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Health Technology Assessment

Synopsis

Acceptance and Commitment Therapy for people living with motor neuron disease: the COMMEND feasibility study and randomised controlled trial

Rebecca L Gould,[1*†] Benjamin J Thompson,[2†] Charlotte V Rawlinson,[1] Matt Bursnall,[2] Mike Bradburn,[2] Anju D Keetharuth,[3] Tracey Young,[3] Vanessa Lawrence,[4] David A White,[2] Robert J Howard,[1] Marc A Serfaty,[1,5] Lance M McCracken,[6] Christopher D Graham,[7] Ammar Al-Chalabi,[8] Laura H Goldstein,[9] Dynameni Androulaki-Koraki,[4] Pavithra Kumar,[2] Kirsty Weeks,[1] Rebecca Gossage-Worrall,[2] Emily J Turton,[2] Simon Waterhouse,[2] Nicola Drewry,[10] Cindy Cooper,[2] Pamela J Shaw[11] and Christopher J McDermott[11]

[1]Division of Psychiatry, University College London, London, UK
[2]Clinical Trials Research Unit, Sheffield Centre for Health and Related Research, University of Sheffield, Sheffield, UK
[3]Sheffield Centre for Health and Related Research, University of Sheffield, Sheffield, UK
[4]Department of Health Services & Population Research, Institute of Psychiatry, Psychology & Neuroscience, King's College London, London, UK
[5]Priory Hospital North London, London, UK
[6]Department of Psychology, Uppsala University, Uppsala, Sweden
[7]Department of Psychological Sciences & Health, University of Strathclyde, Glasgow, UK
[8]Maurice Wohl Clinical Neuroscience Institute, King's College London, London, UK
[9]Department of Psychology, Institute of Psychiatry, Psychology & Neuroscience, King's College London, London, UK
[10]Patient and Public Involvement representative
[11]Sheffield Institute for Translational Neuroscience, and the NIHR Sheffield Biomedical Research Centre, University of Sheffield, Sheffield, UK
[†]Joint first authors

[*]**Corresponding author** r.gould@ucl.ac.uk

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Abstract

Background: Motor neuron disease is a progressive, fatal neurodegenerative disease for which there is no cure. Formal psychological therapies are not routinely part of United Kingdom standard motor neuron disease care due to a lack of evidence-based guidance resulting from a paucity of clinical trials. We aimed to evaluate the clinical and cost-effectiveness of Acceptance and Commitment Therapy plus usual care compared to usual care alone for improving psychological health in people living with motor neuron disease.

Methods: We conducted qualitative interviews with 15 people living with motor neuron disease, 10 caregivers and 12 healthcare professionals. Findings were used to develop an Acceptance and Commitment Therapy intervention specifically for people living with motor neuron disease. Next, we examined its acceptability and feasibility in an uncontrolled feasibility study with 29 people living with motor neuron disease. Findings from qualitative interviews with 14 people living with motor neuron disease and 11 therapists were used to revise the intervention. Finally, we

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conducted a multicentre, parallel, two-arm randomised controlled trial in 16 United Kingdom motor neuron disease care centres/clinics. Eligible participants were aged ≥ 18 years with motor neuron disease. Participants were randomly assigned (1 : 1) to receive up to eight sessions of Acceptance and Commitment Therapy plus usual care or usual care alone and followed up at 6 and 9 months post randomisation by blinded outcome assessors. The primary outcome was total score on the McGill Quality of Life Questionnaire-Revised at 6 months. Secondary outcomes included health status using the EuroQol-5 Dimensions, five-level version. Primary analyses were by intention to treat.

Results: Acceptance and Commitment Therapy was acceptable to people living with motor neuron disease, and it was feasible to recruit participants, hence trial progression criteria were met. From September 2019 to August 2022, 191 participants were recruited: 97 were allocated to Acceptance and Commitment Therapy plus usual care and 94 to usual care alone. Mean age was 61.9 years (standard deviation 11.4), 58% were male and 95% were White/White British. Acceptance and Commitment Therapy plus usual care was superior to usual care alone on the McGill Quality of Life Questionnaire-Revised at 6 months [adjusted mean difference 0.66 (95% confidence interval 0.22 to 1.10); Cohen's $d = 0.46$ (95% confidence interval 0.16 to 0.77); $p = 0.003$] and 9 months [adjusted mean difference 0.76 (95% confidence interval 0.30 to 1.22); Cohen's $d = 0.53$ (95% confidence interval 0.21 to 0.85); $p = 0.001$]. Mean differences in total costs and quality-adjusted life-years at 9 months between Acceptance and Commitment Therapy plus usual care versus usual care alone were not statistically significant [costs: £1019 (95% confidence interval −£34 to £2074); quality-adjusted life-years: 0.019 (95% confidence interval −0.07 to 0.05)]. The incremental cost-effectiveness ratio was £88,507/quality-adjusted life-year: this decreased to £13,817/quality-adjusted life-year in those with medium disease-related deterioration in subgroup analyses.

Conclusion: Acceptance and Commitment Therapy plus usual care is clinically effective at maintaining or improving psychological health, as measured by the McGill Quality of Life Questionnaire-Revised, in people living with motor neuron disease compared to usual care alone. It was not cost-effective overall when calculated using a standard health status measure (EuroQol-5 Dimensions, five-level version). However, it was cost-effective in a subgroup of people experiencing a medium rate of disease-related deterioration.

Limitations: Participants from ethnic minorities were under-represented, despite recruiting from sites with diverse communities. Between-group differences in outcomes may have been partly attributable to expectancy or non-specific therapeutic effects due to the lack of an active control. Cost-effectiveness analyses may have been underpowered to detect significant between-group differences.

Future work: Studies should examine the effectiveness of Acceptance and Commitment Therapy in diverse populations, compared to an active control, using a more appropriate measure to assess cost-effectiveness, and in those with different rates of disease-related deterioration.

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Introduction

This report describes the work undertaken to develop an Acceptance and Commitment Therapy (ACT) intervention for improving the psychological health of people living with motor neuron disease (plwMND), and to determine its clinical and cost-effectiveness in a randomised controlled trial (RCT). It arose from a call commissioned by the National Institute for Health and Care Research (NIHR) Health Technology Assessment (HTA) programme to develop and evaluate a brief psychological intervention for this population.

Rationale for research and background

Motor neuron disease (MND) is a progressive, fatal degenerative disease that affects motor neurons in the motor cortex and spinal cord, leading to progressive weakening and wasting of muscles involved in movement, speech, swallowing and breathing. The clinical outlook in MND is poor, with typical life expectancy being 2–4 years following diagnosis.[1] At present, there is no known cure for MND, and median survival is extended by just 2–3 months at 1 year by the sole UK-licensed, disease-modifying drug riluzole.[2]

As there is no cure or treatment that significantly prolongs survival, helping plwMND to manage their condition, as well as their psychological health, is crucial. Management of psychological health in plwMND is particularly important for two reasons. First, psychological distress is relatively common, with prevalence rates of 34% and up to 30% being reported for depression and anxiety, respectively.[3,4] Second, psychological distress is associated with a range of negative outcomes in plwMND, including shorter survival times, increased hopelessness, an increased risk of suicide and poorer quality of life (QoL).[5–9] Unfortunately, there is little clear evidence-based guidance on how plwMND can be helped to manage their psychological health due to a lack of high-quality, adequately powered research studies.

Systematic reviews have highlighted significant limitations in previous studies of psychological interventions for improving psychological health in plwMND, including low methodological quality due to the lack of a control group and lack of outcome assessment at follow-up.[10,11] Of the few RCTs of psychological interventions that have been conducted to date, all have been limited by high attrition rates and small sample sizes.[12–14] Consequently, it is of little surprise that UK National Institute for Health and Care Excellence (NICE) MND clinical guidelines have not been able to recommend any evidence-based psychological interventions for improving the psychological health of plwMND.[15]

Acceptance and Commitment Therapy is an acceptance-based psychological therapy that may be particularly suitable for plwMND.[16] With its focus on helping people to live their lives in meaningful ways, in the presence of distressing thoughts, feelings and sensations, it may be a more pragmatic approach within the context of MND than those that focus primarily on alleviating distress or symptoms or thinking more realistically. ACT has been shown to be beneficial for improving a range of outcomes, including psychological well-being and QoL, in long-term health conditions (such as muscle disorders and chronic pain) and mental health conditions.[17–19] However, whether it is effective at improving psychological health in plwMND is currently unknown.

Aims and objectives

The overall aim of the project was to develop an intervention based on ACT for improving psychological health in plwMND and to assess its clinical and cost-effectiveness in a RCT. The objectives were to:

1. develop and refine a manualised intervention based on ACT and tailored to the needs of plwMND
2. obtain quantitative estimates of the acceptability and feasibility of the intervention and study methods in an uncontrolled feasibility study
3. use qualitative approaches to explore the intervention's acceptability and feasibility to plwMND (from the perspective of plwMND and therapists)
4. evaluate the acceptability and feasibility of participating in a future RCT of ACT through qualitative interviews
5. clarify study design parameters for a future RCT
6. establish the clinical and cost-effectiveness of ACT plus usual care (UC) for plwMND compared to UC alone in a RCT
7. collect qualitative data from plwMND and therapists to examine perceived mechanisms of impact and the context in which the intervention is delivered.

Methods

Protocols

The project was pre-registered on the International Standard Randomised Controlled Trial Number registry (Ref: ISRCTN12655391). The research pathway for Phases I and II of the project is shown in *Figure 1*. The study protocols for the Phase I qualitative interviews and uncontrolled feasibility study and the Phase II RCT, which was published, provide full methodological details (available at www.ucl.ac.uk/psychiatry/research/mental-health-older-people/projects/commend/about-project).[20] Protocol amendments are listed in *Appendix 1*, *Tables 3* and *4*. The statistical analysis plan (SAP) for the RCT (see *Report Supplementary Material 1*) was reviewed and approved by the Trial Steering Committee (TSC) and Data Monitoring and Ethics Committee (DMEC) before data collection was completed. The Health Economics Analysis Plan for the RCT (see *Report Supplementary Material 2*) was reviewed by the TSC and DMEC and approved by the TSC before the database was locked.

Results summary

In addition to the published trial protocol, five results papers have been published to date (*Table 1*).[20] Key findings from these papers are summarised below.

Phase I

Qualitative interviews/workshops (objective 1, paper 1)[21]

We conducted a series of qualitative interviews and workshops with 15 plwMND, 10 caregivers of plwMND and 12 MND healthcare professionals (HCPs). The needs and preferences of plwMND with respect to psychological interventions were examined, as well as how to adapt psychological interventions for this population. Four overarching themes that had implications for developing psychological interventions for plwMND emerged from thematic analyses:

1. *Unfamiliar territory:* a lack of understanding and knowledge of MND among the general public and non-MND HCPs, which contributed to feelings of isolation, was described by all participant groups in this theme. PlwMND valued the opportunity to share experiences of living with MND with HCPs, but the importance of them having sufficient knowledge of MND was highlighted.
2. *A series of losses:* this theme emphasised the multitude of losses that plwMND experience in physical,

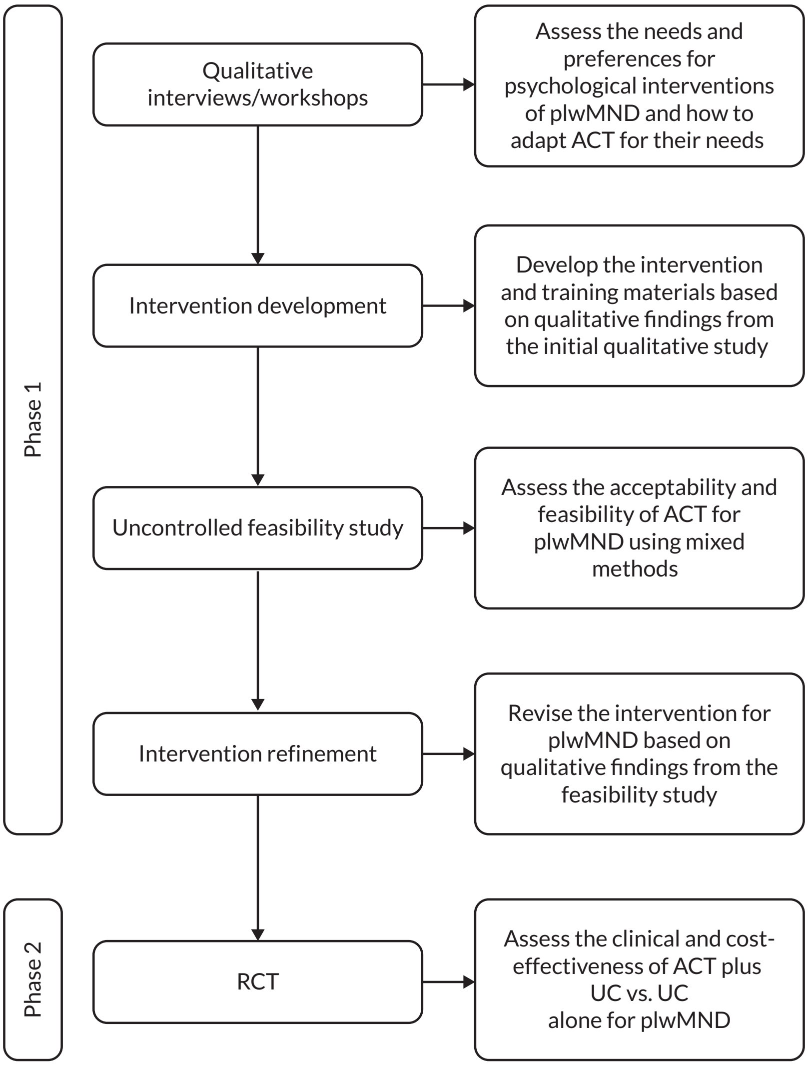

FIGURE 1 Research pathway for Phases I and II of the project.

TABLE 1 Status of results papers from the project

#	Component	Title	Status
1	Qualitative interviews/ workshops and intervention development	Needs and preferences for psychological interventions of people with motor neuron disease	Published in *Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration*[21]
2	Uncontrolled feasibility study	Acceptance and Commitment Therapy for people living with motor neuron disease: an uncontrolled feasibility study	Published in *Pilot and Feasibility Studies*[22]
3	Uncontrolled feasibility study	Experiences of Acceptance and Commitment Therapy for people living with motor neuron disease (MND): a qualitative study from the perspective of people living with MND and therapists	Published in *The Cognitive Therapist*[23]
4	RCT clinical effectiveness	Acceptance and Commitment Therapy plus usual care for improving quality of life in people with motor neuron disease (COMMEND): a multi-centre, parallel, randomised controlled trial	Published in *The Lancet*[24]
5	RCT cost-effectiveness	Health-related quality of life and cost-effectiveness of Acceptance and Commitment Therapy for people living with motor neuron disease	Published in *European Journal of Neurology*[25]

psychological, social and financial domains of their life, which contribute to a feeling of loss of control over one's life. This theme also highlighted how growing fears and anxieties in relation to the prognosis can make it difficult to live in the present moment.

3. *Variability and difficulty meeting individual needs:* the importance of psychological interventions being flexible in order to accommodate variability in MND symptoms, progression rates and individual needs, including those with communication difficulties, was noted in this theme. Practical barriers to engaging in psychological interventions (such as relying on others to attend appointments) and ways of overcoming them (such as ensuring that sessions could be delivered remotely) also emerged in this theme.
4. *Informal support*: this theme discussed the importance of informal support from peers and family members, though highlighted the challenges of balancing benefits of such support with perceived costs. These included the fear of being confronted with peers' disease progression and feeling uncomfortable about disclosing MND-related thoughts and feelings in front of family members.

This work highlighted the value of eliciting views on perceived barriers of and facilitators to uptake and engagement in psychological interventions from the perspectives of both plwMND, caregivers and MND HCPs. In collecting data from three different participant groups and comparing their perspectives, it was possible to identify key areas of commonality, such as the challenge of forging a new identity with MND. It also provided valuable recommendations with respect to the development of an ACT intervention for plwMND.

Intervention development (objective 1)

We developed an ACT intervention, tailored to meet the specific psychological, physical, communication and cognitive needs and preferences of plwMND, based on the recommendations of the qualitative study. The intervention comprised up to eight individual sessions of ACT, supplemented by online audio-recordings/CDs. Each session lasted up to 1 hour in duration and was delivered in person (clinic or home) or via video call. The first six sessions were weekly, and the remaining sessions were fortnightly and then monthly. A range of experiential exercises that targeted the six core processes in ACT were used, which therapists could select from based on a person's specific psychological, physical, communication and cognitive needs. As the NIHR HTA commissioning brief stated that plwMND should not be selected based on the presence of psychological distress, the intervention was developed to be relevant to all plwMND and not just those experiencing psychological distress. Further details are provided in paper 2 and the protocol paper.[20,22]

Uncontrolled feasibility study (objectives 2–5, papers 2–3)[22,23]

We examined the acceptability and feasibility of the developed ACT intervention in an open, uncontrolled feasibility study. PlwMND were recruited from 10 UK MND care centres/clinics and offered up to 8 individual sessions of ACT plus UC. Co-primary outcomes were uptake [≥ 80% of the target sample (*n* = 28) recruited] and initial engagement (≥ 70% completing two or more ACT sessions). Secondary outcomes were QoL, depression, anxiety, psychological flexibility, health status and functioning in plwMND, assessed at baseline and 6 months. We also examined health status and caregiver burden in their informal caregivers.

A priori indicators of success with respect to uptake and initial engagement in the intervention were met. We showed that it was feasible to recruit plwMND [*n* = 29/28 (104%)], and the intervention was acceptable to plwMND [*n* = 22/29 (76%) attended two or more sessions]. Acceptability was further demonstrated by high satisfaction with therapy.

We conducted qualitative interviews with 14 plwMND who had received the intervention and 11 therapists who had delivered it in the feasibility study. Interviews examined the acceptability and feasibility of the intervention, as well as views with respect to participation in a future RCT. Four overarching themes that identified key clinical implications for the delivery of ACT as an intervention for plwMND emerged from thematic analyses:

1. *An appropriate tool to navigate the disease course:* both plwMND and therapists considered ACT to be an appropriate therapy for this condition given the prognosis and physical deterioration seen in MND. They also emphasised the importance of providing a variety of experiential exercises used in ACT to accommodate variability in MND-related needs and preferences.
2. *The value of therapy outweighing the challenges:* numerous benefits of the intervention, either experienced now or anticipated in the future with disease progression, as well as some of the emotional challenges, were described in this theme. Reported benefits included being more accepting of MND and associated aids/adaptations, more present-focused and greater acknowledgement and sharing of feelings with others. Challenges included discussing painful or distressing issues

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and discussing sensitive topics, such as suicidal ideation and self-harm.

3. *Relevance to the individual:* this theme emphasised the importance of taking into account numerous factors related to the individual when delivering ACT. These included the degree to which ACT fitted with an individual's personal philosophy or beliefs, their previous experiences of therapy, and their perceived need for therapy (as participants were recruited irrespective of whether they were experiencing psychological distress).
4. *Involving others:* the possibility of involving the wider social network in therapy was discussed in this theme. Involving family members in therapy, as well as acknowledging the impact of MND on family members, was suggested by some plwMND and therapists, with therapists noting this could be helpful for facilitating therapeutic engagement.

Overall, this work provided valuable recommendations with respect to the refinement of the ACT intervention for plwMND, as well as aiding in clarifying key study design parameters for a future RCT.

Phase II

Randomised controlled trial: clinical effectiveness evaluation (objective 6, paper 4)[24]

We conducted a multicentre, parallel, two-arm RCT of ACT plus UC for improving psychological health in plwMND compared to UC alone in 16 UK MND care centres/clinics. As the NIHR HTA commissioning brief stated that plwMND should not be selected based on the presence of psychological distress, we chose QoL, as assessed by the McGill Quality of Life Questionnaire-Revised (MQOL-R), as our measure of psychological health. We considered this to be the most appropriate measure that would be sensitive to change in psychological health in response to an ACT intervention in plwMND. Participants were randomly allocated (in a 1 : 1 ratio) to receive up to eight sessions of ACT plus UC or UC alone and followed up at 6 and 9 months post randomisation by blinded outcome assessors. The primary outcome was total score on the MQOL-R at 6 months post randomisation. Secondary outcomes at 6 and 9 months post randomisation (unless otherwise stated) for plwMND were: (1) existential and psychological subscales of the MQOL-R, (2) modified Hospital Anxiety and Depression Scale (HADS), (3) Acceptance and Action Questionnaire-II, (4) EuroQol-5 Dimensions, five-level version (EQ-5D-5L) and EQ-visual analogue scale (VAS), (5) self-administered Amyotrophic Lateral Sclerosis Functional Rating Scale – Revised (ALSFRS-r), (6) non-physical adverse events (AEs) and physical self-harm, (7) survival at 9 months post randomisation and (8) Satisfaction with Therapy and Therapist Scale-Revised at 6 months post randomisation in those allocated to the ACT plus UC arm. Secondary outcomes for caregivers were the EQ-5D-5L, EQ-VAS and the Zarit Burden Interview.

Primary analyses were by intention to treat. We used a treatment policy strategy assuming Missing at Random using all randomised participants with data available for the MQOL-R at baseline and 6 months post randomisation and with recorded consent information. Four imputation strategies were used to test and confirm robustness to this assumption: (a) excluding deaths and imputing for missing due to non-response, as specified in the SAP; (b) treating missing due to non-response and missing due to death identically, as specified in the SAP; (c) imputing for missing due to non-response, as specified in the SAP, and separately imputing for death deterministically assuming the same percentage decline in MQOL-R score as those with complete data and in the bottom decile for MQOL-R decline and (d) the same as (c) but using the fifth decile. The SAP was written before the NIHR introduced their estimand policy. In light of the new policy strategies, (b) to (d) were undertaken post hoc.

Recruitment and data collection

People living with MND were recruited from 18 September 2019 to 31 August 2022; recruitment was paused from 17 March to 23 June 2020 due to COVID-19 pandemic-related restrictions. Overall, 191 plwMND were recruited: 97 were randomly allocated to ACT plus UC and 94 to UC alone (*Figure 2*). In addition, 93 caregivers were recruited: 44 (47%) were a caregiver of a plwMND in the ACT plus UC arm, and 49 (53%) were a caregiver of a plwMND in the UC alone arm. Data for the primary outcome analysis were available for 81% (*n* = 155/191) of participants at 6 months post randomisation. Reasons for missing data in each arm are shown in *Figure 2*.

Primary outcome

Acceptance and Commitment Therapy plus UC was superior to UC alone on the MQOL-R at 6 and 9 months post randomisation (*Figure 3*). Putting this in other terms, 61% (*n* = 49/80) of those in the ACT plus UC arm had a QoL that was maintained or improved over 6 months compared to 35% (*n* = 26/75) of those in the UC alone arm.

As shown in *Figure 4*, moderate effect sizes of 0.46 and 0.53 standard deviations (SDs) at 6 and 9 months post randomisation, respectively, exceeded our pre-defined clinically meaningful effect size of 0.44 SDs; chosen based

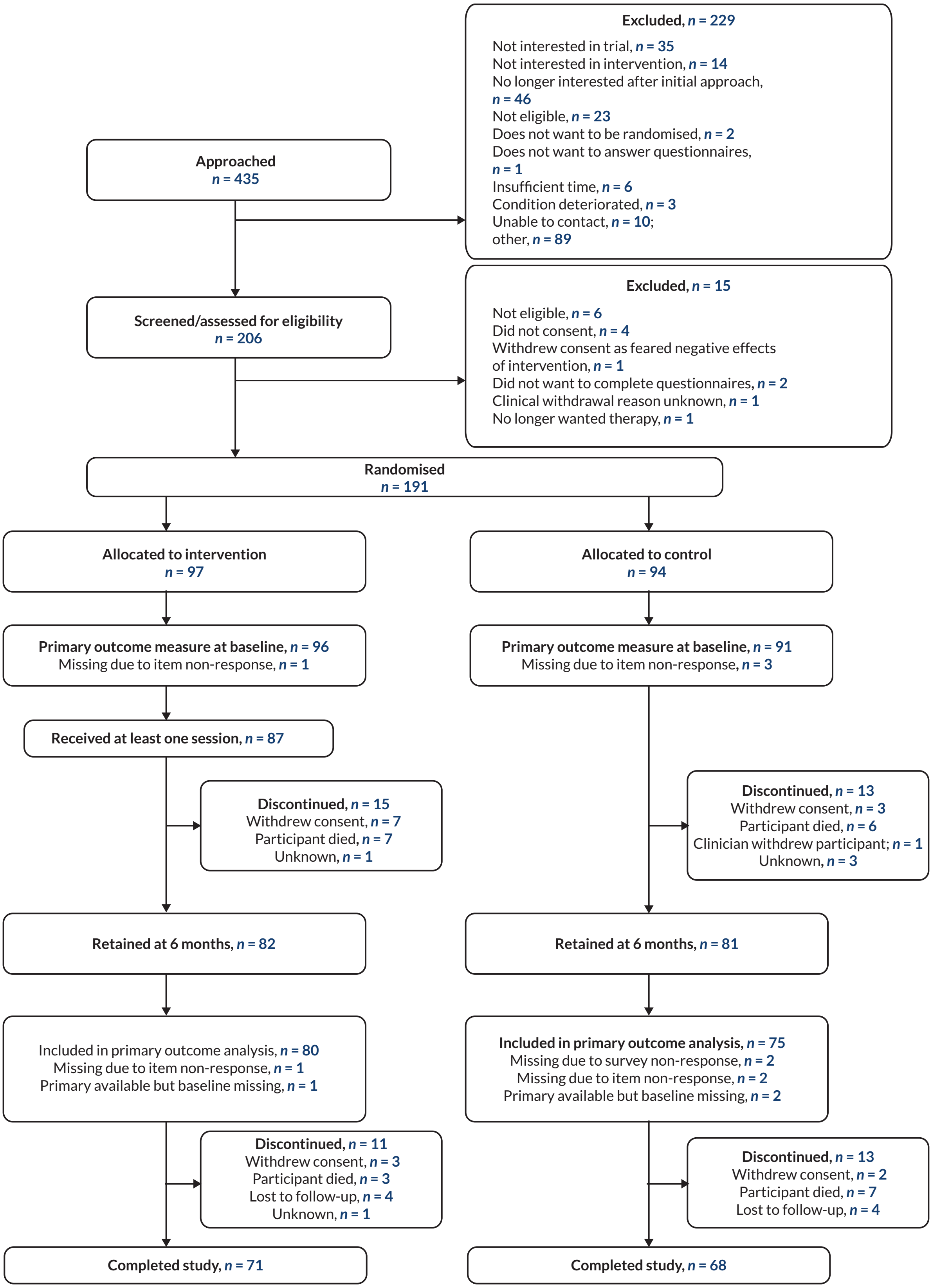

FIGURE 2 Flow of participants in the RCT.

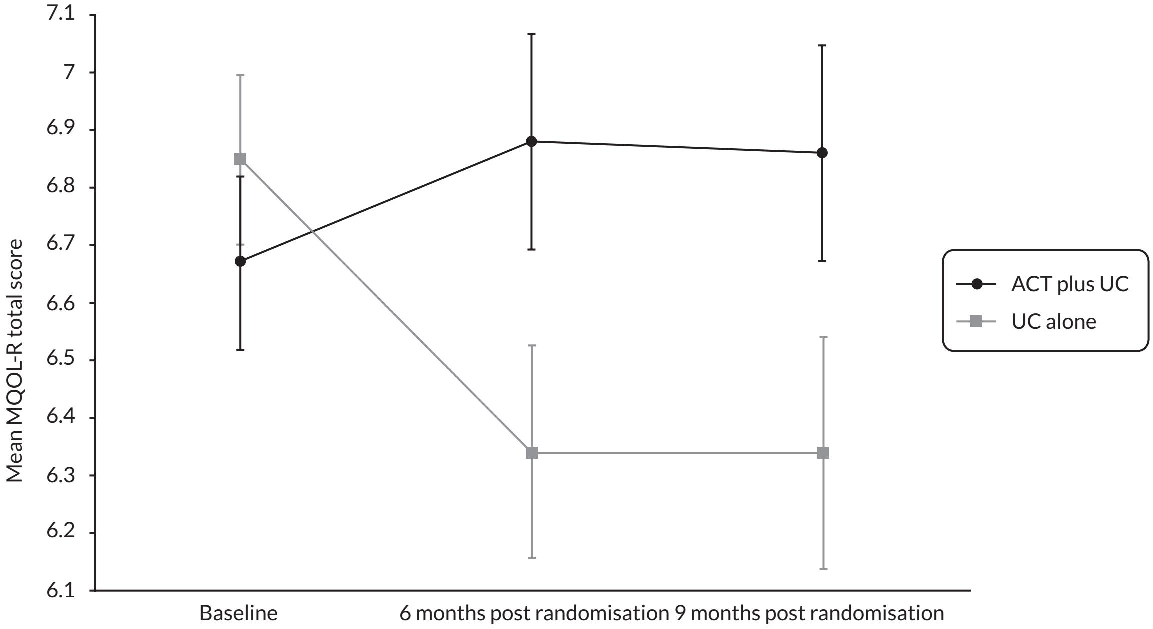

FIGURE 3 Trend in MQOL-R at 6 and 9 months post randomisation by arm. Data are mean (standard error).

on the results of a meta-analysis of ACT for mental and physical health conditions compared to controls as no minimal clinically important difference currently exists for the MQOL-R.[26] Our effect sizes were also consistent with a minimal clinically important difference of approximately 0.5 SDs that has been universally reported for QoL in clinical populations.[27] Results were robust to sensitivity analyses using different analysis methods and assumptions for missing responses.

Secondary outcomes

Statistically significant adjusted mean differences in favour of ACT plus UC compared to UC alone were found for the psychological and existential subscales of the MQOL-R and depression at 6 and 9 months post randomisation. They were also found for brief health status at 6 months post randomisation and psychological flexibility at 9 months post randomisation. There was no evidence of differences between randomised groups in other secondary outcomes. Furthermore, there was no evidence of between-group differences in health-related QoL or caregiver burden in caregivers. Finally, no serious AEs considered to be related to the intervention were identified.

Turning to mediators and moderators of the treatment effect, changes in scores on the MQOL-R at 9 months post randomisation (but not 6 months post randomisation) were mediated by changes in scores on a measure of psychological flexibility (ACT's putative mechanism of change). It was not possible to conduct a dose–response analysis to examine the incremental benefit of each additional ACT session attended on QoL or psychological flexibility as 70% ($n = 68$) of participants in the ACT arm completed all eight sessions, with only 10% ($n = 10$) attending zero sessions. No other mediators or moderators of the treatment effect were identified, including the effect of COVID-19 pandemic-related restrictions at the time of randomisation.

Planned logistic regression analyses demonstrated preliminary evidence that the chance of transitioning from non-case to case levels for depression on the modified HADS was 11% lower in the ACT plus UC arm compared to the UC alone arm at 6 months post randomisation [risk difference −0.11 (95% CI −0.22 to −0.01); $p = 0.044$]. Furthermore, planned exploratory subgroup analyses showed preliminary evidence that those at non-case levels of depression at baseline appeared to show a better treatment response on the MQOL-R at 6 months post randomisation than those at case levels of depression at baseline [adjusted mean difference 0.85 (95% CI 0.38 to 1.32) vs. −0.46 (95% CI −1.80 to 0.88); $p = 0.0057$]. However, these results should be interpreted with caution given that the numbers of participants at case levels of depression were small ($n = 11$ and $n = 15$, respectively).

Randomised controlled trial: cost-effectiveness evaluation (objective 6, paper 5)[25]

Health economic analyses evaluated the cost-effectiveness of ACT plus UC for improving psychological health, as measured by the MQOL-R, compared to UC alone in plwMND, from both a healthcare and societal perspective, over the course of 9 months. Health and

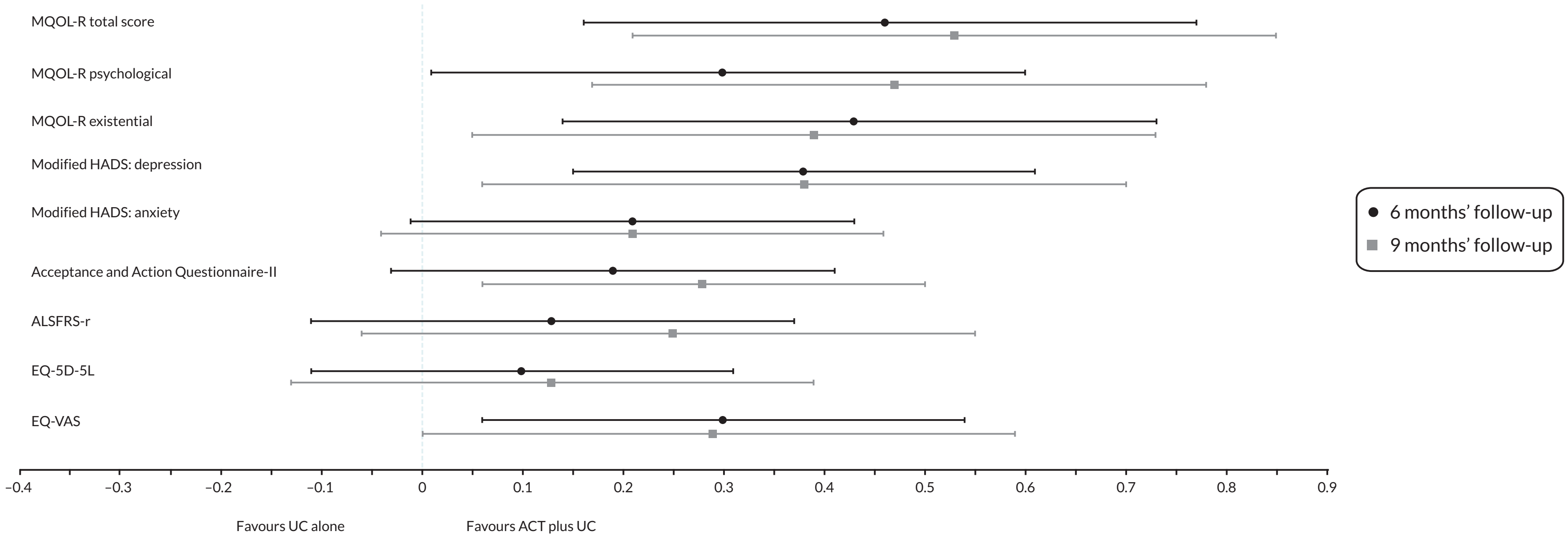

FIGURE 4 Effect sizes for primary and secondary outcomes at 6 and 9 months post randomisation.

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social care resource use were measured using a modified version of the Client Service Receipt Inventory. Health status was assessed using the EQ-5D-5L at baseline, 6 and 9 months post randomisation. The primary analysis was a cost–utility analysis in the intention-to-treat population. Subgroup analyses included rate of deterioration, which was calculated from the average rate of deterioration in ALSFRS-r score between symptom onset and baseline, with participants being split into low/medium/high subgroups based on tertiles of the distribution.

Mean differences in EQ-5D-5L scores at 6 and 9 months post randomisation were not statistically significant between ACT plus UC and UC alone arms [baseline: −0.024 (95% CI −0.103 to 0.056); 6 months post randomisation: −0.008 (95% CI −0.106 to 0.089); 9 months post randomisation: 0.000 (95% CI −0.098 to 0.099)]. The mean cost of the intervention was £712 (95% CI £668 to £756) per participant. Mean differences in total costs [£1019 (95% CI −£34 to £2074)] and imputed quality-adjusted life-years (QALY) [0.012 (95% CI −0.019 to 0.042)] at 9 months between ACT plus UC and UC alone arms were also not statistically significant. The incremental cost-effectiveness ratio was £88,507 per QALY: this decreased to £13,817 per QALY in those with medium disease-related deterioration in subgroup analyses (see *Table 2*). With respect to probabilities of being cost-effective at a willingness-to-pay threshold of £20,000, this was 8% in the primary analysis but increased to 86% in those with a medium rate of disease-related deterioration in subgroup analyses (*Table 2*).

Randomised controlled trial: qualitative evaluation (objective 7)

People living with MND in both arms of the RCT and therapists were invited to anonymously complete a qualitative satisfaction questionnaire at 6 months post randomisation and the end of intervention delivery, respectively. PlwMND in the ACT plus UC arm rated satisfaction with ACT plus UC, while those in the UC alone arm rated satisfaction with psychological aspects of their management within UC. Responses were received from 34% (65/191) of plwMND (33 in the ACT plus UC arm and 32 in the UC alone arm) and 87% (27/31) of therapists. Seven overarching themes emerged from thematic analyses (illustrative quotes are presented in *Appendix 2*, *Table 5*):

1. *Readiness for therapy:* factors that might potentially influence an individual's willingness and readiness to engage in therapy, including the timing of therapy and previous experience of therapy, were described in this theme.
2. *The active ingredients:* this theme emphasised the importance of the therapeutic relationship and specific therapist attributes and how these factors can impact on the experience of therapy.
3. *The benefits:* numerous benefits from receiving the intervention were noted in this theme, including feeling better equipped to face the future (through learning tools and coping strategies), increased acceptance of MND, increased recognition of one's values, increased self-understanding, increased sense of autonomy or control over one's life (e.g. by taking action to engage in life-enriching activities) and improved interpersonal relationships. Additionally, plwMND valued the opportunity to talk about their thoughts and feelings, particularly issues they might not have otherwise discussed. Therapists reported benefits for themselves too, including increased knowledge and confidence in using ACT, increased interest in MND leading to discussions within services, and changes to services with respect to the delivery of psychological care for plwMND.
4. *The challenges:* this theme highlighted the challenges of therapy, such as the emotional challenge of discussing difficult issues, difficulties with some exercises that required the use of imagination skills and the challenge of catering to individual needs. Therapists additionally noted the challenge of facilitating understanding of one of the core ACT processes (self-as-context), a sense of time pressure and disease progression across the course of therapy. Therapists reported challenges for themselves too, including their own anxiety, feeling they needed

TABLE 2 Subgroup analyses based on rate of deterioration

Rate of deterioration	Cost per QALY	Probability that ACT is cost-effective at a willingness-to-pay threshold of £20,000
Lowest	£79,528	12%
Medium	£13,817	86%
Highest	£293,618	< 1%

to rigidly adhere to the manual (rather than using it flexibly) and managing their time within sessions.
5. *The why:* motivations for engaging in therapy and research, including helping others and being willing to try anything that might aid living with MND, were reported in this theme.
6. *The prevailing absence of support:* dissatisfaction with the psychological support provided to plwMND in the UC alone arm was discussed in this theme, with some feeling abandoned as a consequence.
7. *Intervention delivery:* facilitators of intervention delivery included the quality of training and supervision, the provision of a clear, comprehensive and flexible manual, prior knowledge of ACT, previous experience of working with relevant populations and knowledge of MND. Barriers to intervention delivery included participants' emotional avoidance, difficulties in getting to appointments, communication difficulties, illness and participants not experiencing current difficulties or perceiving a need for therapy.

Overall, findings further supported the acceptability and feasibility of ACT for plwMND from the perspective of both plwMND and therapists. PlwMND in the UC alone arm highlighted the lack of provision of formal psychological support within routine clinical care, as well as a perceived need for this. Findings were limited by a lack of in-depth responses, which means that it was not possible to fully examine perceived mechanisms of impact. They were also limited by the fact that 64% (123/191) of plwMND did not complete the qualitative satisfaction questionnaire, and so responses may be biased.

Discussion/interpretation

Principal findings and achievements

The main findings and achievements in this project are listed below:

1. We made numerous important recommendations with respect to the development of psychological interventions for plwMND (paper 1).[21]
2. We demonstrated that ACT, adapted for the specific needs of plwMND, is acceptable to this population and feasible to deliver within the NHS. We also showed that a clinical trial to examine the clinical and cost-effectiveness of ACT for improving psychological health, as measured by QoL, in plwMND is feasible (papers 2 and 3).[22,23]
3. We showed that ACT plus UC is clinically effective at maintaining or improving QoL at 6 and 9 months post randomisation in plwMND compared to UC alone (paper 4).[24] We also demonstrated beneficial effects for depression at 6 and 9 months post randomisation, psychological flexibility at 9 months post randomisation and brief health status at 6 months post randomisation.
4. We demonstrated that changes in a putative ACT-specific mechanism of change, psychological flexibility, mediated changes in QoL at 9 months post randomisation alone (paper 4).[24]
5. We provided further evidence of the acceptability, feasibility and safety of ACT for plwMND from both a quantitative and qualitative perspective (paper 4, *Appendix 2*).[24]
6. We showed that ACT was not cost-effective overall when calculated using a standard health status measure (paper 5).[25] However, subgroup analyses showed that ACT has a high probability of being cost-effective in plwMND experiencing a medium rate of disease-related deterioration.

Contribution to existing knowledge

Prior to this project, high-quality evidence regarding the clinical and cost-effectiveness of psychological interventions for plwMND was lacking. Previous reviews highlighted significant limitations in previous studies, including low methodological quality (e.g. no control group or no outcome assessment at follow-up), high attrition rates and small sample sizes.[10,11] Consequently, this project makes a substantial contribution to the evidence base in being the first adequately powered RCT to evaluate a psychological intervention for plwMND, and the first to evaluate the clinical and cost-effectiveness of ACT in this population.

Strengths and limitations

As already noted, this project reports on the first adequately powered RCT of a psychological intervention for plwMND, as well as the first RCT to evaluate the clinical and cost-effectiveness of ACT for improving psychological health in plwMND compared to UC alone. We were able to recruit participants from geographically diverse regions across the UK for the feasibility study and RCT, some of which were in areas scoring highly on indices of multiple deprivation.[28] We showed evidence of good engagement with the RCT. Session attendance was high (plwMND allocated to ACT plus UC were offered up to eight sessions, and 70% attended all eight) and attrition was low (primary outcome data were available for 81% of participants). These are particularly impressive rates when viewed within the context of a progressive, neurodegenerative disease. Finally, we developed a psychological intervention and training and supervision model that could be delivered entirely remotely, thus increasing accessibility to both plwMND and therapists.

Despite these strengths, there were some limitations in this project. A recurring limitation across all phases of this project was the lack of diversity in study populations, which meant that our findings could not be generalised to the broader population. This is discussed in more detail in *Equality, diversity and inclusion*. Although reweighting methods could have been used to reweight the trial population so that it better matched the target population, this was not completed for two reasons. First, such analyses are reliant on good-quality external data describing ethnicity in the general MND population, which are lacking as ethnicity is frequently not reported.[29] Second, such analyses can be susceptible to model misspecification.[30] Another limitation was the lack of an active placebo control, given that ACT plus UC was compared to UC alone (i.e. a non-active control). Although a mediator analysis suggested that changes in QoL at 9 months were mediated by changes in psychological flexibility (a putative ACT-specific mechanism of change), the extent to which beneficial effects were also attributable to other non-specific factors (such as social support, attention or expectancy) is unclear. In addition, the degree to which between-group differences in outcome measures were a product of resentful demoralisation in the UC alone arm (due to disappointment at being allocated to the UC arm and not receiving the intervention) is unclear, thus complicating the interpretation of findings. This is discussed in more detail in *Research recommendations*. Key limitations of the health economic evaluation were that: (1) cost-effectiveness analyses may have been underpowered to detect significant between-group differences given that the trial was not powered for secondary outcome measures and (2) the EQ-5D-5L may have failed to adequately capture change in psychological health with a psychological intervention. This is also discussed in more detail in *Research recommendations*. An additional limitation is the lack of follow-up assessment beyond 9 months post randomisation. Although this was purposively chosen to minimise attrition – an issue that is particularly important within the context of MND – it does mean that we do not know whether gains were maintained beyond 9 months post randomisation. Finally, the use of qualitative satisfaction questionnaires in the RCT, and the resulting responses that lacked depth, meant that we were unable to fully examine perceived mechanisms of impact of the intervention. Furthermore, the relatively low response rate to these questionnaires in plwMND (34%) meant that responses may have been positively biased.

Challenges faced

The three biggest challenges faced during this project were recruitment, the COVID-19 pandemic and identification of study therapists. Although recruitment is frequently a challenge in clinical trials, competing high-profile trials of pharmacotherapy aimed at prolonging survival limited the pool of potential participants in this project and increased the possibility of attrition (e.g. due to drug trials not allowing co-enrolment on other trials). Future psychotherapy trials should take this into account when estimating recruitment rates and consider ways to overcome this ongoing challenge (e.g. by opening more recruitment sites than anticipated to need).

Turning to the challenge posed by the COVID-19 pandemic, lockdown-related restrictions meant that all study procedures had to be switched to entirely remote delivery. Two factors enabled us to rapidly adjust to this unprecedented challenge: (1) we had already designed the intervention to be delivered via video call, if necessary, to accommodate mobility or geographical barriers to attending clinic for therapy sessions and (2) we had already designed the data collection process so that outcome measures could be collected remotely (again, to overcome mobility or geographical barriers). The switch from face-to-face to remote screening and consenting meant that we were inadvertently able to overcome mobility or geographical barriers to these processes too. Future trials of psychological interventions should consider adopting similar remote procedures to overcome mobility or geographical barriers and widen opportunities for plwMND to participate in research.

A final challenge was identifying study therapists to deliver the psychological intervention. Many MND care centres/clinics reported having little to no access to psychologists or psychotherapists, since they are not recognised as core members of the multidisciplinary team within current NICE clinical guidance.[15] This necessitated approaching therapists beyond neurology services, and thus raises the issue of the future implementation of ACT within MND services. As further evidence emerges confirming our RCT findings, healthcare providers should consider how access to ACT could be provided within MND services. One approach that has been utilised within other services that may be applicable here is ACT-informed multidisciplinary care; for example, physical therapy informed by ACT principles for people living with chronic pain.[31] A recent systematic review of ACT-informed behavioural health interventions delivered by non-mental health professionals reported improvements in a range of outcomes, including increased acceptance and reduced psychological distress, across different populations (though none in neurology).[32]

Consequently, future studies could seek to evaluate whether an ACT-informed multidisciplinary team approach improves QoL in plwMND.

Reflections and what could have been done differently

From the conception of this project, we strongly argued for the importance of assessing QoL in plwMND using a measure that favoured psychological aspects of QoL rather than physical aspects. This was based on the assumptions that: (1) changes in response to a psychological intervention would be most sensitively captured by a measure favouring psychological aspects of QoL, and (2) improvements in physical health in response to a psychological intervention were not expected given the context of a progressive, neurodegenerative condition. On reflection, a similar argument could have been made for not using the EQ-5D-5L in the health economic evaluation. Given the discrepancy between QoL and health status findings in this project, future studies of psychological interventions for plwMND should explore the use of alternative measures to the EQ-5D-5L in health economic evaluations.

Patient and public involvement

Aim

The aim of patient and public involvement (PPI) in the project was to ensure that the views and voices of those living with and affected by MND were integrated into all aspects of the project's design, delivery and dissemination.

Methods and outcomes

Patient and public involvement input to the project was formally implemented at the start of Phase I. A lay member sat on the Trial Management Group throughout the project. A Patient and Caregiver Advisory Group was set up, comprising seven plwMND and caregivers. Two lay members sat on the TSC, as is best practice, to offer multiple perspectives and peer support.[33] Numbers of PPI members fluctuated during the project, with new members being recruited to the project on an ongoing basis.

The views and voices of plwMND and caregivers were included throughout the project in multiple areas, including protocol writing, document production, recruitment issues, study promotion and dissemination. PPI members highlighted the need to ensure accurate gender representation, as MND has a higher incidence among men than women, yet men are less likely to engage with psychological interventions.[34,35] It was suggested that testimonies from men who had received ACT in the feasibility study should be added to the project website and, correspondingly, the possibility of enrolling more male therapists in intervention delivery should be explored. Members were involved in the subsequent selection of testimonial quotes for the project website.

Patient and public involvement members raised confidentiality as an issue, highlighting that it might be possible for them or oversight group members to identify study participants from information presented in study meetings (e.g. withdrawals or AEs) due to the small MND community. Consequently, study reports were redesigned to take this into account.

Patient and public involvement members advised on recruitment issues, including suggesting additional recruitment routes, identifying how MND diagnoses were distributed geographically to inform recruitment, and reapproaching potential participants who may have initially declined involvement in the project, in recognition of the fact that people's needs change across the disease course. Following a temporary pause in recruitment due to the COVID-19 pandemic, the Patient and Caregiver Advisory Group provided feedback on the recovery plan, which was implemented when the trial reopened to recruitment. This contributed to the trial successfully hitting its overall recruitment target.

Patient and public involvement members also reviewed study documentation, advised on titles and wording and approved the dissemination plan. At the end of the project, they reviewed our plain language summary, as well as our interpretation of the results and conclusions drawn.

Overall, PPI members made a significant contribution to the smooth running of the project, aiding recruitment, protecting the safety of participants within the project and ensuring that study documentation was designed to suit plwMND and properly represented their views.

Reflections and critical perspective

A challenge of working with PPI representatives with lived experience of a progressive, neurodegenerative condition is that representatives are likely to experience disease progression across the course of the project. This may mean they have to step down from involvement in a project. It is desirable to include PPI members with varying rates of disease progression, so that the views and opinions of as many people as possible are incorporated within a project.

Consequently, study teams in MND trials should consider the impact of potential attrition and the potential

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Gould RL, Thompson BJ, Rawlinson CV, Bursnall M, Bradburn M, Keetharuth AD, *et al.* Acceptance and Commitment Therapy for people living with motor neuron disease: the COMMEND feasibility study and randomised controlled trial. *Health Technol Assess* 2025;**29**(51). https://doi.org/10.3310/JHGD7339

disruption to the continuity of input, and consider how to facilitate ongoing recruitment of members to PPI groups. Given the challenges in retaining PPI representatives due to disease-related deterioration, study teams should also consider how they can accommodate their varying physical and communicative needs within their oversight groups. As an example, the PPI members in this project met remotely, avoiding the need for travel. In addition, post-meeting remote check-ins were arranged with the PPI representatives who were part of the TSC or Trial Management Group, the trial manager and chief investigator, to answer any questions, follow up on meeting discussions and provide opportunities to input within a less-pressured environment.

Equality, diversity and inclusion

This section focuses on the ethnicity and socioeconomic status of participants, barriers around language, and general recruitment challenges.

Ethnicity

Rates of MND are similar across most ethnic groups, with slightly lower rates found in Black African and Chinese populations.[36,37] A recent analysis supported these findings in an English population.[29] With 97% (*n* = 185/191) of COMMEND trial participants reporting their ethnicity as White/White British, compared to 82% of the UK population in 2021, there is a clear under-representation of Asian, Black and other ethnic groups in the trial population.[38]

Socioeconomic status

Sixty-seven per cent (*n* = 128/191) of participants described their highest level of occupational attainment as associated professional or higher, compared to 51% across the UK in 2021.[38] This indicates that those from a lower socioeconomic background were also under-represented in the trial.

Language as a barrier

The ACT intervention delivered within this project is a psychological intervention that is delivered primarily through verbal communication (with or without the use of a communication aid). During the design of the project, the decision was made to exclude participants who had an insufficient understanding of English to engage with the intervention and complete outcome measures. This was due to difficulties inherent in ensuring adequate and accurate translation of discussions in therapy sessions, therapy materials and outcome measures, as well as the unpredictable availability of interpreters. Additionally, the translation and back translation of therapy materials and outcome measures were not considered feasible within the timescales of the project. Although the overall percentage of people who do not speak English or do not speak it well is low in the UK (1.6%), this may have prevented the participation of some members of ethnic minority groups in this project.[38]

Recruitment challenges

There is some evidence that ethnic minorities may be under-represented in neurology clinics.[39] As MND care centres and clinics were the principal route of recruitment for this project, this will have contributed to the under-representation of participants from ethnic minorities within the trial population. Previous research in countries across the world has shown that ACT has cultural acceptability, yet cultural attitudes to interventions for mental health issues are a recognised barrier to research participation among ethnic minorities.[40–42] Some of these barriers include negative attitudes towards psychotherapy, suspicion or mistrust of health services and healthcare research, stigma and preferences for seeking support for emotional problems from non-medical organisations.

As the MND population is small, the potential participant pool for recruitment to clinical trials is also small, which limits opportunities to target specific subgroups within the MND population. Sixteen recruitment sites were involved in the RCT, with good coverage of the UK, and many sites covering areas scoring highly on indices of multiple deprivation.[28] Despite this, lower socioeconomic groups and ethnic minorities remained under-represented. It is important to recognise that this is an issue affecting research recruitment in general rather than being unique to this project.[43] Since the design of this project, there has been a change in approach from funders and research teams to address this.[44] For example, translation costs can now be costed in grant applications. Given this, future studies should seek to evaluate psychological interventions in a more diverse population of plwMND.

Summary

This project evaluated a psychological intervention in which people from ethnic minorities and lower socioeconomic groups were under-represented in the study population. Participants with an understanding of English that would prevent them from engaging with the intervention or outcome measures were excluded from the study, which will have contributed to the low representation among ethnic minorities. In addition, recruitment challenges specific to MND and psychological interventions, as well as recruitment challenges generally experienced in research, impacted the lack of diversity of the study population. It is hoped that changing approaches to these challenges since the design of the project will improve this situation in future research.

Impact and learning

Throughout the course of this project, we trained and supervised 39 therapists to deliver ACT tailored to the needs of plwMND. Qualitative interviews from the feasibility study and qualitative satisfaction surveys from the RCT highlighted numerous positive outcomes reported by therapists as a direct result of receiving training and supervision through this project. These included developing a greater understanding of and confidence in delivering ACT and working with progressive, neurological conditions such as MND, as well as expanding their professional scope. Furthermore, many reported the continued use of ACT skills in their daily work. Some therapists reported presenting on ACT, either to their NHS trust or as part of a joint initiative with the Motor Neurone Disease Association, as a direct result of training and supervision received in this project. The longer-term impact of this project is discussed in the next section.

Turning to lessons learnt for future research, the most important lesson we learnt was how to conduct a clinical trial using entirely remote means. Recruitment to the RCT was paused from 17 March to 23 June 2020 due to COVID-19 pandemic-related restrictions. Prior to the pandemic, we had already developed the intervention so that ACT could be delivered remotely, if necessary, and designed the outcome assessment process so that outcomes could be collected remotely, if necessary. However, pandemic-related restrictions required us to adapt all study procedures for remote delivery, including screening and consenting; key learning that we can implement in future research trials to ensure opportunities for engaging in research are available to as many plwMND as possible. As 86% of ACT sessions were delivered via video call, we inadvertently learnt that remote delivery of ACT is a clinically effective, feasible, acceptable and accessible option for plwMND who live in remote areas or are unable to travel to clinic due to mobility issues.

Implications for decision-makers

In the absence of a cure or treatment that significantly prolongs survival in MND, helping those living with this condition to improve or maintain their psychological health or QoL is vital. To date, NICE clinical guidelines for MND have not been able to recommend specific evidenced psychological interventions to achieve this due to a paucity of high-quality research.[15] This project represents the first adequately powered RCT of a psychological intervention for plwMND and supports the use of ACT for improving QoL in this population. In doing so, it provides crucial evidence on which to base guidance on clinically effective psychological interventions for plwMND. As NICE clinical guidelines for MND are currently under review, we will continue to work closely with the Motor Neurone Disease Association and NICE to ensure that recommendations from this project can be implemented within UK MND care centres/clinics in the future.[15]

Research recommendations

This project has highlighted numerous areas of uncertainty with respect to psychological interventions for plwMND that need addressing. Our recommendations for future research are outlined below.

What works for whom, when and why?

Statistical analyses in the RCT tentatively suggested that: (1) ACT may prevent progression to case levels of depression in plwMND, and (2) those at non-case levels of depression at baseline appear to respond better to ACT. However, these results should be interpreted with caution given the small number of participants at case levels of depression. Health economic analyses tentatively suggested that ACT plus UC may be cost-effective for those experiencing a medium rate of disease-related deterioration but not those experiencing the lowest and highest deterioration. Clearly, more research is needed to explore these preliminary findings further. Questions remain with respect to the clinical effectiveness of ACT for plwMND from ethnic minorities due to the lack of diversity in the trial population, and plwMND in a more advanced disease stage (i.e. those in King's Stage 4) due to the eligibility criteria in the RCT. With an increasing interest in personalised medicine, future research could examine: (1) who might benefit the most (and least) from ACT, and why; (2) what might be the best way of capturing benefit (e.g. stabilisation vs. improvement; treatment vs. prevention) and when (as the benefits of ACT increased over time in the RCT, which we attributed to an incubation effect) and (3) when might be the best time to offer ACT within the MND disease course. They could also further examine mechanisms of change in ACT for plwMND.

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What is the clinical effectiveness of Acceptance and Commitment Therapy plus usual care for improving quality of life in plwMND compared to an active placebo control plus usual care?

We compared ACT plus UC to a non-active rather than active control condition in the RCT, and so any beneficial effects may have been attributable to non-specific factors (e.g. attention, social support or expectancy) rather than ACT per se. Alternatively, they may have been due to factors such as resentful demoralisation as a consequence of being allocated to the UC arm and not receiving the intervention (which can lead to dropout or negatively impact on questionnaire scores).[45] Although we found evidence that ACT's putative mechanism of change, psychological flexibility, mediated treatment outcome at 9 months post randomisation, such statistical analyses are subject to limitations.[46] It has been argued that experimental design-based evaluations can better overcome some of the criticisms of conventional mediation analyses.[47] Consequently, future research could examine the clinical effectiveness of ACT for improving QoL in plwMND compared to a credible, active placebo control, given that randomised placebo-controlled trials are the gold standard of clinical trials. Although developing credible, active placebo controls for psychological interventions is challenging, previous studies have demonstrated this is possible.[48,49] For example, a randomised dismantling trial showed that an active placebo control (mindfulness-based cognitive therapy minus meditation practice) was as credible as the treatment itself (mindfulness-based cognitive therapy with meditation practice).[49]

What are the most appropriate measures to use in health economic evaluations of psychological interventions for plwMND?

A discrepancy between QoL, as measured by the MQOL-R, and health status, as measured by the EQ-5D-5L, was evident in this RCT: ACT plus UC was superior to UC alone on the MQOL-R but not EQ-5D-5L at both 6 and 9 months post randomisation. This may have been because the trial was powered to detect significant between-group differences on the MQOL-R, but not the EQ-5D-5L. It may also be partly due to the relative insensitivity of the EQ-5D-5L in detecting change in psychological health in response to a psychological intervention within the context of a progressive, neurodegenerative condition. Certainly, a recent systematic review of the psychometric properties of preference-based measures for health economic evaluations highlighted the inadequacy of the EQ-5D-3L in capturing health concerns in people living with ALS (the most common form of MND).[50]

Future research could systematically review the psychometric properties of the EQ-5D-5L when applied to psychological interventions, as well as examining whether other measures may be more appropriate for health economic evaluations in neurodegenerative and long-term physical health conditions. The hierarchy of ways to estimate utilities to calculate QALYs suggests that other generic preference-based measures can be used in cases where the EQ-5D-5L is found not to be appropriate in the population of interest.[51] It further specifies that if no generic preference-based measures can be used, then condition-specific preference-based measures can be used. However, it is recognised that the use of alternative measures limits the comparability of interventions as QALYs generated from different health classification systems produce different results.[52]

Future research could also seek to calculate a mapping algorithm for estimating EQ-5D utilities from the MQOL-R, as has been completed for other QoL measures, as no such studies have been completed to date (according to a database of mapping studies and personal communication with the MQOL-R authors).[53,54] Alternatively, future research could explore the development of a generic measure of psychological distress and satisfaction with life, comparable to the EQ-5D-5L, that could be used in cost-effectiveness analyses of psychological interventions for all physical and mental health conditions.

What is the clinical effectiveness of Acceptance and Commitment Therapy plus usual care for improving quality of life in people living with other progressive neurological conditions compared to usual care alone?

Given that we have demonstrated that ACT plus UC can help plwMND to manage their QoL and psychological well-being, future research could examine whether it is similarly beneficial in other progressive neurological conditions. There is preliminary evidence that ACT may be beneficial for improving QoL and/or psychological well-being in people living with multiple sclerosis. However, previous studies have been limited by methodological issues, including small sample sizes and lack of a control group.[55] Few studies have examined ACT for other progressive neurological conditions such as Parkinson's disease, Huntington's disease and progressive supranuclear palsy. Consequently, future studies should seek to examine the clinical effectiveness of ACT for those living with other progressive neurological conditions within high-quality, adequately powered RCTs.

Conclusions

Acceptance and Commitment Therapy plus UC is clinically effective at maintaining or improving psychological health, as measured by QoL, in plwMND compared to UC alone. It is also acceptable to plwMND and safe, as evidenced by high attendance and satisfaction rates, and no evidence of harm related to the intervention. However, it was not cost-effective overall when calculated using a standard health status measure, though there was a high probability of ACT being cost-effective in a subgroup of plwMND experiencing a medium rate of disease-related deterioration. Further clarification is needed on the cost-effectiveness of ACT for improving QoL in plwMND before it can be implemented within the NHS.

Additional information

CRediT contribution statement

Rebecca L Gould (https://orcid.org/0000-0001-9283-1626): Conceptualisation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Writing – original draft, Writing – reviewing and editing.

Benjamin J Thompson (https://orcid.org/0000-0002-5516-8797): Investigation, Project administration, Resources, Writing – original draft, Writing – reviewing and editing.

Charlotte V Rawlinson (https://orcid.org/0009-0000-2042-0203): Formal analysis, Investigation, Project administration, Resources, Writing – reviewing and editing.

Matt Bursnall (https://orcid.org/0000-0002-6519-3558): Formal analysis, Methodology, Visualisation, Writing – reviewing and editing.

Mike Bradburn (https://orcid.org/0000-0002-3783-9761): Conceptualisation, Formal analysis, Funding acquisition, Methodology, Supervision, Visualisation, Writing – reviewing and editing.

Anju D Keetharuth (https://orcid.org/0000-0001-8889-6806): Formal analysis, Visualisation, Writing – reviewing and editing.

Tracey Young (https://orcid.org/0000-0001-8467-0471): Conceptualisation, Formal analysis, Funding acquisition, Methodology, Supervision, Visualisation, Writing – reviewing and editing.

Vanessa Lawrence (https://orcid.org/0000-0001-7852-2018): Conceptualisation, Formal analysis, Funding acquisition, Methodology, Supervision, Writing – reviewing and editing.

David A White (https://orcid.org/0000-0003-2871-7946): Conceptualisation, Funding acquisition, Methodology, Supervision, Writing – reviewing and editing.

Robert J Howard (https://orcid.org/0000-0002-3071-2338): Conceptualisation, Funding acquisition, Methodology, Supervision, Writing – reviewing and editing.

Marc A Serfaty (https://orcid.org/0000-0001-8388-0776): Conceptualisation, Funding acquisition, Methodology, Supervision, Writing – reviewing and editing.

Lance M McCracken (https://orcid.org/0000-0002-9734-0153): Conceptualisation, Funding acquisition, Methodology, Supervision, Writing – reviewing and editing.

Christopher D Graham (https://orcid.org/0000-0001-8456-9154): Conceptualisation, Funding acquisition, Methodology, Supervision, Writing – reviewing and editing.

Ammar Al-Chalabi (https://orcid.org/0000-0002-4924-7712): Conceptualisation, Funding acquisition, Methodology, Supervision, Writing – reviewing and editing.

Laura H Goldstein (https://orcid.org/0000-0001-9387-3035): Conceptualisation, Funding acquisition, Methodology, Supervision, Writing – reviewing and editing.

Dynameni Androulaki-Koraki (https://orcid.org/0009-0005-2255-1166): Formal analysis, Writing – reviewing and editing.

Pavithra Kumar (https://orcid.org/0009-0000-9649-9296): Investigation, Project administration, Resources, Writing – reviewing and editing.

Kirsty Weeks (https://orcid.org/0009-0006-5206-266X): Formal analysis, Investigation, Project administration, Resources, Writing – reviewing and editing.

Rebecca Gossage-Worrall (https://orcid.org/0000-0002-1435-9474): Investigation, Project administration, Resources, Writing – reviewing and editing.

Emily J Turton (https://orcid.org/0000-0001-5763-9604): Data curation, Software, Writing – reviewing and editing.

Simon Waterhouse (https://orcid.org/0000-0002-6303-9610): Data curation, Software, Writing – reviewing and editing.

Nicola Drewry (https://orcid.org/0009-0000-6177-0285): Conceptualisation, Funding acquisition, Supervision, Writing – reviewing and editing.

Cindy Cooper (https://orcid.org/0000-0002-2995-5447): Conceptualisation, Funding acquisition, Methodology, Supervision, Writing – reviewing and editing.

Pamela J Shaw (https://orcid.org/0000-0002-8925-2567): Conceptualisation, Funding acquisition, Methodology, Supervision, Writing – reviewing and editing.

Christopher J McDermott (https://orcid.org/0000-0001-8598-7454): Conceptualisation, Funding acquisition, Investigation, Methodology, Supervision, Writing – reviewing and editing.

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Recruitment sites

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Sponsor team/Clinical Trials Research Unit and University College London staff

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Collaborators

We thank our collaborators: Brian Dickie and Francesco Pagnini.

Data-sharing statement

All data requests should be submitted to the corresponding author for consideration. Access to anonymised data may be granted following review.

Ethics statement

The Phase I qualitative interviews/workshops study was approved by the University College London Research Ethics Committee (REC) (Ref: 12213/001; 30 November 2017). The Phase I uncontrolled feasibility study was approved by the London Dulwich REC and Health Research Authority (Ref: 18/LO/0227; IRAS: 228539; 13 March 2018). The Phase II RCT was approved by the London Dulwich REC and Health Research Authority (Ref: 19/LO/0272; IRAS: 255069; 13 June 2019).

Information governance statement

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Disclosure of interests

Full disclosure of interests: Completed ICMJE forms for all authors, including all related interests, are available in the toolkit on the NIHR Journals Library report publication page at https://doi.org/10.3310/JHGD7339.

Primary conflicts of interest: Rebecca L Gould, Benjamin J Thompson, Charlotte V Rawlinson, Matt Bursnall, Mike Bradburn, Anju D Keetharuth, Tracey Young, Vanessa Lawrence, David A White, Robert J Howard, Marc A Serfaty, Lance M McCracken, Christopher D Graham, Ammar Al-Chalabi, Laura H Goldstein, Pavithra Kumar, Kirsty Weeks, Rebecca Gossage-Worrall, Emily J Turton, Simon Waterhouse, Cindy Cooper, Pamela J Shaw and Christopher J McDermott declare institutional financial support from the grant for the submitted work. Rebecca L Gould, Marc A Serfaty and Robert J Howard are supported by the NIHR University College London Hospitals Biomedical Research Centre at University College London Hospitals NHS Foundation Trust and University College London. Mike Bradburn, Tracey Young, Cindy Cooper, Pamela J Shaw and Christopher J McDermott are supported by the NIHR Sheffield Biomedical Research Centre. Ammar Al-Chalabi, Vanessa Lawrence and Laura H Goldstein are supported by the NIHR Maudsley Biomedical Research Centre at South London and Maudsley NHS Foundation Trust and King's College London. Christopher J McDermott is a NIHR Research Professor. Ammar Al-Chalabi is a NIHR Senior Investigator (NIHR202421), and is supported through the following funding organisations under the aegis of Joint Programme Neurodegenerative Disease Research www.jpnd.eu (United Kingdom, Medical Research Council (MR/L501529/1; MR/R024804/1) and Economic and Social Research Council (ES/L008238/1), and through the Motor Neurone Disease Association, My Name'5 Doddie Foundation, and Alan Davidson Foundation.

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Department of Health and Social Care disclaimer

This synopsis was published based on current knowledge at the time and date of publication. NIHR is committed to being inclusive and will continually monitor best practice and guidance in relation to terminology and language to ensure that we remain relevant to our stakeholders.

Trial registration

This trial is registered as ISRCTN12655391.

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Award publications

This synopsis provided an overview of the research award *A feasibility study and randomised controlled trial of acceptance and COMmitment therapy for people with Motor nEuroN Disease (COMMEND)*. Other articles published as part of this thread are:

Weeks KR, Gould RL, McDermott CJ, Lynch J, Goldstein LH, Graham CD, *et al*. Needs and preferences for psychological interventions of people with motor neuron disease. *Amyotroph Lateral Scler Frontotemporal Degener* 2019;**20**:521–31. https://doi.org/10.1080/21678421.2019.1621344

Gould RL, Rawlinson C, Thompson B, Weeks K, Gossage-Worrall R, Cantrill H, *et al*.; the COMMEND collaboration group. Acceptance and Commitment Therapy for people living with motor neuron disease: an uncontrolled feasibility study. *Pilot Feasibility Stud* 2023;**9**:1–15. https://doi.org/10.1186/s40814-023-01354-7

Rawlinson C, Gould RL, McDermott CJ, Thompson B, Weeks K, Gossage-Worrall R, *et al*.; the COMMEND collaboration group. Experiences of Acceptance and Commitment Therapy for people living with motor neuron disease (MND): a qualitative study from the perspective of people living with MND and therapists. *Cogn Behav Ther* 2024;**17**:e36. https://doi.org/10.1017/S1754470X24000333

Gould RL, McDermott CJ, Thompson BJ, Rawlinson CV, Bursnall M, Bradburn M, *et al*.; on behalf of the COMMEND Collaboration Group. Acceptance and Commitment Therapy plus usual care for improving quality of life in people with motor neuron disease (COMMEND): a multi-centre, parallel, randomised controlled trial. *Lancet* 2024;**403**:2381–94. https://doi.org/10.1016/S0140-6736(24)00533-6

Keetharuth AD, Gould RL, McDermott CJ, Thompson BJ, Rawlinson CV, Bradburn M, *et al*.; on behalf of the COMMEND Collaboration Group. Cost effectiveness of acceptance and commitment therapy for people living with motor neuron disease, and their health-related quality of life. *Eur J Neurol* 2024;**31**:e16317. https://doi.org/10.1111/ene.16317

For more information about this research, please view the award page (www.fundingawards.nihr.ac.uk/award/16/81/01).

Additional outputs

Publications

Gould RL, Thompson BJ, Rawlinson C, Kumar P, White D, Serfaty MA, *et al*. A randomised controlled trial of acceptance and commitment therapy plus usual care compared to usual care alone for improving psychological health in people with motor neuron disease (COMMEND): study protocol. *BMC Neurol* 2022;**22**:431. https://doi.org/10.1186/s12883-022-02950-5

Conference presentations

Gould RL, Thompson BJ, Rawlinson C, Kumar P, White D, Bursnall M, Bradburn M, *et al*. *A Randomised Controlled Trial Examining the Clinical and Cost Effectiveness of Acceptance and Commitment Therapy Plus Usual Care for Improving Psychological Health in People Living with MND in Comparison to Usual Care Alone*. Paper presented at: 34th International Symposium on ALS/MND, Basel, Switzerland, 6–8 December 2023.

Gould RL, Rawlinson C, Androulaki-Korakaki D, McDermott CJ, Thompson BJ, Kumar P, *et al*. *Qualitative Experiences of Acceptance and Commitment Therapy from the Perspectives of People Living with MND and Therapists: Data from an Uncontrolled Feasibility Study and a Randomised Controlled Trial*. Paper presented at: 35th International Symposium on ALS/MND, Montreal, Canada, 6–8 December 2024.

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List of supplementary materials

Report Supplementary Material 1
Statistical analysis plan

Report Supplementary Material 2
Health economics analysis plan

Supplementary material can be found on the NIHR Journals Library report page (https://doi.org/10.3310/JHGD7339).

Supplementary material has been provided by the authors to support the report and any files provided at submission will have been seen by peer reviewers, but not extensively reviewed. Any supplementary material provided at a later stage in the process may not have been peer reviewed.

The supplementary materials (which include but are not limited to related publications, patient information leaflets and questionnaires) are provided to support and contextualise the publication. Every effort has been made to obtain the necessary permissions for reproduction, to credit original sources appropriately, and to respect copyright requirements. However, despite our diligence, we acknowledge the possibility of unintentional omissions or errors and we welcome notifications of any concerns regarding copyright or permissions.

List of abbreviations

ACT	Acceptance and Commitment Therapy
AE	adverse event
ALSFRS-r	Amyotrophic Lateral Sclerosis Functional Rating Scale – Revised
DMEC	Data Monitoring and Ethics Committee
EQ-5D-5L	EuroQol-5 Dimensions, five-level version
HADS	Hospital Anxiety and Depression Scale
HCP	healthcare professional
HTA	Health Technology Assessment
MND	motor neuron disease
MQOL-R	McGill Quality of Life Questionnaire-Revised
NICE	National Institute for Health and Care Excellence
NIHR	National Institute for Health and Care Research
plwMND	people living with MND
PPI	patient and public involvement
QALY	quality-adjusted life-year
QoL	quality of life
RCT	randomised controlled trial
REC	Research Ethics Committee
SAP	statistical analysis plan
TSC	Trial Steering Committee
UC	usual care
VAS	visual analogue scale

References

1. Goutman SA, Hardiman O, Al-Chalabi A, Chió A, Savelieff MG, Kiernan MC, Feldman EL. Recent advances in the diagnosis and prognosis of amyotrophic lateral sclerosis. *Lancet Neurol* 2022;**21**:480–93. https://doi.org/10.1016/S1474-4422(21)00465-8
2. Miller RG, Mitchell JD, Lyon M, Moore DH. Riluzole for amyotrophic lateral sclerosis (ALS)/motor neuron disease (MND). *Cochrane Database Syst Rev* 2007;**1**:CD001447. https://doi.org/10.1002/14651858.CD001447.pub2
3. Heidari ME, Nadali J, Parouhan A, Azarafraz M, Tabatabai SM, Irvani SSN, *et al*. Prevalence of depression among amyotrophic lateral sclerosis (ALS) patients: a systematic review and meta-analysis. *J Affect Disord* 2021;**287**:182–90. https://doi.org/10.1016/J.JAD.2021.03.015
4. Kurt A, Nijboer F, Matuz T, Kubler A. Depression and anxiety in individuals with amyotrophic lateral sclerosis: epidemiology and management. *CNS Drugs* 2007;**21**:279–91. https://doi.org/10.2165/00023210-200721040-00003
5. McDonald ER, Wiedenfeld SA, Hillel A, Carpenter CL, Walter RA. Survival in amyotrophic lateral sclerosis. The role of psychological factors. *Arch Neurol* 1994;**51**:17–23. https://doi.org/10.1001/archneur.1994.00540130027010
6. Johnston M, Earll L, Giles M, McClenahan R, Stevens D, Morrison V. Mood as a predictor of disability and survival in patients newly diagnosed with ALS/MND. *Br J Health Psychol* 1999;**4**:127–36. https://doi.org/10.1348/135910799168524
7. Pizzimenti A, Aragona M, Onesti E, Inghilleri M. Depression, pain and quality of life in patients with amyotrophic lateral sclerosis: a cross-sectional study. *Funct Neurol* 2013;**28**:115–9. https://doi.org/10.11138/FNeur/2013.28.1.115
8. van Groenestijn AC, Kruitwagen-van Reenen ET, Visser-Meily JMA, van den Berg LH, Schröder CD. Associations between psychological factors and health-related quality of life and global quality of life in patients with ALS: a systematic review. *Health Qual Life Outcomes* 2016;**14**:107. https://doi.org/10.1186/s12955-016-0507-6
9. Paganoni S, McDonnell E, Schoenfeld D, Yu H, Deng J, Atassi H, *et al*. Functional decline is associated with hopelessness in amyotrophic lateral sclerosis (ALS). *J Neurol Neurophysiol* 2017;**8**:423. https://doi.org/10.4172/2155-9562.1000423
10. Gould RL, Coulson MC, Brown RG, Goldstein LH, Al-Chalabi A, Howard RJ. Psychotherapy and pharmacotherapy interventions to reduce distress or improve well-being in people with amyotrophic lateral sclerosis: a systematic review. *Amyotroph Lateral Scler Frontotemporal Degener* 2015;**16**:293–302. https://doi.org/10.3109/21678421.2015.1062515
11. Zarotti N, Mayberry E, Ovaska-Stafford N, Eccles F, Simpson J. Psychological interventions for people with motor neuron disease: a scoping review. *Amyotroph Lateral Scler Frontotemporal Degener* 2021;**22**:1–11. https://doi.org/10.1080/21678421.2020.1788094
12. Pagnini F, Marconi A, Tagliaferri A, Manzoni GM, Gatto R, Fabiani V, *et al*. Meditation training for people with amyotrophic lateral sclerosis: a randomized clinical trial. *Eur J Neurol* 2017;**24**:578–86. https://doi.org/10.1111/ene.13246
13. Pagnini F, Phillips D, Haulman A, Bankert M, Simmons Z, Langer E. An online non-meditative mindfulness intervention for people with ALS and their caregivers: a randomized controlled trial. *Amyotroph Lateral Scler Frontotemporal Degener* 2022;**23**:116–27. https://doi.org/10.1080/21678421.2021.1928707
14. van Groenestijn AC, Schröder CD, Visser-Meily JMA, Reenen ET, Veldink JH, van den Berg LH. Cognitive behavioural therapy and quality of life in psychologically distressed patients with amyotrophic lateral sclerosis and their caregivers: results of a prematurely stopped randomized controlled trial. *Amyotroph Lateral Scler Frontotemporal Degener* 2015;**16**:309–15. https://doi.org/10.3109/21678421.2015.1038276
15. National Institute for Health and Care Excellence. *Motor Neurone Disease: Assessment and Management (NG42)*. 2016. URL: www.nice.org.uk/Guidance/NG42 (accessed 16 December 2024).
16. Hayes SC, Strosahl KD, Wilson KG. *Acceptance and Commitment Therapy: The Process and Practice of Mindful Change*. 2nd edn. New York, NY: Guilford Press; 2012.
17. Rose M, Graham CD, O'Connell N, Vari C, Edwards V, Taylor E, *et al*. A randomised controlled trial of acceptance and commitment therapy for improving quality of life in people with muscle diseases. *Psychol Med* 2023;**53**:3511–24. https://doi.org/10.1017/S0033291722000083
18. McCracken LM, Yu L, Vowles KE. New generation psychological treatments in chronic pain. *BMJ* 2022;**376**:e057212. https://doi.org/10.1136/bmj-2021-057212
19. Gloster AT, Walder N, Levin ME, Twohig MP, Karekla M. The empirical status of acceptance and commitment therapy: a review of meta-analyses. *J Contextual Behav Sci* 2020;**18**:181–92. https://doi.org/10.1016/j.jcbs.2020.09.009

20. Gould RL, Thompson BJ, Rawlinson C, Kumar P, White D, Serfaty MA, *et al*. A randomised controlled trial of acceptance and commitment therapy plus usual care compared to usual care alone for improving psychological health in people with motor neuron disease (COMMEND): study protocol. *BMC Neurol* 2022;**22**:431. https://doi.org/10.1186/s12883-022-02950-5
21. Weeks KR, Gould RL, Mcdermott C, Lynch J, Goldstein LH, Graham CD, *et al*. Needs and preferences for psychological interventions of people with motor neuron disease. *Amyotroph Lateral Scler Frontotemporal Degener* 2019;**20**:521–31. https://doi.org/10.1080/21678421.2019.1621344
22. Gould RL, Rawlinson C, Thompson B, Weeks K, Gossage-Worrall R, Cantrill H, *et al*. Acceptance and Commitment Therapy for people living with motor neuron disease: an uncontrolled feasibility study. *Pilot Feasibility Stud* 2023;**9**:1–15. https://doi.org/10.1186/s40814-023-01354-7
23. Rawlinson C, Gould RL, McDermott CJ, Thompson B, Weeks K, Gossage-Worrall R, *et al*.; the COMMEND Collaboration Group. Experiences of acceptance and commitment therapy for people living with motor neuron disease (MND): a qualitative study from the perspective of people living with MND and therapists. *Cogn Behav Ther* 2024;**17**:e36. https://doi.org/10.1017/S1754470X24000333
24. Gould RL, McDermott CJ, Thompson BJ, Rawlinson CV, Bursnall M, Bradburn M, *et al*.; COMMEND Collaboration Group. Acceptance and Commitment Therapy plus usual care for improving quality of life in people with motor neuron disease (COMMEND): a multicentre, parallel, randomised controlled trial in the UK. *Lancet* 2024;**403**:2381–94. https://doi.org/10.1016/S0140-6736(24)00533-6
25. Keetharuth AD, Gould RL, McDermott CJ, Thompson BJ, Rawlinson C, Bradburn M, *et al*.; COMMEND Collaboration Group. Cost-effectiveness of acceptance and commitment therapy for people living with motor neuron disease, and their health-related quality of life. *Eur J Neurol* 2024;**31**:e16317. https://doi.org/10.1111/ene.16317
26. A-Tjak JGL, Davis ML, Morina N, Powers MB, Smits JAJ, Emmelkamp PMG. A meta-analysis of the efficacy of acceptance and commitment therapy for clinically relevant mental and physical health problems. *Psychother Psychosom* 2015;**84**:30–6. https://doi.org/10.1159/000365764
27. Norman GR, Sloan JA, Wyrwich KW. Interpretation of changes in health-related quality of life: the remarkable universality of half a standard deviation. *Med Care* 2003;**41**:582–92. https://doi.org/10.1097/01.MLR.0000062554.74615.4C
28. Consumer Data Research Centre. *Index of Multiple Deprivation (IMD) | CDRC Data*. 2019. URL: https://data.cdrc.ac.uk/dataset/index-multiple-deprivation-imd (accessed 3 November 2023).
29. Burchardt JM, Mei XW, Ranger T, McDermott CJ, Radunovic A, Coupland C, Hippisley-Cox J. Analysis of incidence of motor neuron disease in England 1998–2019: use of three linked datasets. *Amyotroph Lateral Scler Frontotemporal Degener* 2022;**23**:363–71. https://doi.org/10.1080/21678421.2021.2016837
30. Bradburn MJ, Lee EC, White DA, Hind D, Waugh NR, Cooke DD, *et al*. Treatment effects may remain the same even when trial participants differed from the target population. *J Clin Epidemiol* 2020;**124**:126–38. https://doi.org/10.1016/j.jclinepi.2020.05.001
31. Godfrey E, Wileman V, Galea Holmes M, McCracken LM, Norton S, Moss-Morris R, *et al*. Physical therapy informed by acceptance and commitment therapy (PACT) versus usual care physical therapy for adults with chronic low back pain: a randomized controlled trial. *J Pain* 2020;**21**:71–81. https://doi.org/10.1016/j.jpain.2019.05.012
32. Arnold T, Haubrick KK, Klasko-Foster LB, Rogers BG, Barnett A, Ramirez- Sanchez NA, *et al*. Acceptance and commitment therapy informed behavioral health interventions delivered by non-mental health professionals: a systematic review. *J Contextual Behav Sci* 2022;**24**:185–96. https://doi.org/10.1016/j.jcbs.2022.05.005
33. National Institute for Health and Care Research. *Good Practice Guidelines on the Recruitment and Involvement of Public Members on Trial Steering Committees (TSCs)/Study Steering Committees (SSCs)*. 2021. URL: www.nihr.ac.uk/good-practice-guidelines-recruitment-and-involvement-public-members-trial-and-study-steering-committees (accessed 16 December 2024).
34. Möller-Leimkühler AM. Barriers to help-seeking by men: a review of sociocultural and clinical literature with particular reference to depression. *J Affect Disord* 2002;**71**:1–9. https://doi.org/10.1016/S0165-0327(01)00379-2
35. Seidler ZE, Dawes AJ, Rice SM, Oliffe JL, Dhillon HM. The role of masculinity in men's help-seeking for depression: a systematic review. *Clin Psychol Rev* 2016;**49**:106–18. https://doi.org/10.1016/j.cpr.2016.09.002
36. Zaldivar T, Gutierrez J, Lara G, Carbonara M, Logroscino G, Hardiman O. Reduced frequency of ALS in an ethnically mixed population: a population-based mortality study. *Neurology* 2009;**72**:1640–5. https://doi.org/10.1212/WNL.0b013e3181a55f7b
37. Marin B, Boumé diene F, Logroscino G, Couratier P, Babron MC, Leutenegger AL, *et al*. Variation in world

wide incidence of amyotrophic lateral sclerosis: a meta-analysis. *Int J Epidemiol* 2017;**46**:57–74. https://doi.org/10.1093/ije/dyw061

38. Office for National Statistics. *Ethnicity Facts and Figures. Office for National Statistics*; 2020. URL: www.ethnicity-facts-figures.service.gov.uk/ (accessed 16 December 2024).
39. Teager A, Dunning G, Mirza N, Methley A, Twigg J. A retrospective analysis of the ethnicity of individuals referred to a tertiary neuropsychology service in the United Kingdom. *Clin Neuropsychol* 2023;**38**:262–78. https://doi.org/10.1080/13854046.2023.2215491
40. Woidneck MR, Pratt KM, Gundy JM, Nelson CR, Twohig MP. Exploring cultural competence in acceptance and commitment therapy outcomes. *Prof Psychol Res Pr* 2012;**43**:227–33. https://doi.org/10.1037/a0026235
41. Shayeghian Z, Hassanabadi H, Aguilar-Vafaie ME, Amiri P, Besharat MA. A randomized controlled trial of acceptance and commitment therapy for type 2 diabetes management: the moderating role of coping styles. *PLOS ONE* 2016;**11**:e0166599. https://doi.org/10.1371/journal.pone.0166599
42. Brown G, Marshall M, Bower P, Woodham A, Waheed W. Barriers to recruiting ethnic minorities to mental health research: a systematic review. *Int J Methods Psychiatr Res* 2014;**23**:36–48. https://doi.org/10.1002/mpr.1434
43. Witham MD, Anderson E, Carroll C, Dark PM, Down K, Hall AS, *et al.*; On behalf of the INCLUDE writing group. Developing a roadmap to improve trial delivery for under-served groups: results from a UK multi-stakeholder process. *Trials* 2020;**21**:1–9. https://doi.org/10.1186/s13063-020-04613-7
44. National Institute for Health and Clinical Excellence. *Improving Inclusion of Under-served Groups in Clinical Research: Guidance from the NIHR INCLUDE Project*. 2020. URL: www.nihr.ac.uk/documents/improving-inclusion-of-under-served-groups-in-clinical-research-guidance-from-include-project/25435#-for-the-nihrinclude-guidance-general (accessed 16 December 2024).
45. Bausell R. *The Design and Conduct of Meaningful Experiments Involving Human Participants: 25 Scientific Principles*. Oxford University Press; 2015.
46. Schuler MS, Coffman DL, Stuart EA, Nguyen TQ, Vegetabile B, McCaffrey DF. Practical challenges in mediation analysis: a guide for applied researchers. *Health Serv Outcomes Res Methodol* 2024;**25**:57–84. https://doi.org/10.1007/s10742-024-00327-4
47. Bullock JG, Green DP. The failings of conventional mediation analysis and a design-based alternative. *Adv Methods Pract Psychol Sci* 2021;**4**:25152459211047227. https://doi.org/10.1177/25152459211047227
48. Serfaty M, Csipke E, Haworth D, Murad S, King M. A talking control for use in evaluating the effectiveness of cognitive-behavioral therapy. *Behav Res Ther* 2011;**49**:433–40. https://doi.org/10.1016/j.brat.2011.05.005
49. Williams JMG, Crane C, Barnhofer T, Brennan K, Duggan DS, Fennell MJV, *et al*. Mindfulness-based cognitive therapy for preventing relapse in recurrent depression: a randomized dismantling trial. *J Consult Clin Psychol* 2014;**82**:275–86. https://doi.org/10.1037/a0035036
50. Peters N, Bello-Haas VD, Packham T, Mehdipour A, Kuspinar A. Psychometric properties of preference-based measures for economic evaluation in amyotrophic lateral sclerosis: a systematic review. *Neurol Res Int* 2021;**2021**:1–13. https://doi.org/10.1155/2021/6681554
51. National Institute for Health and Care Excellence. *NICE Health Technology Evaluations: The Manual*; 2022. URL: www.nice.org.uk/process/pmg36 (accessed 16 December 2024).
52. Rowen D, Azzabi Zouraq I, Chevrou-Severac H, Van Hout B. International regulations and recommendations for utility data for health technology assessment. *PharmacoEconomics* 2017;**35**:11–9. https://doi.org/10.1007/s40273-017-0544-y
53. Dakin H, Abel L, Burns R, Yang Y. Review and critical appraisal of studies mapping from quality of life or clinical measures to EQ-5D: an online database and application of the MAPS statement. *Health Qual Life Outcomes* 2018;**16**:31. https://doi.org/10.1186/s12955-018-0857-3
54. Dakin H, Abel L. *HERC Database of Mapping Studies, Version 7.0 2019*. https://doi.org/10.5287/BODLEIAN:BXBDRNWBJ
55. Han A, Wilroy JD, Yuen HK. Effects of acceptance and commitment therapy on depressive symptoms, anxiety, pain intensity, quality of life, acceptance, and functional impairment in individuals with neurological disorders: a systematic review and meta-analysis. *Clin Psychol* 2023;**27**:210–31. https://doi.org/10.1080/13284207.2022.2163158

Appendix 1 Protocol amendments

TABLE 3 Amendments to the Phase I uncontrolled feasibility study protocol

Version number	Date	Reasons for update	Description
2.0	3 March 2018	Feedback from REC	Addition of documentation for caregivers and therapists. Minor corrections/clarifications to participant information sheet, consent form and GP Letter. Addition of space for independent witness to sign consent form. Change to therapist criteria
3.0	31 July 2018	Feedback from independent oversight committee and funder	Statement that people with MND are eligible irrespective of presence or absence of mood symptoms. Minor corrections to protocol. Addition of option to use routinely collected Edinburgh Cognitive and Behavioural ALS Screen data. Clarification of HADS version used. Minor changes/corrections to participant facing documents

GP, general practitioner.

TABLE 4 Amendments to the Phase II RCT protocol

Version number	Date	Reasons for update	Description
2.0	15 April 2019	Feedback from REC, TSC and DMEC	Clarification of 'imminent intent' in relation to suicidal ideation. Addition of Columbia-Suicide Severity Rating Scale (a suicide screening tool) Changes to participant information sheets and consent forms
2.1	19 June 2019	Minor clarifications	Minor corrections and clarifications to protocol. Change to use of screening version of Columbia-Suicide Severity Rating Scale during screening. Addition/removal of sites
2.2	30 March 2020	Amendment to therapy delivery relating to COVID-19	Explicit statement that the intervention could be delivered by telephone
3.0	22 May 2020	Amendment for remote consent, eligibility and baseline assessments relating to COVID-19. Amendments to protocol and supporting documents	Addition of remote screening, baseline and consent processes and documents, in response to the COVID-19 related restrictions. Clarification of non-invasive ventilation and percutaneous endoscopic gastrostomy feeding exclusion criteria. Correction to scoring of Satisfaction with Therapy and Therapist Scale-Revised. Additional participant-facing documents to manage study visits, postal data collection and lost to follow-up
3.1	10 June 2020	Minor clarification relating to COVID-19	Clarification that central team staff can collect data
3.2	23 September 2022	Minor clarifications.	Corrections and clarifications to protocol wording. Amendment to GP letters.

GP, general practitioner

Appendix 2 Illustrative quotes from plwMND and therapists who completed Qualitative Satisfaction Questionnaires

TABLE 5 Illustrative quotes from plwMND and therapists in the Phase II RCT

Theme	Subtheme	Illustrative quote
Readiness for therapy	Unfamiliar territory	'I don't know what other forms of psychological support are available'. – P26, ACT plus UC 'Her prior experience of CBT also helped however in terms of allowing her to appreciate ACT as a novel approach and in line with her own philosophy (clear values, value driven)'. – T15
	The 'right' time	'The issues it seemed designed to address are not issues I feel I have to deal with (yet)'. – P7, ACT plus UC 'Probably earlier in the post-diagnosis phase than later. It can help when emotions are at their rawest and can help to prevent unhelpful avoidant habits from taking hold'. – T2

continued

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TABLE 5 Illustrative quotes from plwMND and therapists in the Phase II RCT (*continued*)

Theme	Subtheme	Illustrative quote
The active ingredients	Therapeutic rapport	'Very good therapist who was understanding and brought out the best in me'. – P20, ACT plus UC 'Relying on the skills of developing a therapeutic alliance, using active listening and reflective practice and containment, alongside ACT skills, helped me to find a way of delivering a psychological intervention that hopefully meant the patients found helpful'. – T29
	Therapists' ability to guide and explain	'I liked the therapist's approach. Thought he was very good at latching onto something I said that we could use in a session'. – P31, ACT plus UC 'As I became more familiar and comfortable delivering the intervention, I suspect my explanations became clearer, and I was more able to adapt them to be relevant and understandable for participants'. – T10
The benefits	A shoulder to lean on	'It is very valuable to MND sufferers to have an outlet for their inner thoughts'. – P10, ACT plus UC 'It would have been good to have someone to talk to'. – P35, UC alone 'All reported that it was positive to have a space to talk about what it was like for them to live with MND and appeared to gain greater acceptance'. – T3
	Opening doors (and feelings)	'It helped me to explore areas of my thinking that I had either denied or suppressed'. – P12, ACT plus UC 'I would like help to deal with my feelings so that they don't prevent me from enjoying life'. – P12, UC alone 'Greater openness and willingness to notice and sit with all emotions, in particular noticing when feeling pressure to stay positive'. – T6
	Equipped and ready	'The therapy was helpful insomuch it has left me with the tools to handle any bumps in the road ahead'. – P27, ACT plus UC 'With this cohort the swift loss of agency is nicely counterpointed with learning this new toolbox. With all the participants there was a delight in learning something new and helpful'. – T21
	Acceptance	'The main thing is acceptance of my condition and if there are hurdles to be overcome the ability to adapt to those changes and not be defeatist' – P10, ACT plus UC 'Some found a way to acknowledge and accept difficult thoughts and most were able to practice something new as a result of reaching an acceptance'. – T22
	Autonomy	'I can now be the person I want to be whilst living with MND. I intend to spend the rest of my life concentrating on what matters to me and this disease'. – P27, ACT plus UC 'It felt motivating and also gave clients a different outlook on what they can and can't do alongside MND'. – T28
	Knowledge of what matters	'It has encouraged me to prioritise my values'. – P20, ACT plus UC 'At the stage that my client is in her MND journey, it was acceptable to re-evaluate her values and look at different ways to still make the most of her life, allowing for change and compromises without feeling failure'. – T16
	Sharing the benefits	'My relationship with husband has become stronger'. – P15, ACT plus UC 'My wife joined in the therapy sessions because I have difficulty communicating – she found the therapy very helpful'. – P2, ACT plus UC 'Their partner who also attended to support them used the sessions well and liked the model often referring to it in our sessions, so you always felt that the offer of the sessions was helpful as a safe space for both and as an intervention via the partner'. – T29
	Benefits for therapists	'It has enormously increased my interest, application and confidence of ACT. It has also opened up a deeper interest in MND and this has had an impact in being part of discussions to improve services for those with MND'. – T1 'I learn an enormous amount from the workshops and supervision and believe my ACT skills have increased considerably as a result of my involvement with COMMEND'. – T18 'Yes, definitely thinking in a more flexible, integrative way therapeutically'. – T5 'Learning more about ACT and its relevance to MND, led me to using ACT (and drawing a lot on the COMMEND intervention) in my clinical work in MND. It also led to service developments, in terms of how we deliver psychological care to people living with MND at our care centre … We now focus a lot more on identifying what is important to everyone living with people with MND, what barriers might come up, and feeding this into the care planning to maintain or improve QoL. This is in contrast to screening for difficulties and responding reactively to these'. – T10

TABLE 5 Illustrative quotes from plwMND and therapists in the Phase II RCT (*continued*)

Theme	Subtheme	Illustrative quote
The challenges	Painful reminder	'The only difficult thing was that talking about it made you realise I'm ill with a life altering condition. Putting that thought front and centre in your head'. – P31, ACT plus UC 'It seemed that not all were as receptive or open to the exploration'. – T12
	The struggle with some exercises or concepts	'It was sometimes difficult to visualise the ideas in the exercises such as placing thoughts on a leaf floating down a stream'. – P17, ACT plus UC 'The most difficult to understand was self as content/context'. – T11
	Same condition, different people	'I wonder if it might be possible to make the process more responsive to individuals' situations and needs. Of course, persons with MND have some key challenges and issues in common, but that really doesn't mean we're all in the same place emotionally, or that we deal with these challenges in the same ways. We don't stop being individuals the moment we're diagnosed'. – P14, ACT plus UC 'I felt like the manualised approach with flexibility to still adjust session content to suit was positive. It felt as though it could be adjusted to suit the client's needs, whilst still following a somewhat manualised approach for the trial'. – T23
	The online debate	'Very good, practical in my case as getting out takes a lot of organizing'. – P18, ACT plus UC 'The practical aspects of the therapy may have been better in a clinic face to face. being in my own surroundings there were distractions'. – P5, ACT plus UC 'On one hand, it was easy for a vulnerable population to connect regularly, and I was able to see someone on the other side of the country. On the other hand, there is something very intimate about sharing physical space, and I often felt that some of the experimental exercises may have lost something in translation to this medium. Then of course there were occasional tech issues'. – T26
	Challenges for therapists	'When I was first starting off, it was a steep learning curve, as ACT was quite new for me, and this led to some anxiety'. – T10 'I think initially I struggled with feeling I had to stick quite rigidly to the structure in the manual – this was probably my own anxiety in no small part – but supervision helped me to be more flexible, which then felt easier'. – T6 'The main challenge was often time – as sessions progressed I became more skilled in managing time in the sessions'. – T11 'I found it somewhat anxiety provoking to record sessions and feel that this impacted on my confidence at times, but I completely appreciate the need to record sessions and rate competencies'. – T27
The why	The need to help others	'Important for patients to help in any way possible, to help with living with such disabling illness'. – P24, ACT plus UC 'Hopefulness from the participants that being part of a study could make a difference for others too, a sense of legacy'. – T21
	Willing to try it all	'I was very keen to try the therapy for myself and to see if it could help me in any way'. – P26, ACT plus UC 'Keen to try anything to help themselves and others with this condition'. – T16
The prevailing absence of support (for plwMND in the UC alone arm)	No support	'I haven't been offered any counselling or therapy through the NHS and I find this very surprising. I think this should be offered as standard to anyone given such a serious life limiting diagnosis'. – P25, UC alone 'To be honest, my husband and I feel pretty much abandoned'. – P30, UC alone
	Outsourcing support	'I receive a lot of care and support through my speech therapist, physio and visiting OT. friends and family are hugely supportive too'. – P24, UC alone
	Support received	'I am happy with the care & attention I receive & the level of support – Hospital & GP are extremely sensitive & caring. They have more than surpassed my expectations'. – P3, UC alone

continued

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TABLE 5 Illustrative quotes from plwMND and therapists in the Phase II RCT (*continued*)

Theme	Subtheme	Illustrative quote
Intervention delivery	Facilitators of delivery	‘It was reasonably easy because of the excellent in person training provided, supervision and the clearly laid out and comprehensive manuals. These three factors really helped. I also had some prior knowledge of ACT’. – T15 ‘A clearly laid out, yet very flexible treatment plan, with very good guidance on how to deliver the exercises and conduct therapy … Supervision and very clear guidance from the manual’. – T18 ‘I think the flexibility that the intervention encouraged and the ongoing supervision enabled me to tailor it, which helped with engagement’. – T10 ‘Knowing we had supervision and regular slots to bring our session was extremely helpful – having the time in supervision to reflect on the impact from the sessions and the patients with MND personally also helped greatly. It allowed us to contain the strong emotions and thoughts that are present in this work sufficiently to allow us to contain the sessions for the patients’. – T29 ‘Supervision, reflection, the manual, my previous training in ACT and experience in palliative care’. – T1 ‘Knowledge of physical progression of MND so intervention could be appropriate and not distressing (i.e. changes to mindfulness exercises used)’. – T23
	Barriers to delivery	‘The only person who withdrew from the study seemed very afraid of thinking/talking about changes related to his MND’. – T10 ‘Main barriers to attending sessions were transportation to in-person appointments’. – T10 ‘I liked and disliked the online working – I felt curtailed by the online working sometimes with some of the exercises – e.g. the labelling exercise – when the patient became more physically disabled over time as happened in both cases’. – T29 ‘One client had significant speech difficulties and did not want a carer to support the sessions. Very difficult at times to understand what they were saying over Zoom, particularly if the connection was poor’. – T3 ‘Hospital admissions, being too unwell to attend sessions requiring cancellations’. – T13 ‘Pain and fatigue. I worked with one client who was actively deteriorating during the intervention, and plans we put in place were heavily affected by worsening fatigue and physical functioning’. – T9 ‘I think he found many elements acceptable and helpful to think about, but at times was unsure of why they were relevant due to him not having any current difficulties’. – T23