## COMMENTARY



# An exploratory study of the worst-case scenario exercise as an exposure treatment for fear of cancer recurrence

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#### Abstract

*Purpose* The worst-case scenario (WCS) exercise is part of a manualized cognitive-existential group intervention for fear of cancer recurrence (FCR). It requires cancer survivors to describe the scenario they most fear when they think about the possibility of their cancer returning and to re-read the scenario daily for 1 week as homework. The purpose of this study was to present this novel clinical treatment for FCR and to examine whether athome repeated exposure to the WCS was related to pre- and post-therapy FCR levels.

*Methods* Women with breast and gynaecological cancers who received care at The Ottawa Hospital Cancer Centre were recruited to participate in this follow-up study. Consenting participants provided copies of their WCS exercises.

*Results* The WCS of ten female cancer survivors were collected to examine the homework portion of the exercise. Higher adherence to homework was significantly related to lower post-therapy FCR but not to pre-therapy scores.

*Conclusions* Baseline levels of FCR may not be a factor influencing inter-session homework adherence to the WCS, while exposure to the WCS resulting from adherence to the homework exercise may influence post-therapy FCR outcomes. These effects remain to be differentiated from the overall therapeutic effect of the 6-week cognitive-existential intervention for

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FCR, using a larger sample. This study presents preliminary evidence for an upcoming multi-centre trial in which the WCS exercise will be re-examined with larger sample sizes.

**Keywords** Fear of cancer recurrence · Psychosocial intervention · Therapeutic writing · Homework · Repeated exposure

Fear of cancer recurrence (FCR) is defined as a "fear, worry, or concern relating to the possibility that cancer will come back or progress" [1]. A recent literature review estimates that 73% of cancer survivors report some degree of FCR, while about half of patients exhibit moderate to high levels [2]. Lebel et al. 2014 [3] piloted a 6-week manualized cognitive-existential (CE) group intervention for FCR with women with breast and ovarian cancer (n = 44). During exit interviews (n = 12), participants commonly referred to the worst-case scenario (WCS) exercise, in session four of the intervention, as being beneficial [4]. This exercise involves writing out their feared scenario in-session, followed by repeated exposure to this content as a daily homework exercise. Similar benefits of the WCS exercise were expressed in a feasibility study of an individual version of the CE intervention [5], and participants experienced lower FCR and cancer-specific distress after the 6-week program. A randomized controlled trial examining the effects of the overall intervention is underway.

This commentary will act as an introduction to this novel clinical technique. The goal of this exploratory study was to determine whether participant adherence to the homework component of the WCS may be related to pre- and post-therapy FCR levels. Previous evidence regarding the relationship between baseline problem severity and homework adherence is mixed, with some studies suggesting severe symptoms at baseline act as a motivator for homework adherence while others propose they act as a barrier [6]. Thus, no specific hypothesis regarding the relationship between pre-therapy FCR and homework adherence was set. Furthermore, the literature on exposure-based treatments for anxiety indicates that increased exposure to a feared outcome is related to a reduction in anxious arousal, and that exposure is more effective when repeated [7]. It was therefore predicted that greater adherence to the WCS would be related to lower post-therapy FCR.

## Methods

The manualized CE group intervention piloted by Lebel et al. (2014) [3] was adapted to an individual format using a randomized, wait-list controlled design [5]. The data for the current study stems from this initiative and was approved by The Ottawa Hospital Research Ethics Board (#20150013-01H) and The University of Ottawa Research Ethics Board (#A03-15-01). Therapy workbooks of female cancer survivors who participated in the CE intervention at The Ottawa Hospital Cancer Centre were collected (for complete inclusion and exclusion criteria, see Tomei, Lebel, Maheu, Lefebvre, and Harris, unpublished, 2017). The prompt for the in-session activity reads as follows: "Write out your worst-case scenario, including images, your reactions, and the reactions of those around you". As homework, participants were instructed to read their scenario out-loud every day and to rate their level of anxiety before and after from 0 (lowest) to 100 (highest).

#### Measures

**Homework adherence** A measure of homework adherence was used to quantify participants' exposure to the WCS throughout the week [8]. The first and last authors evaluated the homework completed in each participant's workbooks using this tool and agreed on a score ranging from 1 (did not attempt the homework) to 6 (completed more of the homework than requested).

**Fear of cancer recurrence inventory** Fear of cancer recurrence was assessed using the fear of cancer recurrence inventory (FCRI), a 42-item self-report scale with well documented psychometric properties (scores range from 0 to 168) [9]. This tool was administered prior to the start of the CE therapy and immediately following the 6-week program.

## Results

A total of 10 participants shared their WCS, out of 19 eligible participants. There were no significant differences between sociodemographic information, medical characteristics, or FCRI scores when comparing the current study's sample to the overall sample of eligible participants. Sociodemographic and medical characteristics of the sample are summarized in Table 1.

All participants completed the WCS exercise in therapy, and 70% of participants attempted or completed the homework exercise in their workbook between sessions. The median homework adherence score was 4.5, with a mean of 3.77 (SD = 1.58, range 1-5). Participants' homework adherence

**Table 1**Demographic and medical characteristics of participants(n = 10)

Characteristics	$M(\mathrm{SD})$
Age	55.5 (10.2)
Time since diagnosis (years)	32.2 (11.2)
	%
Marital status	
Single	_
Married/common law	90
Separated/divorced	10
Widowed	_
Ethnic background	
Caucasian	100
Working status	
Employed full time	50
Employed part time by choice	10
Employed part time due to illness	_
Unemployed due to illness	10
Unemployed	_
Retired	30
Education	
Some university/college	10
University/college degree	60
Graduate school	30
Family income	
<\$20,000	_
\$21,000-40,000	10
\$41,000-60,000	_
\$61,000-80,000	30
\$81,000-100,000	10
>\$100,000	50
Cancer diagnosis	
Breast	70
Gynaecological	30
Cancer stage (at diagnosis)	
Stage I	70
Stage III	30
Treatments	
Surgery	30
Chemotherapy and radiation	10
Radiation and surgery	20
Chemotherapy, radiation and surgery	40

scores were significantly correlated to post-therapy FCRI scores ( $r_s$  [8] = -.76, p < .05) but not with pre-therapy scores ( $r_s$  [10]=-.46, p = .18).

#### Discussion

The WCS exercise is based on principles of cognitive behavioural therapies that utilize repeated exposure to aversive stimuli to reduce pathological fear [10]. Results suggest that participants with higher homework adherence also have lower post-intervention FCR. In contrast, pre-therapy FCR was not significantly related to homework adherence. Similar results were obtained in a study on homework adherence in the context of cognitive behavioural group therapy for social anxiety [11]. Severity of FCR before the beginning of therapy may therefore not be a factor impacting adherence to homework recommendations among patients willing to participate in an intervention on FCR. Participants who did not attempt or complete the homework exercise may have avoided the WCS because of the existential distress associated with FCR.

## Limitations

The generalizability of this exploratory study is limited by its small sample size. In addition, since the current study's sample represents 53% of the overall sample, this group may represent a self-selected subset of the sample that found the exercise useful.

#### **Future directions**

Participant avoidance of the exercise could be managed by reviewing coping mechanisms to facilitate at-home exposure to the anxiety-producing stimuli in the WCS. Alternatively, reminder telephone calls or emails from therapists could encourage more distressed participants to complete the exercise.

The interpretation of the main findings of this study is limited by a small and selected sample. However, the significant relationship between homework adherence and postintervention FCR suggests that the WCS exercise may play a role in the success of the overall CE intervention to treat FCR [5]. More specifically, future studies should aim to determine the frequency of exposure necessary for a significant reduction in FCR, and whether participant baseline characteristics can predict this relationship. Future investigations of the WCS would also benefit from FCR assessments before and after the scenario session, to isolate the effects of the WCS exercise from overall therapy effects. Despite its limitations, this study indicates that the effect of this novel clinical technique to treat FCR is worth exploring in larger samples.

#### Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

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