

Capstone for Impact Submission | GY2019

Project Title: Development of a rapid point-of-care

patient reported outcome measure for

cataract surgery in India

Student Name(s): Smiley, Josiah

Advisor Names(s): Joshua Ehrlich

Branch: Patients & Populations

Path of Excellence: Global Health and Disparities

Handover/Transition:

If this project can be continued by another UMMS student, you may contact them at the following email address/phone number (N/A if project cannot be handed over): **N/A**

Summary:

For patient undergoing cataract surgery in India, existing patient-reported outcome (PRO) measures are either not culturally relevant, have not been adequately validated, or are too long to be used in a busy clinical setting. We sought to develop and validate a brief and culturally relevant point-of-care PRO measure to address this need.

Methodology:

Twelve items from the Indian Visual Functioning Questionnaire (IND-VFQ) were selected based on preliminary data. Patients 18 years and older were prospectively recruited at Aravind Eye Care System in Madurai, India. Clinical and sociodemographic data were collected and the 12-item short-form IND-VFQ (SF-IND-VFQ) was administered pre- and post-operatively to 225 patients; Factor analysis and Rasch modeling was performed to assess its psychometric properties.

Results/Conclusion:

One item that did not fit a unidimensional scale and had poor fit with the Rasch model was eliminated from the questionnaire. The remaining 11 items represented a single construct (no residual correlations > 0.1) and were largely unaffected by differential item functioning. Five items had disordered thresholds resolved by collapsing the response scale from four to three categories. The survey had adequate reliability (0.80) and good construct (infit range, 0.77–1.29; outfit range, 0.56–1.30) and content (item separation index, 5.87 logits) validity. Measurement precision was fair (person separation index, 1.97). There was evidence that items were not optimally targeted to patients' visual ability (preoperatively, – 1.92 logits; overall, – 3.41 logits), though the survey measured a very large effect (Cohen's *d* 1.80). In a subset of patients, the average time to complete the questionnaire was 2 min 6.3 s. The SF-IND-VFQ is a valid, reliable, sensitive, and rapidly administered point-of-care PRO measure to assess changes in visual functioning in patients undergoing cataract surgery in India.

Reflection/Lessons Learned:

I learned about how effective medicine can be with lots of ancillary staff. Aravind Eye Hospital in Madurai, India is probably the most efficient and productive organization when it comes to eye care. I hope to use the lessons learned from observing their functioning in my future career as a physician in an underserved area. I know that research and quality improvement were some of the keys to their immense scale, and I hope to keep that a large part of my practice.