

Unintended weight loss among COPD outpatients contributes to worse one-year clinical outcomes

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Rationale: Unintended weight loss (UWL) is prevalent in chronic obstructive pulmonary disease (COPD), but little research has been done on UWL as independent variable towards clinical outcomes. The aim of this study was to investigate the association between BMI groups and UWL regarding hospitalization, length of stay (LOS), exacerbations, quality of life (QoL) and mortality within one year, in hospital outpatients.

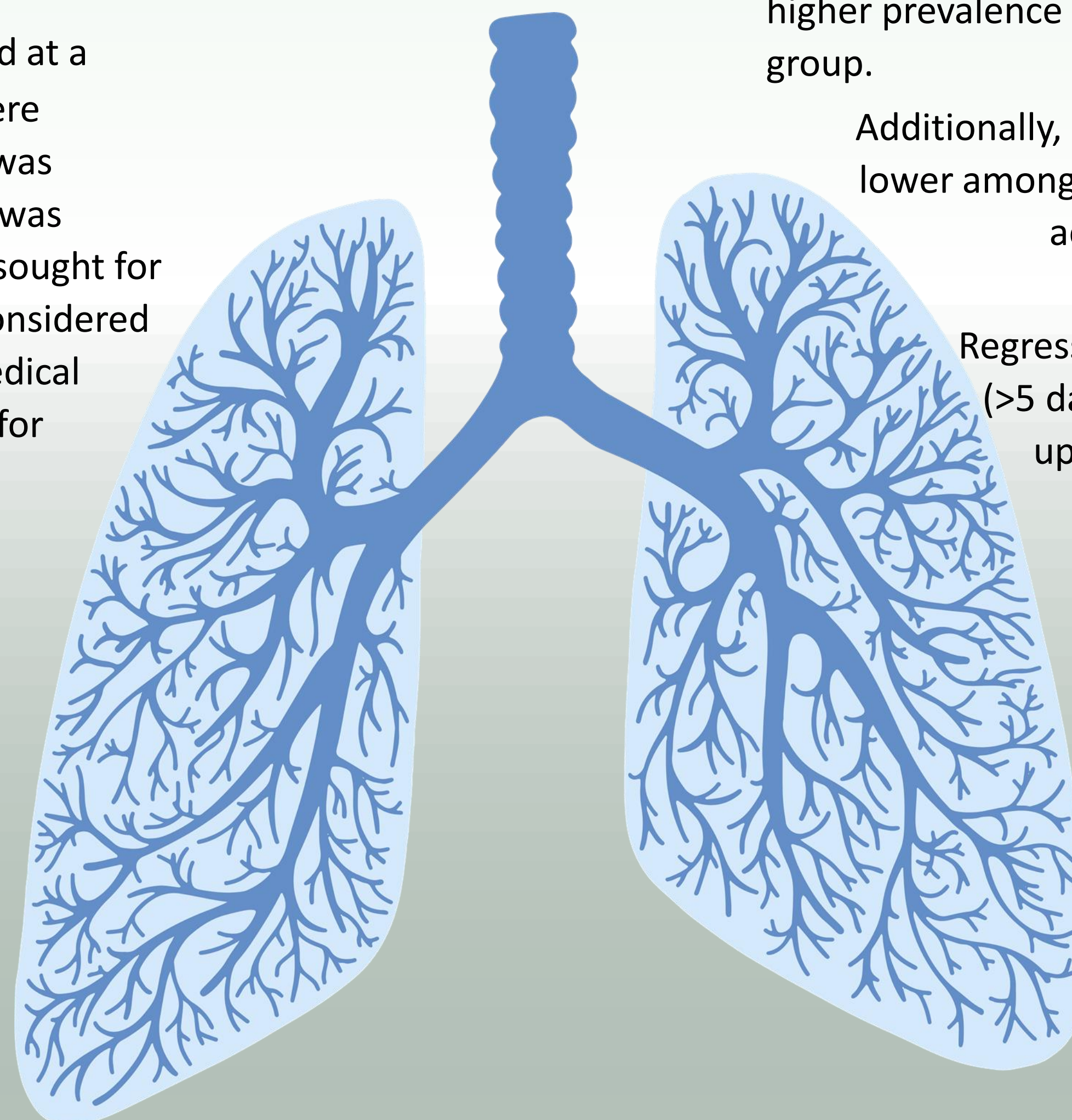
Methods: A prospective cohort study was performed at a Danish Hospital. In the study, 200 COPD outpatients were enrolled consecutively. At baseline, height and weight was measured. Patient-reported UWL within three months was collected in a questionnaire and medical records were sought for disease specific information. A 5% UWL or more was considered "at nutritional risk". At one year follow up, patients' medical records and patient telephone interviews were sought for weight, hospitalizations, EQ-5D-5L, number of non-hospitalization exacerbations and mortality. Data were analyzed using logistic regression analysis.

Results: A total of 187 patients were eligible for follow-up (mean age 69.2 years, 43.9% males, median BMI 26.8 kg/m² and 58.4% had a BMI \geq 25) and 67.9% had had a COPD diagnosis for more than five years. At inclusion the prevalence of UWL of more than 5% bodyweight was 13.4%. Almost all patients (97.3%) were former smokers, and the median FEV1 was 41% predicted, and 64.2% had severe or very severe FEV1.

No significant associations were found between UWL and no unintended weight loss (NUWL) regarding any clinical outcomes as illustrated in Table 1, but a trend towards higher prevalence were found for admission to hospital, and median LOS in the UWL group.

Additionally, UWL was associated with worse QoL, and the EQ-5D-VAS score was lower among patients with UWL, but only significant for items of self-care, usual activities and pain/discomfort (p=0.017, p=0.036, p=0.012) (Table 1).

Regression analysis: Among patients with UWL an almost trifold longer LOS (>5 days) was found (OR=3.97, p=0.008). Exacerbation at one year follow-up was more frequent among underweight patients (OR=4.1, p=0.049) (Table 2).



Conclusion: UWL as a solitary factor is associated with increased hospital LOS, exacerbations and worse QoL but not mortality within one year in COPD hospital outpatients. The results emphasize that implementation of regular screening and early intervention for UWL might be beneficial in COPD outpatient settings as well as in addition to BMI.

Clinical and patient reported outcomes at one year follow-up	UWL (n=25)	NUWL (n=162)	p-value
	N (%) or mean \pm SD or median [Q1-Q3]	N (%) or mean \pm SD or median [Q1-Q3]	
Clinical outcomes at one year follow-up			
Hospital admission	17 (68.0)	78 (48.2)	0.065
Admission with primary diagnosis ^a	10 (40)	46 (28.4)	0.238
Length of stay, all-cause ^b	5 [3.5-7]	3 [2-6]	0.068
Length of stay, primary diagnosis ^b	6.2 [2.7-9.0]	3.5 [2-6.5]	0.203
Exacerbation not requiring admission ^c	13 (65)	65 (51.6)	0.264
Number of exacerbations ^c	2 [2-3]	2 [1-4]	0.487
Mortality	3 (12)	24 (14.8)	0.709
Patient reported outcomes at one year follow-up			
EQ-5D-5L			
Mobility	2.8 \pm 0.9	2.4 \pm 1.2	0.110
Self-care	2.7 \pm 1.4	2.0 \pm 1.1	0.017*
Usual activities	3.3 \pm 1.1	2.7 \pm 1.2	0.036*
Pain/ discomfort	2.6 \pm 0.9	2.0 \pm 1.1	0.012*
Anxiety/depression	1.5 (1-3)	1 (1-2)	0.267
Overall health (0-100)	46.8 \pm 21.8	50.9 \pm 20.5	0.406
SARC-F overall score	3.2 \pm 2.1	3.1 \pm 2.5	0.699

Table 1: Association between unintended weight loss (UWL) and no unintended weight loss (NUWL) regarding clinical and patient reported outcomes.

* p<0.05

^a Primary diagnosis was defined as either COPD exacerbation, pneumonia or dyspnea.

^b Number of admissions and length of stay are based on the patients that had a hospital admission.

^c Data for exacerbation only included patients that completed the interview and excluded mortalities

1 year follow-up	Unadjusted		Adjusted for age and FEV1	
	OR [95% CI]	p-value	OR [95% CI]	p-value
Hospital admission at 1-year follow-up				
Unintended weight loss	2.29 [0.94-5.60]	0.070	2.07 [0.79-5.42]	0.139
BMI groups				
Underweight	1.66 [0.64-4.33]	0.300	1.57 [0.54-4.61]	0.405
Normal weight	Ref.	Ref.	Ref.	Ref.
Obese	1.52 [0.73-3.16]	0.260	1.98 [0.83-4.68]	0.121
Length of stay (>5 days) at 1-year follow-up (n=35)				
Unintended weight loss	2.94 [1.18-7.37]	0.021*	3.97 [1.44-10.94]	0.008*
BMI groups				
Underweight	2.02 [0.68-6.00]	0.203	2.21 [0.67-7.32]	0.194
Normal weight	Ref.	Ref.	Ref.	Ref.
Obese	0.78 [0.30-2.05]	0.616	0.89 [0.28-2.83]	0.847
Exacerbation at 1-year follow-up (n=78)				
Unintended weight loss	1.74 [0.65-4.66]	0.268	1.26 [0.42-3.82]	0.684
BMI groups				
Underweight	4.94 [1.38-17.65]	0.014*	4.06 [1.00-16.40]	0.049*
Normal weight	Ref.	Ref.	1	Ref.
Obese	1.95 [0.84-4.50]	0.118	2.58 [0.96-6.92]	0.060

Table 2: Logistic regression analysis of clinical outcome

* p<0.05

OR, odds ratio; 95% CI, 95% confidence interval.