Use of the Child Health Utility (CHU9D) and Strengths and Difficulties Questionnaire (SDQ) outcome measures in economic evaluations of school-based interventions: data from a cluster-randomised controlled trial in Northern Ireland

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Background

- There is growing evidence linking early social and emotional wellbeing to later academic performance and various health outcomes including mental health.1,3
- An economic evaluation was designed alongside the Roots of Empathy cluster-randomised trial evaluation, which is a school-based intervention for improving pupils’ social and emotional wellbeing.
- The Strengths and Difficulties Questionnaire (SDQ) is a behavioural screening questionnaire for 4-17-year-old children, comprising a total difficulties score and prosocial behaviour score, which aims to identify positive aspects of behaviour.4
- The Child Health Utility 9D (CHU9D) is a generic preference-based health-related quality of life instrument for 7-17-year-old children.5
- Two preference-based tariffs currently exist for CHU9D6,8 however, to date there is no preference-based SDQ tariff to facilitate use of the SDQ instrument within an economic evaluation framework.

Methods

- Non-randomised SDQ and CHU9D utility values were reported with standard descriptive statistics at baseline, after intervention completion, and 12-month follow-up (n=1277) from intervention completion.
- Agreement was based on Spearman’s rank correlation coefficient and graphical techniques.
- CHU9D utility values range from 0.326(largest state) to 1(perfect health).
- Normal, borderline and abnormal thresholds for SDQ total difficulties are: 0–11, 12–15, and 16–40; prosocial behaviour: 6–10, 5, and 0–4.
- Deprivation was measured by Northern Ireland Multiple Deprivation Measure; range 1–890, 1 denotes most deprived.
- Regression analysis was performed to assess the effect and variation in CHU9D utility values in relation to SDQ total difficulties and prosocial behaviour scores, age, sex, and deprivation.
- Both standard gamble6 and best-worst scaling6 tariffs were applied to CHU9D.
- A complete case analysis was originally performed followed by multiple imputation (MI) using chained equations, also known as full conditional specification for missing data.9

Objective

Investigate the applicability of the SDQ within economic evaluation and its relationship with the CHU9D outcome measure.

Findings

- At baseline, after intervention completion, and at 12-month follow-up, mean CHU9D utility values were 0.84 (SD 0.11), 0.85 (0.11), and 0.85 (0.10).
- Mean SDQ total difficulties scores were 12.11 (3.27), 11.78 (3.14), and 11.95 (3.07).
- Mean SDQ prosocial behaviour scores were 8.12 (2.18), 8.42 (2.00), and 8.62 (1.93).
- A correlation between SDQ total difficulties and CHU9D utility at baseline and 12-month follow-up was evident (r=−0.10, p=0.04 and −0.08, p=0.018). No correlation was found after intervention completion or between SDQ prosocial behaviour and CHU9D utility.
- Multivariate regression analysis showed that CHU9D utility was significantly associated with SDQ total difficulties score at baseline (β=−0.09, 95% CI−0.03 to −0.16; p=0.007) and after intervention completion (−0.08, −0.01 to −0.15; p=0.016) after adjustment for deprivation (Table 1).
- CHU9D utility was significantly associated with SDQ prosocial behaviour at 12-month follow-up (0.05, 0.01–0.08; p=0.010) after adjustment for age (Table 1).
- Multiple imputation and applying the alternate BWS tariff had little impact on original analysis (Table 2).
- Figure 1 reports the distributions of responses of each dimension of the CHU9D.

Interpretation

The SDQ and CHU9D are able to measure outcomes in children aged 8–10 years within an educational setting and there is initial evidence that they are related in their measurement properties. A majority of children report no problems in each dimension of CHU9D, except for tired where nearly 80% of children report some level of tiredness. To our knowledge, the SDQ and CHU9D have not yet been used to predict longer-term outcomes within an economic evaluation context. This is an important avenue for further research because issues remain as to whether these childhood measures could be extrapolated into adulthood. A decision analytic model for long-term analysis is now being developed.

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References