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HEALTH ECONOMICS

Cost-effectiveness of psychological and psychosocial interventions for adults, children and young people who have self-harmed

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ABSTRACT

Background Self-harm is a major health issue resulting in high societal costs. Few psychological and psychosocial interventions have shown effectiveness in reducing repeat self-harm.

Objective To assess the cost-effectiveness of psychological and psychosocial interventions that have shown evidence of effectiveness in adults and CYP (children and young people) who have self-harmed.

Methods Using effectiveness data from Cochrane reviews, we developed two decision-analytical models to compare costs and quality-adjusted life years (QALYs) of cognitive behavioural therapy (CBT)-informed psychological therapy added to treatment as usual (TAU) versus TAU alone for adults who have self-harmed, and of dialectical behavioural therapy for adolescents (DBT-A) versus enhanced TAU for CYP who have self-harmed, respectively, from a National Health Service and personal social services perspective in England. Other model input parameters were obtained from published sources, supplemented by expert opinion.

Findings The incremental cost-effectiveness ratio (ICER) of CBT-informed psychological therapy added to TAU versus TAU alone for adults who have self-harmed was £9088/QALY. The ICER of DBT-A versus enhanced TAU for CYP who have self-harmed was £268 601/QALY. Results were overall robust to the alternative scenarios tested.

Conclusions and clinical implications CBT-informed psychological therapy appears to be cost-effective for adults who have self-harmed, which contributes to evidence for its implementation in services. Currently, DBT-A does not seem to be cost-effective for CYP who have self-harmed. The economic analyses were informed by clinical evidence of moderate-to-low (CBT) and low (DBT-A) quality. Further clinical and economic evidence for DBT-A and other psychological and psychosocial interventions for people who have self-harmed is required.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Self-harm is a major health issue worldwide and incurs substantial societal costs. Clinical and economic evidence on psychological and psychosocial interventions for self-harm is limited.

WHAT THIS STUDY ADDS

⇒ Cognitive behavioural therapy (CBT)-informed psychological therapy is likely cost-effective for adults who have self-harmed. Dialectical behavioural therapy adapted for adolescents who have self-harmed currently does not appear to be cost-effective.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ These findings contribute to evidence for service implementation of CBT-informed psychological therapy for adults who have self-harmed. Further clinical and economic evidence on psychological and psychosocial interventions for self-harm is needed.

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BACKGROUND

Self-harm is an important health and social problem worldwide, in particular for young people[1] and their families,[2] although it occurs across the lifespan. It is often repeated, sometimes multiple times,[3] especially in young people.[4] The overall lifetime prevalence in adolescents is 17%, with the mean age of first onset being 13 years, peaking in prevalence among those aged 16 years.[5] Incidence of self-harm decreases with increasing age.[6] Of people who self-harm during adolescence, only about 10% appear to continue self-harming as adults, whereas of people who self-harm during the young adult age, one-third have also self-harmed as adolescents.[7] Mortality risks, particularly from suicide, are greatly elevated following self-harm, especially when it is repeated, in both adults[8] and young people.[9] Self-harm results in high healthcare[10–13] and social service costs,[10] in particular after repeat episodes.[10] Productivity losses associated with self-harm and related suicide are huge, reaching 97% of total costs.[14]

A Cochrane review of psychological and psychosocial interventions for self-harm in adults indicated that psychological therapy based on cognitive behavioural therapy (CBT) approaches was effective in reducing repeat self-harm (RSH). This intervention had the largest and highest quality evidence base among psychological and psychosocial

interventions with a positive effect in adults who have self-harmed.[15] In a second, related Cochrane review of psychological and psychosocial interventions for self-harm in children and young people (CYP) aged≤18 years, dialectical behavioural therapy adapted for adolescents (DBT-A) was the only intervention with some (although limited) evidence of effectiveness in reducing RSH.[16] Limited available trial-based economic evidence suggests that CBT-informed psychological therapy focused on adults[17 18] and DBT-A focused on adolescents[19] may be cost-effective. Given the important resource implications associated with self-harm, the need for efficient use of healthcare resources, the available evidence on the effectiveness of psychological and psychosocial interventions for people who have self-harmed and the limited available economic evidence, our study objective was to examine the cost-effectiveness of CBT-informed psychological therapy (such as CBT or problem-solving) and DBT-A for the prevention of recurrence of self-harm in adults and CYP, respectively, from the perspective of the National Health Service (NHS) and Personal Social Services (PSS) in England, using decision-analytical economic modelling.

METHODS

Two model-based cost-utility analyses were conducted, one to assess the cost-effectiveness of CBT-informed psychological therapy for adults who have self-harmed, and the other to assess the cost-effectiveness of DBT-A for CYP who have self-harmed. The analyses informed the updating of national guidance on the assessment and management of self-harm, including prevention of recurrence, in England, published by the National Institute for Health and Care Excellence (NICE).[20] The guideline was developed by an independent multidisciplinary committee of clinical academics, health professionals and lay members with expertise and experience in the area of self-harm. The committee contributed to the development of the economic models by providing advice on the natural history and management patterns of self-harm in adults and CYP in the UK, as well as on model inputs in areas where evidence was lacking. The analyses followed the NICE 'reference case' for economic evaluations.[21]

Population

The study cohorts comprised people with a hospital presentation for a first or repeat episode of self-harm in the prior 6 months. At model initiation, the hypothetical cohort assessed on CBT-informed psychological therapy comprised adults all aged 29 years, of whom 56% were women; the hypothetical cohort assessed on DBT-A comprised young people all aged 16 years, of whom 75% were girls. The age and gender mix of each cohort were in line with relevant large UK observational studies[4 22] and were used exclusively for the estimation of mortality risks over the time horizon of the analyses.

Interventions and comparators

The adults' model assessed a CBT-informed psychological therapy in addition to treatment as usual (TAU) versus TAU alone, in line with the comparison in the Cochrane review of adult interventions.[15] The definition of CBT-informed psychological therapy in our economic analysis was dictated by the definition adopted by the Cochrane review, which included interventions or intervention components with therapeutic elements of CBT, including CBT interventions and problem-solving. TAU comprised treatment provided by community mental health teams (CMHTs) to adults who have self-harmed after initial hospital management.

The CYP model assessed DBT-A versus enhanced TAU. The comparator was determined by the range of comparators (TAU, enhanced TAU and supportive therapy) in the meta-analysis of DBT-A trials in the Cochrane review of CYP interventions.[16] The committee advised that enhanced TAU be used as the comparator in the economic analysis as broadly capturing the range of comparators in the Cochrane meta-analysis. To model the costs and outcomes of enhanced TAU, the committee advised that we consider enhanced TAU as the care described in the control arm of a large pragmatic UK randomised controlled trial (RCT) (n=832) that assessed family therapy delivered to adolescents aged 11–17 years who have self-harmed, over a follow-up period of 18 months ('Self-Harm Intervention Family Therapy'—SHIFT RCT).[23] The control arm in this RCT comprised treatment provided by children and adolescent mental health services (CAMHS) after initial hospital management.

Economic model structure

Two hybrid decision-analytical models, each consisting of a decision-tree followed by a three-state Markov model, were constructed using Microsoft Office Excel 2013 to estimate total costs and quality-adjusted life years (QALYs) associated with each intervention and its comparator over a 5-year time horizon. The decision-tree element allowed estimation of the immediate pathways and outcomes of providing the active intervention or its comparator in each population, whereas the Markov model element enabled modelling of the ongoing risk of subsequent recurrent events (repeat of self-harm) over a longer period of time, which was conditional on the outcomes experienced in the decision-tree.[24] The model structure was determined by the natural history and management patterns of people who have self-harmed in the UK, and the availability of relevant clinical and epidemiological data (figure 1).

The model followed hypothetical cohorts of people with a hospital presentation for a first or repeat episode of self-harm in the prior 6 months, initiated on the assessed intervention (CBT-informed psychological therapy added to TAU for adults; DBT-A for CYP) or its comparator (TAU for adults; enhanced TAU for CYP). Following a course of treatment and over a period of 6 months (which was the duration of the decision-tree), people in each cohort might repeat self-harm, not repeat self-harm or die. The analysis modelled death due to any reason for adults, and death due to suicide for CYP, based on the availability of relevant data. After the period of 6 months, people in each cohort entered a 3-state Markov model which included the states of 'repeat self-harm' ('RSH'), 'no RSH' and death due to any reason or suicide, as relevant, run in 6-month cycles over 4.5 years. In each cycle, people remained in their current health state, moved between the states of 'RSH' and 'no RSH', or died. A half-cycle correction was applied. The duration of the decision-tree and the cycle length and duration of the Markov model were based on the availability of efficacy and other epidemiological data. The model's time horizon was 5 years, comprising 6 months in the decision tree and 4.5 years (9×6 month cycles) in the Markov model component.

Effectiveness data

Effectiveness data (risk ratio (RR) of reduction in repeat self-harm of each intervention vs its comparator) were estimated from the respective Cochrane meta-analyses.[15 16] Both publications reported relative effects as odds ratios (ORs). For adults, the OR of CBT-informed psychological intervention plus TAU versus TAU alone at 6 months follow-up (0.52, 95% CIs 0.38 to

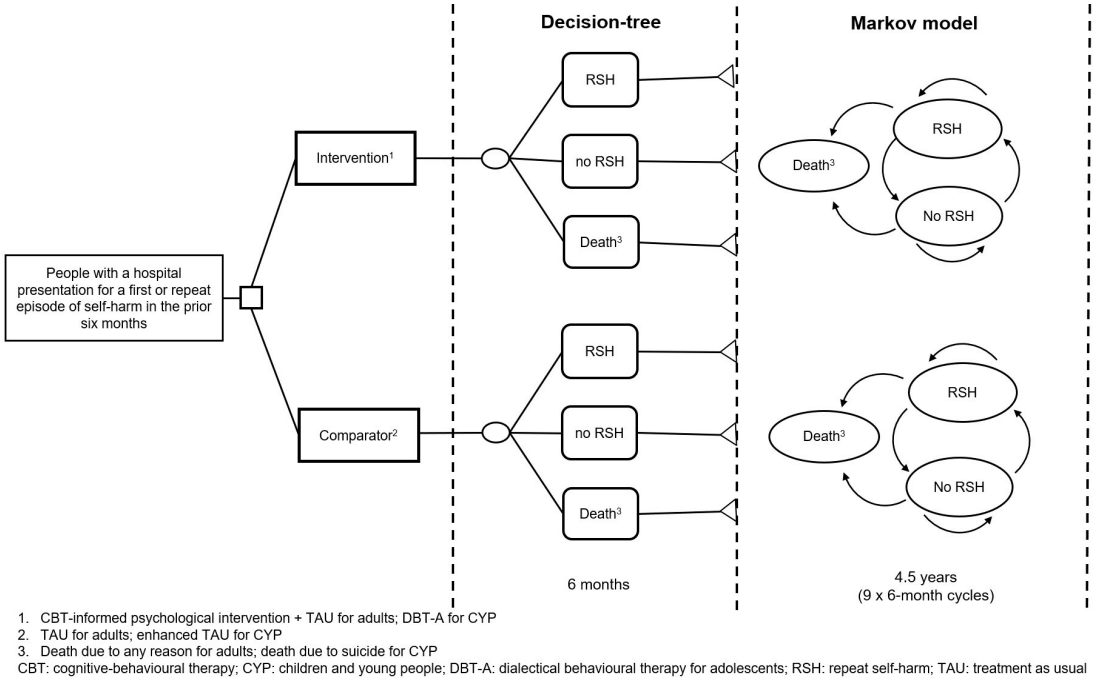

Figure 1 Schematic diagram of the economic model assessing the cost-effectiveness of psychological and psychosocial interventions for people who have self-harmed.

0.70) was obtained from a meta-analysis of 12 RCTs.[15] For CYP, the OR of DBT-A versus enhanced TAU at 6 months follow-up (0.46, 95% CI 0.26 to 0.82) was obtained from a meta-analysis of 4 RCTs.[16] Using the raw data from the Cochrane meta-analyses, we estimated RRs of reduction in repeat self-harm for each intervention versus its comparator (see online supplemental figures 1 and 2 for synthesis of raw data on the reduction in repeat self-harm from the Cochrane meta-analyses, in order to estimate RRs for adults and CYP who have self-harmed, respectively). Estimated RRs for each comparison were multiplied by the absolute baseline effect (risk of repeat self-harm) of the relevant control, in order to estimate the absolute effect of each active intervention.

Other clinical input parameters

The baseline risks of repeat self-harm for TAU for adults and enhanced TAU for CYP, used in the decision-trees, and the transition probabilities between the 'RSH' and 'no RSH' health states of the Markov model components were estimated using UK study data. The transition probabilities between the 'RSH' and 'no RSH' Markov health states were conservatively assumed to be independent of the intervention received, due to a lack of long-term comparative clinical evidence.

For adults, the 6-month baseline risk of repeat self-harm under TAU (0.288) and the transition probabilities between the 'RSH' and 'no RSH' Markov health states (remaining in 'RSH' state: 0.288; transition from 'no RSH' to 'RSH' state: 0.074) were estimated using data from a large UK-based prospective cohort study (N=7344).[25] For CYP, the 6-month baseline risk of repeat self-harm under enhanced TAU (0.142) and the Markov transition probabilities between the 'RSH' and 'no RSH' states (remaining in 'RSH' state: 0.256; transition from 'no RSH' to 'RSH' state: 0.076) were informed by the SHIFT RCT.[23] For details on the estimation of these inputs see online supplemental file 1 (adults) and online supplemental file 2 (CYP).

Mortality

Repeat self-harm is associated with an increased mortality risk. For adults, the increase in the mortality risk associated with self-harm was obtained from a large UK cohort study (n=30 950).[8] For CYP, the increase in mortality due to suicide associated with RSH was obtained from another large UK cohort study (n=9173).[9] For details on the use of these inputs in the models see online supplemental file 1 (adults) and online supplemental file 2 (CYP).

Utility data

Utility values express people's preferences for health-related quality of life and are used for the estimation of QALYs. Following a systematic search of relevant utility data, the base-case utility value of the 'RSH' state for both adults and CYP (0.68) was derived from EuroQol - 5 Dimensions (EQ-5D) ratings of 754 adolescents with previous self-harm.[26] The utility value for the 'no RSH' state (0.93 for adults and 0.94 for CYP) was derived from EQ-5D ratings of the general UK population.[27] Alternative utility data for adults (0.67 and 0.54 for the 'no RSH' and 'RSH' states, respectively)[28] and CYP (0.80 and 0.76 for the 'no RSH' and 'RSH' states, respectively)[23] were tested in sensitivity analysis. For details see online supplemental file 1 (adults) and online supplemental file 2 (CYP).

Resource use and cost data

The analyses included intervention costs (healthcare professional time), and other health and social care costs incurred by people who have self-harmed, expressed in 2020 Great Britain Pound (GBP).

Intervention costs (table 1) were calculated by combining relevant resource use with respective therapist national unit costs (see online supplemental tables 1 and 2 for methods of estimation of unit costs of therapists delivering CBT-informed psychological therapy and DBT-A, respectively). Resource use

Table 1 Intervention costs for people who have self-harmed (2020 prices)

Intervention	Resource use details	Cost/ person
CBT-informed psychological therapy for adults	4.725*×55 min individual face-to-face sessions, delivered by an AfC Band 6 mental health nurse at a unit cost of £92 per hour of direct client contact (see online supplemental table 1)	**£396**
DBT-A for CYP	Individual psychotherapy: 13.875†×60 min individual face-to-face sessions, delivered by an AfC Band 7 health professional (mental health nurse or clinical psychologist) at a unit cost of £138 per hour of direct client contact (see online supplemental table 2)	£1917
	Group skills training: 16‡×120 min group face-to-face sessions, delivered to 10 participants by two Band 7 health professionals (mental health nurses or clinical psychologists) at a unit cost of £138 per hour of direct client contact (see online supplemental table 2)	£884
	Therapist team consultation§: 16×120 min sessions	–
	Out-of-hours counselling over the telephone§: as needed	–
	Total cost	**£2801**

*Estimated assuming that a course of therapy comprises 6 individual sessions based on relevant RCT resource use[15] supplemented with the committee's expert advice, with 55% of clients attending the full course (6 sessions), 30% attending 3-5 sessions and 15% attending 1-2 sessions
†Estimated assuming that a course of DBT-A includes 16 sessions of individual psychotherapy based on relevant RCT resource use[16] supplemented with the committee's expert advice, with 75% of clients attending the full course (16 sessions), one-third of non-completers attending 5-15 sessions and two-thirds of non-completers attending 1-4 sessions
‡Equal to the number of sessions for a full course of group skills training, as the total cost of group therapy is not affected by the attendance rate of individual participants.
§Not costed separately as already considered in the therapist unit costs, as part of the direct-to-indirect time ratio.
.AfC, agenda for change; CBT, cognitive behavioural therapy; CYP, children and young people; DBT-A, dialectical behavioural therapy for adolescents; RCT, randomised controlled trial.

data regarding the modality, number and duration of therapeutic sessions, as well as the number of therapists and participants in group sessions, were obtained from relevant RCTs included in the Cochrane meta-analyses.[15 16] This information was modified by the committee to represent optimal UK practice, accounting also for attendance rates. DBT-A was modelled as a modular psychosocial treatment comprising a combination of individual psychotherapy, group skills training, therapist consultation team and telephone counselling. For costing purposes, we assumed that CBT-informed psychological therapy was delivered by mental health nurses in NHS England Agenda for Change (AfC) Band 6, whereas DBT-A was delivered by mental health nurses or clinical psychologists in NHS England AfC Band 7. However, a range of appropriately trained healthcare professionals may deliver these interventions in routine practice.

TAU for adults, delivered by CMHTs, was provided in both arms of the respective economic model, therefore its cost was cancelled out and was not considered in the analysis. The 6-month cost of enhanced TAU for CYP delivered by CAMHS (£961 in 2020 prices) was obtained from the SHIFT RCT.[23]

Excess NHS/PSS costs incurred by adults who have self-harmed were derived from a UK retrospective cost analysis (n=78)[10] and included primary care, emergency department (ED) presentations, inpatient and outpatient hospital resource use (medical, surgical and psychiatric), psychotropic prescriptions, social care service visits and residential placements. NHS/PSS costs associated with the 'RSH' and 'no RSH' states in the CYP model were obtained from the SHIFT RCT.[23] For details on the method of estimation of costs see online supplemental file 1 (adults) and online supplemental file 2 (CYP).

Discounting

Costs and QALYs were discounted at 3.5% annually as recommended by NICE.[21]

Analysis

In each model, we estimated the incremental cost-effectiveness ratio (ICER), calculated as the difference in total costs divided by the difference in QALYs between treatment options. We determined cost-effectiveness using the NICE lower and upper cost-effectiveness threshold of £20 000–30 000/QALY.[21] To account for the uncertainty around input parameter point estimates, we undertook probabilistic analyses, in which input parameters are assigned probabilistic distributions, and performed 10 000 iterations for each model. Alternative scenarios were tested in sensitivity analysis, by altering the value(s) of a single or a combination of input parameters. Mean costs and QALYs for each option presented in the base-case and sensitivity analyses were calculated by averaging costs and QALYs across 10 000 iterations. Moreover, threshold analyses were conducted by changing the values of key input parameters, to explore at which value the base-case conclusions would change.

All model input values are reported in online supplemental tables 3 and 4 (for adults and CYP, respectively). Online supplemental tables 5–8 show the scenarios tested in sensitivity analysis.

Validation of the economic models

The economic models were developed in collaboration with members of the guideline committee, who also confirmed the face validity of model input values. All inputs and model formulae were systematically checked. The models were tested for logical consistency by setting input parameters to null and extreme values and examining whether the results changed in the expected direction. Results were discussed with the committee to confirm their plausibility. The executable models were made available to stakeholders on request during guideline consultation.

RESULTS

For adults who have self-harmed, CBT-informed psychological therapy added to TAU resulted in more QALYs and higher costs compared with TAU alone, with an ICER of £9088/QALY, suggesting that the intervention is cost-effective within the NICE decision-making context. For CYP who have self-harmed, DBT-A also resulted in more QALYs and higher costs compared with enhanced TAU, but with an ICER of £268 601/QALY, indicating that the intervention is not cost-effective according to NICE criteria. See table 2 and figure 2 for base-case results and online supplemental figures 3 and 4 for cost-effectiveness planes.

Table 2 Base-case probabilistic results of economic analyses of interventions for people who have self-harmed

Intervention for adults	CBT-informed psychological therapy+TAU	TAU	Difference
Total costs per person	£2424	£2283	£141
Total QALYs per person	4.155	4.139	0.016
ICER			**£9088**
Intervention for CYP	DBT-A	Enhanced TAU	Difference
Total costs per person	£10 292	£8493	£1799
Total QALYs per person	4.177	4.170	0.007
ICER			**£268 601**

CBT, cognitive behavioural therapy; CYP, children and young people; DBT-A, dialectical behavioural therapy for adolescents; ICER, incremental cost-effectiveness ratio; QALY, quality-adjusted life year; TAU, treatment as usual.

Cost-effectiveness acceptability curves, which demonstrate the probability of each treatment option being cost-effective at different cost-effectiveness thresholds, are shown in figure 2. For adults, the probability of CBT-informed psychological intervention+TAU being cost-effective compared with TAU was 0.76 and 0.92 at the NICE lower and upper cost-effectiveness thresholds, respectively. At the same thresholds, DBT-A had a probability of being cost-effective compared with enhanced TAU of only 0.03 and 0.05, respectively.

In sensitivity analysis, CBT-informed psychological therapy for adults who have self-harmed was cost-effective under most scenarios. Results were only sensitive to an increase in the number of sessions (the intervention was no longer cost-effective under a £20 000/QALY threshold after increasing the number of intended therapeutic sessions from 6, as in the base-case analysis, to 10), in particular when the increase in the number of sessions was combined with a narrower difference in utility between the 'RSH' and 'no RSH' health states (an 8-session intervention combined with a 0.13 difference in utility was also not cost-effective). Results for DBT-A for CYP who have self-harmed were robust under any scenario tested in sensitivity analysis, with the ICER remaining far above the NICE upper cost-effectiveness threshold of £30 000/QALY. A threshold analysis revealed that DBT-A would become cost-effective if the 6-month risk of repeating self-harm under enhanced TAU and the 6-month probability of remaining in the 'RSH' Markov state was as high as 0.69, or if the DBT-A intervention cost was reduced at £1135 (from the base-case value of £2801) or if the 6-month NHS cost of the 'RSH' state reached £55 000. Full sensitivity analysis results are shown in online supplemental tables 5–8.

DISCUSSION

Overview of findings

According to our findings, CBT-informed psychological therapy appears to be cost-effective for adults with a hospital presentation for a first or repeat episode of self-harm in the prior 6 months under an NHS/PSS perspective in England. Results were robust under most scenarios explored in sensitivity analysis, although the intervention intensity (number of sessions) had some impact on the results due to higher intervention costs involved, such that an intervention comprising≥10 intended therapeutic sessions was no longer cost-effective.

DBT-A was not cost-effective for CYP with a hospital presentation for a first or repeat episode of self-harm in the prior 6 months under an NHS/PSS perspective in England. This finding was robust under all scenarios explored. Threshold analysis suggested that DBT-A was cost-effective only when the risk or the cost of repeating self-harm were very high, or when the intervention cost was significantly reduced, translating into a considerably lower intervention intensity; however, a lower intensity intervention might reduce the treatment effect.

Strengths and limitations

Our analyses used effectiveness data derived from two Cochrane systematic reviews.[15 16] The quality of the clinical evidence was moderate-to-low for CBT-informed psychological therapy for adults and low for DBT-A for CYP. The evidence base for DBT-A was particularly small (four RCTs), so that the estimated treatment effect might change with the accumulation of further evidence. The limitations of the clinical evidence have unavoidably impacted the quality of the model input parameters and should be considered when interpreting the cost-effectiveness results.

For adults, the baseline risks of repeat self-harm, the transition probabilities between the 'RSH' and 'no RSH' health states and the excess costs associated with repeat self-harm were estimated using data from large UK longitudinal studies.[10 25] Respective information for CYP was derived from a large UK RCT that assessed family therapy for young people who have self-harmed,[23] due to a lack of relevant naturalistic data for this population. Mortality data for both populations were obtained from large UK observational studies.[8 9]

The 5-year time horizon of the analyses was considered adequate to capture longer-term outcomes and costs associated with self-harm, without significant extrapolation and assumptions over the course of repeat self-harm.

Utility data were derived from a systematic literature review, which revealed a paucity of data on populations who have self-harmed. Alternative utility data were considered in sensitivity analysis, which nevertheless reflected unrealistically narrow utility improvements following a reduction in repeat self-harm behaviour according to the committee's judgement. Threshold analysis suggested that CBT-informed psychological therapy for adults remained cost-effective as long as the utility improvement from the 'RSH' to the 'no RSH' state was at least 0.10.

Intervention costs were estimated from RCT resource data obtained from the Cochrane reviews, supplemented with the committee's expert opinion, to reflect routine UK practice. Alternative assumptions regarding the number and duration of therapeutic sessions and the seniority of therapists delivering them (reflected in their salary scales) were tested in sensitivity analysis.

We carried out probabilistic analyses, which accounted for the uncertainty around model parameters, and conducted sensitivity analyses to address uncertainties and gaps in the evidence. The model structure was constructed collaboratively with the committee, who also validated the model inputs and assumptions and assessed results for their plausibility. Our analyses adopted NICE principles for assessing the cost-effectiveness of healthcare interventions[21] and are characterised by different strengths and limitations, which we considered when constructing our models and interpreting the results.

Comparison with existing economic evidence

Our findings on CBT-informed psychological therapy for adults who have self-harmed are in line with previous trial-based economic analyses conducted in the UK.[17 18] Contrary to our findings, a Norwegian trial-based economic analysis found that

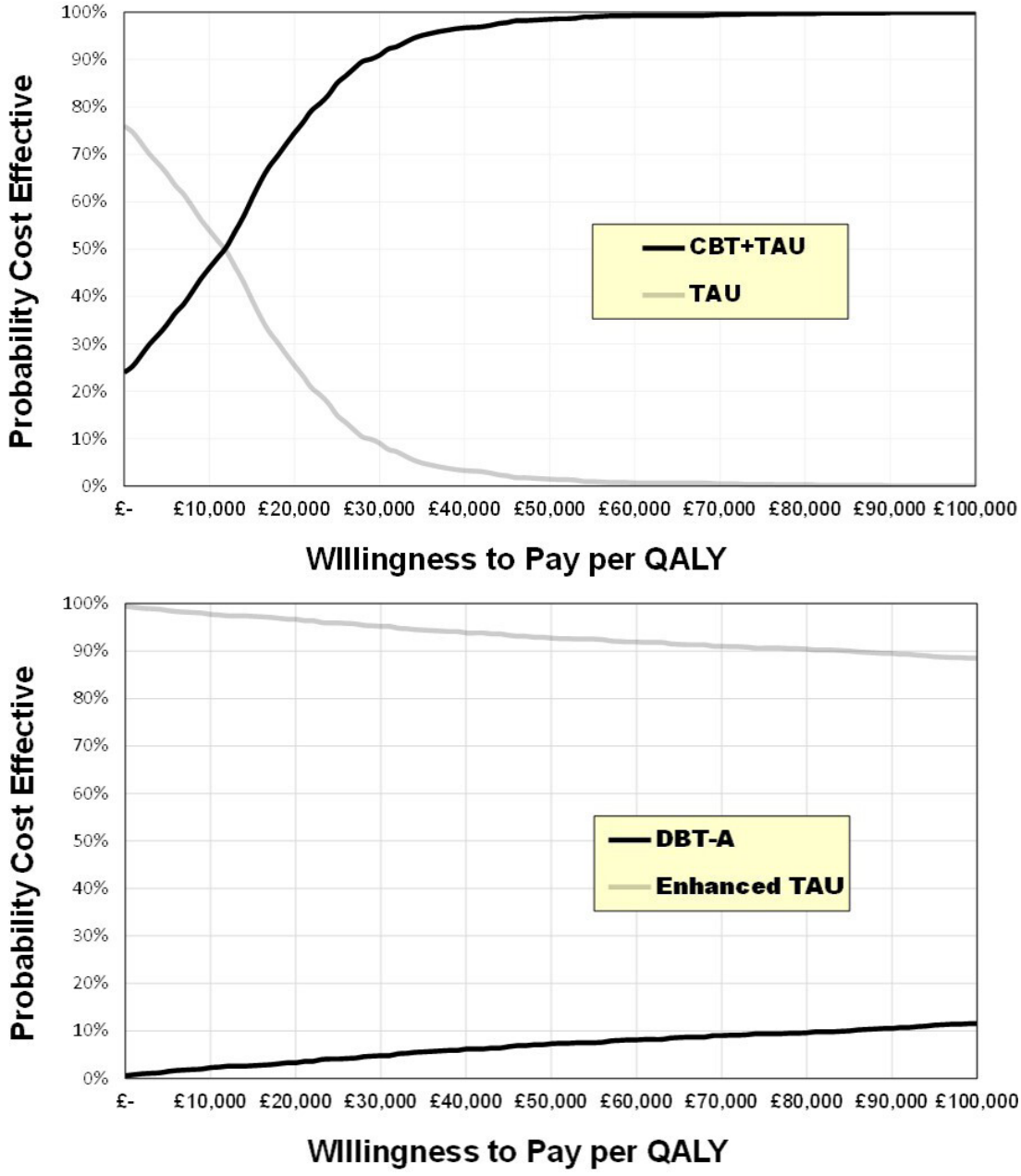

Figure 2 Cost-effectiveness acceptability curves. CBT, cognitive behavioural therapy; DBT-A, dialectical behavioural therapy for adolescents; QALY, quality-adjusted life year; TAU, treatment as usual.

DBT-A was cost-effective for adolescents who have self-harmed (and also met≥3 criteria for borderline personality disorder) compared with enhanced TAU.[19] This small (N=77) study found that DBT-A was more effective than enhanced TAU in reducing repeat self-harm and overall less costly over 71 weeks compared with enhanced TAU, which is not consistent with our findings. It is therefore possible that costs associated with the delivery of DBT-A and/or enhanced TAU as well as healthcare costs associated with the care of CYP who have self-harmed differ between England and Norway.

Other economic assessments conducted alongside RCTs suggested that various interventions for adults and CYP who have self-harmed, including a brief ED-based intervention[29] and DBT[30] for adults, as well as family therapy[23 31] and group-based psychotherapy[32] for CYP, were uncertain or unlikely to be cost-effective compared with TAU in the UK. These studies were overall characterised by various limitations such as small sample sizes and/or short time horizons, so that robust conclusions could not be reached.

Generalisability of the results and implications of the study

Our analyses were conducted from the NHS/PSS perspective in England. Results may be generalisable to other settings with similar funding and structure of healthcare and personal social services, and comparable care pathways for people who have self-harmed. Conclusions on cost-effectiveness ultimately rely on the cost-effectiveness threshold adopted, and this depends on the policymakers' willingness-to-pay for treatment benefits, which may vary across countries and health systems.

Based on the available clinical evidence (as summarised in the Cochrane reviews), previously published economic evidence and

our economic findings, the 2022 NICE guideline on the assessment and management of self-harm made a strong recommendation ('offer') for a structured, person-centred, CBT-informed psychological intervention (eg, CBT or problem-solving therapy), typically delivered in 4–10 sessions, specifically tailored for adults who have self-harmed, as a cost-effective option for this population.[20] The definition of CBT-informed psychological therapy in our economic analysis and the clinical evidence that informed the NICE guideline mirrored that of the Cochrane review, which included CBT interventions and problem-solving; notably, the meta-analysis that informed our economic analysis had very low heterogeneity (I^2=2%).[15] The available evidence showed a potential benefit of psychological and psychosocial interventions that were structured, person-centred, time-limited and informed by CBT. Therefore, the committee agreed that other treatment modalities might also be effective in adults who have self-harmed, as long as they meet these principles.

DBT-A received a weaker recommendation ('consider') as an option specifically for CYP with significant emotional dysregulation difficulties who have frequent episodes of self-harm.[20] This is because DBT-A was not shown to be cost-effective overall in CYP who have self-harmed (unless the risk of repeating self-harm was very high), and the committee felt that the effectiveness data justified a 'consider' recommendation as there were few other interventions for young people with an evidence base. On the other hand, it is acknowledged that, in the English NHS, DBT-A would not be typically offered as an intervention if the primary issue needing therapeutic intervention was low-frequency self-harm in the context of life problems. DBT-A usually comprises a 12-month intensive treatment, targeting CYP with complex presentations (eg, CYP who self-harm and also have an emergent personality disorder), aiming to target self-harm early on in therapy by developing clients' skills to better manage their distress so that they reduce self-harming; once this is achieved, treatment moves on, in the form of further psychological or psychosocial interventions, to address other potential comorbidities such as post-traumatic stress disorder, substance/alcohol misuse, eating disorder, anxiety disorder, depression or relationship difficulties. The full range of benefits of DBT-A in addressing complex comorbidities was not captured in our economic analysis due to a lack of relevant clinical data. It is therefore possible that our analysis has underestimated the cost-effectiveness of DBT-A when CYP have complex presentations.

CLINICAL IMPLICATIONS

CBT-informed psychological therapy may be a cost-effective treatment for adults who have self-harmed. In contrast, currently, DBT-A does not appear to be cost-effective for CYP who have self-harmed. These findings should be interpreted with caution due to the limited evidence base. There is a need for well-conducted studies that examine the relative clinical and cost-effectiveness of a range of psychological and psychosocial treatments for people who have self-harmed, including assessment of longer-term costs and effects, to reduce the uncertainty and limitations characterising current evidence. At the same time, there is a real need and opportunity to enhance aftercare and improve service delivery and timely access to psychological and psychosocial therapies for people who have self-harmed,[33] as long waiting times and inadequate service provision have been identified as barriers to high-quality and safe aftercare for this population,[34] increasing the risk of further self-harm for patients and burnout for service staff.[35] Finally, improved delivery of psychological and psychosocial interventions for people who have self-harmed may also have a role in suicide prevention, as recently outlined in the Suicide Prevention Strategy for England.[36]

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