

# Coexistence of malnutrition, frailty, physical frailty, and disability in patients with COPD at the start of a pulmonary rehabilitation program

Lies ter Beek<sup>1,2,3</sup>, Hester van der Vaart<sup>2</sup>, Johan B. Wempe<sup>2</sup>, Faith D. Ottery<sup>1,4</sup>, Jan L.N. Roodenburg<sup>5</sup>, Cees P. van der Schans<sup>1,5,6</sup>, Harriët Jager-Wittenaar<sup>1,3</sup>

1. Hanze University of Applied Sciences, Research Group Healthy Ageing, Allied Health Care and Nursing, Groningen, The Netherlands
2. University of Groningen, University Medical Center Groningen, Department of Pulmonary Diseases and Tuberculosis, Center for Rehabilitation, Haren, Groningen, The Netherlands
3. University of Groningen, University Medical Center Groningen, Department of Maxillofacial Surgery, Groningen, The Netherlands
4. Ottery & Associates LLC, Vernon Hills (Chicago), United States
5. University of Groningen, University Medical Center Groningen, Department of Rehabilitation Medicine, Groningen, The Netherlands
6. University of Groningen, University Medical Center Groningen, Health Psychology Research, Groningen, The Netherlands

## Aim

We aimed to determine the coexistence of malnutrition, frailty, physical frailty, and disability in patients with chronic obstructive pulmonary disease (COPD) that started a pulmonary rehabilitation program.

## Conclusion

In COPD patients starting pulmonary rehabilitation, the coexistence of malnutrition, frailty, physical frailty and disability is limited. Most patients are frail, but only a minority is physically frail. Practically all malnourished patients are frail (95%), but not all frail patients are malnourished (45%).

## Background

Patients with chronic obstructive pulmonary disease (COPD) often experience disease symptoms such as breathlessness, fatigue, muscle wasting and limited exercise capacity. These symptoms may severely impact on functional performance and clinical outcome.

Malnutrition, frailty, physical frailty and disability are common conditions in patients with COPD. These seem to be 'overlapping' conditions, since all are to a large extent defined by a decrease in functional performance and adverse clinical outcome. Frailty is considered a multi-dimensional construct, comprising physical, psychological and social dimensions, whereas physical frailty is a one-dimensional construct.

It is unclear to what extent malnutrition, frailty, physical frailty, and disability 'overlap' in patients with chronic disease, such as COPD. If we clarify how much or how little these conditions coexist in patients with COPD, and what the underlying shared characteristics are, we may be able to address the patient's needs more specifically by a personalized intervention strategy, e.g. nutrition and/or physical therapy.

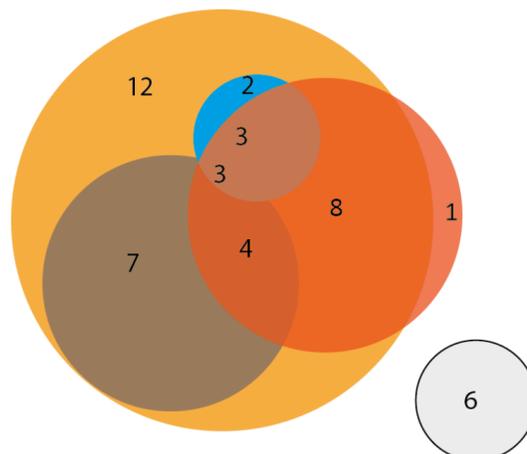


Figure 1. Coexistence of malnutrition, physical frailty, frailty, and disability (n=47)

## Methods

- 47 patients with COPD, 47% male, mean age 60.2±9.6 years, mean BMI 24.0±4.6, median FEV<sub>1</sub>%pred 33 [IQR: 25-43]), not intending to lose weight.
- Malnutrition was assessed by the Scored Patient-Generated Subjective Global Assessment<sup>®</sup> (PG-SGA) Dutch version 3.7 (FD Ottery, 2001, 2006, 2014). Patients were categorized as well nourished (PG-SGA A), moderate/suspected malnutrition (PG-SGA B), or severe malnutrition (PG-SGA C).
- Frailty was assessed by the Evaluative Frailty Index for Physical activity<sup>®</sup> (De Vries, 2011).
- Physical frailty was assessed by Fried's criteria.
- Disability was measured by the WHODAS 2.0<sup>®</sup> (WHO, 2010).

- 40 (85%) Frailty (EFIP score 0,25 >)
- 19 (40%) Malnutrition (PG-SGA stage B-C)
- 14 (30%) Disability (WHODAS score ≥41)
- 8 (17%) Physical frailty (Fried's criteria ≥3)

## Results

- 40% of the patients (19/47) were categorized as malnourished (PG-SGA B or C).
- 85% (40/47) was frail.
- 17% (8/47) was physically frail.
- 30% (14/47) was disabled.
- Malnutrition and frailty coexisted in 38% (18/47) of the patients.
- Malnutrition and physical frailty coexisted in 13% (6/47) of the patients.
- Malnutrition and disability coexisted in 15% (7/47) of the patients.
- In three patients all four conditions coexisted.
- Of the 47 patients, six patients were not malnourished, frail, physically frail, or disabled.



## Contact Details

Lies ter Beek  
l.ter.beek@pl.hanze.nl