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Expressive Writing Improves Psychological and Physical Health among Breast Cancer Survivors: A Review of Journal Articles

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Author's contribution

This work was carried out independently by the author. The author carried out the literature searches and managed the analyses of the study. The author also wrote the first draft of the manuscript and edited the manuscript. The final manuscript was read and approved by the author.

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Review Article

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ABSTRACT

Background: The risk of distress can persist from the time of cancer diagnosis and extends beyond the completion of treatment. The use of expressive writing could help individuals to cope with the impact of diagnosis. By doing so, expressive writing may improve their psychological and physical health.
Objectives: The present review aimed at determining whether or not expressive writing enhances psychological and physical health among breast cancer survivors (BSC). It also aims to explore whether the type of writing prompt makes a difference in results findings.
Data Sources: Electronic bases (01/2004 to 03/2014) included PsychInfo, PubMed, MEDLINE and Google Scholars.
Eligible Studies: Published articles of expressive writing intervention (EWI) that report, as an outcome – health-care utilization, physical health status, psychological well-being, and quality of life among breast cancer survivors.
Results: The review included five articles that fulfilled the selection criteria. Expressive writing

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intervention was found to be associated with a range of benefits (e.g. improvement in health, reduction in psychological distress, satisfaction with social support, and better quality of life). Eligible participants were recruited from diverse settings, for instance, during hospital visits, from organization and in local community. The intensities and prompts used in EWI across studies varied considerably.

Conclusion: Among breast cancer survivors, expressive writing is associated with higher health status and improvement in psychological well-being. Instead of writing prompts, the choice of writing topics moderates the effectiveness of the intervention. Moderate quality evidence, this suggests more research is required to establish robust evidence.

Keywords: Expressive writing; breast cancer; health; well-being; quality-of-life.

1. INTRODUCTION

Breast cancer is the most frequently diagnosed cancer among women worldwide, affecting about 1.38 million women annually [1,2]. In the UK, it is estimated that 550, 000 individuals have been diagnosed with breast cancer at some point in their lives [3]. In Scotland, it was reported that 1.4% of females are living with breast cancer [3]. Though there is an increasing prevalence of people being diagnosed with this condition, the advancement of treatment and early detection has significantly reduced mortality rate [3].

Patients diagnosed with breast cancer undergo a series of physical and psychological changes [4]. Problems like disrupted sleep cycle, fatigue, chronic worrying and demoralization are highly prevalent in this population [5]. Most stressful is the diagnosis itself [6]. This is because cancer diagnosis has the potential to change the person's values, sense of control, relationship with others, and even day-to-day functioning [7]. To a greater extent, the experience of cancer can threaten continuity of identity and self-narrative [8], which generates great emotional turmoil and reduces quality of life [9].

Evidence showed that breast cancer patients experience psychological distress that may persists from the time of being diagnosed to months and even years after completion of treatment [10,11]. Substantiated by longitudinal studies, such distress persists after 5 years among these women [11]. Even though patients with such life-threatening illness implicitly acknowledged that psychosocial interventions can provide significant quality-of-life benefits, the Institute of Medicine reported that only 10-30% of women with breast cancer sought after psychosocial care [12].

Majority of breast cancer patients are reluctant to seek mental health care because of the shameful feeling, stigma associated to the disease, and beliefs about carrying the burden alone [13]. The suppressed emotions can be detrimental to physical and psychological health which may influence adjustment to the disease [14]. Therefore, the implementation of an intervention should target on verbalization of emotional experiences because such design has proven to be effective at helping patients to develop insight towards diagnosis, better emotional adjustment, and foster effective coping techniques to manage the aftermaths of the diagnosis [15].

2. BACKGROUND

Expressive writing intervention (EWI) is one approach that allows individuals to ventilate their emotions. This method developed by Pennebaker and colleagues requires participants to disclose their deepest thoughts and stressful experience for 15-20 minutes daily, or for a few times in a month [16]. This exercise is self-directed and private which paves the way for creativity and stimulates cognitive and emotional processes [17]. It has been proven to be an effective coping strategy for individuals who are going through adversity [14].

The main aspect of EWI as proposed by Lepore et al. is that it uses writing as a vehicle to guide individuals to regulate their thought processes and reactions towards the external world [18]. It operates in a way that it decreases autonomic arousal to negative-related thoughts by organizing the experiences an individual has confronted into a coherent and meaningful narrative [18]. Using the social integration model, writing alters the author's social world, and facilitates social integration by prompting individuals to connect and seek social support that is readily available, thus attaining a better overall functioning [19]. Other theories such as emotional inhibition, cognitive habituation, emotional processing has been used to elucidate

the physical and psychological findings observed in EWI [20]. These theories have been tested to some extent, presenting different views surrounding the mechanism of EWI.

A review conducted by Frattaroli revealed that EWI and its beneficial correlates (e.g. improvement in emotional health, enhanced immune system functioning, reduction in physical health complaints, and less visits to healthcare) have been reported in over 100 randomized studies in non-clinical and clinical populations [21]. The average reported effect size for healthy populations is medium (d = .47), whereas the effect size in clinical populations is modest (d = .19) [22]. Most studies and only a small proportion of it found that there is no observable improvement in psychological well-being or quality of life [23]. In this pool of reviews, little attention has been given to breast cancer survivors (BCS). Previous literature indicated that distress can persist long after completion of treatment; hence a review is needed to determine the efficacy of EWI in ameliorating suffering of BCS.

3. PRESENT STUDY

The main aim of the systematic review is to examine the effectiveness of EWI at improving BCS physical and psychological health. Secondary objective is to explore whether the type of writing prompts in EWI would make a difference in research findings.

4. METHODS

4.1 Identification of Paper

Articles were identified by searching major electronic databases including *PsychInfo, PubMed, MEDLINE, and Google Scholars,* covering the period from 2004 to March 2014. A list of expressive writing related keywords was used to identify relevant papers (see Table 1 in Appendix A). Articles included were in English.

4.2 Selection Criteria

Selection was initially based on retrieval of titles and abstracts. Irrelevant papers and duplicates were removed. The second stage involved screening relevant papers; these papers were assessed and included if it meets the inclusion criteria stated in Table 2 (see Appendix A). Studies were excluded if the articles were unpublished study, not in full-text, and inappropriate patient populations.

4.3 Information Extraction

Information from papers was extracted on: (a) Study aim; (b) Design; (c) Details about intervention (e.g. frequency and duration of writing sessions, delivery mode, and content focus); (d) Outcomes measures; (e) Process (e.g. recruitment method).

In addition, studies were assessed using the Cochrane risk of bias criteria established by Higgins and Altman [24]. The risk of bias assessed the (1) Adequacy of concealment, (2) sequence generation, (3) Baseline comparability, (4) Blinding of subjects, (5) Completeness of follow-up data (refer appendix C). For participant blinding, studies were evaluated whether the procedure is concealed prior beginning of initial writing session, in which experimental manipulation of emotional disclosure is described in detailed – '*adequate*', from studies that demonstrated that participants were aware of the purpose and design of the research – 'inadequate' and studies with insufficient information to identify the adequacy of blinding process – '*unclear*'. Overall risk of bias is coded as low (almost all criteria coded as adequate), moderate (≥ 3 criteria adequate/unclear) or high (< 3 adequate).

5. RESULTS

Using the search strategy, a total of 18 articles was identified after the removal of duplicates (see Fig. 1 in Appendix B). During the initial screening, six papers were excluded because it was not relevant to the theme of this systematic review. Total of seven papers were excluded due to the nature of the design, inappropriate target populations, and inability to trace full-text paper.

5.1 Descriptive of Studies

Remaining five intervention studies fulfilled the selection criteria indicated above. The characteristics of the studies included are described in a Table (refer appendix E). Majority of studies in this review were conducted in the USA [25-27], one in the UK [28] and one in Danish [22]. Three studies [26-28] compared a EWI with a no-intervention control group, one study [25] compared EWI with a factual writing condition, while another [22] compared it with a

non-emotional topic condition. There are different writing prompts used in these studies, such as writing about an imagined traumatic event [22,26], life goals [28] and exploring the meaning of cancer [25,28]. Only two studies [22,28] explicitly screened for psychosocial problems and listed it as an exclusion criterion. Participants were recruited in diverse settings, with most recruitment were carried out through the hospital [25,27-28], followed by organization [22] and in the community [26]. All studies were delivered in the form of self-help for breast cancer survivors, however, the intensity and duration of intervention varied considerably.

5.2 Statistical Power

Three of the studies [25,27-28] did not conduct power analyses. Of the studies which performed power analyses, one [26] had sufficient power to yield a significant result, while another study [22] had sufficient power to detect differences between study groups; however, the findings did not conform to what the authors had initially hypothesized.

5.3 Outcome Measures

Various outcome indicators were used and the common assessed domains were quality of life and mood. Consistency of measurement scales across studies were relatively high, with four studies utilized *Profile of Mood State* [POMS] to assess mood and two employed *Functional Assessment of Cancer Therapy* [FACT-B] to assess quality of life of breast cancer patients. Other measures include self-report of physical health status (i.e. health complaints and healthcare utilization) and psychological well-being (i.e. cancer-related distress, depression, and positive mood) and social support received.

5.3.1 Health status

Two trials [25,27] demonstrated EWI has positive effects on health at a 3-month follow-up. However, when Henry et al. conducted a 9-month follow-up assessment, there were no significant changes in physical symptoms reported among EWI participants, rather, symptoms severity increased to initial baseline level [27]. Although EWI is found to be associated with decreased use of healthcare facilities [25], the effects were not evident in Gellaitry's et al. [28] study groups.

5.3.2 Psychological well-being

Findings revealed EWI produced significant reduction in negative emotions and depressive symptoms after each writing [22] and at 3-month follow-up [27]. When longer periods of assessment were conducted at 6-month and 9-month follow-up [27-28], the effectiveness of EWI on negative mood reduction diminished. Findings by Jensen-Johansen et al. showed no main effects of EWI were found in reducing negative mood, depressive symptomology, and cancer-related distress [25].

5.3.3 Quality of life

Conflicting evidence were found regarding the aim of EWI at improving BCS' quality-of-life outcome, with one trial [26] reported significant improvement and another [28] revealed no significant differences were found between study groups.

5.3.4 Social support

Compared with controls, participants who practiced EW experience higher levels of satisfaction with emotional support [28]. At 6-month post-intervention, though there was not significant differences in perceived actual emotional support between the study groups, EWI participants were more likely to maintain their emotional relationships with others compared to controls.

5.4 Evaluation of Methodology

All studies employed a range of reliable and valid measures to examine the effectiveness of EWI for BCS. On average, a 3-month follow up assessment was conducted in every study, only two studies [22,27] extended the follow up assessment at 9 months. Testing the lasting effects of the intervention is crucial, especially in areas like cancer survivorship. EWI tend to increase momentary distress in post-writing due to the instructions given to recall particular unpleasant incident, if scholars postulated that long-term benefits will surpass the temporarily emotional inconveniences, longer periods of follow up assessment like the aforementioned studies are essential. Another methodological strength of Jensen-Johansen and colleagues [22] study is the large sample size which allows the researchers to adjust for various confounding variables.

It is important to discern what type of writing prompt is effective in enhancing psychological or physical health. Creswell and colleagues [25] employed a content-analysis approach to investigate the nature of BCS' writing style in a naturalistic setting. Such approach enables common themes to emerge for comparison. However, the authors did not manipulate the writing conditions, hence causation cannot be inferred. An intervention is likely to be implemented if it demonstrates feasibility and is of low-cost. Only one study [27] examined this by showing BCS from urban and rural areas benefitted from this simple exercise. This study is a well-matched comparison-group study, therefore the magnitude of the intervention effects should not be regarded as a final arbiter.

5.5 Quality Assessment

Risk of bias varied among the included studies (refer Table in appendix D), with risk assessed as high [27] and moderate [25] in two trials, and low in three [22,26,28]. Across the five trials a total of 3(12%) risk of bias items were evaluated as inadequate, 4(16%) were unclear and 18(72%) were adequate. The common pitfalls in these studies were failure in attempting to blind participants which allowed most items to be assessed as inadequate. Some information was not conveyed thoroughly which hindered the risk of bias assessment, particularly regarding the details to conceal allocation, comparability of groups at baseline, and whether there is a complete follow-up.

6. DISCUSSION

This systematic review examines whether EWI is an effective intervention for improving psychological and physical health for breast cancer survivors. Overall, EWI is capable of enhancing health, well-being, quality of life and social support in these women. However, not all women experience a reduction in psychological distress and improvement in physical health. This suggests that EWI may only be effective among women who have the potential to generate and develop positive responses. This is highlighted in Jensen-Johansen et al. study [22] in which the effectiveness of EWI is moderated by women's ability to express emotional experiences (i.e. alexithymia). Results also revealed that when EWI was compared to a group without any assigned activity, the positive effects of EWI were more direct [26-28]. Conversely, when the control group was assigned with a seemingly neutral task, the beneficial effects of EWI were less straightforward [22,25]. These mixed results suggest that such control condition may not be exclusively neutral and perhaps cause distress in participants.

This is the first work that attempts to examine whether effects of EWI will differ according to type of writing prompts used. Irrespective of prompt, participants in all studies experienced the psychological and physical benefits of expressive writing. Apparently, the choice of writing topic moderates the effectiveness of EWI. Given topics like benefit-finding of cancer experience [25] seems to generate greater benefits than describing deepest feelings about cancer experience [25-26] and even superior than reciting facts about treatment [26]. Participants who were given topic to write just about anything that either associated with breast cancer or self-selected trauma [22-26] don't seem to experience a vast array of benefits compared to those with structured choice of topic. Perhaps, by giving a structured topic, it helps individuals to acknowledge their unique identity, and through writing it helps them to recognize their personal reaction towards the illness and develop greater search of meaning in their breast cancer journey [26].

In general, when participants were recruited via healthcare system (i.e. hospital or clinics), the generated effects were larger than non-healthcare system (i.e. organization or community). All administered EWI in this study were in self-help format, though the effects presumably may not be as large as interventions that were delivered face-to-face, from a public health perspectives, self-help interventions are inexpensive and can reach large target audience which may reduce health disparities among breast cancer survivors living in urban and rural areas.

Like any therapy, there are limitations to expressive writing in intervention and treatment. First, some individuals may be reluctant to participate in a disclosure writing activity if they believe they have difficulties in expressing emotions [29]. Additionally, EWI requires individuals to integrate their perceived benefits into their trauma story, it can be ineffective for those who are inclined to ruminate on negative experiences [30]. Nevertheless, meta-analyses revealed that the EWI appears to be reasonably safe for participants, even if no specific benefits obtained [30,31].

6.1 Limitations

The quality evidence of the studies is not high, demonstrating EWI has a small to moderate beneficial effects associated with improvement in BCS' psychological and physical health. The common weakness of the studies is the lack of blinding, and this is probably due to the different standards of reporting studies. Studies which failed to report control of bias were given negative score; hence papers that were rated as low quality could have been overstated. Moreover, this review is conducted independently by the researcher which could have led to selection bias in screening papers for review.

6.2 Future Research

The research reviewed suggests that EWI can be effective in the enhancement of psychological and physical health status for BCS. However, the effectiveness of the intervention could have been distorted by the nature of activities carried out by control groups in the above-mentioned studies. The type of assigned activities could have led to expectancy bias which misrepresents the interpretation of the actual findings. It can be presumed that if EWI were compared to a no-treatment or waiting list control, the interpretation of the results would be more convincing. Future work should be more careful about the construction of control groups.

Across studies, EWI is delivered in varying intensities; this makes it challenging to decide the appropriate "writing dosage", hence, future research needs to address this issue. Another avenue for research is the timing of writing. Perhaps breast cancer survivors in these studies no longer perceive the cancer experience as an emotional upheaval, this might contribute to the null findings surrounding the efficacy of the intervention. It is suggested that EWI should be implemented at multiple standpoints during the course of illness to not only determine the suitable time to administer the intervention but also investigate the sustainability of the beneficial effects.

Different writing topics yield different types of beneficial correlates. For example, writing about breast cancer trauma is associated with higher quality-of-life [26] and satisfaction with social support [28]. This suggests that more work needs to be carried out to assess the underlying mechanisms and indirect routes of expressive writing. Such knowledge could extract certain components of the EWI and refined it to be administered to individuals with particular unmet needs. More studies are needed to be conducted in diverse population and in patients with different stages of disease (e.g. stage 1 versus metastatic breast cancer) to identify what works for whom. As most studies are conducted among Whites, replication is needed in other countries to reduce publication bias.

7. CONCLUSION

Among breast cancer survivors, expressive writing is associated with higher health status and improvement in psychological well-being. Although there is moderate quality evidence surrounding the effectiveness of EWI, the findings are consistent and have demonstrated clinically important effect. Regardless of prompts, individuals still experience an increase in physical and psychological well-being, however, the choice of writing topics moderate the effectiveness of the intervention. EWI is a brief, cost-effective intervention that can be implemented in healthcare settings to help patients build up personal resources and cope with impact of diagnosis. From a public health perspective, EWI is an easily accessible and non-stigmatizing tool that can be used as a self-directed intervention. However, future work is required to examine the desired outcome.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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APPENDIXES

APPENDIX A

Table 1. Key search terms for potential papers

Descriptors		
Expressive writing		
Free-text words	OR	emotional disclosure, written emotional disclosure, expressive journaling, therapeutic writing
	AND	breast cancer survivor, breast cancer, breast neoplasm, breast tumor, breast carcinoma trial, randomized, RCT
	NOT	animal
Specific fields		breast$, wom?n, emotion$, writ$, random$

Table 2. Inclusion criteria

Study design	**All (preferably RCTs)**
Population(s)	Breast cancer survivors who are not diagnosed/treated for recurrent or metastatic disease
Intervention(s)	Expressive Writing Any form of writing used either as a therapeutic intervention or as an activity to identify therapeutic benefit and/ or improve health or well-being.
Comparators	The stated intervention compared with placebo, or no intervention
Outcomes	At least one of the following outcomes: • Health-care utilization • Measure of physical health status • Measure of psychological well-being that can be defined as positive and negative affect, and any cancer-related psychological distress (i.e. depression and anxiety) • Quality of life

APPENDIX B

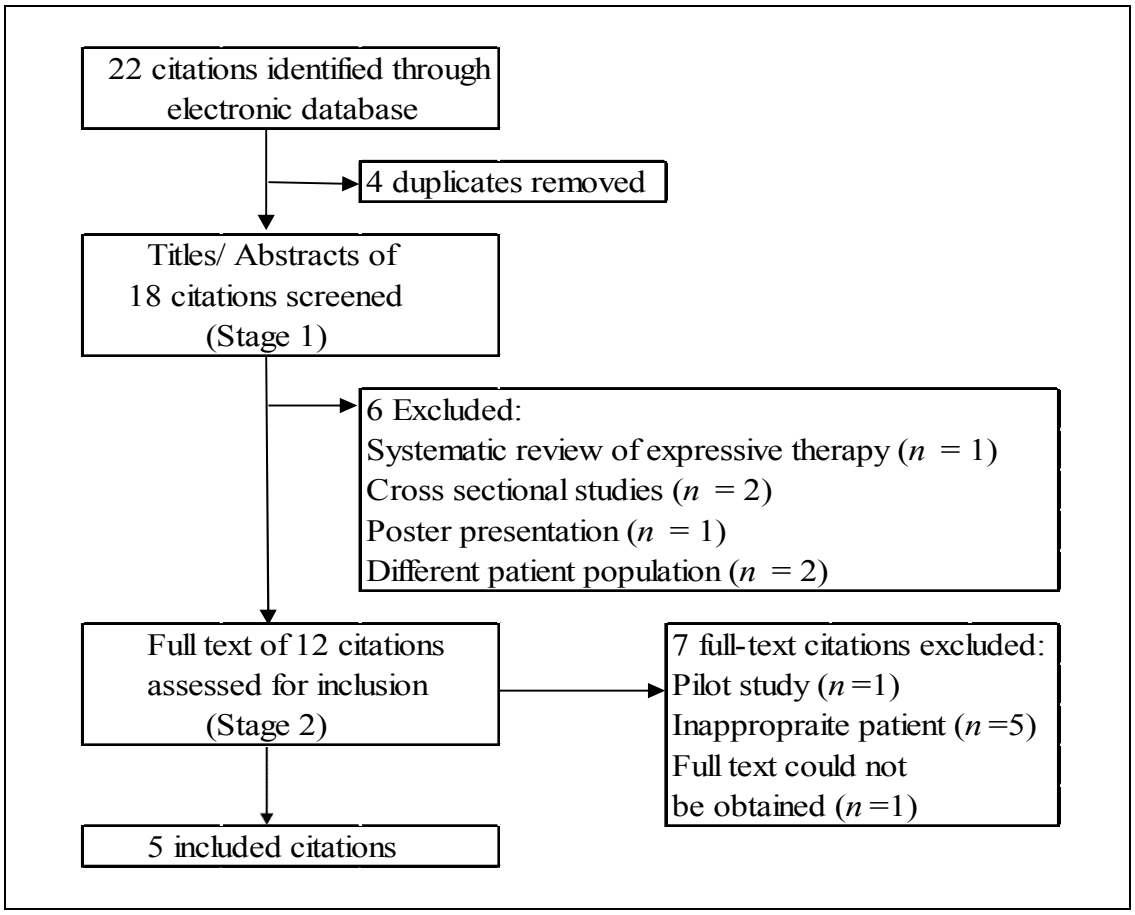

Fig. 1. Flow diagram of included studies for systematic review

APPENDIX C

The cochrane collaboration's tool for assessing risk of bias

Domain	Description	Review author's judgment
Random sequence	State the procedure used to generate the sequence of allocation in detail to allow an assessment of whether it should produce comparable groups	Was the sequence of allocation adequately generated?
Concealed allocation	Describe the procedure used to conceal the allocation sequence in detail to identify whether intervention allocations could have been predicted in advance of, or during, enrolment	Was allocation adequately concealed?
Baseline comparability	Describe the characteristics, number of participants that was allocated in each group in detail to determine comparability.	Were study groups comparable prior study or experimental manipulation?
Blinded participants	State possible precautions or measures used to blind study participants and personnel from knowledge of which intervention a participant received.	Was blinding of participants conducted prior participants decide to participate, or was there sufficient details to assess participants were aware and informed about the nature of the study design?
Complete follow-up	Comprehensiveness states the outcome data for each main outcome, including attrition and loss to follow-up in each intervention group, reasons where attrition or exclusions were reported.	Were clear attrition analysis performed or were data that were not complete failed to be reported?

Summary assessments outcome across domains for each study

Risk of bias	Interpretation	Within a study	Across studies
Low	Possible bias not likely to alter the findings	Low risk of bias for all key domains	Most information is from studies at low risk of bias
Unclear	Possible bias that raises some suspicion about the findings	Unclear risk for one or more keydomains	Most information is from studies at low or unclear risk of bias
High	Possible bias that completely weakens confidence in the findings	High risk of bias for one or more key domains	The proportion of information from studies at high risk of bias is sufficient to affect the interpretation of the results

** Adapted source from "chapter 8: assessing risk of bias in included studies," by J. P. T. higgins, and D. G. altman, D. 2008, cochrane handbook for systematic reviews of interventions, west sussex: john wiley& sons Ltd.*

APPENDIX D

Table of risk of bias assessment

	Assessment domains					
Study	**Random sequence**	**Concealed allocation**	**Baseline comparability**	**Blinded participants**	**Complete follow-up**	**Overall risk of bias**
Creswell *et al*.2007 [25]	Yes	Yes	Unclear	Yes	Unclear	Moderate
Jensen-Johansen *et al*.2013 [22]	Yes	Yes	Yes	Yes	Yes	Low
Craft*et al*.2013 [26]	Yes	Yes	Yes	No	Yes	Low
Henry*et al*.2010 [27]	No	Unclear	Yes	Unclear	Yes	High
Gellaitry *et al*. 2010 [28]	Yes	Yes	Yes	No	Yes	Low

**Overall risk of bias is coded as low (almost all criteria coded as adequate), moderate (≥ 3 criteria adequate/unclear) or high (< 3 adequate)*

APPENDIX E

Table of summary of randomized controlled trials of efficacy of expressive writing intervention (EWI) for breast cancer survivors

Study	Brief description	Expressive writing condition	Control condition	Follow-uptime length	Outcomes Indicators	Results
Creswell et al. 2007 [25]	3 week intervention (once per week) with 63 early-stage BCS with each session lasted for 20 minutes. *Recruitment*: Hospital *Type of intervention*: self-help *Psychosocial status*: nr	2 conditions: *Emotional expression* Write about deepest thoughts/ feelings about personal experience with BC (*n* = nr) *Benefit-finding* Write about positive thoughts regarding personal encounter with BC (*n* = nr)	*Fact-writing condition* Write about the facts regarding own diagnosed condition and treatment (*n* = nr)	Baseline Immediately post-intervention 3 months follow up	Physical symptoms, General life satisfaction [SWLS] Mood [POMS] Coding process of writing contents SA; CP; DM	Content analysis revealed writing with a more SA oriented style meditated the relationship in both EW conditions and was associated with reduction in physical symptoms and fewer cancer-related doctor visits from T1 to T3. SA writing does not predict increases in SWL at follow-up.
Jensen-Johansen et al. 2013 [22]	3 week intervention (once per week) with 507 BCS with each session lasted for 20 minutes *Recruitment*: Organization *Type of intervention*: self-help *Psychosocial status*: none	Choices were given write freely either about: A traumatic or stressful negative-event [or] BC or non-cancer experiences and to explore how one feels about this experience (*n* = 253)	*Non-emotional topic condition* Write in an emotionally neutral manner about their daily activities (*n* = 254)	Baseline Immediately-post intervention (after each writing) 3 months post-intervention 9 months post-intervention	Cancer-related distress [IES], Depression [BDI], Mood [POMS], [PPMS] *Social constraints [SCS-C] *Alexithymia [TAS-20]	Both groups reported less physical and psychological symptoms after each writing sessions, but the effects were not sig across time progression. Those who wrote about their cancer experience had greater reduction in depressive symptoms and reported more positive mood.
Craft et al. 2013 [26]	4 consecutive daily intervention with 120 BCS with each session lasted for 20 minutes *Recruitment*: Community	3 conditions: *Breast cancer trauma* Write about deepest thoughts/ feelings about personal experience with BC (*n* = 26)	*No assigned activity* (*n* = 30)	Baseline One month post-intervention	Quality of life [FACT-B]	EW participants who wrote about their breast cancer, breast cancer trauma and facts regarding breast cancer had improvement in QoL. Almost all writing groups had

Study	Brief description	Expressive writing condition	Control condition	Follow-uptime length	Outcomes Indicators	Results
	Type of intervention: self-help *Psychosocial status*: nr	*Self-selected trauma* Write about deepest thoughts/ feelings about personal encounter of any trauma/event (*n* = 19) *Facts* Write about facts about treatment (*n* = 22)		6 months post-intervention		observable effects on QoL except the group who wrote about any random selected trauma. Overall, those in the EW conditions had higher QoL than the control condition.
Henry et al. 2010 [27]	Single EW session that lasted for 20 minutes with 57 BCS. *Recruitment*: Hospital (radiation-oncology clinics) *Type of intervention*: self-help *Psychosocial status*: nr	Write about any positive thoughts and feelings about personal experience with BC (*n* = 57)	*No assigned activity* (*n* = 40 well-matched controls)	Baseline 1(first week of radiationtreatment) + Baseline 2 (4weeksafter completed radiationtreatment) 3 months post intervention 9 months post intervention	Physical health, Mood [POMS] Depressive symptomatology [CES-D] Comment cards which inquires the writing experience	Participants who engaged in the single EW intervention showed sig enhancement in psychological and physical health compared to their counterpart in the 3mths post intervention, but results showed no differences in the 9mths post intervention
Gellaitry et al. 2010 [28]	4 consecutive daily intervention with 260 BCS with each session lasted for 20 minutes. Brief interviews were conducted to elicit women's experience of writing *Recruitment*: Hospital *Type of intervention*: self-help	Writing with variation in contents each day (*n* = 38): *Emotional disclosure* Discovering feelings and deepest thoughts about personal experience of BC *Cognitive appraisal*	*No assigned activity* (*n* = 42)	Baseline One month post-intervention 3 months post-intervention 6 months post-	Social support [The Significant Others Scale] Quality of life [FACT-B] Psychological well-being [assessed using POMS]	Compared to the control group, participants who practiced EW reported higher levels of satisfaction with emotional support. In the 6 months post intervention, both groups were satisfied with the perceived emotional support, thereby reporting lower rates of negative emotions.

Study	Brief description	Expressive writing condition	Control condition	Follow-uptime length	Outcomes Indicators	Results
				intervention		
	Psychosocial status: None (stated as exclusion criteria)	Exploring what does having BC means to them <u>*Benefit-finding*</u> Finding the benefits or challenges or hurdles they have overcome. <u>*Looking to the future*</u> Focuses on strategies that been used to cope with diagnosis and sharing of experience with others			Healthcare utilization [i. frequency of medical visits regardless is cancer-related or not; ii. Appointments with GPs/nurses]	To note, even though there was no sig differences in perceived actual support reported by both study groups. At the 6-month post intervention, the control condition reported a decrease in actual support, whereas the EWI participants reported no changes in perceived actual support. Intervention on mood, healthcare utilization, and QoL revealed NS effects.

**Abbreviations. BC = breast cancer; BCS = breast cancer survivors; EW = expressive writing; NS = not significant; nr = not reported; * = acts as a moderator; SWLS = Satisfaction with life scale; POMS = Profile of mood state; SA = self-affirmation; CP = cognitive processing; DM = Discovery of meaning; IES = Impact of event scale; BDI = Beck depression inventory; PPMS = Passive positive mood state; SCS-C = Social constraints scale – cancer; TAS-20 = Toronto Alexithymia Scale; FACT-B = Functional assessment of cancer therapy – Breast cancer version; CES-D = Center for epidemiologic studies – depression; QoL = quality of life; sig = significant*

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