EE449

Uncertainty Around HRQoL Values Is Under-Reported - And Can Be Improved

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WHY IS THIS TOPIC IMPORTANT?

- A key feature CEA in health care is the treatment of uncertainty, particularly in the context of probabilistic and stochastic sensitivity analysis.
- The focus of HRQoL valuation research has largely been on producing robust point estimates of the public's average preferences.
- There has been little development of methods for understanding, identifying and quantifying uncertainty around these health state values and for reporting uncertainty so that it can be routinely incorporated into sensitivity analysis in CEA. This is an important gap, because CEA is the principal use of HRQoL values.

OBJECTIVES

- To provide a comprehensive account of the various sources of uncertainty affecting HRQoL 'value sets'
- To identify what methods have been explored to account for these sources of uncertainty
- To highlight gaps in methods and reporting, and implications for their use in generating evidence to inform decision making in health care

METHODS

- Sources of uncertainty affecting HRQoL values were identified & categorised
- We undertook a scoping review (reported separately – Abangma *et al.*)[1] to identify papers exploring methods for capturing uncertainty around modelled HRQoL value sets.
- We looked at how HRQoL value sets are reported and what they say about uncertainty
- We identified a method for estimating standard errors around health state values and demonstrated that, using the data from the 1997 UK EQ-5D-3L value set.[2,3]

CURRENT PRACTICE?

- HRQoL value sets (e.g., for EQ-5D) tend to be reported as simple algorithms which generate, from a chosen model, a single value for each state.
- Variance around dimension/level coefficients is reported - but users are given no guidance on how this information can used to generate estimates of variance around the values for *states* (i.e. a combination of dimensions/levels).
- The use of EQ-5D values is currently only subject to deterministic sensitivity analysis e.g. where alternative acceptable value sets exist and it is not clear which of them to use.[4]

Table 1. Sources of uncertainty around HRQoL values and current reporting

	Sources of uncertainty	Is corresponding uncertainty around HRQoL values reported?
1. Methods for eliciting stated preferences	1 Choice of stated preference methods	Rarely
	2 Mode of administration	Rarely
	3 Respondent errors	Rarely
	4 Other within-respondent inconsistencies	Rarely
	5 Random responses	Rarely
	6 Use of heuristics	Rarely
	7 Heterogeneity	Sometimes
	8 Different response styles	Rarely
	9 Fraud	Sometimes
2. Study design	10. What population's preferences are relevant	Rarely
	11. Choice of sample frame	Rarely
	12. What sub-set of states/pairs of states are valued	Rarely
3. Modelling approaches	13. What measure of 'average' preference is used?	Rarely
	14. Choice of modelling methods	Sometimes
	15. Model misspecification	Rarely
	16. Prior beliefs about desirable characteristics of values	Rarely

CONCLUSIONS

- **Despite 50 years of HRQoL research, uncertainty around preference weights has largely been ignored.**
- This may convey a false sense of precision around reported HRQoL values - and means relevant information on uncertainty isn't taken into account in QALYs and ICERs.
- The few papers exploring methods for addressing uncertainty focus on statistical uncertainty in modelling value sets. **None of those methods are currently in standard use in reporting value sets.**
- **We demonstrate (see 'take away tool' below) a standard method that can readily be used to report standard errors around modelled health state values. Reporting these should be standard practice in value set reporting.**
- **BUT that is just a starting point.** The other sources of uncertainty in Table 1 remain largely unexplored and under-reported. This is an important research gap.

A TAKE-AWAY TOOL

Follow this QR code to see how standard errors around health state values in any value set can readily be produced using information from the covariance matrix.

KEY MESSAGE

Given the importance of HRQoL values for CEA and health care decisions, researchers should do more to **(a) report uncertainty around health state values** in a way that can be taken into account in CEA; and (b) **strengthen the use of HRQoL values in decision-making** by ensuring users and decision makers are fully informed about relevant uncertainty.

References

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