

**Background:** Mental well-being measures are common in population surveys but cannot be directly used for utility-based economic evaluations. Existing mapping studies, mostly pre-Covid-19, relied on linear regression, and may not reflect individuals' evolving preferences on quality of life. This study explores methods to estimate health utility associated with mental well-being, by linking EQ-5D-5L and GHQ-12 responses collected in a large population sample.

**Methods:** We used data from 12701 respondents participating in the 46th Wave of the Belgian "Great Corona Study", in March 2022. We compared direct methods (linear and inflated beta regression) that map source responses directly to utility values, with indirect methods that estimate responses for each EQ-5D-5L dimension using non-parametric or ordered logistic regression before generating utilities. Regression models used either individual GHQ-12 items or the total score as the dependent variable, controlling for sociodemographic factors. Model performance was assessed using root mean squared error (RMSE).

**Results:** Greater GHQ-12 distress, at both item and total score levels was linked with greater problems across EQ-5D dimensions and lower utility values. RMSE ranged from 0.142 (linear model with GHQ-12 items) to 0.157 (beta inflated model with GHQ-12 scores), with linear and ordered logistic models performing best, although linear models performed worse than beta when estimating values at the lower end. Despite violated normality assumptions, linear regression yielded the lowest RMSE. Indirect mapping is conceptually more robust, as it aligns closely with the dimensional structure of EQ-5D-5L and minimises variations associated with the use of different value sets.

**Conclusions:** This study provides up-to-date algorithms for mapping mental well-being data to health utility values. The mapping can enable the integration of mental health data for use in QALY-based economic evaluations, where utility data are not available.

**Key messages:**

- This study provides updated algorithms for estimating health utility values from mental well-being data, enabling the integration of mental health measures into QALY-based economic evaluations.
- Choosing the best mapping method involves balancing predictive performance with conceptual appropriateness and simplicity.

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# Estimating health utility associated with mental well-being: mapping GHQ-12 responses onto EQ-5D-5L

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