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Research paper

Frailty and comprehensive geriatric assessment organized as CGA-ward or CGA-consult for older adult patients in the acute care setting: A systematic review and meta-analysis



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ABSTRACT

Background: With worldwide population aging, increasing numbers of people need hospital care. Evidence suggests comprehensive geriatric assessment (CGA) is superior to usual care.

Objective: To summarize the evidence for the effects of CGA in frail and moderately frail patients compared with usual care in acute care settings.

Data sources: CINAHL, PsycInfo, Cochrane Library, EMBASE, and PubMed were searched in October 2011, January 2013, and February 2015.

Study eligibility: Randomized controlled trials.

Participants: Older adults aged ≥ 65 years who were admitted to hospital with a complex condition, divided into frail and moderately frail groups.

Intervention: CGA.

Control: Usual care.

Outcomes: Change in housing, personal activities of daily living (PADL), instrumental activities of daily living (IADL), readmission, cognitive function, depression, quality-of-life care-giver burden, and mortality.

Study appraisal and synthesis: The grading of recommendations assessment development and evaluation (GRADE) system to assess the quality of evidence and PRISMA-guidelines for meta-analyses and reviews. Continuous data were presented as standardized mean differences and dichotomous data were presented as risk differences.

Results: Twenty-nine articles based on 17 unique studies (6005 patients in total). CGA was categorized as CGA-ward or CGA-consult. In the frail group, CGA-ward was superior to usual care for change in housing, PADL, and depression. CGA-consult was superior to usual care for PADL and IADL in the moderately frail group.

Conclusion: There was a stronger effect for frail older adults and CGA-ward compared with usual care. This highlights the importance of detecting frailty. However, the degree of evidence was limited.

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1. Introduction

With worldwide population aging, increasing numbers of people are living with multiple chronic conditions and frailty. Hospital care is often required to optimize treatment or to diagnose and treat acute conditions. Older patients are also at risk

for adverse outcomes such as severe infections, delirium, loss of functional capacities, institutionalization, and increased mortality when admitted to hospital [1,2]. Therefore, it is important that hospital care is tailored to the individual to reduce the likelihood of such events. In an older population, accumulation of factors such as health behaviors, access to healthcare, and exposure to physical and social environments make the older population heterogeneous. This means it is reasonable to query which sub-group of older adults benefits the most from personalized care.

There is growing understanding that merely grouping older people chronologically is not sufficient. Instead, frailty is considered to be a valid way to identify subgroups of older adults at risk of adverse outcomes from acute illness or an in-hospital stay. Frailty is a dynamic state originating from age-related decline in physiological function and depletion of reserve capacity [3] that can be conceptualized as a continuum from not frail, to pre-frail, to frail [4]. Frailty is also defined as a syndrome with multiple causes, characterized by diminished strength and endurance and reduced physiological function that increases vulnerability for adverse outcomes such as falls, delirium, disability, and/or death following a stressor event [3,5,6].

There are two main models for defining frailty. First, the phenotype model by Fried et al. [7] describes frailty as a physical phenotype with five measurable components: weight loss, exhaustion, weakness, slowness, and reduced physical activity. The second model is the cumulative deficit model created by Rockwood et al. based on the Canadian Study of Health and Aging [8]. They created a frailty index based on symptoms (e.g., low mood), signs (e.g., tremor), abnormal laboratory values, disease states, and disabilities/deficits [8]. The frailty index is a calculation of the presence or absence of each variable as a proportion of the total variables. While the phenotype and cumulative deficit models overlap in their identification of frailty [9], the cumulative deficit model allows greater discrimination of moderate and severe frailty [10].

Several studies showed better outcomes when older adults were given care based on comprehensive geriatric assessment (CGA), a multidimensional interdisciplinary diagnostic process focused on determining a frail older adult's medical, psychological, and functional capability to develop a coordinated and integrated plan for treatment and long-term follow-up [11–15]. CGA is considered a “gold standard of care” for frail older adults, although frailty is poorly defined in most studies and internationally recognized assessments (such as the phenotype and cumulative deficit models) have not been frequently applied.

A review conducted in 2011 [12] attempted to determine the benefits of CGA for a study population divided into groups of the most frail or at-risk patients (defined as age plus a specific criteria) and patients identified based on chronological age alone, finding that both groups benefited from CGA. The basis of “need” may have overlapped frailty criteria, but to the present authors' knowledge, there are no reviews available that systematically include the dimension of frailty in studying the effects of CGA in older adults in the acute care setting.

Objective: the present review aimed to summarize the evidence for the effects of CGA initiated in hospital compared with usual care in a population of frail and moderately frail patients aged ≥ 65 years who were acutely admitted to hospital.

2. Methods

The present systematic review and meta-analysis was performed according to the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) [16]

and the Swedish Council on Health Technology Assessment (SBU) [17].

2.1. Eligibility

Eligibility was based on study design: randomized controlled trials or observational studies with a baseline description that allowed comparisons between the groups were included.

2.2. Population

The populations of the selected studies comprised older adults aged ≥ 65 years who were acutely admitted to hospital. We classified the populations based on both phenotype and cumulative deficit models to develop a surrogate measure of frailty. The patient populations were divided into a frail group and a moderately frail group, based on the presence of signs or symptoms, clinical conditions, diseases, and disability described in baseline and/or outcome measures in the selected studies. As the baseline descriptions varied between studies, particular attention was given to age, cognitive measures, ADL functionality, and mortality in the control groups. Patient baseline characteristics and outcomes were examined by two of the present authors skilled in geriatric practice and research. Patient populations were initially categorized independently and thereafter compared, and in the case of disagreement, discussed by all authors until consensus was reached.

2.3. Interventions

We focused on older adults with complex conditions where we found the evidence currently available was not convincing. The interventions in the selected studies were described in a way that allowed the study to be reproducible and clearly defined the organization (e.g., ward with patient responsibility, consulting function, resources, and competences). Studies that focused on specific medical conditions such as stroke or hip fractures were excluded as there is already evidence available for multiprofessional teams.

Structured CGA can be organized in different ways. In 2011, Ellis et al. [12] suggested CGA could be further defined as *CGA-ward* and *CGA-consult*. The main difference between these two models is the comprehensive responsibility of the team.

CGA-ward, also known as Acute Care of Elders units (ACE units) [18], General Evaluation Management units, or Geriatric-based units, represents a CGA model where an inter-disciplinary team of professionals are the *primary* responsible caregivers for the older patient [12,18]. This model covers both acute care and inpatient rehabilitation care programs. It includes four components: a specialized environment, patient-centered care, medical review, and interdisciplinary care [19]. The team employs a holistic approach to assessment and care planning and takes full responsibility for all clinical decisions. A number of reviews and meta-analyses have confirmed the beneficial effects of *CGA-ward* [11–14,20,21].

CGA-consult, also known as Mobile Acute Care of the Elderly or inpatient geriatric consultation teams, was initially described and tested by Campion et al. in the early 1980s [22]. In this model, frail older patients are hospitalized on a non-geriatric ward, based on the patient's main medical reason for admission, and evaluated by a multidisciplinary team using CGA principles to assess, discuss, and recommend a treatment plan for frail older inpatients [23]. In this model, a mobile team responds to referrals from the patient's primary responsible physician. The team acts in a consultative way and does not have direct responsibility for care [24]. The benefits of this model are less clear [12], but a review showed an effect on decreased mortality after 6 and 8 months [23].

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