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Post-discharge follow-up assessments of frail older people in their home environment: Is it feasible?

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Abstract

Objectives: The aims of this study were to (1) assess the recruitment rate, drop-out, time to complete and acceptability of the test battery and evaluate the feasibility of follow-ups in the home environment and (2) describe the population in terms of sex, comorbidity, disability and frailty.
Methods: Participants were recruited from 3 geriatric departments and were assessed before discharge and in their homes at 1 and 3 months. The assessments consisted of: medical diagnoses; medications; risk of pressure ulcers, falls, malnutrition, depression and frailty; physical function, physical activity and health-related quality of life. Data on re-admission and home service were retrieved from the county council and the participating municipalities. Feasibility was evaluated by describing the recruitment process including inclusion/exclusion criteria, the participation rate and the number of and reasons for drop-out, the acceptance of the test battery, time taken and the feasibility of performing the tests in the participants' homes.
Results: Thirty-five of 89 eligible patients agreed to participate (21 men/14 women). It took on average 70 minutes to complete the test battery at baseline and 124 minutes (including travel) at the home visits. The participants accepted the test battery. Mean age was 84 years and the women were significantly older than the men. The greatest number of the participants were regarded as frail, all had comorbidity and 77% had disability (n=27).
Conclusions: It was feasible to conduct the test battery at the ward and in the participant's home. Frailty, comorbidity and disability were present simultaneously in almost half of the participants.

Keywords

Comprehensive Geriatric Assessment (CGA), frailty, geriatric care, health outcomes, health related quality of life, person-centered healthcare, post-discharge follow-up, walking ability

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Introduction

Frailty is a term used in geriatric medicine to identify older adults who are at increased risk of poor clinical outcomes such as incident disability, cognitive decline, falls, hospitalisation, institutionalisation or increased mortality. Frailty represents a reduction in resistance to stressors, leading to increased clinical vulnerability and adverse health outcomes [1]. Frailty is closely related to comorbidity and disability and it is important that the conditions can be distinguished from each other in order to further develop clinical practice [2].

Comprehensive Geriatric Assessment (CGA) is a multidimensional, interdisciplinary diagnostic process to determine the medical, psychological and functional capabilities of a frail older person in order to develop a coordinated and integrated plan for treatment and long-term follow-up [3]. Screening for frailty among older patients and the use of CGA in geriatric medicine departments can lead to decreased disability, hospitalizations and increases the chance of patients living at home for a longer period of time [4]. Complex interventions based on CGA delivered to older people in the community can increase the likelihood of continuing to live at home, principally through a reduced need for care home admission and reduced falls, but those who are most frail appear to receive the least benefit [5]. It is important to develop more efficient methods of detecting and grading the severity of frailty and differentiating it from disability and comorbidity before initiating effective interventions

targeting older peoples' health in clinical practice [6]. Person-centered care (PCC) is designed to focus on the patient's personal needs, preferences and values has been reported to contribute to the improvement of health outcomes [7]. The success of PCC seems to be that focus of care is on the patient as a person rather than on the disease. The patient narrative forms the basis of a partnership between the patient and healthcare provider and care is provided *via* a jointly formed health plan [8]. A better health outcome for frail older adults might be achieved by combining interventions based on CGA together with PCC.

Knowledge about frail older people's health development is desirable to prevent and avoid the deterioration of health and to improve healthcare outcomes. In this feasibility study, we measured function and health status over time in older people discharged from hospital and aimed to (1) assess the recruitment rate, drop-out, time to complete and acceptance of the test battery and evaluate the feasibility of follow-ups in the home environment and (2) describe the population in relation to sex, frailty, comorbidity and disability.

Methods

Setting

This is a prospective study where patients were recruited before discharge from 3 geriatric departments and were followed up in their homes 1 and 3 months after discharge. On average, the 3 geriatric departments have in total 10,000 admissions per year with 113, 109 and 90 beds, respectively. The geriatric departments are located in 3 different hospitals, which are separate from the emergency hospitals. Patients are referred to the geriatric departments from emergency departments in other hospitals or from other medical disciplines (primary care). Reasons for referral can include rehabilitation when expected, that is, after orthopaedic surgery, prolonged rehabilitation after stroke or treatment for severe infections and conditions such as cardiopulmonary diseases, *etc*. At the geriatric departments, a team of nurses, physiotherapists, occupational therapists and geriatricians assess, evaluate and rehabilitate the patient. Before discharge, a coordinated care plan is initiated by the team at the ward and is discussed in a meeting with the patient, a social care worker from the municipality and sometimes next of kin. The proportion of women is 64% with a mean age of 85 years, while the mean age for men was 83 years. The average length of stay is 9 days (unpublished data). Patients admitted to the participating geriatric departments in this study were from 2 specific municipalities in the Stockholm area.

Feasibility evaluation

The feasibility was evaluated by describing the recruitment process, including inclusion/exclusion criteria, the participation rate and the number of and reasons for, drop-out [9,10]. The measurements were evaluated in relation to the participants' acceptance of the test battery, the time taken and the feasibility of performing the tests in the participants' homes.

Recruitment

Patients admitted to the participating geriatric departments living in 2 specific municipalities in the Stockholm area were asked to participate and were included after informed consent. The inclusion criterion was age > 65 years. Exclusion criteria were discharge to nursing home or other residential care settings in the municipality, life expectancy of less than 3 months, transfer with lifter from bed to wheelchair, fewer than 2 days' admission, did not understand and speak Swedish. The study was approved by the Regional Ethical Review Board in Stockholm, Sweden (DNR: 2013/1620-31/2). Informed consent was obtained.

Data collection processes

Three people from the staff in each participating department collected the data. Their professions were physiotherapist, occupational therapist and nurse at one clinic and physiotherapist, occupational therapist and physician undergoing specialist training at 2 departments. The test leaders participated in 4 half-day workshops: 2 before study start, one 2 weeks after start and one before the first home visit. The content of the workshops consisted of a description of the study flow, recruitment, measurements and documentation. They were instructed to try out the measurements on each other and also on a few patients between workshop 1 and 2. The main aim of the third workshop was to discuss any problems that arose in recruitment and testing and the aim of the fourth workshop was to prepare them for assessments in the person's home, approaches to consider when visiting a participant in their own home and safety aspects. For any participant who screened positive for moderate to severe depression, the test leader contacted the physician who was part of the project group for consultation. The participation rate in the workshops was 100% for 7 of the test leaders. Two of the test leaders (physicians) participated in 2 of 4 workshops. The teams at each department were asked to collaborate and support and help each other in the data collection process. After completion of the data collection, a follow-up meeting was organised to show some preliminary descriptive data and to ask and discuss with the test leaders what they thought of the recruitment flow, the different measurements and the home visits, *etc*.

Baseline characteristics

Living situation, educational level, type of medication and medical diagnoses as well as discharge care level (referral to home care, home rehabilitation or general practitioner) were documented. Comorbidity was defined as 2 or more diseases [11].

Measurements

All measurements were conducted before discharge and in the participants' homes at 1 and 3 months after discharge by the test leader. The selected measurements described below where chosen to include a comprehensive geriatric approach and to be able to classify frailty using Fried's criteria [12]. They were also chosen in relation to if they had been translated to Swedish and validated on a Swedish population. The test leaders then entered the data into an Excel-file prepared by the project manager.

The risk of *pressure ulcers* was assessed with the Norton Scale [13]. The instrument is based on a score between 7 and 28, where a score of 20 or less is regarded as a risk of pressure ulcers.

Fall risk was assessed with the Downton Fall Risk Index. The instrument consists of 5 modules: (i) previous falls, (ii) medication, (iii) sensory deficits, (iv) mental state and (5) gait. Three or more points indicate an increased fall risk [14].

Screening for *depression* was assessed with the Geriatric Depression Scale (GDS-15) [15]. Zero to 4 points is regarded as no symptoms, 5-10 moderate symptoms and above 10 severe symptoms.

Cognitive status was measured with Mini Mental State Examination [16]. The instrument is divided into: (a) orientation, (b) attention, (c) instant and delayed recall, (d) language and (e) figure copying. The maximum score is 30, indicating fewer cognitive impairments.

Functional leg muscle strength was measured with a 30-second chair stand [17], where the participant is instructed to rise from a standard chair as many times as possible in 30 seconds with the arms folded across the chest.

Mobility was measured with the Rivermead Mobility Index, which measures 15 different transfers indoors and outdoors. The maximum score is 15, indicating independent mobility [18].

Activities of daily living (ADL) were measured using the Barthel Index, which consists of 10 items that measure personal ADL and transfer indoors. The maximum score is 90, indicating independence in personal ADL [19]. Disability was defined as dependence in one or more activities in personal ADL.

Health-Related Quality of Life (HRQL) was measured with EQ5D-5L [20]. The instrument consists of 2 parts. The first part has 5 items related to: (i) mobility, (ii) personal daily activities, (iii) household, work and leisure activities, (iv) pain and (v) anxiety. The second part consists of an item for self-rated health estimated on a VAS scale from 0 to 100.

The following measurements, described below, were partly chosen to be able to classify frailty. Those who fulfilled one to two criteria were regarded as pre-frail and those with 3 or more as frail [12].

Nutritional status was assessed using the Mini Nutritional Assessment (MNA) Short Form [21]. The instrument is based on scores between 0 and 14 points, where 0-7 points is regarded as malnutrition, 8-11 points is regarded as risk of malnutrition and 12-14 points as normal nutritional status. Those who reported an unintentional weight loss of more than 1 kg in the last 3 months were regarded as having one of the frailty criteria.

Hand-grip strength was measured with the Jamar Hand Dynamometer [22]. The best of 3 attempts with the dominant hand is reported. Men who performed below 29-43 kg and women below 17-21 kg depending on their BMI were regarded as having one of the frailty criteria.

Walking speed was measured over 2.44 metres (8 feet) at self-selected and maximal speed [23]. Women walking at a self-selected speed below 0.66 m/s and men below 0.77 m/s were regarded as having one of the frailty criteria.

Physical activity was measured with the Physical Activity Scale for the Elderly (PASE), which is a self-report tool. The instrument consists of sitting time and household and leisure activity items estimated over the past 7 days [24]. The participants were asked to estimate their physical activity level the last 7 days prior to admission. Sitting time is not part of the calculation of the PASE score [25]. Since the PASE does not estimate METs or kcal, other cut-offs had to be used to classify frailty. Men who reported a score below 50 and women with a score below 40 were regarded as having one of the frailty criteria. These scores were set to establish a low activity level and could mean, for example, that a person took short walks 3-4 times/week and did light housekeeping.

Self-reported exhaustion was measured using two questions in the CES-D Scale (Center for Epidemiologic Studies-Depression) [26]. The questions used were: "I felt that everything I did was an effort"; "I could not get going". Those who answered "often" or "most of the time" in one of the questions were regarded as having a frailty criterion [12].

Health and social care consumption data

Re-admissions to hospital and/or an emergency department in the 3 months after discharge were obtained from the Stockholm County Council Health Care Consumption Database (VAL). All healthcare providers in the Stockholm County Council (including private departments with a license) are obliged to report the data digitally. The reported data consisted of date for admission and to which department/hospital the patient was admitted. Information on home service hours were obtained from the home care offices in the participating municipalities.

Statistical analyses

Data are presented with the median (inter-quartile range) or giving the number of participants for nominal data. Differences between groups were analysed with the independent t-test for continuous data, the Mann Whitney U test for ordinal or skewed data and Chi-square or Fischer's Exact test for nominal data. SPSS version 20 was used for statistical analyses.

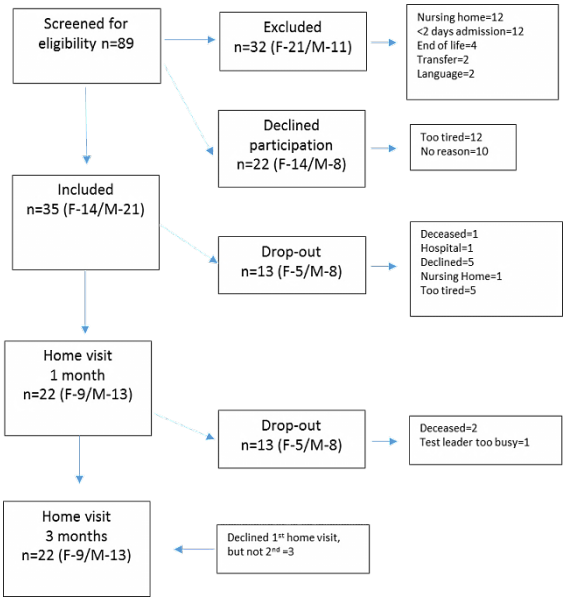
Results

Feasibility evaluation

Recruitment process

According to a decision by the managers at the 3 departments, the recruitment period was set to 2 weeks in September 2015. In those 2 weeks, 89 patients were screened for participation in the study. Of those, 32 were excluded and 22 declined participation (altogether 61%), (Figure 1). The time for recruitment averaged 9 minutes per potential participant.

Figure 1 Flow of recruitment and drop-out



The goal was to include 15 participants from each clinic (45 in total). Thirty-five participants were finally included (n=14/12/9 from the respective department), 19 fulfilled both home visits and 3 had one home visit (Figure 1). More men than women agreed to be included.

Measurements and data collection process

On average, the test battery took 70 minutes for each participant to complete at baseline. The participants thought the PASE questionnaire was difficult to complete because it was difficult to remember and estimate the time spent sitting and that some of the examples in moderate and high-intensity activities were not relevant, but there were no missing data. The greater number of the participants (n=32, 91%) estimated that they were sedentary sometimes or often and 26 participants (74%) estimated they spent more than 2-4 or >4 hours sitting. The most common sedentary activities were watching TV, doing crosswords, reading and listening to the radio.

Some data were missing on the Geriatric Depression scale where the participants did not want to answer some of the items. At baseline, one participant did not want to answer "Do you feel pretty worthless the way you are now?" At the first follow-up, 2 participants did not want to answer the following questions: "Do you prefer to stay at home, rather than going out and doing new things?" and "Do you think it is wonderful to be alive now?"

One EQ5D-5L questionnaire from baseline was reported missing by one of the test leaders. Two participants were not able to do the walking speed test. Overall, the participants accepted the test battery and had the ability to complete it.

For 2 of the participants, re-admission data were missing. The participants could not be found in the VAL database due to the fact that they had died or moved from the Stockholm area. The municipal authorities delivered data on those participants who were listed in their home service databases. Participants who were not listed were regarded as not having help from home service.

The home visit took on average 124 minutes including travel (travel time was on average approximately 30 minutes). It was feasible to conduct the measurements in the participants' homes and the test leaders were often told that the participants appreciated the visit. There were no missing data from the home visits apart from those described above.

Description of the participants

The women were significantly older than the men were. Reasons for hospital care were somewhat different for men and women and men had more continuous medications compared to women (p=0.057) (Table 1). Almost all women were living alone and had help from home service. A majority of the participants were at risk of or had malnutrition and a high fall risk. Almost half of the participants had moderate or severe symptoms of depression and a majority were dependent in terms of personal ADL. Median length of stay was 7 days for men and 9 days for women. Almost half of the participants were admitted due to falls and fractures (Table 1). All participants had co-morbidity, 26 of 35 (74%) participants had 5 or more comorbidities.

The participants were also classified as frail, pre-frail and non-frail according to Fried *et al*. [12] in relation to re-admission (Figure 2). Only one person was regarded as non-frail. In almost half of the participants (47%) frailty, comorbidity and disability were present simultaneously (Table 2).

Re-admissions were found for 21 of the 33 participants where there were data on re-admission (64%) within 30 days and of those 8 (24%) were admitted within 10 days. There were no significant differences in any of the baseline characteristics or the outcomes measured between those with or without re-admission (data not shown).

Discussion

The study showed that it was feasible to conduct the test battery at both the department and in the participant's home. The study sample consisted of a greater proportion of men than the general population at the geriatric departments. The women were significantly older than the

Table 1 Baseline characteristics of the participants

	All (35)	**Men** (n=21)	**Women** (n=14)
Age, md (q1-q3)	84 (73-89)	80 (72-87.5)	87 (83.5-91)*
Education, n			
High school or less	23 (66)	12 (57)	11 (79)
University	12 (34)	9 (43)	3 (21)
Living alone, n	24 (69)	12 (57)	12 (86)
No help from home service after discharge, n	14 (40)	11 (52)	3 (21)
Reasons for hospital care, n			
Falls/fracture	17 (49)	11 (55)	6 (50)
Infection	6 (17)	6 (30)	0*
Heart/lung/other	9 (28)	3 (15)	6 (50)
Missing data	*3*	*1*	*2*
Length of stay, md (q1-q3)	8 (6-10)	7 (6.5-11.5)	9 (6-10.5)
Care level after discharge			
General practitioner	18 (51)	10 (50)	8 (73)
Basic home care	7 (20)	6 (30)	1 (9)
Home rehabilitation	6 (17)	4 (20)	2 (18)
Missing data	*4*	*1*	*3*
Continuous medications, md (q1-q3)	10 (7-11)	11 (9-11.75)	7 (5.5-9.5)
Cognition (MMSE), md (q1-q3)	26 (21-28)	27 (21-28)	24.5 (23-27)
Nutrition (MNA), n			
Malnutrition	12 (34)	8 (38)	4 (29)
Risk of malnutrition	17 (49)	9 (43)	8 (57)
Normal	6 (17)	4 (19)	2 (14)
Pressure ulcers (Norton), n			
Risk	3 (9)	2 (10)	1 (7)
Fall risk (DFRI), n			
Risk	27 (77)	18 (86)	9 (64)
Depression (GDS-15), n			
Severe symptoms	3 (9)	2 (10)	1 (7)
Moderate symptoms	12 (34)	8 (38)	4 (29)
No symptoms	20 (27)	11 (52)	9 (64)
Physical activity (PASE score), md (q1-q3)	51 (26-69)	40 (25-75)	59 (29-68)
Physical function			
Barthel Index, md (q1-q3)	75 (60-85)	80 (62.5-90)	70 (56-85)
Rivermead Mobility Index, md (q1-q3)	8 (6-10)	8 (7-10)	8.5 (4.5-10.5)
Walking speed (self-selected) m/s, md (q1-q3)	0.42 (0.38-0.5)	0.43 (0.38-0.55)	0.41 (0.37-0.47)
Walking Speed (max) m/s, md (q1-q3)	0.77 (0.55-0.91)	0.77 (0.61-0.83)	0.63 (0.52-1.03)
30-sec Chair Stand, number, md (q1-q3)	0 (0-6)	0 (0-6)	3 (0-7)
Health-related quality of life (EQ5D)			
Index, md (q1-q3)	0.55 (0.27-0.73	0.55 (0.13-0.73)	0.55 (0.32-0.73)
VAS, md (q1-q3)	50 (40-65)	50 (29.5-62.5)	60 (44-70)

Abbreviations: m=mean, sd=standard deviation, n=number, MMSE=Mini Mental State Examination, MNA=Mini Nutritional Assessment, DFRI=Downton Fall Risk Index, GDS=Geriatric Depression Scale, PASE=Physical Activity Scale for the Elderly, md=median, q1-q3=quartile 1-quartile 3
* $p<0.05$

Figure 2 Presence of frailty in regards to re-admission (missing data n=2)

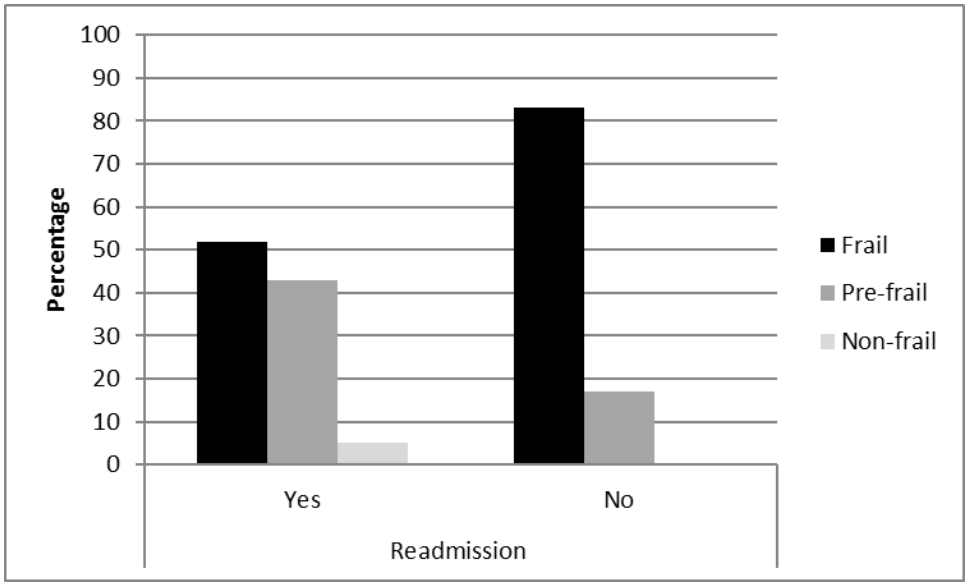


Table 2 Results of level of frailty, comorbidity and disability

	All (35)	**Men** (n=21)	**Women** (n=14)
Frailty phenotype			
Frail, n	22 (63)	14 (67)	8 (57)
Pre-frail, n	12 (34)	6 (29)	6 (43)
Non-frail, n	1 (3)	1 (4)	0
Comorbidity			
Yes, n	35	21	14
Disability			
Yes, n	27 (77)	15 (71)	12 (86)
Presence of frailty, comorbidity, disability			
Yes, n	16 (46)	10 (48)	6 (43)

men were. A vast majority of the participants were regarded as frail and had comorbidity as well as disability. The re-admission rate was high.

Feasibility

The recruitment period proved to be too short to be able to recruit the planned number of participants. In the planned future study, this needs to be discussed with the managers of participating departments. It often takes longer than expected to recruit participants to clinical studies, especially frail older people [27]. The exclusion and drop-out rates, as well as reasons for drop-out, were similar to other studies [28,29]. To improve recruitment rate in older people, it has been shown to be important to invest time in explaining the study, to give the patients enough time to consider participation and to emphasise that participation will not affect other aspects of care [28,30].

The distribution of men and women in the study was different compared to the distribution at the departments in general. The reason for this was that more men than women agreed to participate. One reason for this could be that the men were younger and were living with someone. The most common reason for declining was that they were too tired to participate, which is in line with other studies [29].

Despite the participants' ages, comorbidity and low physical function, the test battery seemed feasible and acceptable by the participants, with a very low level of missing data. There were some missing data in the Geriatric Depression Scale where the participants did not want to answer some of the questions. However, this lack was not as significant as that in a study conducted in nursing homes, which reported approximately 16% missing data in GDS-15 [31]. None of the 3 departments has the clinical routine of assessing mental health problems such as depression among their patients, which may be one reason why the participants might have felt uncomfortable answering these questions. Furthermore, the PASE questionnaire required the participant to recall his or her performed physical activities for the latest 7 days before admission. It could be difficult to estimate these activities due to the length of the recall period and the fact that the participants' cognition varied between 15 and 30 on the

MMSE test. Most studies exclude participants with cognitive dysfunctions when measuring self-reported behaviour, so comparison in this regard is difficult.

Prior to and during the data collection, the test leaders participated in 4 workshops to discuss the measures, data collection procedures and documentation. It is necessary to train the test leaders and to be sure they all use and interpret the measures consistently. Previous studies pointed to the need to adequately train the test leaders due to the quality of the collected data [32]. At the follow-up meeting after the data collection was completed, the test leaders felt it was more feasible than expected to conduct the test battery both at the department and in the participants' homes. This, together with the few pieces of missing data, supports the choice of measurements included and the training of the test leaders.

Participants' characteristics

The participants' characteristics revealed that rehabilitation after a fall injury and treatment for infections of the airways or urinary tract were the most common causes of admission to the geriatric department in the sample group. The study sample also corresponds to the population regarding risk of malnutrition and falls (unpublished data from a submitted paper). In this study, the participants were also screened for depressive symptoms using the GDS-15 and 15 of them (43%) were identified as having severe or moderate symptoms. At the 3 geriatric departments, assessing for depressive symptoms using a validated instrument is not a clinical routine. Swedish guidelines state that all patients should be assessed using MNA, Norton and DFRI as in this study, but there are no guidelines for assessing risk of depression. However, the findings from this small sample mirror Swedish studies of older persons reporting that between 10% and 42% of the samples consisted of older persons who were identified/diagnosed with depression [33,34].

The test battery and data collection allows the assessment of differences in the manifestations of frailty, comorbidity and disability [12]. The greatest number of the participants were regarded as frail according to the criteria of Fried *et al*. [12]. Just one participant was identified as non-frail, reflecting the vulnerable patient population in the geriatric departments. Frailty, comorbidity and disability were present simultaneously in almost half of the participants at time of discharge in this study and were more common than in previous reports on frailty, comorbidity and disability [2,35].

When selecting an appropriate instrument to measure frailty the intended purpose is a key consideration [36] and the assessment tool needs to be valid and reliable [37]. Knowledge of frail older peoples' health development is desirable to prevent and to avoid the deterioration of health and to improve healthcare outcomes. Frailty, disability and comorbidity measured over time may increase knowledge of the complex interactions in frail older peoples' health.

Almost two-thirds of the participants were re-admitted to hospital within 30 days, which is in the higher range of previous reports (26-70%) on hospital re-admission [38]. However, re-admission to hospital is a variable concept and associated with many confounders and so far there is no consensus on methods to adjust for them [38]. Our measurements of functional status over time have the potential to develop a better understanding regarding the level of frailty, comorbidity and disability among the older persons and to better adjust for confounding factors regarding future health status and hospital re-admission [39]. Participants' expectations regarding their care and what they expect from formal or informal caregivers were not investigated in this study, but may influence their decision regarding a new contact when their health falters as previous studies have revealed that a person-centered approach results in better outcomes in older people [7,40].

Lessons learned

This study was conducted to test the feasibility of conducting a study to measure functional status over time after discharge to explore if preventable factors can be found that affect older people's health and to decrease the risk of re-admissions. The findings from this study indicate that such a study seems to be urgent, as we found that 64% of the sample was re-admitted to hospital care after discharge. The time for recruiting will be considerable, as 61% of eligible participants were excluded or declined participation. Previous prospective studies on risk factors for a decline in health and re-admission in a geriatric population have included approximately 600 participants [38]. A large sample size is necessary to be able to control for a number of variables due to the complexity of causes for reduced health and re-admission in this heterogeneous geriatric population [41]. To recruit a sample of 600 participants, at least 1,667 persons need to be eligible. The time for recruitment was 9 minutes per potential participant meaning that it takes at least 15,003 minutes (250 hours, at least 1 month full time) to recruit a sample of 600. Using discharge to nursing homes as an exclusion criterion must be put into the context of the extent to which nursing home beds are available in participating municipalities. In all, at least 30 weeks will be needed for recruitment.

The measurements used in this study were relevant and few data were missing. The data collection was suitable both at the department and in the participants' homes. The training of the test leaders is essential and resources need to be calculated for this topic. The use of other data sources, such as medical records, information from the VAL database and data from social care offices in the municipalities, needs to be planned in advance and clear contracts between representatives need to be written due to turn-over of staff and managers in different positions. In this study, we did not collect any data from participants and family members using interviews to collect their views on care process and particularly the discharge process and the time at home after discharge. In a future study, information on participants' and family members' experiences and perceptions on the time after discharge and the contact and collaboration with staff from primary care, home care and home care services, would be of interest to explore.

Strengths and limitations

The aim of this study was to evaluate the feasibility to conduct a major study. Thus, the sample size is small and due to the large drop-out rate it would not be appropriate to compare baseline with the two follow-ups. Therefore, the results of the home visits have not been reported**.** Furthermore, more sophisticated analyses, such as regression analyses, were not performed since the sample size was small and due to the feasibility study design [10]. The data regarding time to conduct the recruitment and data collection were recorded by the test leaders and some of them may have over- or underestimated the time. However, the average time for conducting the recruitment and assessing the participants according to the test battery seems reasonable. Other strengths are the fact that few data are missing and that the participants accepted the test battery and had the ability to complete it despite a high level of frailty, comorbidity and disability.

Conclusion

The present study has demonstrated that the test battery was feasible to conduct both at the department and in the participants' homes. Frailty, comorbidity and disability were present simultaneously in almost half of the participants at time of discharge and the re-admission rate was high. This needs to be taken into consideration in future studies.

Acknowledgements and Conflicts of Interest

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