ISPOR Europe 2021: number of goals vs number of attainment levels

Important dates

- Deadline: Tuesday, June 29 2021
- Acceptance notification: Tuesday, August 17 2021
- Conference: December 1-3 2021

Guidelines

- Title in title case
- Study approach:
    - Decision Modeling & Simulation
- Choose a topics and subtopics, some relevant ones to this abstract:
    - Clinical Outcomes
        - Clinician Report Outcomes
    - Methodological & Statistical Research
        - **Modeling & Simulation**
    - Patient-Centered Research
        - Stated Preference & Patient Satisfaction
        - Patient-reported Outcomes & Quality of Life Outcomes
- Specific disease/specialized treatment area
    - Can select up to 4 that best describes your research
    - You can choose “multiple” if one choice does not apply
- 300 words or fewer
- No tables or graphs
- Research presented at a previous ISPOR meeting is not allowed

Abstract

Title: The Goal Attainment Scaling Method is Robust to Violations of Normality in Goal Scales: A Simulation Study

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Background

Goal attainment scaling (GAS) is a patient-centric outcome measure that captures meaningful change through personally identified treatment goals. For each goal, a 5-point attainment scale is defined to describe possible outcomes, with the midpoint representing the "expected outcome". A key assumption in GAS analysis is that the scores on the scale approximate a normal distribution. Using data simulation techniques, we investigated whether GAS performance varied if the assumption of normality was violated.

Methods

We employed a latent variable model to generate GAS data (Urach et al. 2019). We varied the number of subjects (40, 60, 80; equally assigned to control or treatment), treatment effect size (0.3, 0.5, 0.7, 0.9 and 1.1), and number of goals per subject (1-5 goals). Latent goal scores were discretized into 5-point scales using either: "uniform" intervals that were spaced to return a uniform score distribution, and "normal" intervals that were spaced to approximate a normal distribution. For each set of parameters, 1000 trials were simulated. Two-sided -tests were performed on summary T-scores. Power was the percentage of simulations detecting a significant treatment effect (=0.05).

Results

The statistical power did not vary significantly whether using uniform or normal intervals, with less than 1% difference for most parameter combinations. As expected, T-scores were higher when using uniform intervals. However, the standardized effect sizes were equal across small-medium effect sizes (<0.7), as typically seen in most GAS studies. At the higher effect sizes, the uniform intervals underestimated the treatment effect compared to normal intervals (difference of 0.03-0.07). This difference is unlikely to impact interpretation of GAS results.

Conclusions

Violating the distributional assumptions of GAS data is unlikely to affect the power to detect a treatment effect at effect sizes typically seen in GAS studies. The GAS method is robust to perturbations in normality of goal scores.