

Supplementary material, M.T. Durheim *et al.*

ILD-specific health-related quality of life in systemic sclerosis-associated ILD compared with IPF

SUPPLEMENTARY METHODS

Sample size justification

Published studies examining K-BILD scores in SSc-ILD were not available during planning of the current study. We therefore used published studies using St. George's Respiratory Questionnaire, which correlates well with K-BILD,¹ to estimate the expected relative difference in HRQL. Using estimated mean (SD) SGRQ scores of 44.5 (17.8) in IPF² and 34.8 (16.1) in SSc-ILD,³ we estimated that patients with IPF could be expected to have 27% "worse" HRQL. To take a more conservative approach to sample size estimation we assumed a smaller difference of 15%. Assuming an average K-BILD total score of 54.3 (9.5) based on a published registry cohort from Sweden,⁴ 34 patients with IPF and 34 with SSc-ILD would be required to detect this difference in K-BILD total score with 80% power and an alpha level of 0.05 using a two-sample t-test. To account for potential erroneous use of questionnaires, we planned to include 40 patients in each group, but the final enrolled population was more heavily weighted toward IPF due to the number of available patients with each diagnosis during the study time period.

Handling of missing data

Of the 86 patients included in the study, there were no missing data for K-BILD scores, diagnosis (IPF versus SSc-ILD), age, gender or FVC. There were five patients with missing values for DLCO (three with IPF, two with SSc-ILD). While DLCO was a pre-specified adjustment variable for estimating adjusted K-BILD scores, we elected not to impute DLCO values because (1) missing values were relatively few and evenly distributed among IPF and SSc-ILD patients and (2) by simple inspection did not appear to be consistently related to other potential measures of disease severity. Missing data for other variables was not imputed as these did not affect analysis of the primary outcome. The multivariable model presented in **supplemental table 2** included only complete cases (n = 79).

SUPPLEMENTARY RESULTS

Non-parametric comparison of K-BILD scores

While K-BILD scores appeared to be normally distributed overall and have been treated as such in prior studies,^{1,4,5} a small number of SSc-ILD patients in particular had very little HRQL impairment, leading to some deviation from the normal distribution. Medians, interquartile ranges, and non-adjusted comparisons using Kruskal-Wallis tests are therefore presented in **supplemental table 1** as a sensitivity analysis. As in the parametric analysis, patients with IPF had greater impairment in overall ILD-specific quality of life and in the psychological domain.

Supplementary material, M.T. Durheim *et al.***Supplemental Table 1: Non-parametric comparison of K-BILD scores.** P-values are derived from Kruskal-Wallis tests.

	IPF Median (IQR)	Ssc-ILD Median (IQR)	P-value
Total score	54.1 (15.3)	64.4 (15.4)	0.007*
Breathlessness	41.9 (19.4)	45.9 (22.9)	0.090
Chest symptoms	63.7 (19.1)	73.4 (30.9)	0.141
Psychological	52.0 (16.6)	68.3 (33.4)	0.002*

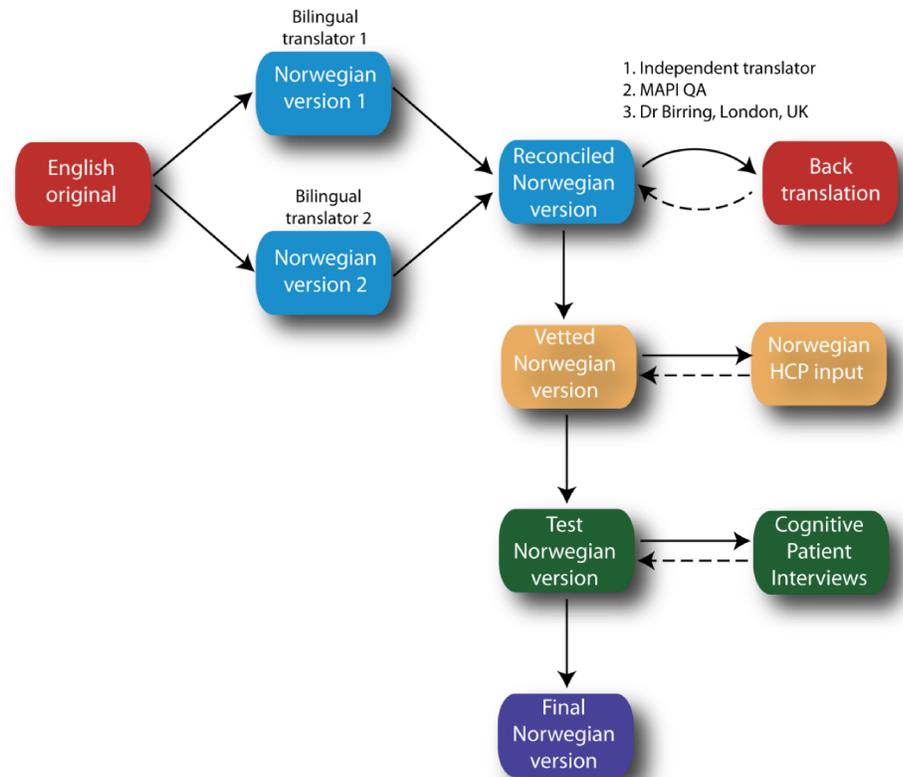
*remains significant after adjustment for multiple comparisons using the Bonferroni-Holm method (nominal p-value 0.003 is less than the critical Bonferroni-Holm value of 0.0125).

Supplementary Table 2: Factors associated with K-BILD total score in the overall study population. Multivariable linear regression model using K-BILD total score as the dependent variable. Only complete cases (n = 79) were included in this model.

	Coefficient	95% CI	p-value
Ssc (versus IPF)	3.52	-4.64, 11.67	0.393
Female	-3.13	-9.78, 3.52	0.351
FVC (% predicted)	0.28	0.09, 0.47	0.004
DLCO (% predicted)	0.06	-0.15, 0.27	0.567
Oxygen use	5.15	-4.99, 15.28	0.315
Age (per year)	-0.02	-0.30, 0.27	0.905
Current smoking	-5.08	-10.93, 0.77	0.088

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Supplemental Figure 1: Development of the Norwegian language version of the K-BILD.



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