Reviewer's report

Title: A comparison of the sensitivity of EQ-5D, SF-6D and TTO utility values to changes in vision and perceived visual function in patients with primary open-angle glaucoma

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Reviewer: Louise Longworth

Reviewer's report:

The paper describes a small but interesting study designed to estimate and compare utility values for people with primary open-angle glaucoma. My main comment relates to a lack of detail provided on the methods used to elicit the utilities. This is key to the study design and results. If the methods used really are comparable (depending on responses to concerns about the TTO methods below) then I propose that the clarifications are made within the paper along with additional drafting clarifications noted below. However if the methodology used in TTO exercise affects comparability of utilities with EQ-5D and SF-6D, then this is likely to substantially weaken the paper and significant revisions would have to be made to reflect this. I have elaborated further below on the specific concerns relating to the TTO. The manuscript also requires some amendments for accuracy and clarity.

Major essential revisions

Main comment: TTO design

My main comment is that there is a lack of detail describing the TTO elicitation. This is extremely important for the paper and it is difficult to judge the methods and data without that information.

- What were the anchors used for the TTO? This is crucial. Was it ‘dead’ and ‘perfect health’ or ‘full health’ as used for QALY estimation and EQ-5D and SF-6D. This needs to be explicitly stated. If these anchors or equivalent one were not used the comparability with EQ-5D and SF-6D will be flawed as the TTO will be measuring a different concept. In addition it would be inappropriate to compare to most QALY calculations if used to estimate QALYs.

- The length of time for trading was set as the total that they expected to live (Y). As a method this is fine. However further clarification required: was this asked explicitly at the outset about the individual value for each person? Why was this approach chosen? It would also be helpful to present these data. This differs from the approach used in the EQ-5D and SF-6D which use a 10 period. Consideration as to how this will affect comparability is required in the discussion section.

- What approach was used to elicit values for states considered to be worse than dead (SWD). I note that the authors consider zero to be a lower bound for the TTO, which is concerning. The authors need explain how they handled the
possibility of SWD explicitly. Again they need to consider comparability to other utility estimation methods in their explanation and discussion.

- Were props used? If so what? Props have been found to significantly affect the values obtained (see Dolan et al, JHE 15:2)

- What iteration procedure was used to obtain the point of indifference?

Other points of clarification

- SF-6D is obtained from 11 not 6 questions on the SF-36. Is this a typo or has it been incorrectly calculated?

Minor essential revisions

- Some grand statements are referred to in the introduction without sufficient explanation or justification. For example, it states that 'interventions should be compared to each other through cost-utility analyses'. Why should they? What about other methods such as cost-benefit analysis as generally recommended by the Treasury? I agree that CUA has a significant role in the evaluation of health interventions but it is not the only approach.

- Greater clarity is required in the second paragraph of the introduction as it confuses several concepts. It states that utility values are preference-based measure of quality of life. This is not correct. Utility values can be produced by preference-based measures of quality of life. They also don't range from 0 to 1. As by definition, values of less than zero (dead) are possible to reflect health states considered to be worse than being dead. In the context of utility measurement the MID can be considered to be the minimum detriment in health that a person would give up some length of life to avoid.

- TTO is a method rather than an instrument

- What types of conditions prevented reliable visual testing?

- What happened to those people who failed the depression screen?

- Response rates (% people approached and completing interviews) and missing data (% item missing responses for each instrument/measure) should be reported

- Discussion. The authors are correct that a 5 level version of the EQ-5D has been developed (see Herdman et al, 2011) although this wasn't developed to specifically address concerns around vision.

Discretionary revisions

- 'UV' isn't a commonly used abbreviation. I think it would improve readability if excessive abbreviations were avoided.

Discussion:

- How do the results compare to other studies examining the performance of utility instruments for reflecting the utility associated with glaucoma and other vision conditions? E.g. Tosh et al, Value in Health 2012.

- The discussion doesn't include any consideration of why instruments such as
the EQ-5D and SF-6D may have been designed in the way they have. That is, to focus on how health impacts on general quality of life and functioning (as opposed to specific symptoms), to enable multiple health impacts of conditions (and adverse effects of treatment) to be captured within a single utility estimate and to enable comparison between interventions/conditions. There will clearly be a trade off between these abilities and the to capture small/specific changes for specific symptoms. In this specific case where is that balance of trade off? Is the sensitivity more important - will that be the case for all interventions in glaucoma?

Level of interest: An article of importance in its field

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 also published in this field but do not consider myself to have any conflicting interests and I have no related financial interests to declare.