systematic review. *Disabil Rehabil*. 2014;36(23):1943–1963.
- [56] Levack WMM, Weatherall M, Hay-Smith EJC, et al. Goal setting and strategies to enhance goal pursuit for adults with acquired disability participating in rehabilitation. *Cochrane Database Syst Rev*. 2015;(7):CD009727.
- [57] Herdman KA, Vandermorris S, Davidson S, et al. Comparable achievement of client-identified, self-rated goals in intervention and no-intervention groups: reevaluating the use of Goal Attainment Scaling as an outcome measure. *Neuropsychol Rehabil*. 2018. DOI:[10.1080/09602011.2018.1432490](https://doi.org/10.1080/09602011.2018.1432490)
- [58] Locke EA, Latham GP. Building a practically useful theory of goal setting and task motivation. A 35-year odyssey. *Am Psychol*. 2002;57(9):705–717.
- [59] Lenzen SA, Daniëls R, Van Bokhoven MA, et al. Disentangling self-management goal setting and action planning: a scoping review. *PLoS One*. 2017;12(11): e0188822.