

University of Groningen

Frailty among older adults: exploring the social dimension

Bunt, Steven

DOI:
[10.33612/diss.131224932](https://doi.org/10.33612/diss.131224932)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2020

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):
Bunt, S. (2020). *Frailty among older adults: exploring the social dimension*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen. <https://doi.org/10.33612/diss.131224932>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

General introduction

'Age is an issue of mind over matter. If you don't mind, it doesn't matter.'
- Mark Twain

Worldwide, there is a trend of an ageing population due to an increase in life expectancy and decreasing fertility rates. By 2050, 30% of the population in most European countries will be 60 years old and over (World Health Organization 2015). It is inevitable that this demographic change will have an impact on health care costs and health care practice. For example, the percentage of patients aged 65 and older that visited a physiotherapist in the Netherlands already increased from 28% in 2011 to 33% in 2017 and is expected to escalate even further in the coming years (Dool and Schermer 2019). Consequently, the expanding use of care by older adults has an impact on health care costs for society. In the Netherlands in 2017, 80% of the costs for care were for frail older adults and/or people with chronic diseases, and these costs are rising (Vektis 2018). In the care for frail older adults, an average of almost ten caregivers are involved of which seven are formal and three are informal caregivers (Broese van Groenou *et al.* 2016). Frail older adults are commonly treated for a distinct health problem that is related to the specific domain of the health care professional. For example, a physiotherapist will primarily diagnose and treat physical problems. However, it can be questioned whether the health problems of frail older adults are, in fact, bounded to these single health problems as this population often has multiple (functional) problems as a result of the ageing process; this is referred to as frailty. Over the past years, the biomedical model in which physical frailty is dominant received the most scientific attention although various models currently include physical as well as psychological, cognitive, and social domains in the overall frailty concept. Still, these domains are rather underdeveloped in literature. Especially the concept of social frailty remains unsettled.

The concept of frailty

Although the number of frail older adults is increasing, causing a challenge for health care practices to adequately deal with this group, the concept of frailty itself is still under debate. As people age, there is an accumulation of cellular defects leading to age-related disability, multi-morbidity, and a decrease of reserve capacity. Additionally, the resistance to physical stressors decreases, causing vulnerability to adverse health outcomes (Clegg *et al.* 2013). This phenomenon is referred to as *frailty* (Fried *et al.* 2004). Studies show that frailty negatively influences the outcome of medical treatment (Jarrett *et al.* 1995) and increases recovery time of health problems (Heyland *et al.* 2015). In the medical sciences, it had been common to conceptualize frailty in a mere biomedical sense; definitions of frailty were unidimensional and primarily comprised physical and physiological indicators. Fried (1992), for example, defined five physical frailty components: unintentional weight loss, weakness, exhaustion, slow gait, and low physical activity. Rockwood *et al.* (1994)

introduced a dynamic model of frailty, emphasizing the capacity of older adults for independence as a balance between an individual's assets and deficits. Rockwood's approach is different from Fried's model as it approaches frailty in a more stochastic ageing model: frailty develops due to an accumulation of deficits, and the outcome cannot be determined in advance. This model of frailty also comprised psychosocial components next to factors related to the physical and functional status. In addition to the biomedical models, more broadened definitions of frailty have been suggested in the anthropological and social sciences. Raphael *et al.* (1995) and Kaufman (1994) have defined frailty as a social construction in which both the characteristics of the individual and the individual's environment (such as the opportunity to participate in social activities) play a role in a person's frailty status. These models understand frailty in a dynamic way as a process along a continuum (Raphael *et al.* 1995) or as a dynamic adaptive process between the individual and the environment (Kaufman 1994).

Still today, the definition of frailty remains contested. In a recent report of the (World Health Organization 2015, p.63), frailty is defined as "*a progressive age-related decline in physiological systems that results in decreased reserves of intrinsic capacity, which confers extreme vulnerability to stressors and increases the risk of a range of adverse health outcomes*" (Cesari *et al.* 2016) thereby according with the biomedical and reductionist approach to frailty. On the other hand, a significant number of studies (Bielderman *et al.* 2013, Gobbens *et al.* 2010, Schuurmans *et al.* 2004, Steverink *et al.* 2001) contribute to a multidimensional approach to frailty. Steverink *et al.* (2001) developed the multidimensional Groningen Frailty Indicator (GFI) which not only screens for physical vulnerabilities but also for psychosocial imbalances. Gobbens *et al.* (2010, p. 342) suggested an integral conceptual definition of frailty: "*Frailty is a dynamic state affecting an individual who experiences losses in one or more domains of human functioning (physical, psychological, social), which is caused by the influence of a range of variables and which increases the risk of adverse outcomes.*"

In the various multidimensional frailty concepts, especially the domain of social frailty is rather underdeveloped. It remains unsettled what the concept of social frailty comprises and, consequently, also how to measure this infirmity. In addition, the area of cognitive decline has, indeed, been extensively studied, but hardly as (a component of the) frailty concept. Some describe the relation between cognitive decline and frailty (Hsieh *et al.* 2018, Margioti *et al.* 2019) while others include cognition in the concept of frailty (Gobbens *et al.* 2010). Cognitive decline undoubtedly impacts the frailty status and is interrelated with physical and social frailty. Therefore, measuring cognitive frailty is relevant for preventing further losses in physical, psychological, and social functioning of older adults. However,

the measurement of cognitive frailty is disputed; there is a large heterogeneity in its operational definition and therefore also in the measurement of the concept (Sargent and Brown 2017).

Cognitive frailty

There is significant variety in cognitive functions among people whereby different functions decrease at different rates. Decline in memory and in the speed of information processing is common, and complaints about these functions are frequently reported by older adults (World Health Organization 2015). Cognitive frailty is a condition recently defined by criteria describing coexisting physical frailty and mild cognitive impairment (MCI). There are two proposed subtypes: reversible cognitive frailty (physical frailty/pre-MCI subjective cognitive decline) and potentially reversible cognitive frailty (physical frailty/MCI) (Panza *et al.* 2018). Worldwide, the prevalence of MCI and dementia is increasing (Ward *et al.* 2012, Prince *et al.* 2013). Although MCI and dementia are distinct diagnoses, some people with MCI develop dementia, but others do not (Bruscoli and Lovestone 2004). Cognitive functions can be considered as a prerequisite for older adults' self-management abilities (Tomlin and Sinclair 2016, Howell *et al.* 2017). In that way, cognitive frailty may also affect the social frailty status. Specifically, regarding frailty, self-management is important for preventing (further) losses and for ageing successfully (Frieswijk *et al.* 2006, Schuurmans *et al.* 2004, Steverink *et al.* 2005). Although the area of cognitive decline in older age is studied extensively, its measurement in the context of the frailty concept is still under debate. Cognitive functioning is increasingly used as an item in recently published frailty screening instruments but is heterogeneously operationalized (Azzopardi *et al.* 2018, Sargent and Brown 2017). A valid instrument for measuring cognitive frailty, and especially MCI, in an early stage, would contribute to prevent losses in other frailty subdomains.

Social frailty

As argued above, the concept of social frailty is still rather underdeveloped and debated for its added value to the frailty concept. Some studies have explicitly defined it as insufficient participation in social networks and the perception of a lack of contacts and support (Broese van Groenou 2011). Gobbens *et al.* (2010) include social components in their model of frailty (i.e., *social relations* and *social support*) but also pose the question of whether social components are *determinants* or *components* of the frailty concept. Others define social components as being related to the frailty concept, but as a distinct

concept. For example, Andrew *et al.* (2012) use the concept of social vulnerability that contains a broad representation of factors that influence and describe an individual's social circumstances. Associations of social factors with other frailty components have been discussed in the literature; social isolation and loneliness are known contributors to physical frailty (Strawbridge *et al.* 1998) and may lead to cognitive decline (Cacioppo and Hawkey 2009). In conclusion, it remains unsettled what the concept of social frailty comprises. The literature is still inconclusive on the scope and nature of social frailty and demonstrates different approaches to the concept. A better understanding of how social frailty should be understood and how it develops is important for preventing it and for designing policy measures to address it.

Measurement instruments for measuring cognitive and social frailty

Being able to identify frail older persons requires validated screening instruments. Subsequently, tailored interventions can be provided to prevent or delay (further) frailty and adverse outcomes such as morbidity, excessive health care use, and early death. In the last two decades a considerable number of frailty measurement instruments have been developed (Azzopardi *et al.* 2016). However, considering the predominant biomedical view and the limited research on cognitive and social frailty, there is a lack of valid and reliable measurement instruments especially for these two subdomains.

As for measuring cognitive frailty, being able to identify MCI in an early stage and providing proper support and/or treatment might prevent the accumulation of further losses in physical, psychological, or social functioning of older adults. However, the widely used screening instrument, the MMSE (or SMMSE), is not sufficiently accurate for identifying MCI (Mitchell 2009). Only a few cognitive screening tools are available to differentiate normal cognition from MCI and dementia, but most are not able to distinguish between dementia and MCI. To address these challenges, the Quick Mild Cognitive Impairment (Qmci) screen has been developed (O'Caoimh *et al.* 2012, O'Caoimh *et al.* 2013, O'Caoimh *et al.* 2014) and has been found to be sensitive and specific in differentiating MCI from Normal Cognition (NC) and from mild dementia in (among others) Canadian samples. In the Dutch context, however, no screening instruments to properly identify MCI are available. Therefore, a valid screening tool in the Dutch language is needed to allow for prompt interventions.

Regarding social frailty, the few screening tools that do intent to cover the social frailty domain use a wide variety of aspects of social frailty, and operationalize these rather

differently. So, there is significant diversity of social components in the frailty screening tools and severity measures of frailty, while moreover, the social dimension usually gets less weight in the detection of frailty within frailty screening instruments as compared to the physical and psychological dimensions (Bessa *et al.* 2018). For example, the Groningen Frailty Indicator (GFI), in fact, only contains the concept of emotional loneliness (*experiencing emptiness, missing presence of others, feeling left alone*) (Steverink *et al.* 2001) while the Questionnaire to measure Social Frailty (QSF) consists of items that only relate to one's social activities (among others, *talking to others, going out, visiting friends*) (Makizako *et al.* 2015). In conclusion, it remains unclear how to adequately measure social frailty. Moreover, in the Dutch context, no specific instruments for measuring social frailty among older adults are available. Such an instrument would help to identify socially frail older adults, and subsequently, design interventions and policies both on the level of individual older adults and in the general population.

Aim and outline of this thesis

The objective of this thesis is to further explore the concept of frailty with a focus on social frailty in order to contribute to a more comprehensive understanding of the concept of social frailty in older adults. A second objective is to translate and cross-culturally adapt existing non-Dutch measurement tools for cognitive and social frailty for use in the Dutch context. Therefore, according with these two objectives, this thesis is divided into two parts.

Part one

Part one focuses on the multidimensional concept of frailty with specific attention to social frailty. **Chapter 2** addresses the problem that older patients in physiotherapy practices are usually referred to their physiotherapist for a single physical problem. However, many also experience age-related co-existing psychological and social problems which may hamper their physical recovery. The aim of this chapter is to describe the biopsychosocial frailty characteristics of older patients receiving physiotherapy and relate levels of frailty to levels of resilience.

Chapters 3 and 4 concern the issue that social frailty is a rather unexplored concept and, therefore, aim to contribute to more extensive knowledge of the concept of social frailty in older adults. **Chapter 3** consists of a scoping review in which existing insights regarding social frailty are evaluated, structured, and synthesized into a new conceptual model of social frailty. **Chapter 4** reports a qualitative study among community-dwelling and assisted-living older adults regarding their lived experiences of social frailty.

Part two

Part two addresses the issue of the lack of instruments in the Dutch language for measuring cognitive frailty and social frailty. In **Chapter 5**, the *Qmci* is translated for use in Dutch speaking countries after which the Dutch version of the *Qmci* (*Qmci-D*) is validated. Additionally, its sensitivity and specificity in differentiating MCI from NC and dementia are compared to the most widely used short cognitive screen in the Netherlands, the Dutch version of the SMMSE (*SMMSE-D*). In **Chapter 6**, the Social Vulnerability Index (SVI, (Andrew *et al.* 2008) is adapted for use in Dutch speaking countries, and its face validity and feasibility are tested.

Finally, in **Chapter 7**, the main findings of the preceding chapters are discussed and reflected on. Moreover, their implications for practice and future research are considered.

References

- Andrew, M.K., Mitnitski, A.B. and Rockwood, K. 2008. Social vulnerability, frailty and mortality in elderly people. *PLoS One*, **3**, 5, e2232.
- Andrew, M.K., Mitnitski, A., Kirkland, S.A. and Rockwood, K. 2012. The impact of social vulnerability on the survival of the fittest older adults. *Age and Ageing*, **41**, 2, 161-5.
- Azzopardi, R.V., Beyer, I., Vermeiren, S., Petrovic, M., Van Den Noortgate, N., Bautmans, I., Gorus, E. and Gerontopole Brussels Study Group. 2018. Increasing use of cognitive measures in the operational definition of frailty—a systematic review. *Ageing Research Reviews*, **43**, 10-6.
- Azzopardi, R.V., Vermeiren, S., Gorus, E., Habbig, A.K., Petrovic, M., Van Den Noortgate, N., De Vriendt, P., Bautmans, I., Beyer, I. and Gerontopole Brussels Study Group. 2016. Linking Frailty Instruments to the International Classification of Functioning, Disability, and Health: A Systematic Review. *Journal of the American Medical Directors Association*, **17**, 11, 1066.e1,1066.e11.
- Bessa, B., Ribeiro, O. and Coelho, T. 2018. Assessing the social dimension of frailty in old age: A systematic review. *Archives of Gerontology and Geriatrics*, **78**, 101-13.
- Bielderman, A., van der Schans, C.P., van Lieshout, M.R., de Greef, M.H., Boersma, F., Krijnen, W.P. and Steverink, N. 2013. Multidimensional structure of the Groningen Frailty Indicator in community-dwelling older people. *BMC Geriatrics*, **13**, 86,2318-13-86.
- Broese van Groenou, M. 2011. Sociale kwetsbaarheid. In Campen, C.v. (ed), *Kwetsbare Ouderen*. Sociaal Cultureel Planbureau, Den Haag, 121.
- Broese van Groenou, M., Jacobs, M., Zwart-Olde, I. and Deeg, D.J.H. 2016. Mixed care networks of community-dwelling older adults with physical health impairments in the Netherlands. *Health & Social Care in the Community*, **24**, 1, 95-104.
- Bruscoli, M. and Lovestone, S. 2004. Is MCI really just early dementia? A systematic review of conversion studies. *International Psychogeriatrics*, **16**, 2, 129-40.
- Cacioppo, J.T. and Hawkey, L.C. 2009. Perceived social isolation and cognition. *Trends in Cognitive Sciences*, **13**, 10, 447-54.
- Cesari, M., Prince, M., Thiyagarajan, J.A., De Carvalho, I.A., Bernabei, R., Chan, P., Gutierrez-Robledo, L.M., Michel, J., Morley, J.E. and Ong, P. 2016. Frailty: an emerging public health priority. *Journal of the American Medical Directors Association*, **17**, 3, 188-92.
- Clegg, A., Young, J., Iliffe, S., Rikkert, M.O. and Rockwood, K. 2013. Frailty in elderly people. *Lancet*, **381**, 9868, 752-762.
- Dool, J. and Schermer, T. 2019. *Zorg door de fysiotherapeut. Jaarcijfers 2018 en trendcijfers 2014-2018*. Netherlands Institute for Health Services Research, Utrecht.
- Fried, L.P., Ferrucci, L., Darer, J., Williamson, J.D. and Anderson, G. 2004. Untangling the concepts of disability, frailty, and comorbidity: implications for improved targeting and care. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, **59**, 3, M255-63.
- Fried, L.P. 1992. Conference on the physiologic basis of frailty. April 28, 1992, Baltimore, Maryland, U.S.A. Introduction. *Ageing (Milan, Italy)*, **4**, 3, 251-2.
- Frieswijk, N., Steverink, N., Buunk, B.P. and Slaets, J.P. 2006. The effectiveness of a bibliotherapy in increasing the self-management ability of slightly to moderately frail older people. *Patient Education and Counseling*, **61**, 2, 219-27.

- Gobbens, R.J., Luijckx, K.G., Wijnen-Sponselee, M.T. and Schols, J.M. 2010. In search of an integral conceptual definition of frailty: opinions of experts. *Journal of the American Medical Directors Association*, **11**, 5, 338-43.
- Gobbens, R.J., van Assen, M.A., Luijckx, K.G., Wijnen-Sponselee, M.T. and Schols, J.M. 2010. Determinants of frailty. *Journal of the American Medical Directors Association*, **11**, 5, 356-64.
- Heyland, D.K., Garland, A., Bagshaw, S.M., Cook, D., Rockwood, K., Stelfox, H.T., Dodek, P., Fowler, R.A., Turgeon, A.F., Burns, K., Muscedere, J., Kutsogiannis, J., Albert, M., Mehta, S., Jiang, X. and Day, A.G. 2015. Recovery after critical illness in patients aged 80 years or older: a multi-center prospective observational cohort study. *Intensive Care Medicine*, **41**, 11, 1911-20.
- Howell, E.H., Senapati, A., Hsieh, E. and Gorodeski, E.Z. 2017. Medication self-management skills and cognitive impairment in older adults hospitalized for heart failure: A cross-sectional study. *SAGE Open Medicine*, **5**, 2050312117700301.
- Hsieh, T.J., Chang, H.Y., Wu, I.C., Chen, C.C., Tsai, H.J., Chiu, Y.F., Chuang, S.C., Hsiung, C.A. and Hsu, C.C. 2018. Independent association between subjective cognitive decline and frailty in the elderly. *PLoS one*, **13**, 8, e0201351.
- Jarrett, P.G., Rockwood, K., Carver, D., Stolee, P. and Cosway, S. 1995. Illness presentation in elderly patients. *Archives of Internal Medicine*, **155**, 10, 1060-4.
- Kaufman, S.R. 1994. The social construction of frailty: an anthropological perspective. *Journal of Aging Studies*, **8**, 1, 45-58.
- Makizako, H., Shimada, H., Tsutsumimoto, K., Lee, S., Doi, T., Nakakubo, S., Hotta, R. and Suzuki, T. 2015. Social frailty in community-dwelling older adults as a risk factor for disability. *Journal of the American Medical Directors Association*, **16**, 11, 1003. e7,1003. e11.
- Margioti, E., Scarmeas, N., Kosmidis, M., Vlachos, G., Dardiotis, E., Ntanasi, E., Sakka, P., Hadjigeorgiou, G. and Yannakoulia, M., 2019. *Exploring the association between subjective cognitive decline and frailty*, Aristotle University of Thessaloniki.
- Mitchell, A.J. 2009. A meta-analysis of the accuracy of the mini-mental state examination in the detection of dementia and mild cognitive impairment. *Journal of Psychiatric Research*, **43**, 4, 411-31.
- O'Caomh, R., Gao, Y., McGlade, C., Healy, L., Gallagher, P., Timmons, S. and Molloy, D.W. 2012. Comparison of the quick mild cognitive impairment (Qmci) screen and the SMMSE in screening for mild cognitive impairment. *Age and Ageing*, **41**, 5, 624-9.
- O'Caomh, R., Timmons, S. and Molloy, D.W. 2013. Comparison of the Quick Mild Cognitive Impairment Screen (Qmci) to the Montreal Cognitive Assessment. *Irish Journal of Medical Science*, **182**.
- O'Caomh, R., Svendrovski, A., Johnston, B.C., Gao, Y., McGlade, C., Eustace, J., Timmons, S., Guyatt, G. and Molloy, D.W. 2014. The Quick Mild Cognitive Impairment screen correlated with the Standardized Alzheimer's Disease Assessment Scale-cognitive section in clinical trials. *Journal of Clinical Epidemiology*, **67**, 1, 87-92.
- Panza, F., Lozupone, M., Solfrizzi, V., Sardone, R., Dibello, V., Di Lena, L., D'Urso, F., Stallone, R., Petruzzini, M. and Giannelli, G. 2018. Different cognitive frailty models and health-and cognitive-related outcomes in older age: from epidemiology to prevention. *Journal of Alzheimer's Disease*, **62**, 3, 993-1012.
- Prince, M., Bryce, R., Albanese, E., Wimo, A., Ribeiro, W. and Ferri, C.P. 2013. The global prevalence of dementia: a systematic review and metaanalysis. *Alzheimer's & Dementia : the Journal of the Alzheimer's Association*, **9**, 1, 63,75.e2.

Chapter 1

- Raphael, D., Cava, M., Brown, I., Renwick, R., Heathcote, K., Weir, N., Wright, K. and Kirwan, L. 1995. Frailty: a public health perspective. *Canadian Journal of Public Health = Revue Canadienne de Sante Publique*, **86**, 4, 224-7.
- Rockwood, K., Fox, R.A., Stolee, P., Robertson, D. and Beattie, B.L. 1994. Frailty in elderly people: an evolving concept. *CMAJ : Canadian Medical Association Journal = Journal de l'Association Medicale Canadienne*, **150**, 4, 489-95.
- Sargent, L. and Brown, R. 2017. Assessing the Current State of Cognitive Frailty: Measurement Properties. *The Journal of Nutrition, Health & Aging*, **21**, 2, 152-60.
- Schuermans, H., Steverink, N., Lindenberg, S., Frieswijk, N. and Slaets, J.P. 2004. Old or frail: what tells us more? *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*, **59**, 9, M962-5.
- Steverink, N. 2001. Measuring frailty: developing and testing the GFI (Groningen Frailty Indicator). *The Gerontologist*, **41**, 236.
- Steverink, N., Lindenberg, S. and Slaets, J.J. 2005. How to understand and improve older people's self-management of wellbeing. *European Journal of Ageing*, **2**, 4, 235-44.
- Strawbridge, W.J., Shema, S.J., Balfour, J.L., Higby, H.R. and Kaplan, G.A. 1998. Antecedents of frailty over three decades in an older cohort. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, **53**, 1, S9-16.
- Tomlin, A. and Sinclair, A. 2016. The influence of cognition on self-management of type 2 diabetes in older people. *Psychology Research and Behavior Management*, **9**, 7-20.
- Vektis. 2018. *Zorgthermometer Ouderenzorg*. Zeist.
- Ward, A., Arrighi, H.M., Michels, S. and Cedarbaum, J.M. 2012. Mild cognitive impairment: disparity of incidence and prevalence estimates. *Alzheimer's & Dementia: the Journal of the Alzheimer's Association*, **8**, 1, 14-21.
- World Health Organization. 2015. *World report on ageing and health*. World Health Organization, Geneva.

