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BRIEF CLINICAL REPORT

Overcoming death anxiety: a phase I trial of an online CBT program in a clinical sample

Rachel E. Menzies[1]*, Alexandra Julien[2], Louise Sharpe[1], Ross G. Menzies[2], Fjóla Dögg Helgadóttir[3] and Ilan Dar-Nimrod[1]

[1]The University of Sydney, Australia, [2]The University of Technology Sydney, Australia and [3]AI Therapy, Vancouver, Canada
*Corresponding author. Email: rachel.menzies@sydney.edu.au

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Abstract

Background: Growing research indicates that death anxiety is implicated in many mental health conditions. This increasing evidence highlights a need for scalable, accessible and cost-effective psychological interventions to reduce death anxiety.

Aims: The present study outlines the results of a phase I trial for one such treatment: *Overcome Death Anxiety* (ODA). ODA is the first CBT-based online intervention for fears of death, and is an individualised program requiring no therapist guidance.

Method: A sample of 20 individuals with various mental health diagnoses commenced the ODA program. Death anxiety was assessed at baseline and at post-intervention. Depression, anxiety and stress were also measured.

Results: In total, 50% (10/20) reached the end of the program and completed post-treatment questionnaires. Of these, 60% (6/10) showed a clinically reliable reduction in their overall death anxiety, and 90% (9/10) showed a reduction on at least one facet of death anxiety. There were no adverse events noted.

Conclusions: ODA appears to be a safe and potentially effective treatment for death anxiety. The findings have provided initial evidence to support a randomised controlled trial using a larger sample, to further examine the efficacy of ODA.

Keywords: cognitive behaviour therapy; death anxiety; internet; online; transdiagnostic

Introduction

Death anxiety has been argued to be a transdiagnostic construct, underlying various mental health conditions (Iverach *et al.*, 2014). Fears of death have been shown to be highly associated with the severity of numerous disorders, including anxiety disorders, substance use disorders, somatic symptom-related disorders, and depressive disorders (Menzies *et al.*, 2019). Experimental studies further suggest that death anxiety plays a causal role in multiple disorders, including specific phobias, obsessive-compulsive disorder, panic disorder, and more.

Despite this, standard treatments typically fail to address death anxiety. For example, gold standard treatments for anxiety disorders typically centre on disproving specific threat estimates (e.g. the likelihood of illness), rather than addressing the underlying mortality concerns. This failure to target potentially underlying issues, such as death anxiety, has been argued to contribute to the 'revolving door' of mental health services (Iverach *et al.*, 2014; p. 590), in which individuals may present to treatment with one condition, only to later return to treatment with another. That is, if death anxiety underlies many mental health

conditions, then treatments which specifically target this construct may be essential to prevent symptom recurrence and the emergence of additional disorders.

Fortunately, meta-analytic findings demonstrate that death anxiety can be ameliorated, with cognitive behavioural therapy (CBT) proving most efficacious (Menzies *et al.*, 2018). Despite this promising finding, and the clear relevance of death anxiety to numerous mental health conditions, no evidence-based self-help treatments for this construct currently exist. Online self-help interventions, which can produce comparable effects to face-to-face interventions, have been put forth as a solution to the growing mental health needs of the global population. Thus, online interventions may be an ideal method of delivering accessible death anxiety treatments. The present trial aimed to examine the safety and potential efficacy of an online CBT program, *Overcome Death Anxiety* (ODA; Menzies *et al.*, 2021), in a clinical sample.

Method

Participants

Participants were recruited from a psychology clinic waitlist in Sydney. The inclusion criteria were: (1) ≥18 years of age, (2) a current mental health diagnosis, (3) regular access to the internet/email, (4) English fluency, and (5) high death anxiety (≥1*SD* below the community mean on the Multidimensional Fear of Death Scale; MFODS). Exclusion criteria were: (1) having undergone CBT in the last six months, (2) currently experiencing a psychotic illness, and (3) severe symptoms of depression [i.e. score of >19 on the Patient Health Questionnaire-9 (PHQ-9), and >1 on the item assessing suicidality]. The final sample consisted of 20 participants (60% female), mean age of 36.10 years ($SD = 8.01$). The most common current diagnoses in the sample were OCD (60%), illness anxiety disorder (45%), and generalised anxiety disorder (35%). The clinical trial was pre-registered on the Australian and New Zealand Clinical Trials Registry (ACTRN12619000384156).[1] Written informed consent was obtained from all participants.

Measures

Pre-screening questionnaires

The Anxiety and Related Disorders Interview Schedule – Lifetime Edition (ADIS-5L) was used to determine eligibility and establish diagnoses. The MFODS was used to determine eligibility; a lower score on the MFODS indicates *higher* death anxiety. The PHQ-9 was used to establish eligibility and monitor participant safety.

Primary outcome

The Collett-Lester Fear of Death Scale-Revised (CLFD-R) is a 32-item measure which assesses death anxiety on four subscales: Death of Self, Dying of Self, Death of Others, and Dying of Others. The CLFD-R was selected as the primary outcome measure as it has been shown to be responsive to change (Zuccala *et al.*, 2019).

Secondary outcomes

Two secondary outcomes were selected: first, the mean satisfaction score on the single item question 'Overall, how satisfied were you with the program?', with a response scale ranging from 0 ('not satisfied at all') to 10 ('completely satisfied'); second, the proportion of participants who experienced an adverse event, defined as any of the following: (1) a significant worsening in depression scores on the PHQ-9, meeting the clinical cut-off;

[1] https://www.anzctr.org.au/Trial/Registration/TrialReview.aspx?id = 376875&isReview = true

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(2) scoring ≥2 on item 9 of the PHQ-9, which assesses suicidality, and reporting active suicidal ideation; (3) a self-harm or suicide attempt, or (4) a hospitalisation.

Other measures

The Depression Anxiety Stress Scales-21 (DASS-21) was used to assess depression, anxiety and stress. A 19-item evaluative measure was also created, to assess perceptions of treatment usability and efficacy.

Procedure

To determine eligibility, the ADIS-5L was administered by a senior clinical psychologist, and the PHQ-9 and MFODS were completed. Eligible participants were then given access to ODA, in which they completed the CLFD-R and the DASS-21 at pre-treatment. To increase completion, participants had up to five months to progress through the ODA program, in line with similar timeframes implemented in previous studies. Due to the stand-alone nature of the program, participants were not contacted by researchers until they had reached the end of ODA, unless their PHQ-9 scores indicated they were at risk. The PHQ-9 was emailed to participants each week to monitor safety. After the last module, the CLFD-R and the DASS-21 were administered. Participants who reached the end of the program were also emailed the treatment satisfaction and evaluative questionnaires.

Structure of ODA

ODA consists of the following seven modules: (1) Introduction (i.e. introducing the rationale for addressing death anxiety and the virtual therapist); (2) Thinking Exercises (i.e. introducing the cognitive model of emotion and 10 unhelpful thinking styles); (3) Challenging Your Thinking (i.e. introducing the concept of cognitive challenging for unhelpful beliefs about death); (4) Creating Your Model (i.e. psychoeducation about behaviours which maintain anxiety, and the creation of an individualised diagrammatic formulation for the user); (5) Exposure (i.e. creating individualised exposure tasks); (6) Living Life to the Fullest (i.e. values-based activities to increase meaning in life); and (7) Relapse Prevention. In addition to these seven modules, ODA also includes 'reflection tasks' (e.g. quotes, short videos, or songs) and optional 'expansion tasks' (e.g. full length films or books) throughout the program. The structure and content of the program is outlined in more detail in Menzies *et al.* (2021).

Analytic plan

Given the sample size, a reliable change index (RCI) score was calculated for the primary outcome measure (i.e. CLFD-R) for each participant who completed the program. RCIs±1.96 were considered to represent a reliable change (Jacobson *et al.*, 1984). We calculated the percentage of participants who made a clinically reliable improvement on the CLFD-R as per the RCI.

Results

Primary outcome

Results from the 10 participants who completed the program indicated that 60% made a clinically reliable improvement on the total CLFD-R (i.e. RCI>1.96), and 90% improved on at least one subscale. Specifically, 70% of completers reported a clinically reliable improvement on Death of Self, 60% on Dying of Self and Dying of Others, and 50% on Death of Others. No participant experienced a clinically reliable deterioration on any subscale. Pre- and post-intervention scores are presented in Table 1.

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Table 1. Pre-treatment and post-treatment data

Measures	Baseline			Post
	Entire sample ($n = 20$)	Non-completers ($n = 10$)	Completers ($n = 10$)	Completers ($n = 10$)
PHQ-9	7.55 (5.66)	7.60 (6.08)	7.50 (5.54)	5.83 (4.75)
CLFD-R				
Death of Self	27.45 (8.41)	25.90 (8.72)	29.00 (8.23)	20.30 (7.41)
Dying of Self	26.95 (9.12)	25.20 (9.84)	28.70 (8.47)	21.20 (6.37)
Death of Others	33.30 (5.45)	32.90 (5.84)	33.70 (5.31)	26.20 (6.55)
Dying of Others	27.00 (6.23)	25.00 (6.18)	29.00 (5.91)	21.40 (8.85)
Total	114.70 (19.52)	109.00 (17.47)	120.40 (20.67)	89.10 (24.67)
DASS-21 Depression	12.70 (9.54)	15.40 (10.46)	10.00 (8.17)	7.00 (5.91)
DASS-21 Anxiety	11.80 (9.47)	13.60 (12.47)	10.00 (5.16)	6.20 (3.58)
DASS-21 Stress	23.00 (11.40)	23.20 (11.82)	22.80 (11.59)	17.80 (8.35)

Post-treatment data for PHQ-9 only available for $n = 6$. Standard deviation in parentheses. CLFD-R, Collett-Lester Fear of Death Scale – Revised; DASS-21, Depression Anxiety Stress Scales-21; PHQ-9, Patient Health Questionnaire.

Secondary outcomes

No participant experienced an adverse event. On the single item satisfaction measure, responses indicated a mean satisfaction score of 8.0 out of 10 ($SD = 1.41$, range 7–10). On the 19-item evaluative measure, the feedback was largely positive; all six users who provided feedback agreed that the program was effective, and that they would recommend it to others. However, all six users also agreed that they needed more treatment.

Additional analyses

A total of 15 (75%) participants progressed to the midpoint of the program (i.e. reached Module 4), and 10 (50%) participants reached the end of the program. Mann–Whitney *U*-tests were conducted to explore whether baseline differences in participants may have predicted attrition. The results indicated that none of the baseline variables predicted completion.

Furthermore, 60% of participants made a reliable improvement on at least one DASS-21 subscale; 40% experienced reduced Stress, 30% reduced Anxiety, and 10% reduced Depression. Among the six users who completed the PHQ-9 at post-intervention, two (33%) made a reliable improvement, and four showed no reliable change.

Discussion

The current trial sought to examine the efficacy and safety of the first online CBT-based treatment for death anxiety. Half of the participants who commenced the program completed all modules; of these, 60% demonstrated a clinically reliable improvement in their overall death anxiety, with 90% improving on at least one of four facets. Importantly, there were no adverse events reported. Furthermore, 60% of users made a clinically reliable improvement on at least one DASS-21 subscale. Lastly, evaluative feedback from those who completed suggested that the program was user-friendly, accessible and helpful.

The limitations of the current study should be noted. First, it was not possible to collect feedback or post-treatment questionnaires from individuals who did not complete the program. As a result, the reasons for treatment dropout remain unclear. We cannot exclude the possibility that some people who did not complete experienced a worsening of symptoms. However, it is also possible that some users discontinued treatment due to making improvements early in the program. Future studies of ODA are needed to collect data among those who discontinue, and to ascertain the reasons for dropout. Second, the absence of a

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control group limits conclusions surrounding the impact of the program itself, as it remains possible that improvements in death anxiety were related to extraneous causes. However, given that the data were collected during the COVID-19 pandemic, when death anxiety is more salient, it appears unlikely that scores would have reduced naturally over this time.

Despite these limitations, the present study represents the first trial of an online, evidence-based treatment for death anxiety. The finding that most program completers achieved a reliable improvement in their death anxiety indicates the potential efficacy of the treatment. Furthermore, the fact that death anxiety was reduced in a treatment-seeking sample with a range of disorders and a high level of co-morbidity, is particularly promising. The current program also adds to the existing literature by producing changes in death anxiety without individual guidance from a therapist, making it the first of its kind.

In addition, the completion rate of 50%, approximately double the average completion found for stand-alone programs, suggests a strength of the program. The absence of adverse events or deterioration in death anxiety scores in this clinical sample is also a strength. The program appears safe to deliver as a stand-alone treatment, although further research is necessary to confirm its safety among individuals with more significant depression than the current sample. Lastly, the reduction in stress, anxiety and/or depression among most participants supports the notion that death anxiety, the sole focus of ODA, may be causally related to mental health problems (Iverach *et al.*, 2014).

In sum, the current results suggest that the ODA program is a promising treatment for death anxiety. Its stand-alone nature ensures it is cost-effective, accessible and scalable. Future research should seek to test the efficacy of ODA using a randomised controlled trial, with longer follow-up of participants, including those who discontinue. In addition, further research is needed to examine whether the improvements in death anxiety produced by the program also lead to an improvement in broader mental health and reduce relapse.

Supplementary material. To view supplementary material for this article, please visit: https://doi.org/10.1017/S135246582300005X

Data availability statement. Data are available from the corresponding author upon reasonable request.

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Conflicts of interest. The authors declare none.

Ethical standards. Ethics approval was obtained by the Human Research Ethics Committee at The University of Sydney (2019/171) and The University of Technology Sydney (ETH194468), and the research conformed to the Declaration of Helsinki. Written informed consent was obtained from all participants. The clinical trial was registered *a priori* on the Australian and New Zealand Clinical Trials Registry (ACTRN12619000384156).

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