Gerontology And Geriatric Research

SCIENTIFIC LITERATURE

Mini Review

Frailty and Life Expectancy Assessments are Essential in Older Adults but Remain Challenging

Winters AM[1*], Bilo HJG[2,3], Roodbol PF[4] and Finnema EJ[4,5,6]

[1]Departments of Internal Medicine and Geriatrics, Isala Hospital, Zwolle, The Netherlands

[2]Stichting Onderzoekscentrum Ketenzorg Chronische Ziekten, Zwolle, The Netherlands

[3]Department of Internal Medicine, University Medical Center Groningen and University of Groningen, The Netherlands

[4]Department of Health Sciences, University Medical Center Groningen and University of Groningen, The Netherlands

[5]Hanze University of Applied Sciences, The Netherlands

[6]NHL Stenden University of Applied Sciences, The Netherlands

ARTICLE INFO

Received Date: August 15, 2022
Accepted Date: September 12, 2022
Published Date: September 15, 2022

KEYWORDS

Acute setting
Shared decision making
Frailty

Citation for this article: Winters AM, Bilo HJG, Roodbol PF and Finnema EJ. Frailty and Life Expectancy Assessments are Essential in Older Adults but Remain Challenging. Gerontology And Geriatric Research. 2022; 4(2):130

Corresponding author:
Antje Marianne Winters,
Departments of Internal Medicine and Geriatrics, Isala Hospital
Dokter van Heesweg 2, PO box 10400, Zwolle, 8000 GK, The Netherlands, Tel: +31-384248190; Email: a.m.winters@isala.nl; a.m.winters@rug.nl

ABSTRACT

With more focus on the degree of frailty and life expectancy, in addition to patient characteristics, care could be more tailored, taking into account individual wishes and needs. A valid way of measuring frailty and life expectancy, however, is essential to providing equal treatment and objective judgment. In this short review, the authors aim to provide an insight into the challenges of assessing frailty and life expectancy and of applying the outcomes of such assessments in current healthcare settings. There are several tools, and combinations thereof, that can be used to assess frailty and life expectancy; however, none of the tools are accurate enough for the acute setting. Despite the lack of consensus on which tool or tool combination to use, their importance has been clearly demonstrated. Frailty and life expectancy should be part of identifying patient characteristics before treatment goals can be determined. In addition, the process of making treatment decisions needs to be standardized to support healthcare professionals and patients in making well-considered and well-founded decisions that are focused on the individual.

INTRODUCTION

Especially in older adults, life expectancy and quality of life as essential outcome factors, instead of the possible successful outcomes of technical procedures only, have been considered more frequently when designing care and care structures. Traditionally, treatment is focused on medical conditions and specific diagnoses. These days, a more individualized model is gaining in importance, based on a biopsychosocial approach that considers the degree of frailty and life expectancy to be essential contributing factors in avoiding adverse treatment of or consequences for older adults.

A recently published article shows the usefulness of such an approach [1]. In this article, the impact of operative and non-operative management of hip fractures on the quality of life of frail older adults was assessed. Although the short-term mortality in the non-operative management group was higher than in the operative management group, there was no loss of quality of life and health-related quality of life in non-operated patients. Based on these results, the authors concluded that non-

operative management could seriously be considered a valid option for frail hospitalized patients with limited lifexpectancy. Such an approach is an excellent example of focusing on patient characteristics, with treatment choices also depending on life expectancy and patients' quality of life.

In other circumstances, frailty should also be considered in defining treatment goals. Frail older adults with hypertension are at a higher risk of experiencing periods of hypotension when the treatment goal is to lower blood pressure to generally accepted levels [2,3]. Hypotension could result in higher risks of depression, falls, hip fractures, and delirium [2,3]. It is also known that for older frail patients with type 2 diabetes mellitus the benefits of intensive blood glucose control diminish with longer diabetes duration and increased age. These patients are more likely to experience hypoglycaemia and that may result in falls, hospitalization, and loss of independence [4]. Prescribers should be aware of the impact of standard treatment on frail older adults and, therefore, weigh the benefits of treatment against the harms for each patient.

FRAILTY DEFINITION AND TOOLS

A fundamental question that needs to be addressed first is whether there are sufficient valid instruments to determine the degree of frailty that can be used in such circumstances. There are several tools, and combinations thereof, that can be used to identify frailty but this is complicated by the fact that there are multiple definitions of frailty and that a gold standard is lacking [5]. Whether it will be possible to define a gold standard in due time or whether a consensus-based, generally accepted, and universal compromise is the only option remains an important question. It is quite possible that different settings (e.g. community settings versus hospital or care home settings or chronic versus acute settings) will require different instruments to assess frailty. These topics will be addressed in this short review.

Frailty is most often defined as an ageing-related syndrome of physiological decline, characterized by significant vulnerability to adverse health outcomes [6]. Some researchers express frailty as 'the most problematic expression of population ageing' and define frailty as a state of vulnerability to poor resolution of homeostasis after a stressor event that is a consequence of a cumulative decline in many physiological systems during a lifetime [7]. These definitions, including an often-used definition by Fried et al. [8], refer to frailty as a medical concept. In contrast, a multidimensional approach to frailty is increasingly being advocated. It can be defined as a dynamic state, affecting an individual who experiences losses in one or more domains of human functioning (physical, psychological, and/or social), which is caused by a range of variables and increases the risk of adverse outcomes [9,10].

We screened the literature for systematic reviews and meta-analyses of frailty screening tools and found two relevant reviews [5,11]. Thirty-nine screening tools were included and four were described in both reviews. The populations studied were community-dwelling older adults, aged 60 [5] or 65 years and older [11]. One review also included data about frailty tools that were tested in emergency departments and nursing homes [5].

Overall, the researchers agree that a multidimensional frailty tool with a high-accuracy risk prediction of adverse outcomes is desirable if it is sufficiently applicable in a short time frame and validated for a particular setting. Some researchers preferred the Frailty Index, which is based on these properties [5], while others preferred the Tilburg Frailty Index [11]. The Frailty Index lists 13-92 health deficits for which patients can be screened, with good criterion and construct validity but poor to moderate discriminatory ability for community-dwelling older adults [12]. The Frailty Index accurately predicts adverse outcomes, such as falls, impairment in Activities in Daily Living (ADL), cognitive decline, hospitalization, and mortality. However, various combinations of items were used. The authors also suggest considering the use of simple risk indicators, such as slow gait speed, because of their excellent ability to predict impairment in ADL [5]. The Tilburg Frailty Index is a self-administered questionnaire with 15 items that relate to disability and receiving personal care and that has demonstrated good validity and reliability for primary healthcare settings, [5,11,13]. A sensitivity of 0.87 and a specificity of 0.76 were described for frailty related to adverse outcomes, such as disability, hospitalization, and falls [13]. For the acute setting or for acutely ill patients, using the frailty tools as described in the reviews is not recommended [5].

TOOLS FOR ESTIMATING LIFE EXPECTANCY

Sometimes, new challenges force us to define aspects of frailty more appropriately. It is known that frailty is associated with shorter life expectancy [14]. With the outbreak of the coronavirus pandemic, it became clear that predicting a potentially shorter life expectancy was highly relevant. During the coronavirus pandemic, there was a discussion in the Netherlands about which patients were to be seen as the better candidates to be offered an Intensive Care (IC) bed or, conversely for which patients the use of IC facilities would not in any way contribute to better outcomes because of the patients' pre-existing poor health [15]. Assessing life expectancy as a starting point may contribute to making better-substantiated choices and, ideally, will contribute to allocating appropriate individualized and valuable care. Eventually, age became the official decisive factor in the admission to the Intensive Care Unit (ICU) in case of bed shortages. Therefore, we also wondered whether there are valid instruments to predict life expectancy among older adults in acute settings.

In the literature, we found four reviews of shorter life expectancy predictions among the elderly [16-19]. A variety of settings were described: community-dwelling older adults, elderly individuals undergoing haemodialysis [16], patients with and without cancer (breast cancer in particular) [16,17,19], nursing home patients [17], and elderly individuals who were admitted to the ICU [18]. A total of 77 tools were examined to predict mortality within 4 weeks to 10 years. Three tools might be appropriate for the prediction of short-term survival between four weeks and three months for patients with advanced cancer to guide the choice of radiation dose and fraction [19]. However, these tools not validated for elderly individuals without cancer. Some other tools have demonstrated moderate to very good accuracy regarding the prediction of mortality between one and seven years. Still, most tools were used and assessed by the researchers who developed them, without examining the external validity [17]. The predicting performances of frailty and life expectancy scores were only assessed for the Frailty Index [5,17]. A moderate accuracy of 0.62 has been described to predict a life expectancy of less than 72 months [17]. Some researchers suggest that the surprise question 'Would I be surprised if this patient died within one year?' can be used to identify patients at high risk of death and who might benefit from palliative care. In a systematic literature and meta-analysis, the performance characteristics of the surprise question in predicting death has been reviewed [16]. For the prediction of mortality within 6 to 18 months, the pooled sensitivity was 0.67 and the specificity 0.80, with a positive predictive value of 37% and a negative predictive value of 93%. For patients with non-cancer illnesses, worse performances were reported. The researchers advised against using the question as a stand-alone prognostic tool [16].

DISCUSSION

None of the tools for predicting frailty and shorter life expectancy were accurate enough to use in an acute setting. Which outcomes are relevant from a patient's perspective regarding screening for risks with these points in mind? Is it essential to know the mortality risk? From a healthcare professional's view, it can be relevant to determine which treatment is valuable and meaningful for patients with a short life expectancy. It is also likely that such a question is appropriate for most patients. Still, it is not necessarily of the same value to everyone because there may also be other issues influencing the eventual judgment of patients (and often their families).

In general, with an approach that focuses on individual needs and wishes, it is possible to initiate advanced care planning and consider stopping any unnecessary life-prolonging treatment, where appropriate. This avoids influencing the quality of life during the short time remaining and timely initiates palliative care, which may contribute to being able to end life with dignity. An approach like this will support patients and families in making appropriate decisions. Still, basing advanced care merely on the outcomes of currently available questionnaires is inappropriate. Predictions and assumptions that are based on such an approach are too unreliable in a considerable minority of patients to be applied as a certainty on an individual basis.

For us as researchers, frailty and mortality are essential patient outcomes. Results from questionnaires, however, apply on a group or population level and are often not sufficiently reliable on an individual level. An approach that combines patient-relevant outcomes and expert-relevant outcomes is advisable [20]. In our opinion, questionnaire outcomes only add to the

Frailty and Life Expectancy Assessments are Essential in Older Adults but Remain Challenging. Gerontology And Geriatric Research. 2022; 4(2):130.

overall picture but should not dominate in the decision-making process.

COMPLEX DECISION-MAKING SITUATIONS

Translating such thoughts as described into practical action remains a challenge. For example, in the Dutch guidelines for older patients with proximal femoral fracture, Shared Decision-Making (SDM) is advised when patients have the explicit wish to receive non-operative management [21]. SDM is defined as a process that is taking place in a relationship where there is a partnership between the provider and the patient that is characterized by a collaborative bi-directional mutual exchange of information and discussion involving negotiation that leads to a shared decision [22]. In practice, this wish is not always very evident and the process and steps to be taken have not been described in the guidelines. Whether it concerns surgery or admission to the ICU, these are complex medical decision-making situations. A narrative review presented and discussed the ethical frameworks that are used for medically complex situations in older people and recommended the use of frameworks that contain step-by-step plans, moral values, and an approach to balancing the views of all participants [23]. Unfortunately, they did not 'identify a single effective framework'. Furthermore, although very important, moral deliberations can be influenced by the cultural background as accepted in a community, by healthcare workers, and by patients and their families. Decision-making that is based on ethical considerations might lead to entirely different outcomes, depending on the cultural setting in which the deliberations take place. This makes generalization a challenge. The process should be as short as possible and be applicable to all healthcare professionals.

CONCLUSION

There is, as yet, no agreement on a standardized frailty assessment and decision-making process for older adults who are admitted to hospital. So far, assessment tools have been validated and a standardized approach is accepted as part of guidelines. An alternative might be to address a set of fundamental questions when considering new interventions in the acute setting:

- Does this intervention improve wellbeing or contribute to maintaining an acceptable state of wellbeing?
- Does this intervention improve prognosis regarding morbidity and mortality, with the explicit understanding that wellbeing will be either improved or maintained at the pre-intervention level?
- When therapeutic interventions are considered not meaningful, when judged in the light of bullet point 2, are any interventions possible to alleviate symptoms and suffering in the frail older adult?

Although a treatment decision is nearly always initiated by healthcare professionals, it will, of course, always be the result of deliberations by the frail person, their family, and healthcare professionals. Such a process will never be easy but our patients deserve a well-considered and well-founded decision that is focused on the individual.

REFERENCES

1. Loggers SAI, Willems HC, Van Balen R, Gosens T, Polinder S, et al. (2022). FRAIL-HIP Study Group. Evaluation of Quality of Life after Nonoperative or Operative Management of Proximal Femoral Fractures in Frail Institutionalized Patients: The FRAIL-HIP Study. JAMA Surg. 157: 424-434.
2. Hateren van KJJ, Hendriks SH, Gronier KH, Bakker SJL, Bilo HJG, et al. (2015). Frailty and the relationship between blood pressure and mortality in elderly patients with type 2 diabetes (Zwolle Outpatient Diabetes project Integrating Available Care-34) Journal of hypertension. 33: 1162-1166.
3. Franz H Messerli, Sven Streit, Tomasz Grodzicki, (2018). The oldest old: does hypertension become essential again?, European Heart Journal. 39: 3144-3146.
4. Verenso. (2011). Multidisciplinaire Richtlijn Diabetes [multidisciplinary guideline diabetes].
5. Apóstolo J, Cooke R, Bobrowicz-Campos E, Santana S, Marcucci M, et al. (2017). Predicting risk and outcomes for frail older adults: an umbrella review of frailty screening tools. JBI Database System Rev Implement Rep. 15: 1154-1208.
6. (2022). British Geriatrics Society.
7. Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. (2013). Frailty in elderly people. Lancet. 381: 752-762.
8. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, et al. (2001). Cardiovascular Health Study Collaborative

Research Group. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 56: M146-156.

9. Slaets JPJ. (2006). Vulnerability in the Elderly: Frailty. Medical Clinics of North America. 90: 593-601.
10. Gobbens RJ, Luijkx KG, Wijnen-Sponselee MT, Schols JM. (2015). Toward a conceptual definition of frail community dwelling older people. Nurs Outlook. 58: 76-86.
11. Gilardi F, Capanna A, Ferraro M, Scarcella P, Marazzi MC, et al. (2018). Frailty screening and assessment tools: a review of characteristics and use in Public Health. Ann Ig. 30: 128-139.
12. Drubbel I, Numans ME, Kranenburg G, Bleijenberg N, de Wit NJ, Schuurmans MJ. (2014). Screening for frailty in primary care: a systematic review of the psychometric properties of the frailty index in community-dwelling older people. BMC geriatrics. 14: 27.
13. Gobbens RJ, Boersma P, Uchmanowicz I, Santiago LM. (2020). The Tilburg Frailty Indicator (TFI): New Evidence for Its Validity. Clinical interventions in aging. 15: 265-274.
14. Herr M, Arvieu JJ, Ankri J, Robine JM. (2017). What is the duration of life expectancy in the state of frailty? Estimates in the SIPAF study. European journal of ageing. 15: 165-173.
15. Vincent JL, Creteur J. (2022). Appropriated care for the elderly in the ICU. J Intern Med. 291: 458-468.
16. Downar J, Goldman R, Pinto R, Englesakis M, Adhikari NK. (2017). The "surprise question" for predicting death in seriously ill patients: a systematic review and meta-analysis. CMAJ. 189: E484-E493.
17. Thomas R, Pieri A, Cain H. (2017). A systematic review of generic and breast cancer specific life expectancy models in the elderly. Eur J Surg Oncol. 43: 1816-1827.
18. Keuning BE, Kaufmann T, Wiersema R, Granholm A, Pettilä V, et al. (2020). Mortality prediction models in the adult critically ill: A scoping review. Acta Anaesthesiol Scand. 64: 424-442.
19. Pobar I, Job M, Holt T, Hargrave C, Hickey B. (2021). Prognostic tools for survival prediction in advanced cancer patients: A systematic review. J Med Imaging Radiat Oncol. 65: 806-816.
20. Kersting C, Kneer M, Barzel A. (2020). Patient-relevant outcomes: what are we talking about? A scoping review to improve conceptual clarity. BMC Health Serv Res. 20: 596.
21. Federated Medic Specialist. (2016). 'Richtlijn Proximale femurfracturen' [Guideline proximal femoral fractures].
22. Charles C, Gafni A, Whelan T. (1997). Shared decision-making in the medical encounter: what does it mean? (or it takes at least two to tango). Soc Sci Med. 44: 681-692.
23. van Bruchem-Visser RL, van Dijk G, de Beaufort I, Mattace-Raso F. (2020). Ethical frameworks for complex medical decision making in older patients: A narrative review. Arch Gerontol Geriatr. 90: 104160.