Title: Comprehensive Geriatric Assessment for older adults in the community: a commentary of a systematic review.

Commentary on:

Sum G, Nicholas SO, Nai ZL, Ding YY, & Tan WS. 2022. Health outcomes and implementation barriers and facilitators of comprehensive geriatric assessment in community settings: a systematic integrative review [PROSPERO registration no.: CRD42021229953]. *BMC Geriatrics*;*22*(1):379.

Key Points

- The evidence for health outcomes related to the use of CGA in community practice remains mixed and inconclusive.
- Barriers to implementation of CGA in the community include lack of partnership alignment, negative patient perception of preventative work and operational challenges.
- Facilitators include the holistic assessment and anticipation of patient need by skilled staff and timely recommendation to services improving care coordination and convenience.
- Further robust RCTs are required to facilitate a meta-analysis.

Introduction

The population in England and Wales aged 65 years and over was 11 million in the 2021 Census, and of these, 97% reside within private households (ONS 2023). Older adults who live independently without the need for institutionalised or 'skilled care' in their daily lives are considered as community dwelling elderly (Madhavan et al. 2016).

For older adults (65 or over), 40% report a limiting longstanding illness, and 20% have a non-limiting longstanding illness (NHS England, 2023). By 2035, two thirds of adults over 65 are expected

to be living with multiple health conditions (multimorbidity) (Kingston et al. 2018). People with multi-morbidity have an increased risk of functional decline, poorer quality of life, greater healthcare use and higher mortality (Yarnall et al. 2017). The needs of the community dwelling elderly are therefore multi-faceted and span medical, functional, psychological and social requirements. With a growing number of older adults in the UK general population, the NHS Long Term Plan (NHS England, 2019) identified the need to help older people to stay healthy and independent for as long as possible with community and district nursing teams key to delivering this ambition.

The Comprehensive Geriatric Assessment [CGA] is a process of care for older adults comprising several steps; a multidimensional holistic assessment considers health and wellbeing, leading to a plan of care to address issues which are of concern to the older person, with supportive interventions put in place and subsequently reviewed (BGS, 2019). In a hospital setting, utilising a CGA after an emergency admission increases older adults' likelihood of being alive, in their own homes, and is associated with a potential cost reduction compared with general medical care (Ellis et al. 2011). More recent evidence has shown that CGA intervention is effective in improving quality of life and reducing caregiver burden, but did not affect the length of hospital stay (Chen et al. 2021). CGA remains the gold standard approach to improving a range of outcomes for older people in acute hospital settings (Conroy et al. 2019) and it is recommended that health and social care practitioners start a CGA when older people with complex needs are admitted to hospital (NICE, 2016). The British Geriatrics Society has since produced a CGA toolkit for primary care practitioners (BGS 2019). Current evidence suggests that conducting a CGA for older adults in primary care with a high risk of hospitalisation, reduces the need for hospital care days, but with no significant difference to outpatient visits or mortality (Nord et al. 2021). An earlier systematic review also reported mixed results for CGA in primary care, with improved adherence to medication modifications, but no improvement in survival or functional outcomes (Garrard et al. 2019). Considering the multi-faceted needs of the community dwelling elderly, the ambition of the Long-Term Plan to increase care in the

community (NHS England 2019) and mixed evidence for CGA use in primary care settings, there is a need to explore the use of CGA in the community setting.

A systematic review was undertaken by Sum et al. (2022) to synthesise the evidence for conducting a CGA for older adults in a community setting including health outcomes and the barriers and facilitators to implementation. Our commentary aims to critically appraise the methods used in the review, expand upon the findings and to consider what they mean for community nursing practice within a secondary health care service.

Results of the review by Sum et al. 2022

From 14,151 records identified in the database search after de-duplication, 203 full texts were assessed for eligibility, and 43 studies were included in the final review. Most studies were controlled intervention studies (n=31), of which 30 were randomised controlled trials (RCTs). The remaining studies were pre-post studies without controls (PPS) (n=4) or case-controlled studies (n=1), qualitative studies (n=3) or mixed methods studies (n=4). Follow-up periods ranged from three months to three years. Most studies were conducted in Europe (n=23): Denmark (n=1), Finland (n=1), Italy (n=1), Netherlands (n=9), Norway (n=1), Spain 1 (n=1), Sweden (n=4), Switzerland (n=2), Netherlands (n=1), and United Kingdom (n=2). The remaining worldwide studies came from the United States (n=9), with the remainder undertaken in Australia (n=2), Canada (n=3), New Zealand (n=2), Hong Kong (n=1), South Korea (n=1) and Taiwan (n=2). Most studies included participants aged 70 years or over (n=30). The remainder of the studies included participants aged ≥65 years (n=13). The most common settings reported for conducting the CGA were at-home (n=25), primary care (n=8), or secondary or tertiary care on an outpatient geriatric clinic basis setting (n=5). The majority of CGAs were conducted by nurses (alone) (n=22), followed by geriatrician and nurse and/or social worker (n=7) or by a multidisciplinary team (n=6). The remainder were conducted by nurses working with either General Practitioners, occupational therapists, physiotherapists, pharmacists, or they were conducted independently by trained interviewers (n=8). Most of the included articles were categorised by the

review's authors as good quality (n=23, 54%) or fair quality (n=16, 37 %) and the remainder were judged to be of poor quality (n=4, 9%).

Functional status outcomes

Nineteen RCTs and three PPSs examined functional status outcomes. Functional status outcomes were assessed in RCTs based on performance of a pre-defined list of Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) in the intervention group compared to controls (usual care). Fourteen RCTs (74%) found no differences in the intervention groups compared to controls over follow-up periods ranging from six months to three years, whilst the remaining five RCTs (26%) found improvement in the sum of counts of independence compared to control groups over follow-up periods from three months to three years. Two of the three PPSs reported significantly improved functional ability (via measures of mobility, balance, gait speed, strength and lower extremity muscle strength related to ambulation and stair climbing) at 12 week and five month follow-up respectively, and one PPS reported no difference at three month follow-up.

Frailty status and falls

Frailty status and incidence and severity of falls were measured in six RCTs and one PPS. Half of the RCTs reported no impact of CGA for both the number and severity of falls in the intervention group, compared to controls, using the Fried Frailty Criteria over follow-up periods of six months to three years. However, the remaining three RCTs reported favourable outcomes including lower relative risk of falls and adverse consequences of falls at nine month follow-up, a significantly lower proportion of frail patients and a higher proportion of pre-frail patients compared to controls at 24 month follow up, and favourable frailty outcomes for the intervention group at 18 months follow-up. The PPS study reported a significant physical home environment and reduced fall hazards at 12 weeks.

Mental Health Outcomes

Six RCTs and two PSSs examined mental health outcomes through validated outcome measures for depression, mood and behaviour symptoms including the Geriatric Depression Scale (GDS), Dupuy's General Well-being Schedule (GWBS), the 5-item Rand-36 mental health subscale, and the Centre for Epidemiologic Studies-Depression scale (CES-D). Three RCTs showed no difference in depressive symptoms at follow-up periods from one to three years, whilst the other three RCTs showed improved depressive symptoms at 18 months and two years, and improved mood and behaviour symptoms at 12 months compared to the control groups. The two PPSs reported a lower mean score in depressive symptoms on the 30-item GDS at three month follow up.

Self-rated health

Six RCTs and one PPS examined self-rated health over follow-up periods of 12 weeks to three years. Of the six RCTs, only one reported improved health perception at two-year follow-up. The PPS found improvement in self-rated health status at 12-week follow-up.

Cognition

Two RCTs and one PPS explored cognitive function. Only one of the two RCTs found improved cognition in the intervention group at two year follow-up, measured using the Mini Mental State Examination (MMSE). The PPS reported significant improvement in behaviour amongst those with cognitive dysfunction at three month follow-up, but no change in MMSE, clock drawing test and clinical dementia rating scales for all participants.

Chronic condition outcomes

Four RCTs and two PPSs investigated chronic condition outcomes between follow-up periods of six months and three years. Three of the RCTs reported no difference between groups and one RCT reported poorer bowel incontinence in the intervention arm at 12 month follow-up. Two PPSs found no differences in chronic condition outcomes at three month follow-up.

Medication related outcomes

One RCT reported improved medication appropriateness compared to the control group at 24 week follow up. Two PPSs found a significant reduction in the proportion of patients with polypharmacy at five month follow up, and significant pre-post reduction in the number of medications taken at 12 month follow-up. The case-control study found no significant difference in the rate of high-risk prescriptions at 20 months.

Nutritional status

Two PPS found the CGA to be significant associated with lowering the risk of malnutrition at three and five months respectively.

Quality of life (QoL) outcomes

Seventeen RCTs and three PPSs measured QOL outcomes. Twelve of the RCTs found CGAs to have no significant impact on QoL over follow-up periods of nine months to two and a half years, whilst four reported improvements in QoL outcomes in one to three year follow ups. All three PPSs reported improved QoL in follow-up periods between three to twelve months.

Mortality outcomes

Of the fourteen RCTs, one controlled PPS and one case control study examining mortality outcomes between 12 months and three years, only one RCT reported a significant reduction in risk of mortality at 36 month follow up.

Barriers to implementation of CGAs

Barriers to the implementation of CGAs were categorised according to three themes: a lack of partnership alignment and feedback for the multiple agencies involved in the CGA, poor acceptance of preventative work and operational challenges. A lack of partnership alignment in multi-agency teams related to differences in organisational cultures and models of service delivery, differing

expectations of job roles, duplication of work and a lack of direct communication between partners. The second barrier related to the poor acceptance of preventative services by patients. The review identified that patients struggled to engage with, or have trust in, the new service or perceive the service to be of value. The final barrier related to challenges in operationalising and optimising CGAs (planning and conduct of the CGA and the process of actioning findings). Factors that hampered this process included variation in the duration of home visits, appropriate timing of visits (meeting the patients' needs on time), lack of monetary reimbursement for payers, patients raising concerns that fell outside of the CGA's scope, lack of local geriatrician support for multi-morbidity, and the ease, use and accuracy of the tool itself.

Facilitators to implementation of CGAs

Facilitators to the implementation of CGAs were categorised according to three themes. Firstly, CGAs were perceived to facilitate a holistic assessment of a patients' needs including those that were previously undetected or unreported. An assessment in the home environment allowed for direct and detailed observation of the patient's living environment and daily functioning. With additional staffing resources available, healthcare professionals were able to undertake patient education for at risk patients including advice on self-management. The second theme related to skilled staff facilitating implementation and included personal attributes such as being attentive, reassuring and anticipating the older person's needs. Thorough explanation of the patient's condition also helped to improve health literacy and adoption of services. Lastly, there was broad agreement that the CGA facilitated timely recommendations to services for previously unaddressed needs and may have improved coordination and continuity of care.

Commentary

Using the Joanna Briggs Institute's Critical Appraisal Tool for Systematic Reviews and Research Syntheses (JBI 2017), the review conducted by Sum et al (2022) achieved seven out of 11 criteria (see Table 1.). Two criteria were unclear: (i) critical appraisal was conducted by two or more reviewers

independently, and (ii) evidence there were methods to minimize errors in data extraction. It is unclear whether these were completed independently, or in duplicate by members of the review team. A further two criteria were not met: (iii) the sources and resources used to search for studies, and (iv) the likelihood of assessment for publication bias. The authors searched four databases, however they failed to search any grey literature, thesis repositories or unpublished studies. A comprehensive search strategy would also help to alleviate the impact of publication bias, and a further statistical test to assess for its presence could have been applied, such as an Egger's test. This was a comprehensive summary of evidence, but due to the limitations described, some caution should be applied when applying the findings to practice.

Table 1. Critical appraisal of Sum et al. 2022 using the Joanna Briggs Institute's Critical Appraisal Tool for Systematic Reviews and Research Syntheses (JBI 2017).

JBI critical appraisal checklist items	**Responses**
1. Is the review question clearly and explicitly stated?	Yes, a well articulated objective was defined; to synthesise quantitative health outcomes and implementation barriers and facilitators of conducting CGA on community-dwelling older adults. This objective was also stated as a review question in the PROSPERO registration: CRD42021229953.
2. Were the inclusion criteria appropriate for the review question?	Yes. Included criteria were primary studies with both quantitative and qualitative outcomes; older adults ≥65 years; care setting in the community including home, primary care, day care settings and outpatient clinics; the CGA has ≥2 assessment domains and development of a care plan to inform care; CGA is not specific to one specific health condition or issue. Searches were restricted to English language only.
3. Was the search strategy appropriate?	Yes. The search strategy utilised relevant Medical Subject Headings (MeSH) and inclusive variations of 'Comprehensive Geriatric Assessment' (CGA) including 'needs assessment'. Searches were undertaken from January 2000 to October 2020. The start date of 2000 onwards was chosen to ensure health outcomes identified were derived from up-to-date health systems and policies.

4. Were the sources and resources used to search for studies adequate?	No. A comprehensive search of the literature using four medical and social sciences electronic databases was undertaken however there was no grey literature or citation searching.
5. Were the criteria for appraising studies appropriate?	Yes. Quality evaluation was undertaken using recognised critical appraisal tools for quantitative, qualitative and mixed-methods studies and categorised as good, fair or poor.
6. Was critical appraisal conducted by two or more reviewers independently?	Unclear. Quality evaluation was assigned to one of three reviewers, but it is unclear if there was more than one reviewer working independently.
7. Were there methods to minimize errors in data extraction?	Unclear. Data extraction assigned to one of three reviewers (with no clear indication if two or more completed the process) and no reference to any tools used to guide data extraction.
8. Were the methods used to combine studies appropriate?	Yes. Due to methodological and clinical heterogeneity, a meta-analysis was not undertaken, instead quantitative outcomes were synthesised narratively and presented by categories of health outcome. Qualitative findings for barriers and facilitators were presented thematically.
9. Was the likelihood of publication bias assessed?	No. Publication bias was not assessed.
10. Were recommendations for policy and/or practice supported by the reported data?	Yes. Recommendations for implementation of CGA in the community were supported by research data.
11. Were the specific directives for new research appropriate?	Yes. Gaps in the research were drawn from both the qualitative and quantitative findings.

Review findings: what are the implications for community practice and further research?

Sum et al. 2022 report mixed evidence on health outcomes for conducting CGA on older adults in community settings. They suggest this may reflect the complexity of the intervention such as the variations in implementation and target populations. Included studies in the review were heterogeneous in study design, sample population (including age), setting, who delivered the CGA, assessment of health outcome measures including tools used and follow-up periods. Consequently, the review authors were unable to make comparisons between studies using a meta-analysis. To address these issues, future robust RCTS of CGAs in the community setting are required, with detailed

sub-analysis of populations, setting and assessment, including longer follow-up periods to account for longer-term functional recovery. Reported outcomes should aim to include functional status, frailty and falls, quality of life, mortality and psychosocial health.

Although it is not possible to make clear recommendations for community practice from the evidence, findings from a further qualitative synthesis suggest that CGA in a home-based or out-patient setting allows for a holistic and integrated approach to care, enriched by the home environment, and increasing both patient satisfaction and accessibility of healthcare (Hayes et al. 2023). The use of CGA in community settings also aligns well with the ambitions proposed by The National Health Service (NHS) Long Term Plan for fully integrated community-based healthcare, with an emphasis on prevention, early intervention and personalised services including support from community health teams for people in their own homes as an alternative to hospitalisation (NHS, 2019).

There are currently no clinical guidelines for the use of a CGA within secondary service community settings. The CGA Toolkit for primary care practitioners however identifies several circumstances for when a CGA could be considered within a community setting; when an older person presents to their GP with a frailty syndrome (e.g. falls, confusion), when a GP or community team learn of an incident that implies frailty in an individual, upon discharge from hospital after presenting with a frailty syndrome, and in care homes (BGS, 2019). They also identify that undertaking a CGA in the community takes time, possibly up to two hours, and they envisage the assessment being contributed to by health and social care professionals. The toolkit adds that nurses are well placed to manage the complexity of the assessment, in an efficient way, drawing on the core values of the nursing role such as advocating for the patient and empowering people to make shared decisions. There are currently many CGA instruments and procedures in place, suggesting that knowledge sharing on CGAs available could enable researchers and professionals to apply existing CGAs in their own context (Stoop et al. 2019).

The findings of Sum et al. (2022) also highlighted the facilitators and barriers to implementation of CGAs in the community setting such as the difficulties in aligning multi-agency teams and the sustainability of partnerships. Successful integration of care between primary and specialist services requires synchronised changes on different levels, a well-resourced team and defined service, agreed and articulated roles and responsibilities, and a willingness for healthcare colleagues to co-work and co-learn (Kozlowska et al. 2018). Conversely, barriers to integrated care include lack of commitment by organisations, conflicting interests, insufficient resources, poor co-ordination, insufficient focus on patient's needs, tensions between professionals, misunderstanding over priorities in care and resistance to change (Kozlowska et al. 2018). To help address these issues, digital health technologies can potentially assist in improving communication and data transfer, supporting the administration of CGAs (Molinari-Ulate et al. 2023). Indeed, the Long-Term Plan aims to enforce technology standards to ensure data is interoperable and accessible and free up time and resource (NHS England, 2019). Evidence suggests however there are barriers to the usability of digital health technologies such as difficulties navigating software, unstable network connectivity and length of the assessment and lack of training to use them (Molinari-Ulate et al. 2023).

Patient perception of preventative services was also identified as a barrier to implementation. Similarly, a review of older adults' perception of fall risk and prevention indicated many did not view themselves as at risk of falls, and improving the accuracy of fall risk perception may motivate older adults to take preventative action (Alfaro-Hudak et al. 2023). In a CGA process, healthcare professionals in the community should ensure meaningful involvement of older adults and their families or caregivers to ensure that their contributions are valued, and their concerns are addressed (Hayes et al. 2023). Training for CGA conduct is also an important issue, and a review of multi-professional educational interventions to train CGA identified that education and training with a continuous learning approach, potentially using case-based or work-placed teaching methodologies is key to equip the health care workforce for successful CGA performance in an interprofessional environment (Linder-Rabi et al. 2023).

Conclusion

The evidence for the implementation of CGAs in the community setting remains inconclusive and further rigorous experimental studies are needed to facilitate a meta-analysis. Although more evidence is required, CGA is supportive of the need for an integrated and person-centred approach to care for older adults in their own homes. Community nurses are well placed to manage CGA, drawing on key values such as patient advocacy and shared decision making. Community teams should consider the barriers and facilitators to implementation identified in this review such as the need for effective communication and knowledge exchange between acute, primary and secondary services, and meaningful involvement and understanding of patients and carers' concerns.

Reflective questions

1. With the CGA being identified as a Gold Standard for hospital settings, what benefits do you feel this would bring to the community setting?

2. Which health and social care partnerships should coordinate the implementation of CGAs in the community?

3. How do we consider patient's views on the CGA to reflect their differing needs

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