

Randomised trial of expressive writing for distressed metastatic breast cancer patients

Catherine E. Mosher^{a*}, Katherine N. DuHamel^a, Joanne Lam^a,
Maura Dickler^b, Yuelin Li^a, Mary Jane Massie^a and Larry Norton^b

^a*Department of Psychiatry and Behavioral Sciences, Memorial Sloan-Kettering Cancer Center, 641 Lexington Avenue, 7th Floor, New York, NY 10022, USA;*

^b*Department of Medicine, Memorial Sloan-Kettering Cancer Center, 600 East 66th Street, New York, NY 10065, USA*

(Received 21 July 2010; final version received 17 December 2010)

Women with metastatic breast cancer and significant psychological distress ($N = 87$) were assigned randomly to engage in four home-based sessions of expressive writing or neutral writing. Women in the expressive writing group wrote about their deepest thoughts and feelings regarding their cancer, whereas women in the neutral writing group wrote about their daily activities in a factual manner. No statistically significant group differences in existential and psychological well-being, fatigue and sleep quality were found at 8-weeks post-writing. However, the expressive writing group reported significantly greater use of mental health services during the study than the neutral writing group (55% vs. 26%, respectively; $p < 0.05$). Findings suggest that expressive writing may improve the uptake of mental health services among distressed cancer patients, but is not broadly effective as a psychotherapeutic intervention.

Keywords: metastatic breast cancer; expressive writing; psychological distress; sleep; fatigue

Introduction

Writing about negative emotional experiences has been found to improve physical and psychological health (see Frattaroli, 2006, for a meta-analytic review). People randomly assigned to write about their deepest thoughts and feelings regarding personal stressors have shown enhanced well-being and fewer medical visits following writing compared to those assigned to write about neutral topics (Frisina, Borod, & Lepore, 2004; Pennebaker, 1997; Smyth, 1998). Although most trials of written emotional disclosure have focused on healthy populations, this research has recently been extended to medical populations, including people with asthma, rheumatic disease and cancer (Danoff-Burg, Agee, Romanoff, Kremer, & Strosberg, 2006; C. de Moor et al., 2002; J.S. de Moor et al., 2008; Rosenberg et al., 2002; Smyth, Stone, Hurewitz, & Kaell, 1999; Stanton et al., 2002).

*Corresponding author. Email: cemosher@iupui.edu

Limited evidence suggests that expressive writing may enhance cancer patients' health. For example, Stanton et al. (2002) found that among women with early-stage breast cancer, both those who wrote about their deepest thoughts and feelings surrounding cancer and those who wrote about benefits of their cancer experience, had fewer medical appointments for cancer-related morbidities in subsequent months than did control writing participants. Another study found that patients with metastatic renal cell carcinoma who wrote about cancer-related thoughts and feelings evidenced significantly better sleep quality and sleep duration compared to patients who wrote about health behaviours (de Moor et al., 2002). A third study found that prostate cancer patients who wrote about their thoughts and feelings related to their cancer or other stressful life events reported reduced pain perceptions relative to a no-writing control group (Rosenberg et al., 2002). Regarding psychological outcomes, results suggest that expressive writing benefits cancer patients who do not generally avoid their cancer-related thoughts and feelings (Stanton et al., 2002) and patients who feel constrained in discussing their cancer experience with others (Low, Stanton, Bower, & Gyllenhammer, 2010; Zakowski, Ramati, Morton, Johnson, & Flanigan, 2004).

To date, little research has extended the expressive writing paradigm to women with metastatic breast cancer or other advanced cancer populations. Metastatic breast cancer patients cope with numerous stressors, including cognitive and physical decline, a growing dependence on health care professionals and significant others and the ultimate prospect of death. Physical and psychological problems are highly prevalent in this population and include fatigue, sleep disturbance, anxiety, depression and demoralisation (i.e. existential despair and distress) (Aranda et al., 2005; Kissane et al., 2004; Palesh et al., 2007; Vehling et al., 2010). One study found that 11 of the top 20 unmet needs for women with metastatic breast cancer were psychological in nature and included uncertainty about the future and concerns about the worries of loved ones (Aranda et al., 2005). Expressive writing may reduce patients' distress by improving self-regulation of emotions, behaviours and physiological responses (Lepore, Greenberg, Bruno, & Smyth, 2002). Specific mechanisms underlying its beneficial effects may include decreasing autonomic arousal to cancer-related thoughts and feelings and cognitive processing of events into a coherent and meaningful narrative (King, 2002; Lepore et al., 2002; Low, Stanton, & Danoff-Burg, 2006). An alternative perspective, the social integration model, suggests that expressive writing may prompt patients to seek social support, which, in turn, improves well-being (Pennebaker & Graybeal, 2001).

This study examines the health effects of expressive writing in an advanced breast cancer patient sample and extends prior work in several respects. First, only patients with clinically elevated distress participated in this trial. In previous expressive writing studies, cancer patients were typically in the post-treatment phase and reported good baseline quality of life, which left little room for positive changes during the intervention period (Rosenberg et al., 2002; Zakowski et al., 2004). Second, this study examined indices of existential well-being (i.e. a sense of meaning and peace and demoralisation), which are theoretically linked to emotional processing and expression and particularly relevant for patients with life-limiting illnesses (Schwartz & David, 2002). Finally, all assessments and writing tasks were administered via telephone, which enhances the potential for dissemination to advanced cancer patients.

We hypothesised that patients assigned to write about their deepest cancer-related thoughts and feelings would experience better existential and psychological well-being, reduced fatigue and enhanced sleep quality compared to patients assigned to write about a neutral topic. We also explored whether the effectiveness of the writing conditions varied by patients' functional status, time since diagnosis and level of education. Finally, we explored whether the writing conditions might prompt differential seeking of mental health services.

Methods

Participants and procedures

Women with stage IV breast cancer were recruited from a comprehensive cancer centre in New York City from March 2008 to November 2009. Inclusion requirements were: (1) English fluency, (2) at least 18 years of age and (3) significant distress as indicated by scores exceeding the cutoff (≥ 4) on the distress thermometer (DT) (Jacobsen et al., 2005). Patients were excluded from study participation if they: (1) had severe cognitive impairment assessed with the Short Portable Mental Status Questionnaire (Pfeiffer, 1975) or (2) engaged in expressive writing on a daily basis. Adequate sample size ($n \geq 70$) for a multivariate analysis of variance (MANOVA) was determined on the basis of comparisons across writing groups of two measures (i.e. meaning/peace and demoralisation). Parameters entered into the statistical power calculation included a moderate effect size ($f = 0.30$) and an overall correlation of 0.25 between the endpoints, power = 0.80, $F(1, 68) = 5.25$, $p < 0.025$ (Faul, Erdfelder, Lang, & Buchner, 2007). Although the estimated effect size is comparable to those observed in some expressive writing studies with cancer patients (de Moor et al., 2002; Stanton et al., 2002), a larger sample size would be needed to detect the small effect sizes reported in a meta-analysis (Frattaroli, 2006).

Permission to contact patients was sought from their oncologists, and letters of invitation and consent forms were mailed to women approved for contact. Patients completed a screening assessment via telephone. Those who met the study eligibility criteria and provided informed consent completed a baseline telephone interview approximately 1 week after the screening assessment. Computerised random assignment to the expressive writing or neutral writing group then occurred using the method of random permuted block. Patients were stratified by ethnicity (Caucasian vs. African American vs. other ethnicity) and age (<55 vs. 55–65 vs. >65 years). Participants received four sets of writing instructions, lined paper, essay rating forms and envelopes for returning materials by mail.

Following the procedures of Zakowski et al. (2004), patients completed four writing sessions over 4–7 weeks. For session 1, a post-doctoral psychology research fellow called the patient and provided a brief introduction to the writing task. Patients were asked to go to a quiet area of their house where they would not be interrupted. Expressive writing participants were instructed to write their deepest thoughts and feelings about their cancer, whereas neutral writing participants described yesterday's activities in a factual manner. Instructions were based on published work (Zakowski et al., 2004) and are available from the first author. Patients were told to start writing immediately after hanging up the phone and to write continuously for 20 min.

At the end of the writing session, the fellow called the patient and asked whether she had experienced any interruptions while writing. If the interruption was longer than 5 min, the patient was asked to continue writing (to complete the 20-minute session) until the fellow called again. Then, the patient was instructed to rate her essay and mail the essay and ratings to the fellow in the envelope provided. The patient was asked whether she had any questions or concerns and then the next writing session was scheduled. Procedures were identical for subsequent writing sessions, except that the initial brief introduction from session 1 was omitted. Patients completed a follow-up phone interview approximately 8 weeks after the final writing session. Interviewers were blinded to participants' group assignment. Patients received \$25 for the baseline assessment and \$25 for the follow-up assessment.

Measures

Existential well-being

The Meaning/Peace subscale of the Functional Assessment of Chronic Illness Therapy – Spiritual Well-Being scale (FACIT-Sp; Peterman, Fitchett, Brady, Hernandez, & Cella, 2002) assessed the participants' degree of purpose in life and inner peace. A measure of demoralisation, or existential despair and distress, was also administered (Jacobsen et al., 2006).

Psychological well-being

The DT (Roth et al., 1998) assessed general distress and the Center for Epidemiologic Studies – Depression scale (CES-D; Radloff, 1977) assessed depressive symptoms. Patients also completed the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS-A; Zigmond & Snaith, 1983).

Sleep disturbance and fatigue

The Pittsburgh Sleep Quality Index (PSQI; Buysse, Reynolds, Monk, Berman, & Kupfer, 1989) evaluated habitual sleep disturbances over a 1-month period. The total global sleep quality score was used in this study. The Functional Assessment of Chronic Illness Therapy Fatigue subscale (FACIT-F; Yellen, Cella, Webster, Blendowski, & Kaplan, 1997) assessed fatigue during the past 7 days.

Socio-demographic and medical variables

Participants reported their socio-demographic data and use of mental health services (e.g. counselling, cancer support groups). Medical information was obtained from chart review. Trained interviewers administered the Australia-modified Karnofsky Performance Status Scale (AKPS; Abernethy, Shelby-James, Fazekas, Woods, & Currow, 2005) to assess baseline functional impairment.

Manipulation check and essay ratings

An independent rater unaware of writing group assignment read the transcribed essays in random order and judged the writing instructions for each essay.

In addition, after each writing session, participants rated how personal their essays were and how much they revealed emotions in their essays on 7-point scales (1 = *not at all*; 7 = *a great deal/extremely*) (Stanton et al., 2002). The computerised text analysis program, Linguistic Inquiry and Word Count (LIWC; Pennebaker, Mayne, & Francis, 1997) provided the percentage of positive emotion words and negative emotion words in each essay, which served as a third manipulation check.

Statistical analyses

Preliminary multivariate analyses of variance and χ^2 analyses were conducted to determine whether the writing groups differed at baseline. No differences were found with regard to demographic, medical and dependent variables. Multivariate analyses of covariance (MANCOVA) were used to examine the effects of group assignment on follow-up outcomes, controlling for baseline values of the dependent variables. The following conceptually related groups of dependent variables were analysed in three separate MANCOVAs: (1) existential well-being (meaning/peace and demoralisation); (2) psychological well-being (general distress, depressive symptoms and anxiety); and (3) physical well-being (sleep and fatigue). Additional MANCOVAs were conducted to examine whether the effects of group assignment on the three sets of dependent variables differed according to functional status, time since diagnosis and level of education (0 = less than a college degree, 1 = college degree or higher). Each potential moderator was independently analysed and baseline values of the dependent variables were included as covariates. Finally, a logistic regression analysis was conducted to examine the effect of group assignment on the use of mental health services during the study, controlling for baseline use.

Results

Sample characteristics

A total of 521 breast cancer patients were identified by medical records for this study, and permission was granted to contact 83% of the patients (Figure 1). Of the 405 patients who were potentially eligible for this study (e.g. fluent in English), 173 (43%) completed the screening assessment. Respondents were significantly younger (58.1 ± 11.5 vs. 61.4 ± 13.0 years, respectively; $d = 0.27$, $p < 0.01$) and more proximal to diagnosis (4.0 ± 3.2 vs. 5.0 ± 5.1 years, respectively; $d = 0.22$, $p < 0.05$) than nonrespondents. Ethnicity and medical treatment variables (i.e. receipt of chemotherapy, surgery, hormonal therapy and radiation) did not differ between respondents and nonrespondents. Fifty-eight percent of respondents were eligible, with reasons for ineligibility as follows: score less than 4 on the DT (39%) or engaging in expressive writing on a daily basis (2%).

Of the 101 patients who were eligible for this study, 98 consented to participate and 90 (89%) completed the baseline assessment. The majority of participants were Caucasian, married and well-educated (Table 1). The average time since diagnosis of stage IV breast cancer was 4 years, and most participants had received chemotherapy or hormonal therapy. Writing materials were mailed to 87 women, and 86 women

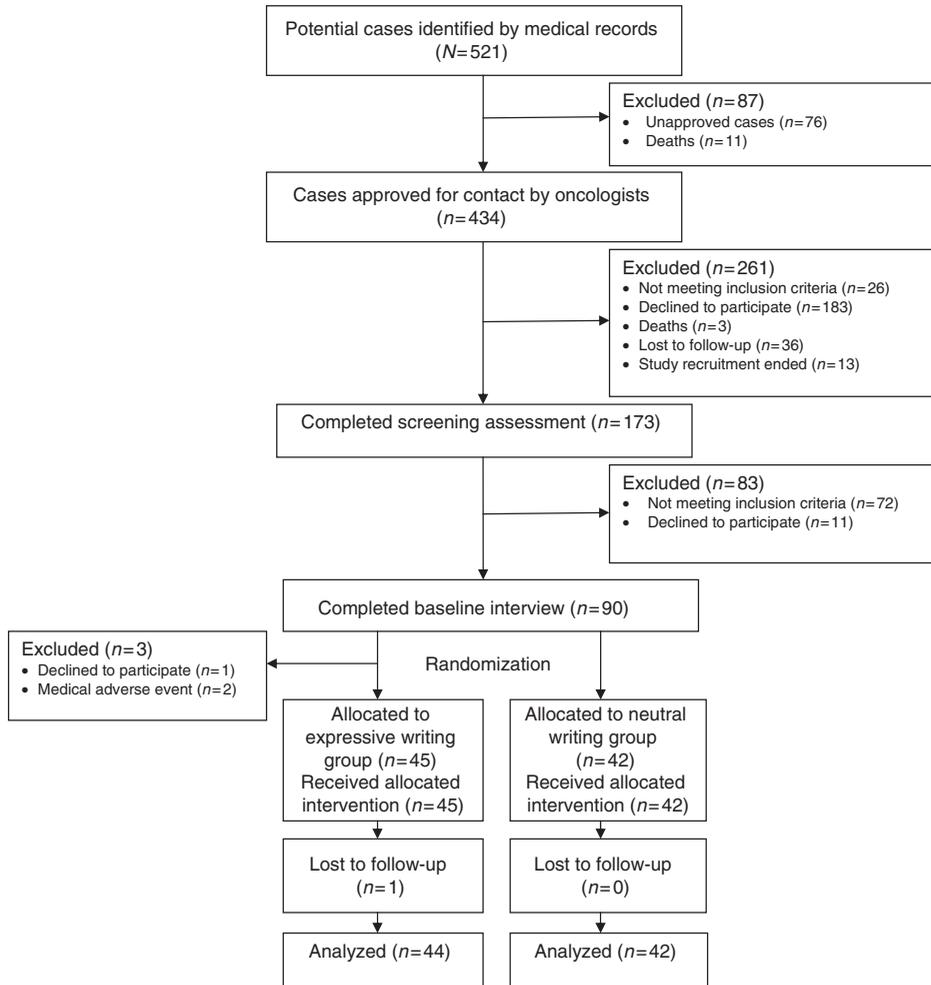


Figure 1. Study schema.

completed all four writing sessions and the 8-week follow-up assessment (cumulative 12.2% drop-out rate).

Manipulation checks

The independent rater correctly judged the writing assignment for 99% of the 348 essays, indicating excellent adherence to the writing instructions. Participants’ ratings of essay emotionality were significantly correlated with the proportion of positive emotion words ($r = 0.23, p < 0.001$) and negative emotion words in the essays ($r = 0.48, p < 0.001$), as assessed by the LIWC program.

A MANOVA with the writing group, writing day and their interaction as independent variables was conducted on participants’ ratings of the degree to which their essays were personal and revealed their emotions and the proportion of positive

Table 1. Sample characteristics.

Characteristic	Expressive writing group (<i>n</i> = 44)		Neutral writing group (<i>n</i> = 42)	
	Number	(%)	Number	(%)
Age, years				
Mean		57.4		58.5
Standard deviation		12.5		11.7
Race				
Caucasian	36	81.8	34	81.0
African American	2	4.5	4	9.5
Hispanic	2	4.5	3	7.1
Other	4	9.1	1	2.4
Education				
≥12 years	6	13.6	5	11.9
Some college	8	18.2	13	31.0
College or graduate degree	30	68.2	24	57.1
Employed	14	31.8	16	38.1
Married or marriage equivalent	31	70.5	29	69.0
Karnofsky performance status				
Mean		78.9		80.2
Standard deviation		9.2		8.4
Number of comorbid conditions				
Mean		1.3		1.4
Standard deviation		1.5		1.4
Time since diagnosis of Stage IV breast cancer, years				
Mean		4.2		4.7
Standard deviation		3.0		3.5
Breast cancer treatment history				
Chemotherapy	43	97.7	36	85.7
Radiation	30	68.2	25	59.5
Hormonal therapy	33	75.0	38	90.5
Surgery	37	84.1	35	83.3
Cancer treatments during the study				
Chemotherapy	33	75.0	31	73.8
Radiation	3	6.8	5	11.9
Hormonal therapy	15	34.1	20	47.6
Surgery	1	2.3	1	2.4
Baseline mental health service use	18	40.9	10	23.8

and negative emotion words in the essays. The effect for writing group was significant, Wilks' Λ ; $F(4, 317) = 0.44$, $p < 0.001$. Follow-up univariate analyses showed that the expressive writing group rated their essays as more personal than the neutral writing group (5.7 ± 1.6 vs. 4.3 ± 2.2 , respectively; $\eta_p^2 = 0.13$, $p < 0.001$) and as more revealing of their emotions (5.7 ± 1.4 vs. 3.0 ± 2.2 , respectively; $\eta_p^2 = 0.35$, $p < 0.001$). In addition, the essays of the expressive writing group contained a higher percentage of positive emotion words than those of the neutral writing group (0.73 ± 0.62 vs. 0.35 ± 0.38 , respectively; $\eta_p^2 = 0.13$, $p < 0.001$) as well as a higher

Table 2. Descriptive statistics, effect sizes, and 95% confidence intervals for study outcomes at follow-up.

Outcome	Expressive writing group (<i>n</i> = 44)		Neutral writing group (<i>n</i> = 42)		Partial η^2	95% CI
	Mean	SE	Mean	SE		
Meaning and peace	21.60	0.59	22.58	0.60	0.02	-0.70 to 2.66
Demoralisation	21.07	1.65	19.50	1.68	0.01	-6.26 to 3.11
Distress thermometer	4.53	0.36	4.37	0.37	0.00	-1.20 to 0.88
CES-D	17.99	1.35	17.87	1.38	0.00	-3.98 to 3.74
HADS-Anxiety	7.15	0.48	7.87	0.49	0.01	-0.64 to 2.09
Global sleep quality	8.42	0.39	7.83	0.39	0.01	-1.70 to 0.52
FACIT-Fatigue	30.38	1.17	32.58	1.20	0.02	-1.16 to 5.58

Notes: SE, standard error; CI, confidence interval; CES-D, Center for Epidemiologic Studies-Depression Scale; HADS, Hospital Anxiety and Depression Scale; FACIT, Functional Assessment of Chronic Illness Therapy. Means are adjusted for baseline values of the dependent measures.

percentage of negative emotion words (6.2 ± 1.9 vs. 3.0 ± 1.5 , respectively; $\eta_p^2 = 0.46$, $p < 0.001$). The main effect of writing day and the interaction of writing day and group assignment were not significant.

Analyses on study outcomes

Three MANCOVA analyses revealed no effects of writing group on the following sets of dependent variables with baseline values as covariates: (1) existential well-being (meaning/peace and demoralisation); (2) psychological well-being (general distress, depressive symptoms and anxiety); and (3) physical well-being (sleep and fatigue) (Table 2). To further examine the effects of writing group, mean change scores were calculated (data not shown). These scores revealed little change in study outcomes from baseline to follow-up for both writing groups.

Subsequent MANCOVA analyses showed that writing group did not interact with functional status, time since diagnosis or level of education to predict the three sets of dependent variables (existential well-being, psychological well-being and physical well-being). Thus, the same results were obtained across demographic and medical subgroups.

A logistic regression analysis showed a significant effect of writing group on use of mental health services during the study, controlling for baseline use. Expressive writing participants were more likely to access these services during the study than neutral writing participants (24/44 vs. 11/42, respectively; odds ratio = 3.40, 95% CI, 1.05 to 11.08). Among patients who accessed mental health services, the average number of sessions during the study did not differ between the expressive writing and neutral writing groups (6.5 ± 7.0 vs. 7.4 ± 7.0 , respectively; $d = 0.13$, $p > 0.10$). Patients in both writing groups were more likely to receive counselling or other mental health services than attend cancer support groups (27/86 vs. 13/86). Most patients who received mental health services other than cancer support groups reported discussing their cancer experience with a professional (24/27).

Discussion

In this sample of women with metastatic breast cancer and significant distress, expressive writing did not result in better existential and psychological well-being, reduced fatigue or enhanced sleep quality as compared to neutral writing. Although a meta-analysis found a positive main effect of expressive writing on psychological well-being in primarily healthy samples (Frattaroli, 2006), this effect has not been demonstrated in cancer patient samples (C. de Moor et al., 2002; J.S. de Moor et al., 2008; Low et al., 2010; Stanton et al., 2002; Zakowski et al., 2004). Previous null findings have been attributed to the good quality of life of cancer patients at baseline (Zakowski et al., 2004), whereas the current results require an alternative explanation. Participants in most expressive writing studies have reflected on past stressors that were not life-threatening (e.g. end of a relationship), whereas women in this study wrote about an ongoing, unpredictable and life-limiting stressor (metastatic breast cancer). If decreasing physiological arousal to stressful memories is a key mediator of the positive health effects of expressive writing, as suggested by some findings (Low et al., 2006), disclosure regarding an evolving stressor that threatens every aspect of one's life may have a low likelihood of conferring health benefits.

Other trials of emotional disclosure interventions for advanced cancer patients have yielded mixed results. Among patients with metastatic renal cell carcinoma, expressive writing did not decrease distress, but enhanced vigour and sleep quality (de Moor et al., 2002). A randomised trial of partner-assisted emotional disclosure for patients with primarily advanced gastrointestinal cancer yielded relational benefits for some couples, but did not reduce distress (Porter et al., 2009). Supportive-expressive group therapy for metastatic breast cancer patients, a central component of which is emotional expression, has shown heterogeneous effects on psychological well-being (see Edwards, Hulbert-Williams, & Neal, 2008, for a review). Intervention and control participants, on average, have reported relatively stable distress over time (Classen et al., 2001; Goodwin et al., 2001). None of these trials had a distress criterion for study entry. Taken together, findings challenge the assumption that emotional expression has a ubiquitous positive impact on the adjustment of advanced cancer patients and underscore the need to elucidate for whom emotional disclosure interventions may be effective.

In this study, null effects of expressive writing were obtained regardless of time since diagnosis, functional status and level of education. A recent study of expressive writing for metastatic breast cancer patients obtained mixed results regarding the relations between diagnosis duration and health outcomes (Low et al., 2010). Specifically, women who had been recently diagnosed appeared to benefit from the intervention with respect to somatic symptoms, whereas women with greater diagnosis duration appeared to experience adverse effects of the intervention on sleep. Examining whether expressive writing is most beneficial for patients during acute phases of the stressor (e.g. time of diagnosis, test results indicating further metastases, changes in treatment regimens) is an important direction for future research. With respect to level of education, our results are consistent with those of a meta-analysis that did not find a moderating effect of education on expressive writing outcomes (Frattaroli, 2006). However, the extent to which literacy level impacts the outcomes of expressive writing deserves further study, as the majority of expressive writing trials have been conducted with college students.

Although both writing groups in this study showed little change in their distress over time, the expressive writing group reported more than double the rate of mental health service use during the study compared to the neutral writing group. Differential rates of referral to mental health services between writing groups cannot account for this finding because we only referred one patient to these services. A study with early-stage breast cancer patients did not find an effect of expressive writing on psychological support seeking; however, participants reported positive life quality at all time points (Stanton et al., 2002). In this study, expressive writing may have increased patients' awareness of their distress and challenging circumstances, thereby prompting them to seek mental health services. Although the duration and type of mental health services varied, the treatment often involved some discussion of their cancer experience. Further research is needed to test the social integration model that postulates change in social interactions with close others or healthcare professionals as a mediator of the relation between writing group assignment and health outcomes such as mental health service use (Pennebaker & Graybeal, 2001). Discussion of mental health concerns with a healthcare professional is a strong predictor of mental health service use among advanced cancer patients (Kadan-Lottick, Vanderwerker, Block, Zhang, & Prigerson, 2005).

Limitations of this trial should be noted. First, patients who were younger and more proximal to diagnosis were more likely to participate; however, these response biases were relatively small in magnitude. Second, the generalisability of the findings to men and patients with diverse ethnic and socioeconomic backgrounds warrants examination. In addition, although the sample size was more than double that of most expressive writing trials with cancer patients, we had limited power to detect small effect sizes. Finally, this study relied on self-reported outcome measures that were administered at one follow-up assessment. Administering objective and self-reported health assessments over time would provide a more comprehensive evaluation of expressive writing's health effects. A longer follow-up period may have revealed benefits of expressive writing when combined with mental health interventions. An intervention that involves social support and greater emotional processing of the stressor may be necessary for distressed patients with serious illness.

This study contributes to future research and clinical practice in several respects. First, the 100% retention rate across the four writing sessions supports the feasibility of home-based interventions for advanced cancer patients. Second, the findings provide a reliable estimate of health effects of expressive writing in this population due to the low attrition rate and rigorous methods (e.g. randomisation, blind assessments and distress criterion for study entry). Third, results suggest that expressive writing may improve uptake of psychological support services among distressed patients without increasing symptom severity. Reducing personal barriers to psychological support seeking among those with clinically elevated distress is an important goal of health care. Next steps include documenting further social outcomes of expressive writing and testing whether it is a useful adjunct to standardised psychosocial interventions.

Acknowledgements

Catherine Mosher is now at Indiana University-Purdue University Indianapolis in the Department of Psychology.

This study is supported by the National Cancer Institute (F32CA130600). The clinicaltrials.gov identification number for this study is NCT00624156. The authors thank Francis J. Keefe, PhD, for contributing his expertise as well as the breast cancer team at Memorial Sloan-Kettering Cancer Center and our research participants. These results were presented at the 2010 annual meeting of the Society of Behavioral Medicine in Seattle, WA.

References

- Abernethy, A.P., Shelby-James, T., Fazekas, B.S., Woods, D., & Currow, D.C. (2005). The Australia-modified Karnofsky Performance Status (AKPS) scale: A revised scale for contemporary palliative care clinical practice [ISRCTN81117481]. *BMC Palliative Care*, *4*, 7, doi: 10.1186/1472-684X-4-7.
- Aranda, S., Schofield, P., Weih, L., Yates, P., Milne, D., Faulkner, R., & Voudouris, N. (2005). Mapping the quality of life and unmet needs of urban women with metastatic breast cancer. *European Journal of Cancer Care*, *14*, 211–222, doi: 10.1111/j.1365-2354.2005.00541.x.
- Buysse, D.J., Reynolds, C.F., III, Monk, T.H., Berman, S.R., & Kupfer, D.J. (1989). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Psychiatry Research*, *28*, 193–213, doi: 10.1016/0165-1781(89)90047-4.
- Classen, C., Butler, L.D., Koopman, C., Miller, E., DiMiceli, S., Giese-Davis, J., . . . , Spiegel, D. (2001). Supportive-expressive group therapy and distress in patients with metastatic breast cancer: A randomized clinical intervention trial. *Archives of General Psychiatry*, *58*, 494–501, doi: 10.1001/archpsyc.58.5.494.
- Danoff-Burg, S., Agee, J.D., Romanoff, N.R., Kremer, J.M., & Strosberg, J.M. (2006). Benefit finding and expressive writing in adults with lupus or rheumatoid arthritis. *Psychology and Health*, *21*, 651–665, doi: 10.1080/14768320500456996.
- de Moor, C., Sterner, J., Hall, M., Warneke, C., Gilani, Z., Amato, R., & Cohen, L. (2002). A pilot study of the effects of expressive writing on psychological and behavioral adjustment in patients enrolled in a Phase II trial of vaccine therapy for metastatic renal cell carcinoma. *Health Psychology*, *21*, 615–619, doi: 10.1037//0278-6133.21.6.615.
- de Moor, J.S., Moye, L., Low, M.D., Rivera, E., Singletary, S.E., Fouladi, R.T., & Cohen, L. (2008). Expressive writing as a presurgical stress management intervention for breast cancer patients. *Journal of the Society for Integrative Oncology*, *6*, 59–66, doi: 10.2310/7200.2008.0010.
- Edwards, A.G., Hulbert-Williams, N., & Neal, R.D. (2008). Psychological interventions for women with metastatic breast cancer. *Cochrane Database of Systematic Reviews*, *3*, CD004253, doi: 10.1002/14651858.CD004253.pub3.
- Faul, F., Erdfelder, E., Lang, A., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*, 175–191, Retrieved from <http://brm.psychonomic-journals.org/>
- Frattaroli, J. (2006). Experimental disclosure and its moderators: A meta-analysis. *Psychological Bulletin*, *132*, 823–865, doi: 10.1037/0033-2909.132.6.823.
- Frisina, P.G., Borod, J.C., & Lepore, S.J. (2004). A meta-analysis of the effects of written emotional disclosure on the health outcomes of clinical populations. *Journal of Nervous and Mental Disease*, *192*, 629–634, doi: 10.1097/01.nmd.0000138317.30764.63.
- Goodwin, P.J., Leszcz, M., Ennis, M., Koopmans, J., Vincent, L., Guther, H., . . . , Hunter, J. (2001). The effect of group psychosocial support on survival in metastatic breast cancer. *New England Journal of Medicine*, *345*, 1719–1726, doi: 10.1056/NEJMoa011871.
- Jacobsen, P.B., Donovan, K.A., Trask, P.C., Fleishman, S.B., Zabora, J., Baker, F., & Holland, J.C. (2005). Screening for psychologic distress in ambulatory cancer patients. *Cancer*, *103*, 1494–1502, doi: 10.1002/cncr.20940.

- Jacobsen, J.C., Vanderwerker, L.C., Block, S.D., Friedlander, R.J., Maciejewski, P.K., & Prigerson, H.G. (2006). Depression and demoralization as distinct syndromes: Preliminary data from a cohort of advanced cancer patients. *Indian Journal of Palliative Care, 12*, 815, doi: 10.4103/0973-1075.25913.
- Kadan-Lottick, N.S., Vanderwerker, L.C., Block, S.D., Zhang, B., & Prigerson, H.G. (2005). Psychiatric disorders and mental health service use in patients with advanced cancer: A report from the coping with cancer study. *Cancer, 104*, 2872–2881, doi: 10.1002/cncr.21532.
- King, L.A. (2002). Gain without pain? Expressive writing and self-regulation. In S.J. Lepore & J.M. Smyth (Eds.), *The writing cure: How expressive writing promotes health and emotional well-being* (pp. 119–134). Washington, DC: American Psychological Association.
- Kissane, D.W., Grabsch, B., Love, A., Clarke, D.M., Bloch, S., & Smith, G.C. (2004). Psychiatric disorder in women with early stage and advanced breast cancer: A comparative analysis. *The Australian and New Zealand Journal of Psychiatry, 38*, 320–326, doi: 10.1111/j.1440-1614.2004.01358.x.
- Lepore, S.J., Greenberg, M.A., Bruno, M., & Smyth, J.M. (2002). Expressive writing and health: Self-regulation of emotion-related experience, physiology, and behavior. In S.J. Lepore & J.M. Smyth (Eds.), *The writing cure: How expressive writing promotes health and emotional well-being* (pp. 99–117). Washington, DC: American Psychological Association.
- Low, C.A., Stanton, A.L., Bower, J.E., & Gyllenhammer, L. (2010). A randomized controlled trial of emotionally expressive writing for women with metastatic breast cancer. *Health Psychology, 29*, 460–466, doi: 10.1037/a0020153.
- Low, C.A., Stanton, A.L., & Danoff-Burg, S. (2006). Expressive disclosure and benefit finding among breast cancer patients: Mechanisms for positive health effects. *Health Psychology, 25*, 181–189, doi: 10.1037/0278-6133.25.2.181.
- Palesh, O.G., Collie, K., Batiuchok, D., Tilston, J., Koopman, C., Perlis, M.L., . . . , Spiegel, D. (2007). A longitudinal study of depression, pain, and stress as predictors of sleep disturbance among women with metastatic breast cancer. *Biological Psychology, 75*, 37–44, doi: 10.1016/j.biopsycho.2006.11.002.
- Pennebaker, J.W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science, 8*, 162–166, doi: 10.1111/j.1467-9280.1997.tb00403.x.
- Pennebaker, J.W., & Graybeal, A. (2001). Patterns of natural language use: Disclosure, personality, and social integration. *Current Directions in Psychological Science, 10*, 90–93, doi: 10.1111/1467-8721.00123.
- Pennebaker, J.W., Mayne, T.J., & Francis, M.E. (1997). Linguistic predictors of adaptive bereavement. *Journal of Personality and Social Psychology, 72*, 863–871, doi: 10.1037/0022-3514.72.4.863.
- Peterman, A.H., Fitchett, G., Brady, M.J., Hernandez, L., & Cella, D. (2002). Measuring spiritual well-being in people with cancer: The Functional Assessment of Chronic Illness Therapy – Spiritual Well-being Scale (FACIT-Sp). *Annals of Behavioral Medicine, 24*, 49–58, doi: 10.1207/S15324796ABM2401_06.
- Pfeiffer, E. (1975). A short portable mental status questionnaire for the assessment of organic brain deficit in elderly patients. *Journal of the American Geriatrics Society, 23*, 433–441, Retrieved from <http://www.wiley.com/bw/journal.asp?ref=0002-8614&site=0001>
- Porter, L.S., Keefe, F.J., Baucom, D.H., Hurwitz, H., Moser, B., Patterson, E., & Kim, H.J. (2009). Partner-assisted emotional disclosure for patients with gastrointestinal cancer: Results from a randomized controlled trial. *Cancer, 115*(18 Suppl), 4326–4338, doi: 10.1002/cncr.24578.
- Radloff, L.S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401, doi: 10.1177/014662167700100306.

- Rosenberg, H.J., Rosenberg, S.D., Ernstoff, M.S., Wolford, G.L., Amdur, R.J., Elshamy, M.R., . . . , Pennebaker, J.W. (2002). Expressive disclosure and health outcomes in a prostate cancer population. *International Journal of Psychiatry in Medicine*, *32*, 37–53. Retrieved from <http://www.baywood.com/journals/previewjournals.asp?id=0091-2174>
- Roth, A.J., Kornblith, A.B., Batel-Copel, L., Peabody, E., Scher, H.I., & Holland, J.C. (1998). Rapid screening for psychologic distress in men with prostate carcinoma: A pilot study. *Cancer*, *82*, 1904–1908, doi: 10.1002/(SICI)1097-0142(19980515)82:10 <1904::AID-CNCR13>3.0.CO;2-X.
- Schwartz, C.E., & David, E. (2002). To everything there is a season: A written expression intervention for closure at the end of life. In S.J. Lepore & J.M. Smyth (Eds.), *The writing cure: How expressive writing promotes health and emotional well-being* (pp. 257–278). Washington, DC: American Psychological Association.
- Smyth, J.M. (1998). Written emotional expression: Effect sizes, outcome types, and moderating variables. *Journal of Consulting and Clinical Psychology*, *66*, 174–184, doi: 10.1037/0022-006X.66.1.174.
- Smyth, J.M., Stone, A.A., Hurewitz, A., & Kaell, A. (1999). Effects of writing about stressful experiences on symptom reduction in patients with asthma or rheumatoid arthritis: A randomized trial. *Journal of the American Medical Association*, *281*, 1304–1309, doi: 10.1001/jama.281.14.1304.
- Stanton, A.L., Danoff-Burg, S., Sworowski, L.A., Collins, C.A., Branstetter, A.D., Rodriguez-Hanley, A., . . . , Austenfeld, J.L. (2002). Randomized, controlled trial of written emotional expression and benefit finding in breast cancer patients. *Journal of Clinical Oncology*, *20*, 4160–4168, doi: 10.1200/JCO.2002.08.521.
- Vehling, S., Lehmann, C., Oechsle, K., Bokemeyer, C., Krull, A., Koch, U., & Mehnert, A. (2010). Global meaning and meaning-related life attitudes: Exploring their role in predicting depression, anxiety, and demoralization in cancer patients. *Supportive Care in Cancer*. Advance online publication. doi: 10.1007/s00520-010-0845-6.
- Yellen, S.B., Cella, D.F., Webster, K., Blendowski, C., & Kaplan, E. (1997). Measuring fatigue and other anemia-related symptoms with the Functional Assessment of Cancer Therapy (FACT) measurement system. *Journal of Pain and Symptom Management*, *13*, 63–74, doi: 10.1016/S0885-3924(96)00274-6.
- Zakowski, S.G., Ramati, A., Morton, C., Johnson, P., & Flanigan, R. (2004). Written emotional disclosure buffers the effects of social constraints on distress among cancer patients. *Health Psychology*, *23*, 555–563, doi: 10.1037/0278-6133.23.6.555.
- Zigmond, A.S., & Snaith, R.P. (1983). The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*, *67*, 361–370, doi: 10.1111/j.1600-0447.1983.tb09716.x.

Copyright of Psychology & Health is the property of Routledge and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.