

Frailty and dementia evidence summary

Background

The Evidence and Evaluation for Improvement team (EEvIT) were requested by the Focus on Dementia programme to rapidly review the evidence on frailty and dementia that would inform the usefulness of frailty assessment tools in the management and coordination of dementia care. The interrelation between dementia and other ageing related conditions is reflected in national guidance that dementia should be integrated with prevention strategies for frailty and long-term conditions¹ and as part of holistic planning and coordination of care for older people². Frailty is considered a potential preventable or modifiable risk factor for dementia alongside other long-term conditions which would suggest an important role for frailty assessment.

The two most common models of assessment for identifying frailty are the frailty phenotype and Frailty Index. The Frailty Index developed by Rockwood is based on a model of frailty as a consequence of interacting physical, psychological and social factors. A frailty index score is calculated as the number of deficits a person is identified as having divided by the number of deficits being considered in the index³. A Clinical Frailty Scale has been developed as a specific tool by Rockwood for screening frailty in clinical settings based on clinical judgement⁴. The degree of frailty in the scale is considered to correspond with the same degree of dementia. The frailty phenotype model considers frailty as a clinical syndrome with associated symptoms that allows identification of a patient as not frail, prefrail or frail⁵.

The following summary of the published evidence was guided by the following questions of interest to the Focus on Dementia programme team:

- What relationship has been identified between frailty and dementia that would suggest a role for frailty assessment in dementia care?
- What frailty assessment tools such as the Clinical Frailty Scale have been evaluated for their usefulness in the management and co-ordination of dementia care?

Methods

A search (in the MEDLINE database) was conducted for relevant systematic reviews investigating the relationship between frailty and dementia including prevalence of frailty in dementia and frailty as a risk factor for dementia. Citation chaining was used to identify additional relevant studies including recent primary studies. As the approach taken was based on a rapid response, quality assessment was not included.

Findings

The literature covers the following two areas: the relationship between frailty and dementia (four systematic reviews, one narrative review and one longitudinal cohort study) and the evaluation of frailty assessment tools (one systematic review, one longitudinal cohort study and one retrospective cohort study).

Relationship between frailty and dementia

Frailty as a risk factor for dementia has been widely investigated. Evidence from the identified studies suggests that frailty is prevalent in dementia and that frailty can increase the risk of developing dementia in older adults.

A systematic review and meta-analysis⁶ of the prevalence of frailty in Alzheimer's disease (AD) included five studies (534 patients). Prevalence was found to vary (11.1% to 50.0%) with a pooled prevalence of 31.9%. A small study that analysed data from a Norwegian cohort (116 patients) found a higher prevalence of frailty in people with dementia with lewy bodies (DLB)⁷ (37.14%) compared with AD (18.97%). The authors discuss how people with DLB may be expected to show signs of frailty because of the symptoms of dementia but also through wider interactions such as with comorbidities.

A 2013 narrative review⁸ identified that frailty and cognitive disorders including dementia were significantly associated with each other. The review describes how results across studies were mixed with some finding no association or that the association with frailty was only found for specific dementia subtypes. There is variation in how frailty has been defined and measured across studies. The review also discusses the research that implicates particular processes in the progression of cognitive decline which includes cardiovascular risk factors, AD pathology and depression and how these areas require further research.

More recent systematic reviews have aimed to provide more robust assessment of the relationship between frailty and dementia with the inclusion of longitudinal cohort studies. A 2016 systematic review⁹ which was reported as the first to include all relevant longitudinal studies at that time of

publication. Frailty was found to increase the risk of incident of AD (four studies), vascular dementia (two studies) and all dementia (three studies). A random-effects meta-regression analysis showed that frail women may have a higher risk of incident of AD than frail men.

The increased risk of dementia is also confirmed in a 2019 systematic review and meta-analysis¹⁰ investigating the relationship between frailty and cognitive disorders in community-dwelling older adults. The review identified six relevant studies, all but one were longitudinal cohort studies which were included in the meta-analysis. Frailty was found to increase the risk of cognitive disorders in community dwelling older adults. The highest increase was for the incidence of dementia.

The most recent study identified investigates the degree of frailty severity and subsequent incidence of dementia over a 10-year period in an analysis of the English Longitudinal Study of Ageing¹¹. The findings show that compared with non-frail participants, pre-frail and frail participants have an increased risk of developing dementia. A dose-response relationship is shown between the degree of frailty at baseline and subsequent risk of dementia. A key limitation is a lack of formal identification of dementia cases. The authors conclude that where risk factors for dementia are being considered, a comprehensive frailty assessment should be included. The need for future research was identified to be able to understand the mechanisms that link frailty to dementia and to establish how frailty severity affects dementia progression.

Frailty assessment in dementia

In the identified literature, frailty assessment tools are reported in the context of their predictive value for dementia rather than evaluation of their usefulness in clinical screening or care coordination in dementia.

A comparison was made in one study between different types of risk factors in a frailty index for predicting dementia. In this study, Searle and Rockwood¹² consider how prediction of dementia risk varies depending on the type and number of deficits based on a secondary analysis from the Canadian Study of Health and Aging. The results suggest that risk of dementia increases as a function of the number of deficits. These deficits include a wide range of health problems in addition to known dementia risk factors. The authors conclude that this evidence suggests the risk of dementia and death is determined more by overall health status and less by specific health problems.

A systematic review¹³ identified a Prognostic Risk Score as the only tool tested and validated in a cohort of people with dementia diagnosis. An additional study was identified that evaluated a Multidimensional Prognostic Index¹⁴ derived from a standardised comprehensive geriatric assessment that predicts short and long term mortality in older adults with dementia in a geriatric hospital ward. The authors conclude that a multidimensional approach to assessment and management of dementia is important in older people.

Summary and conclusion

The relationship between frailty and dementia in the context of frailty being a risk factor for dementia has been widely investigated in the published literature. Frailty assessment tools are

reported for their predictive value rather than their use in the management and coordination of dementia care. Given that frailty has been found to increase the risk of dementia and the value of multidimensional approaches to the assessment of frailty, this evidence supports current recommendations for integrated approaches to the prevention, assessment and management of dementia with other long-term conditions. Research gaps identified include how frailty affects dementia progression, the mechanisms that link frailty to dementia and evaluation of particular frailty assessment tools in the management and coordination of dementia care.

References

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