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Abstract

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MEASURING FRAILTY: DEVELOPING AND TESTING THE GFI (GRONINGEN FRAILTY INDICATOR).

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In the realm of geriatric assessment and targeted interventions, it is increasingly acknowledged that the term frailty should not only refer to physical vulnerabilities, but also to psychosocial imbalances. Still, most screening instruments for frailty lack such psychosocial indicators. The aim of the present study was to develop and test a short and easy to use screening instrument for level of frailty, including psychosocial indicators. On the basis of literature and theory, 22 items were formulated, referring to mobility, fitness, co-morbidity, nutrition, cognition, vision, hearing, loneliness and psychological distress. These items were tested in a sample of 275 older people age 65 and over (hospital inpatients, nursing home residents and community-dwelling elderly). Data revealed that frailty could be measured satisfactorily with 12 items

(internal consistency – alpha – was .76). Factor analysis (PCA) revealed one underlying component, explaining 40% of the variance. Cut-off scores for frailty profiles were determined by geriatric experts. It is concluded that a short and easy to use frailty measure could be developed, useful for geriatric case-finding as well as for identifying groups for targeted interventions.

MEASURING Development and Testing of the

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BACKGROUND AND AIM.

- In the geriatric field it is increasingly acknowledged that the frailty concept should not only refer to physical, but also to social and psychological vulnerabilities.
- Existing frailty measurements often lack social and psychological indicators.
- Aim is to develop and test a short and easy to administer screening instrument for level of frailty, including psycho-social components.

DEFINITION AND THEORY

- Frailty is a state of decreasing reserves with respect to those functions and resources that are essential for a person to maintain an acceptable level of physical, social and psychological functioning. Frailty increases to the extent that these reserves decrease or get lost.
- Two questions need to be answered that follow from the above definition: What is an acceptable level of functioning? What functions and resources are essential for such functioning?
- The 'critical phase' theory of the SPF-Successful Aging theory (Steverink et al., 1998) addresses both questions:
 - Frailty implies interacting problems with:
 - basic prerequisites of overall functioning
 - fulfillment of basic physical and social needs
 - psychological (emotional) responses to loss.

HYPOTHESES

- Frailty problems, including social-psychological ones, interact; therefore, frailty will refer to a continuum of cumulating and interacting problems rather than to separate dimensions.
- Age is not a component of frailty, but will correlate positively, although not necessarily strong, with frailty level.
- Frailty correlates substantially (and negatively) with measures of physical and psycho-social health (construct validity).
- Frailty as measured with the new instrument correlates positively with clinical assessments of level of frailty.

METHOD

- Sample
 - 275 elderly people (age range 64-99)
 - Mean age: 78 years (s.d.: 7.0)
 - Females: 72.9%
 - Married: 41.8%
- Measures
 - Groningen Frailty Indicator: a pool of 22 items referring to 10 components of frailty was formulated:
 - mobility problems; comorbidity; malnutrition; cognitive, vision, and hearing problems
 - problems with overall physical energy; loneliness
 - depressed mood and anxiety feelings.
 - "Self-rated Health" (5-item sub scale of MOS-SF20) (Cronbach's Alpha in present study is .85).
 - General Health Questionnaire (12 items version) (Cronbach's Alpha in present study is .90).

FRAILITY: Groningen Frailty Indicator (GFI)

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RESULTS

- 15 items were selected that together compose an internal consistent and one-dimensional scale:
 - Cronbach's Alpha: .77
 - Principal Component Analysis: see Table 1

Table 1 Principal Component Analysis

	1	2	3
Mobility (4 items)	.48	.60	-.23
Comorbidity	.43	-.26	-.16
Malnutrition	.35	.00	.00
Cognition	.37	-.39	-.52
Vision	.47	.41	.50
Hearing	.45	.00	.61
Physical energy	.66	.37	-.13
Loneliness (3 items)	.65	-.44	-.11
Depressed mood	.64	-.31	-.39
Anxiety feelings	.66	-.33	-.15
Eigenvalues	2.8	1.3	1.2
% Variance exp.	28	13	12

Figure 1 Clinical frailty and frailty scale-scores.

CONCLUSIONS

- The first empirical results of the Groningen Frailty Indicator show that it seems possible to measure frailty as an overall construct, including physical as well social and psychological components.
- The new frailty indicator shows to be an internal consistent and one-dimensional scale.
- First indications for construct validity are positive as well as the indications for clinical validity.
- Further empirical foundation of the scale is needed, as well as investigating its clinical usefulness regarding the quick and easy screening of frail older people and the planning of targeted interventions.

REFERENCES

Steverink, N., Lindenberg, S., Ormel, J. (1998). Towards understanding successful ageing: patterned change in resources and goals. *Ageing and Society*, 18, 441-467.

- Scale characteristics in sample:
 - Mean: 4.6 (s.d.: 3.1; range: 0-12)
 - Correlation with age: .17 (p<.001)
- Construct validity (relation to other measures): See Table 2

Table 2 Means on Self-Rated Health (SF-20) and Psychological Distress (GHQ) for high vs low frail.

	High frail (>=5)	Low frail (<=4)
SF-20	12.7*	17.6*
GHQ	27.4#	21.7#

* T-test; p<.001
T-test; p<.001