Is Emotion Regulation a Common Mechanism Underlying Clusters of Psychological Symptoms in Breast Cancer Patients?

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INTRODUCTION

- Breast cancer patients tend to experience numerous psychological symptoms that co-occur and form clusters.
- A common psychological mechanism may underlie the membership of symptoms in a given cluster, but this hypothesis has never been investigated.
- Maladaptive emotion regulation (ER) is one possible common mechanism.

OBJECTIVE

To examine the cross-sectional and prospective relationships between subjective and objective measures of ER and clusters of psychological symptoms among women receiving radiation therapy for breast cancer.

METHODS

Participants (N=81)

Recruited at L'Hôtel-Dieu de Québec hospital (CHU de Québec-Université Laval, Québec, Canada).

Inclusion criteria:

- Have received a diagnosis of non-metastatic breast cancer
- Be scheduled to receive adjuvant radiotherapy in the upcoming weeks
- Be between 18 and 75 years of age
- Be living within 50 km of the research center
- Be able to understand and read French

Exclusion criteria:

- Have distant metastasis
- Have received neoadjuvant or adjuvant chemotherapy for breast cancer
- Present severe cognitive impairments (e.g., Alzheimer's disease) or score ≤ 20 on the Montreal Cognitive Assessment
- Have a severe psychiatric disorder (e.g., psychosis)

Procedure and Measures

A battery of self-report scales was completed before (T1) and after (T2) radiotherapy:

Psychological symptoms

- Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983)
 - Anxiety
 - Depression
- Fear of Cancer Recurrence Inventory (Simard & Savard, 2009)
- Insomnia Severity Index (Blais et al., 1997)
- Fatigue Symptom Inventory (Hann et al., 1998)
- Physical Symptoms Questionnaire (PSQ)
- Functional Assessment of Cancer Therapy—Cognitive Function (Wagner et al., 2009)

Emotion Regulation

- Emotion Regulation Questionnaire (Gross & John, 2003)
 - Expressive suppression
 - Cognitive reappraisal
- Acceptance and Action Questionnaire-II (Bond et al., 2011)
 - Experiential avoidance
- Resting high frequency heart rate variability (HF-HRV) measured at T1 only with a digital inter-beat interval recorder (Polar RS800).

Table 1. Participants' Demographic and Medical Characteristics at T1 (N = 81)

	M (SD)	(%)
Age (years; range: 31–75)	59.4 (8.5)	
Marital status		
Married/Cohabiting		64.2
Other		35.8
Education		
College or university degree		65.4
Other		34.6
Annual family income (Canadian dollars)		
Less than \$60,000		65.7
\$60,000 and higher		34.3
Current occupation		
Full time work		23.5
Part-time work		8.6
Sick leave		25.9
Retired		39.5
Other		2.4
Cancer stage (n = 80)		
0 (in situ)		23.8
1		66.3
2		10.0

RESULTS

Identification of symptom clusters

- Using latent profile analyses:
 - a "low" and a "moderate" cluster were found both at T1 and T2;
 - additionally, a "High - depression" cluster was found at T1, whereas a "High - anxiety, depression, insomnia and cognitive impairment" cluster was found at T2.
- Two clusters characterizing changes in symptoms between T1 and T2 ($\Delta T2-T1$) were found:
 - one characterized by symptoms of moderate severity that remained stable between T1 and T2;
 - the other reflected symptoms in the moderate range at T1 that decreased at T2.

Figure 1. Percentiles per latent class for the three latent profiles of psychological symptoms identified at T1 (N = 81)

Figure 2. Percentiles per latent class for the three latent profiles of psychological symptoms identified at T2 (N = 80)

Figure 3. Percentiles per latent class at each time point for the two latent profiles of change in psychological symptoms between T1 and T2 ($\Delta T2-T1$; N = 80)

CONCLUSION

- Maladaptive ER strategies (i.e., suppression and avoidance), assessed subjectively, are a possible psychological mechanism underlying clusters of cancer-related psychological symptoms.
- Objective measure of ER (resting HF-HRV) was not a significant predictor of symptom clusters.
- Psychological interventions targeting maladaptive ER strategies may have the potential to treat several psychological symptoms simultaneously
- These results should be replicated in a larger sample with longer follow-up and in patients with other types of cancer, including men.

Emotion Regulation as Predictor of Clusters Membership

Direct canonical discriminant analyses indicated that:

- Higher levels of avoidance and suppression predicted membership in symptom clusters that included more severe symptoms cross-sectionally at T1 and at T2 (both $ps < .0001$).
- ER at T1 did not significantly predict membership in clusters of symptom changes between T1 and T2 ($p = .15$).

Table 2. Results of the Canonical Discriminant Analysis with Subjective and Objective Measures of Emotional Regulation predicting Latent Profiles

Predictor	Correlations of Predictor with Discriminant Function		
	Cross-sectional T1	T2	Prospective ER at T1 and LPA on $\Delta T2-T1$ symptoms
Subjectively-measured ER			
Experiential avoidance	-.90	-.83	-.84
Expressive suppression	-.33	-.56	-.36
Cognitive reappraisal	.17	.10	.55
Objectively-measured ER			
Resting HF-HRV	.22	N/A	.39
Canonical R	.68***	.68***	.37

Note. Significant predictor: $p \geq .33$; *** $p \leq .0001$

Table 3. Standardized class means of avoidance and suppression in each cluster.

Standardized class means (Z)	Clusters		
T1	Low sx	Moderate sx	High sx - depression
Avoidance	-0.46	0.00	0.34
Suppression	-0.15	-0.17	0.64
T2	Low sx	Moderate sx	High sx - anxiety, depression, insomnia and cognitive impairment
Avoidance	-0.53	0.36	1.42
Suppression	-0.34	0.15	1.32

Note. Sx= symptoms

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