

# Comprehensive geriatric assessment: recognition of identified geriatric conditions by community-dwelling older persons

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## Abstract

**Objectives:** to study (i) the prevalence of geriatric conditions in community-dwelling older persons at increased risk of functional decline and (ii) the extent to which older persons recognise comprehensive geriatric assessment (CGA)-identified conditions as relevant problems.

**Methods:** trained registered nurses conducted a CGA in 934 out of 1209 older persons at increased risk of functional decline participating in the intervention arm of a randomised trial in the Netherlands. After screening for 32 geriatric conditions, participants were asked which of the identified geriatric conditions they recognised as relevant problems.

**Results:** at baseline, the median age of participants was 82.9 years (interquartile range (IQR) 77.3–87.3 years). The median number of identified geriatric conditions per participant was 8 (IQR 6–11). The median number of geriatric conditions that were recognised was 1 (IQR 0–2). Functional dependency and (increased risk of) alcohol and drug dependency were the most commonly identified conditions. Pain was the most widely recognised problem.

**Conclusion:** CGA identified many geriatric conditions, of which few were recognised as a problem by the person involved. Further study is needed to better understand how older persons interact with identified geriatric conditions, in terms of perceived relevance. This may yield a more efficient CGA and further improve a patient-centred approach.

**Keywords:** *comprehensive geriatric assessment, recognition, shared decision making, older persons, patient-centred care*

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## Introduction

Comprehensive geriatric assessment (CGA) for older persons is increasingly being implemented in community settings [1, 2]. CGA is a multidisciplinary, systematic procedure addressing the physical, psychological, functional and social conditions of older persons to create a tailored care and treatment plan (CTP) [3, 4]. CGA in combination with interventional actions aim to prevent functional decline, nursing home or hospital admission and mortality [3]. However, research on the effectiveness of CGA in community care setting in countries with high primary care

standards, such as the Netherlands and UK, remain inconclusive [5–9].

From a patient-centred perspective, a CGA should include an individual's needs, goals and preferences [10, 11]. Shared decision making enhances a patient-centred approach and focuses on outcomes that matter to the persons involved [12, 13].

Some authors investigated CGA-identified care needs and interventions initiated after a CGA [14–16]. However, little is known about the extent to which geriatric conditions are recognised as relevant problems in community-dwelling frail older persons. Here, we report on the prevalence of

geriatric conditions in community-dwelling older persons at increased risk of functional decline and the extent to which the older persons recognise CGA-identified conditions as relevant problems.

### Methods

#### Design and setting

We carried out a randomized controlled trial to investigate the effects of a home visiting programme. In this paper, we focus on the intervention group, describing the process evaluation of the programme. The home visits took place between February 2003 and October 2004.

Participants were community-dwelling older persons aged 70 years and older from 13 general practices in the Netherlands who took part in the intervention arm of a cluster randomized trial (RCT). The trial involved CGA and nurse-led care coordination with multiple follow-up visits to prevent disability. This RCT was conducted between December 2010 and 2014. Details of the study have been published elsewhere [17].

#### Study population

The eligibility of older persons was determined through a self-report questionnaire, including the risk of functional decline as assessed by the Identification of Seniors At Risk—Primary Care (ISAR-PC) screening questionnaire [18]. The general practitioner (GP) excluded persons whom s/he expected to have a life expectancy of less than 3 months, suffered from dementia, did not understand Dutch, planned to move or spend a long time abroad or lived in a nursing home. All participants received a baseline questionnaire assessing demographics and comorbidities.

#### Comprehensive geriatric assessment

A trained community care registered nurse (CCRN) conducted the CGA to screen for the presence of 32 geriatric conditions. The CGA covered physical, psychological, functional and social domains. Further diagnostic assessments and interventions were drawn from a toolkit containing evidence-based protocols for these geriatric conditions [17].

#### Recognition of geriatric conditions

After the CGA, participating older persons were asked the following questions for all identified conditions: do you recognise {identified condition} as a problem and if yes, do you want an intervention for {identified condition}? Subsequently, the CCRN discussed the yield of the CGA and further diagnostic assessments with the participant's GP and a tailored CTP was made. The CCRN evaluated the CTP during one or more follow-up visits. At each visit, the CCRN completed a logbook in which interventions and reasons for no intervention were documented.

#### Statistical analysis

Recognition was calculated as the proportion of geriatric conditions identified in the CGA that was recognised as a problem by the participants. Three reviewers (M.v.R., W.B. and E.H.) screened the logbooks to assess which interventions a participant had received. Descriptive statistics were used to summarise quantitative data, using SPSS for Windows, version 23.0.

#### Results

Thirteen practices with 3,430 community-dwelling people aged 70 years and older were randomized to the intervention arm of the cluster RCT. Of these, 1,209 participants were identified as being at increased risk of functional decline and were eligible to participate in the intervention. At baseline, the median age of the participants was 82.9 years (interquartile range (IQR) 77.3–87.3) and 65.1% were women (Table 1). Fourteen nurses conducted CGAs on 934 participants (77.5%). Participants who declined the CGA ( $n = 275$ ) were older, more often lived in a residential home and reported a lower quality of life (Table 1).

#### Geriatric conditions identified

The CGA resulted in a median of 8 (IQR 6–11) identified geriatric conditions per participant. Table 2 shows the prevalence of geriatric conditions. The most prevalent geriatric conditions were polypharmacy (47.5%), (an increased risk of) alcohol and drug dependency (68.9%), limitations in daily functioning (85.0%) and loneliness (32.4%) in the physical, psychological, functional, and social domains, respectively.

#### Recognition of geriatric conditions as a problem

The median number of geriatric conditions that were recognised as a problem was 1 (IQR 0–2). The most prevalent geriatric conditions (as a proportion of geriatric conditions identified) recognised by respondents as a problem were pain (41.2%), depressive symptoms (20.3%), hearing impairment (27.4%) and loneliness (19.1%) in the physical, psychological, functional and social domains, respectively.

#### Initiated interventions

Supplementary Table S1, available at *Age and Ageing* online, shows the rate and all types of interventions that were initiated for the identified geriatric conditions. The median number of initiations of treatment was 1 (IQR 0–2). Most interventions were initiated for pain ( $n = 114$ ), depressive symptoms ( $n = 65$ ), mobility ( $n = 82$ ) and loneliness ( $n = 65$ ), in the physical, psychological, functional and social domains, respectively. The reasons for lack of intervention were often unknown. These results include non-recognition and refusal of intervention(s) (Supplementary Table S2, available at *Age and Ageing* online).

**Table 1.** Characteristics of participants in the intervention group who had an ISAR-PC score  $\geq 2$ 

Characteristics	Total intervention group, invited for CGA (N = 1209) N (%)	Intervention group receiving CGA (N = 934) N (%)	Intervention group declining CGA (N = 275) N (%)
Age, in years, median (IQR)	82.9 (77.3–87.3)	82.7 (76.8–87.1)	84.4 (78.2–88.1)*
Female sex	787 (65.1)	614 (65.7)	173 (62.9)
Born in the Netherlands	1138 (94.1)	879 (94.1)	259 (94.2)
Level of education			
Primary school or less	254 (21.0)	184 (19.7)	70 (25.5)
Secondary education	758 (62.7)	592 (63.4)	166 (60.4)
College or university	179 (14.8)	146 (15.6)	33 (12.0)
Socio-economic status			
Low ( $\leq 1$ SD)	57 (4.8)	39 (4.2)	19 (6.9)
Intermediate	927 (76.7)	726 (77.7)	201 (73.1)
High ( $\geq 1$ SD)	224 (18.5)	169 (18.1)	55 (20.0)
Married/living together	561 (46.4)	436 (46.7)	125 (45.5)
Living situation			***
Independent, alone	528 (43.7)	431 (46.1)	97 (35.3)
Independent, together	535 (44.3)	420 (45.0)	115 (41.8)
Residential home	138 (11.4)	77 (8.2)	61 (22.2)
Multimorbidity ( $\geq 2$ )	997 (83.2)	769 (82.3)	227 (82.5)
Psychological health status (RAND-36) (range 4–100), mean (SD) <sup>a</sup>	71.3 (17.4)	72.2 (16.9)	68.5 (18.5)**
Quality of life (range 0–10), mean (SD)	7.2 (1.3)	7.3 (1.2)	6.9 (1.5)***
Identification of seniors at risk, primary care (range 0–7.5), median (IQR) <sup>b</sup>	4 (3–5)	4 (3–5)	4 (3–5)

Values are numbers (%) unless stated otherwise; IQR, interquartile range; SD, standard deviation. Student's *t*-test for continuous variables; Mann-Whitney *U* test for continuous nonparametric variables; Chi-square test for categorical variables. \* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .

<sup>a</sup>Higher scores represent a better psychological health status.

<sup>b</sup>Higher scores represent an increased risk of functional decline.

**Table 2.** Identification and recognition of geriatric conditions (by decreasing numbers identified within four domains)

Geriatric condition	Identified % (N) N = 934 <sup>a</sup>	Recognition % (N) <sup>a</sup>
Physical		
Polypharmacy <sup>b</sup>	47.5 (444)	22.5 (100)
Incontinence <sup>c</sup>	42.3 (396)	30.6 (121)
Pain <sup>d</sup>	38.3 (359)	41.2 (148)
Hypertension <sup>e</sup>	34.7 (325)	9.5 (31)
Osteoporosis risk <sup>f</sup>	30.6 (287)	16.7 (48)
Dizziness <sup>g</sup>	29.6 (276)	37.7 (104)
Obesity <sup>h</sup>	22.3 (209)	13.9 (29)
Medication safety and side effects <sup>i</sup>	21.1 (197)	23.4 (46)
Heart rate <sup>j</sup>	17.9 (168)	3.0 (5)
Oral hygiene <sup>k</sup>	9.3 (87)	19.5 (17)
Medication adherence <sup>l</sup>	9.2 (86)	7.0 (6)
Swallowing disturbance <sup>m</sup>	8.0 (75)	28.0 (21)
Constipation <sup>n</sup>	7.7 (72)	38.9 (28)
Malnutrition <sup>n</sup>	4.9 (46)	26.1 (12)
Dehydration <sup>o</sup>	1.5 (14)	35.7 (5)
Indwelling urinary catheter use <sup>p</sup>	1.5 (14)	7.1 (1)
Pressure ulcer <sup>q</sup>	1.5 (14)	35.7 (5)
Psychological		
Alcohol/drug abuse <sup>r</sup>	68.9 (646)	2.8 (18)
Depressive symptoms <sup>s</sup>	38.4 (360)	20.3 (73)
Memory problems <sup>t</sup>	38.1 (357)	11.8 (42)
Anxiety <sup>u</sup>	10.7 (100)	20.0 (20)
Delirium <sup>v</sup>	6.8 (64)	9.4 (6)
Functional		

Continued

Table 2. Continued

Geriatric condition	Identified % (N) N = 934 <sup>a</sup>	Recognition % (N) <sup>a</sup>
Functional dependency <sup>w</sup>	85.0 (796)	7.0 (56)
Walking aid <sup>x</sup>	52.7 (494)	13.6 (67)
Falls <sup>y</sup>	44.3 (415)	17.6 (73)
Exhaustion <sup>z</sup>	40.3 (378)	21.7 (82)
Sleeping disorder <sup>aa</sup>	39.9 (374)	19.5 (73)
Hearing impairment <sup>bb</sup>	30.7 (288)	27.4 (79)
Vision impairment <sup>cc</sup>	21.3 (200)	36.0 (72)
Social		
Loneliness <sup>dd</sup>	32.4 (304)	19.1 (58)
Living situation <sup>ee</sup>	9.3 (87)	16.1 (14)
Finance <sup>ff</sup>	4.5 (42)	4.8 (2)

<sup>a</sup>All 934 were asked for the presence of 32 geriatric conditions by a nurse. If a geriatric condition was present/identified, the participant was asked whether he/she recognised the identified problem. For example, 934 (number of patients in intervention arm, overall denominator) were asked whether they use five or more different medications (defined as polypharmacy); 444 participants answered this question with 'yes' (CGA-positive). Those 444 participants were asked whether they recognised the use of five or more different medications as a problem; 100 (out of 444) participants recognised polypharmacy as a problem.

<sup>b</sup>Do you use 5 or more different medications?

<sup>c</sup>Did you experience incontinence of urine or stool in the past month?

<sup>d</sup>Visual analogue scale for pain, range 0–10, score ≥4.

<sup>e</sup>Blood pressure SBD > 160 mmHg.

<sup>f</sup>Osteoporosis and fracture risk, score ≥4.

<sup>g</sup>Did you experience dizziness in the past month?

<sup>h</sup>Body mass index (kg/m<sup>2</sup>).

<sup>i</sup>Do you experience difficulties or side effects with medication use?

<sup>j</sup>Beats/min.

<sup>k</sup>Did you have pain in your mouth in the past month?

<sup>l</sup>Do you know when and how you should take your medication?

<sup>m</sup>Did you experience difficulties with swallowing in the past month?

<sup>n</sup>Short Nutritional Assessment Questionnaire 65+ (SNAQ 65+).

<sup>o</sup>Have you been admitted to a hospital because of dehydration in the past year?

<sup>p</sup>Do you have an indwelling urinary catheter?

<sup>q</sup>Do you have pressure ulcer(s)?

<sup>r</sup>(i) 'Do you smoke?'; (ii) Screening test for problem drinking: AUDIT-C; (iii) 'Do you use benzodiazepines?'

<sup>s</sup>(i) 'During the past month, have you often been bothered by feeling down, depressed or hopeless?'; (ii) 'During the past month, have you often been bothered by little interest or pleasure in doing things?'; Both questions displayed.

<sup>t</sup>(i) 'Do you have memory problems?'; (ii) Mini Mental State Examination (MMSE), range 0–30, cognitively impaired if ≤ 23.

<sup>u</sup>Did you feel anxious in the past month?

<sup>v</sup>Have you ever experienced delirium?

<sup>w</sup>Katz-ADL index.

<sup>x</sup>Are you using a walking aid?

<sup>y</sup>Did you experience a fall during the last six months?

<sup>z</sup>(i) 'I felt that everything I did was an effort'; (ii) 'I could not get going'.

<sup>aa</sup>'Do you experience problems with sleeping?'; 'Do you use sleeping medication?'

<sup>bb</sup>'Do you have a hearing impairment, regardless the use of a hearing device?'

<sup>cc</sup>'Do you have a visual impairment, regardless the use of glasses?'

<sup>dd</sup>Jong Gierveld questionnaire, score ≥3.

<sup>ee</sup>'Do experience problems with your living situation?'

<sup>ff</sup>'Can you manage financially?'

## Discussion

This study demonstrates that CGA in community-dwelling older persons with an increased risk of functional decline detects many geriatric conditions, yet results in low recognition rates of these geriatric conditions. Out of 32 geriatric conditions, functional dependency was the most commonly identified. Pain was the most widely recognised problem.

## Comparison with other literature

Previous studies on CGA in community-dwelling older persons focused on the prevalence of identified geriatric conditions [16, 19–26]. However, comparing the results of these studies is difficult because of differences in the inclusion criteria for participants and geriatric conditions evaluated.

To our knowledge, ours is one of the first studies assessing how often older persons recognised that the geriatric

conditions are being evaluated. We found a recognition rate of one geriatric condition out of a median of eight identified geriatric conditions. Pain and incontinence were recognised most. Other problems such as hypertension, constipation and alcohol or substance misuse were infrequently recognised as a problem. This could indicate that the CGA detected many conditions with no apparent clinical relevance. For example, older persons may simply accept certain conditions as a part of normal ageing, problems were perhaps already treated or were not perceived as appropriate problems to discuss with the GP. Nevertheless, asking older persons which of the identified geriatric conditions they recognise may be useful in facilitating shared decision making and overall efficiency [27].

Most studies evaluating the prevalence of geriatric conditions also report on the initiation of interventions; however, the intervention rates reported in these studies are higher compared to our results [16, 25, 26]. This could be the result of the older persons' prioritisations, but could also be due to already high standards of care as usual in the Dutch GP practice.

### Strengths and limitations

Strengths of this study include the large sample of community-dwelling older persons at increased risk of functional decline. The CGA was based on a comprehensive review of all available evidence for the detection and treatment of the 32 most prevalent geriatric conditions or problems and was validated by a multidisciplinary team [17].

There were several limitations. First, despite a detailed nurse protocol and training in motivational interviewing and patient empowerment, we have no exact data how nurses inquired about the recognition of detected conditions and perceived problems. Second, we were unable to determine whether identified geriatric conditions were newly detected or conditions previously identified and already known to (and acted upon by) GPs. Third, prevalence of geriatric conditions, recognition and initiation of intervention were not pre-specified as an outcome in our randomized trial protocol [17].

### Implication for further research

The findings of this study indicate that future research should first investigate current care and treatment of the individual being assessed, and then investigate the potential unmet needs. More insight in priorities, goals and potential behaviour change in care and treatment of geriatric conditions and unmet needs may avoid detecting conditions that are not perceived as relevant for further treatment and can contribute to a cost-effective and affordable CGA. Identifying geriatric conditions that are more often perceived as relevant for treatment may further improve an efficient and patient-centred approach.

## Conclusion

In a setting with high-quality primary care, a carefully designed CGA identified many geriatric conditions, of which few were recognised as problems by older persons at risk of functional decline. Further study is needed to better understand how older persons interact with identified geriatric conditions, in terms of perceived relevance. This may yield a more efficient CGA and further improve a patient-centred approach.

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## Key points

- CGA identified many geriatric conditions, of which few were recognised as a problem by the person involved.
- CGA alone may be too sensitive for community-dwelling older people at increased risk of functional decline.
- Further study is needed to better understand how older persons interact with identified geriatric conditions.

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## Supplementary data

Supplementary data mentioned in the text are available to subscribers in *Age and Ageing* online.

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## Conflicts of interests

None declared.

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