Reviewer's report

Title: Development and Psychometric Properties of a Brief Measure of Subjective Decision Quality for Breast Cancer Treatment

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Reviewer: Karen Sepucha

Reviewer's report:

The authors report on initial psychometric analysis of a new survey instrument to measure the quality of decisions for breast cancer treatment. The survey includes six items each representing a different dimension including regret, satisfaction, fit, adequacy of information, and involvement. They examined the items with 320 women who reported on their decisions about surgery, chemotherapy and radiation. It is a well written manuscript describing an initial field test of the instrument. Although there are several instruments available that assess different aspects included in the subjective measure tested here, having a brief one that adequately captures the different elements could be helpful. However, there are several areas of the manuscript would benefit from additional details and evidence.

Major revisions:

1. Perhaps most important would be a clearer description of the theory or framework used to define decision quality. The authors describe six dimensions, but do not indicate why these six were used as opposed to others. Formal decision analysis has six dimensions of decision quality (but not these six), the IPDAS standards and others have defined decision quality with three dimensions (informed, involved, value concordant), etc. Please include more details on the rationale, theory and or framework used to guide the selection of these dimensions (and why other dimensions were not included).

2. Further, it would be helpful to understand more about the item development. I was surprised to see only one item used for each dimension as many of these dimensions have entire surveys devoted to them e.g. Decision Regret Scale, Decision Making Satisfaction Scale, and Decisional Conflict Scale, etc. Please include more details on how the wording of the items were determined, why there is only one item for each dimension, and any cognitive testing or other work to ensure respondents understand the items as intended.

3. It would be helpful in the introduction and again in the discussion to present a more compelling case for the need for such a survey. What gap is this filling? How are these items providing better, new, more relevant information than current scales for decision quality (see examples listed in prior comment)?

4. The lack of any strong framework makes some of the results difficult to interpret. For example, with Table 4, did the authors have any hypotheses about how these items would work across the different decisions? Across different
patients?

5. Despite finding that only five dimensions appeared to hang together psychometrically the authors recommend keeping all six. Why? Did they examine whether it was an issue perhaps with wording of the item? Or does that dimension need more than one item to assess adequately? A little more detailed discussion of this result and implications for future versions of the survey would be helpful.

Minor revisions:

6. The authors present this as measure of breast cancer decision quality – however the dimensions seem fairly generic. Was there any specific adaptation or work to make these relevant for breast cancer? Were breast cancer patients and providers involved in identifying the dimensions or creating the items?

7. Please provide some details on the selection of the 7-point response scale and on the performance of the items. What was the range of responses for each item (e.g. how often were each of the 7 responses used for each item)? Please describe in more detail.

8. Please provide more details on response rates and missing data, especially as it pertains to understanding the acceptability and feasibility of the survey instrument (e.g. only 195/320 had all items complete for chemotherapy). Which items were skipped? It would also be helpful to clarify the survey protocol e.g. whether reminders were used for patients who took the survey home to complete. Please discuss in the results and limitations the implications of such a large number of incomplete surveys and missing data.

9. Please comment on ceiling effects and whether there is a need to revise the items in any way to remove those.

10. It seems premature in the conclusion to recommend assessing these six dimensions of decision quality when the paper did not present any other dimensions (or compelling rationale as to why these six were particularly important) nor did the authors present any compelling evidence of validity (except to argue that patients' perceptions are inherently valid).

**Level of interest**: An article whose findings are important to those with closely related research interests

**Quality of written English**: Acceptable

**Statistical review**: No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests**:

I have been involved in the development of survey instruments to measure decision quality for common medical conditions, including breast cancer treatment.