Uncovering the Relationship Between the COPD Assessment Test and St George’s Respiratory Questionnaire in Patients with Chronic Obstructive Pulmonary Disease: A Post-hoc Analysis of the IMPACT, FULFIL, and EMAX trials


Background

The COPD assessment test (CAT) and St George’s Respiratory Questionnaire (SGRQ) are two validated tools used to measure health status in COPD.

When only one tool is available in a clinical study, it may be useful to have the ability to convert between CAT scores to SGRQ scores to enable further use, for example in economic modeling or comparative effectiveness research.

• The scatterplots of SGRQ total score vs CAT score at baseline for each of the three studies are shown in Figure 1. Pearson correlation coefficients ranged from 0.663 to 0.706.

• The regression slopes were similar for each of the three trials, for each unit change in CAT score, SGRQ increased by 1.7 to 1.79.

• The intercept estimates for the FULFIL and the IMPACT trial (i.e. SGRQ score at CAT=0) were 19.6 and 19.5, respectively. The intercept for the EMAX trial was 11.1 (Figure 1A), possibly due to the exclusion of patients with CAT <10.

• Baseline overall and on-treatment conversions, stratified by treatment arm, are shown in Table 1.

Table 1: Regression analysis of SGRQ total score vs CAT score

<table>
<thead>
<tr>
<th>Study</th>
<th>Intercept</th>
<th>Slope</th>
<th>Pearson correlation coefficient (r)</th>
<th>Spearman correlation coefficient (ρ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMAX</td>
<td>11.105</td>
<td>1.747</td>
<td>0.663</td>
<td>0.650</td>
</tr>
<tr>
<td>IMPACT</td>
<td>19.490</td>
<td>1.710</td>
<td>0.688</td>
<td>0.681</td>
</tr>
<tr>
<td>FULFIL</td>
<td>13.688</td>
<td>1.765</td>
<td>0.688</td>
<td>0.681</td>
</tr>
</tbody>
</table>

Results

• The scatterplots of SGRQ total score vs CAT score at baseline for each of the three studies are shown in Figure 1. Pearson correlation coefficients ranged from 0.663 to 0.706.

• The regression slopes were similar for each of the three trials, for each unit change in CAT score, SGRQ increased by 1.7 to 1.79.

• The intercept estimates for the FULFIL and the IMPACT trial (i.e. SGRQ score at CAT=0) were 19.6 and 19.5, respectively. The intercept for the EMAX trial was 11.1 (Figure 1A), possibly due to the exclusion of patients with CAT <10.

• Baseline overall and on-treatment conversions, stratified by treatment arm, are shown in Table 1.

Conclusions

• The baseline regression models (between-patient) between CAT total score and SGRQ scores were similar across the three studies.

• This indicates a conversion algorithm may be developed based on the consistent relationship at a population level.

• Further validation activities (with other datasets and patient subgroups) would be of interest.

References:

Lipson et al., Am J Respir Crit Care Med 2017;196:609–616.

Acknowledgements

External support in the form of writing assistance including preparation of the initial draft under direction and guidance of the authors and incorporating authors’ comments for each draft, preparing figures and tables, proofreading editing, and referencing was provided by Krista Guimond and Rebecca Cummings at Aura, a division of Spirit Medical Communications Group Limited and was funded by GlaxoSmithKline.

Presented at the American Thoracic Society Annual Meeting, Virtual, May 14–19, 2021