Title: Pilot of a theoretically grounded psychologist-delivered intervention for fear of cancer recurrence (Conquer Fear)

Running Head: Conquer Fear: A promising new treatment for fear of cancer recurrence

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Key points

Theoretically and empirically grounded treatment options targeting FCR are limited, despite the high prevalence, morbidity, and potential cost of FCR.

This paper reports results from a small single-arm pilot study evaluating the acceptability, feasibility, and potential efficacy of a theoretically based intervention for FCR (Conquer Fear).

All survivors invited to participate completed the intervention and rated its essentialness and effectiveness highly (mean ratings >7/10).

Therapists felt the intervention had: good face validity, strong theoretical foundations, high clinical relevance, and reported increased knowledge about and confidence managing FCR post-training.

Clinically and statistically significant reductions in FCR and cancer-specific anxiety were observed post-intervention and maintained at two-month follow-up for most participants.

Keywords: Cancer; oncology; fear of cancer recurrence; survivorship; metacognitive therapy: acceptance and commitment therapy

Introduction

Fear of cancer recurrence (FCR), defined as the fear or worry that cancer could return or progress in the same place or another part of the body [1], is a common and debilitating problem among cancer survivors. A recent systematic review found that across different cancer sites and assessment strategies, on average: 73% of cancer survivors report *some* degree of FCR (range=39-97%); 49% report *moderate to high* FCR (range=22-87%); and 7% report *high* FCR (range=0-15%) [2]. FCR is stable over time and has been shown to impact negatively on quality of life (QOL), psychological adjustment, emotional distress and anxiety, ability to establish future plans, and carer QOL [2]. High FCR has also been associated with greater medical service usage and costs [2]. Despite the high prevalence, morbidity, and potential cost of FCR, survivors commonly report strong unmet needs for help managing FCR [2]. This suggests many cancer services are currently providing inadequate care in this area. Indeed, clinicians in psycho-oncology report difficulties dealing with high FCR [3]. There is a clear need for interventions specifically targeting FCR, but very few have been developed and evaluated to date [4-6]. This paper reports on the pilot testing of a novel, theoretically based intervention for FCR.

Methods

Intervention

The manualised intervention (Conquer Fear) aims to reduce the impact of FCR and is based on the Common Sense Model of Illness (CSM) [7], Self-Regulatory Executive Function Model (S-REF) [8] and Relational Frame Theory (RFT) [9]. Key intervention objectives include: a) teaching strategies for controlling worry and excessive threat monitoring (S-REF); b) modifying unhelpful beliefs about worry (S-REF); c) developing appropriate monitoring and screening behaviours (CSM); d) providing information about follow-up care and empirically-supported behavioural change (e.g. weight loss, exercise etc.) to reduce risk of recurrence (CSM); e) addressing cancer-related existential changes (RFT); and f) promoting values-based goal-setting (RFT). The intervention comprises five 60-90 minute, individual face-to-face sessions with a trained psychologist/psychiatrist (therapist). Home-based practice and reading (≈2 hours/week) is encouraged to consolidate skills. See Table 1 for an overview of session content. More detail is provided in Butow et al. [10].

<*Table 1*>

Study design

The feasibility, acceptability, and likely efficacy of Conquer Fear were evaluated in a small longitudinal single-arm pilot study approved by relevant local ethics committees.

Participants

Three psychologists and one psychiatrist with at least five years clinical and two years psycho-oncology experience attended a one-day training workshop. Each therapist selectively invited two patients referred to their practice to participate. Eligible participants had: a) completed curatively intentioned hospital-based treatment for early-stage cancer at least two months previously; b) no evidence of active cancer; c) adequate English; and d) a Fear of Cancer Recurrence Inventory (FCRI) severity subscale score ≥13, indicating clinical FCR levels [11]. Current major depression was an exclusion criterion.

Procedure
Participants completed measures of *FCR* (42-item FCRI [12] including the 9-item severity subscale); *cancer-specific anxiety* (15-item Impact of Event Scale; IES) [13]; and *QOL* (27-item Functional Assessment of Cancer Therapy - General; FACT-G) [14] at baseline, immediately post-intervention, and two months later. Participants rated intervention sessions on a 10-point scale (e.g. "How essential/effective did you feel Session X was?"), from 0 "not at all essential/effective" to 10 "extremely essential/effective" at reducing FCR.

Statistical Analysis
Primary feasibility outcomes were therapist and patient perceptions of the intervention, analysed using descriptive statistics. The primary efficacy outcome was the FCRI severity subscale, analysed using a linear mixed model with a random subject effect to account for longitudinal data and time modelled continuously. Post-treatment and two month follow-up changes from baseline were calculated from this model. FCRI, IES, and FACT-G total scores were modelled similarly. Mixed models yield reasonable estimation with small samples [15]. A reliable change index (RCI) [16] was calculated for the FCRI severity score for each participant at both follow-up time points. Participants were deemed to have experienced clinically significant improvements when RCI >1.96. Analyses were performed in SAS v9.3 (Cary, North Carolina).

Results
Eight survivors were invited to participate and all consented. All were female; average age was 48 years (SD=11.3, Range=37-64) and average time post-diagnosis was 2.3 years (SD=1.3, Range=0.8-4.5). Most (63%) had breast cancer diagnoses, all received chemotherapy, and three (38%) were currently receiving hormone therapy. Three-quarters were partnered and seven had children. All had finished high school and seven were employed. All participants provided complete baseline data and completed all intervention sessions, seven had post-treatment data, and five had two-month follow-up data. One participant died (cause unknown) during follow-up, two others were uncontactable.

Feasibility
Post-training, all therapists reported increased knowledge about and confidence in managing FCR. All agreed the training was informative, relevant, interesting, and an appropriate length. They felt the intervention had face validity and could be feasibly delivered in practice (see Table **2**). Average participant ratings of the essentialness and effectiveness of intervention components were 8/10 and 7.2/10 respectively.

<*Table 2*>

Efficacy
Mean FCRI *severity* subscale scores decreased 4.1 out of 36 points immediately post-intervention (p=0.002) and 8.2 points at two-month follow-up (p=0.002, see Table **3**), representing standardised effect sizes (ESs) of 1.0 and 1.9, which are well within the clinically important range [17]. Reliable change indices [16] indicated that 3/7 and 4/5 participants had clinically meaningful reductions in FCR *severity* at post-treatment and follow-up respectively. FCRI *total* score also decreased significantly over time; by 24.9 post-treatment (ES=0.9) and 49.8 points at follow-up (ES=1.8; p=0.002). Cancer-specific anxiety (IES total) decreased by 8.9 (ES=0.6) post-treatment and 17.7 points at follow-up (ES=1.2; p=0.01). QOL (FACT-G total)

did not change significantly (p=0.1; ES=0.7), although the 12.8 point increase at follow-up was above the recommended change score of 6 [18].

<*Table 3*>

Discussion

This pilot study provides evidence for the feasibility, acceptability, and potential efficacy of a novel treatment for FCR (Conquer Fear).

Survivors rated the intervention as highly acceptable and beneficial in reducing their FCR. The 100% uptake and retention rate of survivors invited to participate highlights the relevance of the intervention. All therapists reported increased knowledge about and confidence in managing FCR as a result of training and valued the strong theoretical foundation and applicability to their practice.

Despite its size, this pilot study demonstrated clinically and statistically significant reductions in FCR and cancer-specific anxiety, and clinically significant improvements in QOL following treatment. Furthermore, improvements were maintained or increased at two-month follow-up in most participants, indicating the promise of Conquer Fear in an area where evidence-based treatments are currently lacking.

Clearly this is a small pilot study, with an unrepresentative sample of four experienced therapists each treating two selected participants and no control group, all of which may have biased the study results. Nonetheless, FCR is a common, persistent, and burdensome problem amongst survivors that therapists report difficulty managing and for which evidence-based interventions are lacking. Accordingly, the fact that Conquer Fear resulted in large, clinically significant reductions in FCR is notable. Conquer Fear is based on three well-validated theories in the clinical and health psychology literatures and has demonstrated good proof of concept in this study. Larger randomised controlled trials are required to establish the efficacy of this intervention.

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Table 1. Conquer Fear session content

Session	*Content*
1	• FCR-specific assessment • FCR model introduction and treatment rationale • Discussion of existential changes brought about by cancer • Values clarification and goal setting
2	• Discussion of the impact of potential vulnerability factors such as past traumatic life events on the interpretation and meaning of FCR • Introduction and rationale for and practice of Attention Training Technique
3	• Introduction and rationale of Detached Mindfulness • Application of Detached Mindfulness to FCR and practice
4	• Information provision about possible symptoms of cancer recurrence • Specification of guidelines to help clients distinguish symptoms from benign physical complaints • Re-assessment of self-examination practices and medical surveillance and identification of avoidant or excessive behaviours • Development of behavioural contract to help clients to engage in recommended levels of self-examination and follow-up tests if necessary • Discussion of beliefs that underpin FCR (e.g. beliefs about the benefits of FCR, or beliefs about physical harm caused by FCR), and testing validity of beliefs through Socratic dialogue
5	• Review of goal setting • Summary and review of skills learned throughout the program • Development of FCR relapse prevention plan

Table 2. Feasibility outcomes

Outcome	Mean	95% CI
Patient assessment (n=7)		
Treatment was essential[1]	8.0	(7.0,9.0)
Treatment was effective[1]	7.2	(6.1,8.3)
Therapist evaluation (n=4)		
Confidence treating FCR prior to training[1]	5.8	(4.6,6.9)
Confidence treating FCR after training[1]	8.0	(7.3,8.7)
FCR knowledge increase[1]	7.8	(6.9,8.6)
Insight into FCR increase[2]	2.3	(1.9,2.7)
Insight into meta-cognitive therapy increase[2]	2.7	(2.3,3.1)
Training was appropriate length[2]	2.3	(1.9,2.7)
Training materials were helpful[2]	2.4	(2.0,2.8)
Training was applicable to practice[2]	2.6	(2.2,3.0)
Training was relevant to practice[2]	2.4	(2.0,2.8)

[1] Range: 0-10

[2] 0='Strongly disagree', 1='Disagree', 2='Agree', 3='Strongly agree'

Table 3. Efficacy outcomes

Outcome	Assessment	Mean (SD)	Change from baseline[1]	95% CI	p-value[2]	Effect size[3]
FCR severity	Baseline	25.1 (4.3)				
(range: 0-32)	Post-treatment	19.6 (7.1)	-4.1	(-6.4,-1.9)	0.002	1.0
	Follow-up	17.1 (7.1)	-8.2	(-12.8,-3.7)	0.002	1.9
FCRI total	Baseline	101.7 (27.3)				
(range: 0-162)	Post-treatment	74.7 (28.0)	-24.9	(-38.8,-11.0)	0.002	0.9
	Follow-up	62.5 (24.9)	-49.8	(-77.6,-22.0)	0.002	1.8
Cancer-specific anxiety	Baseline	26.3 (15.3)				
(range: 0-88)	Post-treatment	14.9 (9.2)	-8.9	(-15.6,-2.1)	0.01	0.6
	Follow-up	9.0 (10.8)	-17.7	(-31.3,-4.2)	0.01	1.2
QOL	Baseline	71.9 (19.4)				
(range: 0-100)	Post-treatment	85.0 (12.1)	6.4	(-1.8,14.6)	0.1	0.3
	Follow-up	84.6 (17.5)	12.8	(-3.6,29.3)	0.1	0.7

[1] Calculated from a linear mixed model.
[2] For the test of change from baseline using a linear mixed model.
[3] Calculated using the baseline SD