

# Frailty screening in older hospitalized patients

Citation for published version (APA):

Warnier, R. M. J. (2023). *Frailty screening in older hospitalized patients*. [Doctoral Thesis, Maastricht University]. Maastricht University. <https://doi.org/10.26481/dis.20231011rw>

## Document status and date:

Published: 01/01/2023

## DOI:

[10.26481/dis.20231011rw](https://doi.org/10.26481/dis.20231011rw)

## Document Version:

Publisher's PDF, also known as Version of record

## Please check the document version of this publication:

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## Summary

Many people get old in a healthy way but for a considerable group, ageing is also associated with an increased risk of one or more chronic diseases (multimorbidity) and secondary disabilities. In the Netherlands almost 50% of those aged 75 years and over suffer from more than one chronic condition. This impacts their use of health care services, including hospital care. Hospitals become more and more 'geriatric institutions' and in daily practice, nursing staff has to deal with an increasing number of older patients. When older people with acute health problems are hospitalized, they are at high risk of rapid functional decline both during their hospital stay as well as after discharge.

Frailty and functional decline contribute to negative short and long-term health outcomes such as prolonged hospital stay, frequent readmissions to hospital, admission to a nursing home, and increased mortality. Therefore an active approach in detecting frailty in hospitalized older patients is considered to be necessary, as a starting point for proactive interventions.

This thesis focuses on the screening for frailty in daily nursing care for hospitalized older patients. We conducted several studies with three aims: (1) generating an overview of available hospital screening tools for frailty and their psychometric properties, (2) obtaining information regarding the quality and usefulness of the Maastricht Frailty Screening Tool for Hospitalized Patients (MFST-HP screening tool) that we developed ourselves for frailty screening at hospital admission, and (3) exploring opinions of hospital nurses on conducting frailty screening.

After a general introduction (chapter 1), chapter 2 addresses the first aim. A systematic review was performed to identify and review screening tools for frailty in older adults admitted to inpatient hospital care with respect to their validity, reliability and feasibility. Studies were identified through systematically searching PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Embase and PsycINFO and screening reference lists till June 2014. The quality of the included studies was critically appraised via the Quality Assessment of Diagnostic Accuracy Studies (QUADAS).

The included screening tools showed different characteristics with respect to the number of items, the method of administration and the domains included. The most frequently studied tools with respect to predictive validity were the Identification Seniors At Risk (ISAR) and Triage Risk Stratification Tool (TRST).

The review concluded that many screening tools are available for daily practice. None of these tools, however, demonstrated clear evidence on both validity, reliability and feasibility. The overall sensitivity of the included screening tools was fairly good, whereas information on reliability and feasibility was lacking for most tools. In future research more attention should be given to these latter aspects.

Chapter 3, 4 and 5 address our second aim. Our research focused on the performance of the Maastricht Frailty Screening tool for Hospitalized Patients (MFST-HP). With this 15-item frailty tool, nurses can assess older patients at admission on 3 domains of frailty (physical, social and psychological). In our first study, aspects of reliability, validity and feasibility of the MFST-HP were explored in a sample of 79 consecutive patients. Reliability of the MFST-HP was fairly good; the Intraclass Correlation Coefficients for both intra- and inter-rater reliability were promising (ICC above .93). Older patients and those with more comorbidity showed higher scores on the MFST-HP compared to younger patients and those with less comorbidity. Due to a low administration time (averaged 2.6 minutes), and no need for extended training, we considered the MFST-HP as a feasible tool in nursing care.

In chapter 4 we describe a study on the predictive value of the MFST-HP for the health outcomes length of hospital stay, discharge destination, readmission and mortality. Data of 2691 hospitalized patients (70+) were included in the study. The predictive value of the MFST-HP was analyzed by means of receiver operating characteristics curves. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) for different MFST-HP cut-off scores were examined.

Mean age of the population was 78,9 years (SD 6,4) and their average length of stay was 10,2 days (SD 9,7). Nearly 75,0% of the patients were discharged to their home and around. Approximately 25% of the patients were readmitted within 120 days. Mortality rates were 4,3% and 9,5% (within 30 or 120 days post discharge, respectively). The area under the curve was moderate and varied from 0,50 to 0,69 for the different outcomes. Due to high values on negative predictive value (between 73,5% and 96,7%) the MFST-HP showed to be able to rule out a large proportion of non-frail patients. In this study 84% of the patients had a MFST-HP score of  $\geq 6$ , suggested as most favorable cut off.

The MFST-HP seems therefore to operate more strongly as a non-frailty indicator than as a frailty indicator and may in this respect help professionals to decide upon subsequent care. The MFST-HP was able to rule out 84% of the non-frail population in this study. The remaining 16% needs to be assessed by means of a more comprehensive geriatric assessment to gain more insight in the level of vulnerability in the frail-group.

In chapter 5 the MFST-HP was compared to the commonly used Dutch VMS hospital tool. The objective of the study was to examine the predictive properties of the brief Dutch National Safety Management Program for the screening of frail hospitalized older patients (VMS) and compare these with the more extensive MFST-HP. The VMS screening assesses patients on 4 domains (i.e. functional decline, delirium risk, fall risk, nutrition). Data of 2573 hospitalized patients (70+) were included and relative risks, sensitivity and specificity and area under the receiver operating curve (AUC) of both tools were calculated for discharge destination, readmissions and mortality.

Different proportions of frail patients were identified by means of both tools: 53.2% based on the VMS and 16.1% based on the MFST-HP. The specificity was low for the VMS and the sensitivity was low for the MFST-HP. The overall AUC for the VMS varied from .50 to .76 and from .49 to .69 for the MFST-HP. We concluded that the predictive properties of the VMS and the more extended MFST-HP with regard to the screening of frailty among older hospitalized patients are poor to moderate and not very promising.

Chapter 6 addresses the third aim of this thesis. In this chapter, the impact of frailty screening on daily nursing care is reported.. Information about the opinions and attitudes of nurses about frailty screening is lacking, although they have a crucial role in conducting this screening. We performed an exploratory study to examine hospital nurses' opinions and perspectives about this screening and how it influences their daily work. A qualitative, exploratory approach was employed, using semi-structured interviews with 13 nurses working on different general medical wards (surgical and internal medicine) in three Dutch hospitals. Frailty screening had been implemented for several years in these hospitals.

The participating nurses reported that frailty screening might be useful to structure their work, it might create more awareness of frail older patients and it might be used as starting point for proactive nursing care. Paradoxically, at the same time, they assessed their clinical view as more important than the results of a standard screening tool. The nurses hardly used the overall screening scores, but were particularly interested in information regarding specific items, such as delirium or fall risk. Furthermore, screening results are partly embedded in the daily nursing care process, e.g., in

team briefings or during transfers of patients to other wards. The majority of the nurses had received little training about the background of frailty screening and the use of screening tools.

Although nurses stated that frailty screening tools may be helpful in daily practice, they did not use the frailty screening tools in the preferred way; tools were particularly used to evaluate patients on separate items of the tool instead of the summative score of the tool. Therefore, when frailty screening tools are implemented in daily practice, nursing staff should be involved from the beginning, become aware of the meaningfulness of this screening and get adequate training. Additional research in this field is necessary to gain more insight into nurses' perspectives and activities regarding frailty screening.

In chapter 7 we discuss our main findings for each of the three aims of this dissertation, including methodological reflections and implications for daily practice and future research. We concluded that nowadays plenty screening tools are available for daily practice, all with different (reported) psychometric properties. Our own developed tool did not perform better on predictive ability than the already known tools. Alternative and practical approaches on frailty screening, like the Clinical Frailty Scale, should be explored in daily practice. And last but not least, when implementing these tools in daily practice, nurses should be involved right from the beginning; as they are the key figures in using these tools.