

## Studying the Effect of Awareness and Emotional Expression Interventions on the Intensity of Pain and Anger in Women with Breast Cancer

Tânia Brandão<sup>1</sup>, Rita Tavares<sup>1</sup>, Marc S. Schulz<sup>2</sup>, Paula Mena Matos<sup>1\*</sup>

<sup>1</sup>Center for Psychology, Faculty of Psychology and Education, University of Porto, Porto, Portugal.

<sup>2</sup>Department of Psychology, Bryn Mawr College, Pennsylvania, USA.

### Abstract

Cancer pain is one of the most frequent and debilitating consequences of cancer and reduces the ability to regulate various emotions such as anger from the psychological effects of this disease, which affects the quality of life of these patients. The purpose of this research was to determine the effect of awareness and emotional expression interventions on the anger and pain intensity of women with breast cancer. The current research was semi-experimental with a pre-test-post-test design with a control group and a two-month follow-up. In this study, 50 qualified people were selected by available sampling and randomly replaced into two groups awareness and emotional expression therapy (25 people) and control group (25 people). For the experimental group, awareness and emotional expression therapy was performed during 8 sessions of 90 minutes. Research data were collected through Siegel's Multidimensional Anger Scale questionnaire and Visual Pain Scale questionnaire. Data were analyzed in SPSS software version 23 and by repeated measure analysis of covariance. The results showed that awareness and emotional expression therapy has a significant effect on the overall score of pain and anger intensity in breast cancer patients and this effect continued until the follow-up stage ( $P < 0.05$ ). In breast cancer patients, due to the lack of knowledge about the nature of the disease and the determining role of psychological factors in the rate of recovery and the treatment process, it is necessary to provide conditions for their feelings and emotions to be well-regulated and expressed.

**Keywords:** Awareness, Breast cancer, Emotional expression, Pain, Anger, Women

### Introduction

Breast cancer is the most common cancer in women in 157 out of 185 countries and causes 670,000 deaths in the world in 2022 [1]. Cancer begins when cells begin to grow out of control, which can start in one or both breasts. Breast cancer has different complications; Symptoms such as anxiety, pain, fatigue, and menopause symptoms can affect the daily activity and subsequently the quality of life of women with cancer [2-4]. Pain is one of the most common symptoms or side effects for people with cancer. Prevalence-related review studies show that the overall prevalence of pain among cancer patients is 44.5%, of which 30.6% experience moderate to severe pain. The prevalence of cancer remains high, which emphasizes the need for attention in cancer pain management [5]. According to the definition of the International Pain Association, pain is an unpleasant sensory and emotional experience that is related to actual or potential injury and has two dimensions, the sensory dimension and the emotional dimension. The sensory dimension of pain refers to the intensity of pain, and its emotional dimension refers to the level of unhappiness experienced by a person. Pain is what the patient says and is there whenever he says it. The patient is the most reliable person to state the existence of pain; this definition emphasizes the subjective nature of pain and its control [6]. Sometimes the cancer itself can cause pain, in other cases, cancer

**Corresponding author:** Paula Mena Matos  
**Address:** Center for Psychology, Faculty of Psychology and Education, University of Porto, Porto, Portugal.  
**E-mail:** ✉ pmmaos@fpce.up.pt  
**Received:** 02 June 2024; **Revised:** 30 August 2024; **Accepted:** 06 September 2024; **Published:** 30 September 2024

**How to Cite This Article:** Brandão T, Tavares R, Schulz MS, Matos PM. Studying the Effect of Awareness and Emotional Expression Interventions on the Intensity of Pain and Anger in Women with Breast Cancer. *J Integr Nurs Palliat Care*. 2024;5:83-90. <https://doi.org/10.51847/DckSJUDCOP>

treatment such as surgery, radiation, or chemotherapy can cause pain. In breast cancer, survivors undergo surgical treatment with various types of mastectomy, breast-conserving surgery, and lymph node dissection, which often lead to chronic pain [7]. The diagnosis of breast cancer has a great impact on the quality of life of women, especially on their emotional state. One of the reactions of people to the diagnosis of cancer is excitement and anger. Research shows that during the treatment process of breast cancer patients, their excitement and anger increases [8, 9].

Anger and pain are negative emotions that interact through complex biological, emotional, and behavioral mechanisms. Studies have shown the adverse effects of anger on chronic pain, treatment outcomes, and social relationships [6, 10]. There is a relationship between anger regulation and both pain states (i.e. acute and chronic pain) [11]. Women with breast cancer who use unfavorable strategies to regulate or express their emotions (such as suppression or inhibition) have reported emotional distress, depressive symptoms, anxiety, lower quality of life, and physical health [12]. According to a study conducted in colon cancer patients regarding the relationship between anger expression and the number of natural killer cells, the number of natural killer cells was lower in patients with higher outward expression of anger than in patients with lower anger expression [13] which shows that the suppression of emotions and the existence of unpleasant emotions itself causes changes in immune responses and the process of cancer progression [14]. It was also shown in research that there is a negative relationship between lack of emotional awareness and quality of life, and breast cancer patients who have less self-awareness of emotions experience a lower quality of life [15]. On the other hand, despite increasing attention to cancer pain, the prevalence of pain in cancer patients has not changed significantly in the past decades and it is still an important issue for cancer patients [16].

Emotional expression affects the pain of women with breast cancer through changing physical sensations and pain perception. A healthy lifestyle by improving the body's immune system and positive emotional expression causes women with cancer to experience less pain during the treatment process. Studies have shown that emotion-focused therapy has been effective in reducing physical aggression, verbal aggression, anger, and hostility in breast cancer patients [11, 14]. In addition, emotion-oriented couple therapy has been effective in psychological improvement, stress reduction, and aggressive manifestations in women with breast cancer [17].

According to the available literature, emotional factors play a decisive role in the initiation, spread, and severity of cancer. In addition, the implementation of psychological interventions such as awareness therapy and emotional expression potentially leads to a reduction of anger and pain, improvement of quality of life, acceleration of recovery, reduction of hospitalization time, and ultimately reduction of clinical costs. According to what has been mentioned, it seems necessary to carry out more research to check the efficiency of this type of treatment, especially in patients with breast cancer. Therefore, one of the effective interventions for the anger and pain of breast cancer patients can be the treatment of awareness and emotional expression. This treatment approach was developed by Mark Lumley. Emotional awareness and expression therapy is a type of therapy that focuses on developing emotional awareness and expression skills to increase mental health. The treatment is based on the idea that emotions have a protective function and difficulty in managing emotions will lead to emotional and behavioral problems [18-20].

In the treatment of awareness and emotional expression, the therapist helps clients to identify, name, and healthily experience their emotions, and to learn the skill of managing the emotions of the problem of compromise [21]. This treatment is based on the awareness of emotions and their positive expression and helps patients deal with and process stimuli such as memories, experiences, relationships, and emotions [22]. It has been shown in research that emotional awareness and techniques of written expression of emotion lead to a significant reduction in pain [23]. In another study, it was shown that the effectiveness of awareness therapy and emotional expression in reducing pain in people with Fibromyalgia is more than cognitive behavioral therapy and basic education [18]. Therefore, this study aimed to determine the effect of emotional awareness and expression Therapy (EAET) on the anger and pain intensity of female breast cancer patients.

## Materials and Methods

This research was a semi-experimental type with a pre-test-post-test follow-up design with a control group. The first measurement was carried out by performing a pre-test before the training, the second measurement after the completion of the required training, and the third time after the passage of at least 2 months after applying the independent variables in the form of the follow-up phase. In this research, the independent variable is the awareness and emotional expression therapy group, and the dependent variable is the pain intensity score in the visual pain intensity questionnaire, and the anger score in the Siegel Multidimensional Anger Questionnaire.

The inclusion criteria include: women between 18 and 50 years old with breast cancer based on the results of mammography, sampling, and clinical judgment of oncologists who are in the second stage of the disease, have a middle school education or higher, willingness and consent to participate in the research and complete the form Consent and achievement were one standard deviation higher than the mean in anger and pain intensity questionnaires. In addition, participants should not have been practicing yoga, meditation, or mindfulness.

Exclusion criteria include not attending intervention sessions for more than two sessions, unwillingness to continue attending intervention sessions, suffering from acute physical and psychological illnesses, and the severity of the illness in such a way that the person is unable to continue psychotherapy sessions.

From among the eligible people who were referred, 50 people were selected through available sampling after diagnostic examination related to research variables and inclusion criteria, and were randomly divided into two groups of treatment based on awareness and emotional expression (25 people) and the group Control (25 people) were replaced. The objectives of the research and the principle of information confidentiality were explained to the patients, and after obtaining informed consent, questionnaires were presented to them for completion, and eight group therapy sessions were held for them.

The visual analog scale is a graded axis for measuring the intensity of pain, with zero at one end and 10 at the other end, below zero, the expression "No pain" and below the number 10, the expression "The worst possible pain" is written. In this scale, the person is asked to visually mark the perceived pain intensity on the axis [24]. The visual pain intensity scale is the most widely used pain measurement scale in the world, and besides its validity and reliability, the most important feature of this scale is its ease of use. A score of 1-3 indicates mild pain, 4-7 indicates moderate pain, and 8-10 indicates severe pain. The reliability of this scale to determine the pain level is 0.77 and the validity is up to 0.51 [25].

Siegel's Multidimensional Anger Scale (MAI) is a 30-item test developed by Siegel [26] to measure anger. The questions of the five-dimensional anger test measure the arousal of angry situations, hostile attitude, internalized anger, and externalized anger on a five-point Likert scale ranging from one (completely false) to five (completely true). The psychometric properties of the multidimensional anger scale have been confirmed in foreign studies [26].

For the experimental group, emotional awareness and expression therapy (EAET) was performed in a group during 8 sessions of 90 minutes each week. The original version of EAET was developed by Lumley *et al.* [21]. Other researchers then collaborated to develop the current version of EAET, which included a stronger focus on the emotional expression of trauma and unresolved conflict by targeting unexpressed anger and communication between emotions. The sessions were held as a workshop with exercises. The training sessions were developed based on the therapist's manual protocol developed by Mark Lumley and colleagues and a version that focused on unexpressed anger. For each session, an application was given as homework, which was appropriate to the topics worked on in each session. No training was applied to the control group. For the control group as well as the experimental group, it was performed before the start of the pre-test sessions, and after the completion of the training sessions for both groups, it was performed in the last post-test session, and two months after the completion of the test sessions, the follow-up phase of the test was performed.

After collecting the questionnaires in the follow-up phase, the raw data were analyzed with SPSS version 23 software and with covariance analysis with repeated measurements.

## Results and Discussion

According to the findings of **Table 1**, the average scores of pain intensity and anger and its dimensions in the post-test and follow-up stages showed more changes in the intervention group compared to the control group. To test the hypotheses of the research, variance analysis with repeated measurements and multivariate covariance analysis were used. To use this test, its presuppositions must be respected, so the Shapiro-Wilk test was used to test the normality of the distribution. The results of this test in research variables are presented in **Table 2**.

**Table 1.** Comparison of variable scores of pain intensity and anger and its components in the pre-test, post-test, and follow-up phase.

Variable		Pre-test		Post-test		Follow-up	
		Mean	SD	Mean	SD	Mean	SD
Intensity of pain	Experimental group	5.714	1.055	2.619	0.497	2.571	0.507
	Control group	5.095	0.995	4.952	0.804	5.047	0.920
Anger arousal	Experimental group	41.857	6.279	27.619	4.477	28.571	4.615
	Control group	39.095	4.794	38.904	4.710	38.857	4.407
Situational anger	Experimental group	31.714	5.533	23.571	5.075	24.047	5.142
	Control group	31.619	5.123	31.142	4.809	30.857	5.169
Hostile attitude	Experimental group	14.952	2.290	9.381	1.716	9.761	2.300
	Control group	14.428	1.912	13.619	0.139	14.142	1.352
External anger	Experimental group	12.714	2.194	8.667	1.494	9.047	1.657

	Control group	12.095	1.609	11.857	1.352	12.333	1.278
Inner anger	Experimental group	16.714	3.227	11.190	2.358	11.476	2.182
	Control group	15.666	2.798	15.190	2.713	15.142	2.669
Level of anger	Experimental group	117.952	12.241	80.428	7.762	82.904	8.461
	Control group	112.904	10.587	110.714	9.587	111.333	9.210

**Table 2.** Examining the assumptions of covariance analysis of the normality of the distribution of scores.

Variable	Group	Pre-test		Post-test		Follow-up	
		Statistics	Sig.	Statistics	Sig.	Statistics	Sig.
Intensity of pain	Experimental group	0.973	0.311	0.290	0.079	0.933	0.090
	Control group	0.912	0.066	0.949	0.175	0.907	0.052
Level of anger	Experimental group	0.927	0.121	0.914	0.066	0.923	0.098
	Control group	0.963	0.585	0.967	0.661	0.972	0.780

The null hypothesis that the distribution of scores in the variable of pain intensity and anger is normal has been confirmed in all groups in all stages (significance levels are greater than 0.05). Levine's test was used to check the assumption of homogeneity of variances of anger and pain intensity variables, and the results of this test are shown in **Table 3**.

**Table 3.** Levine's test to check the assumption of homogeneity of the variable variances of anger and pain intensity.

Variable	Step	F statistic	df1	df2	Sig.
Level of anger	Pre-test	0.818	2	60	0.446
	Post-test	1.354	2	60	0.266
	Follow-up	0.279	2	60	0.757
Intensity of pain	Pre-test	0.246	2	60	0.783
	Post-test	1.282	2	60	0.285
	Follow-up	1.808	2	60	0.173

The results of **Table 4** show that in the intervention group, the difference in the average scores related to the intensity of pain and anger in the post-test phase is significant compared to the pre-test, and this decrease in the intensity of pain and anger in breast cancer patients continued until the follow-up phase ( $P < 0.05$ ).

**Table 4.** The average difference in the intensity of pain and anger in the pre-test, post-test, and follow-up stages.

Variable	Group	Steps		Mean differences	Sig.
		Pre-test	Post-test		
Intensity of pain	Experimental group	Pre-test	Post-test	3.095	0.001
		Pre-test	Follow-up	3.143	0.001
		Post-test	Follow-up	0.048	0.666
Level of anger	Experimental group	Pre-test	Post-test	37.524	0.001
		Pre-test	Follow-up	35.048	0.001
		Post-test	Follow-up	-2.476	0.410

Based on the results presented in **Table 5**, the effect of measurement time on dependent variables (pain intensity and anger level) is significant. Therefore, it can be claimed that there is a significant difference between the average level of anger and pain intensity in the pre-test, post-test, and follow-up. In addition, the interaction effect between time and group is significant; this result indicates that the treatment of awareness and emotional expression had an effect on the level of anger and pain intensity, but at the same time, the effect of the group is also significant. Therefore, it can be concluded that regardless of the measurement time, there is a significant difference between the mean scores of anger and pain intensity in the intervention and control groups.

**Table 5.** The effect of measurement time on dependent variables.

Variable	Type of assessment	Source of change	Sum of squares	df	Mean square	F	Sig.	Effect size	Test power
Intensity of pain	Within the group	Time	77.786	1	77.786	176.913	0.001	0.747	1.00
		Time and group	50.335	2	25.167	57.238	0.001	0.656	1.00
		Error	26.381	60	0.440	-	-	-	-
	Between groups	Group	61.471	2	30.735	19.172	0.001	0.974	1.00
		Error	96.190	60	1.603	-	-	-	-
Level of anger	Within the group	Time	12540.071	1	12540.071	173.193	0.001	0.926	1.00
		Time and group	6053.476	2	3026.738	181.795	0.001	0.858	1.00
		Error	998.952	60	16.649	-	-	-	-
	Between groups	Group	11321.725	2	5660.862	19.442	0.001	0.393	1.00
		Error	17470.159	60	291.169	-	-	-	-

The results of the present study confirm the effectiveness of awareness therapy and emotional expression on the intensity of pain and anger in women with breast cancer compared to the control group. Having cancer with associated physical changes (such as amputation, hair loss, etc.) can cause a loss of physical cohesion, a sense of detachment, and changes in personal relationships (especially with a spouse). As emotional researchers believe, the emotional suffering of depressed and anxious people is centered around three classes of unmet needs: safety and security needs, love and relationship needs, and the need for autonomy and recognition of values by others. This study was conducted to investigate the effectiveness of awareness therapy and emotional expression on the intensity of pain and anger in female patients with breast cancer. The data showed that in the intervention group, the mean and standard deviation of the pain intensity scores in the post-test compared to the pre-test have a significant difference. In addition, in the intervention group, the averages and standard deviations of the scores related to anger in the post-test compared to the pre-test show a significant difference, this decrease in the intensity of pain and anger in breast cancer patients continued until the follow-up stage. The findings of this research are in line with research findings in which emotion-focused therapy has been effective in reducing aggression, physical aggression, verbal aggression, anger, and hostility in breast cancer patients [27]. In addition, the research of Guarino *et al.* [17], which showed the effectiveness of emotion-based therapy on aggressive manifestations in women with breast cancer, is in line with the current research.

On the other hand, the findings of this study are contrary to the findings of Sipilä *et al.* [28] who showed that there is no relationship between emotion regulation and pain. Research studies show that women with breast cancer show less emotional expression and inhibition that is more emotional. Emotional suppression and rumination are common in these patients [29]. Therefore, the researchers believe that acquiring the skill of expressing emotions and correctly facing one's emotions and projecting them through the training of emotion-oriented therapeutic approaches (for example, actively dealing with the processing of emotions and expressing emotions positively and adaptively) leads to appropriate social responses and Patients get more social support. Social support acts as a protective shield against disease and increases the adaptation of cancer patients. One of the treatments that deals with the expression of feelings is the treatment of awareness and emotional expression, which has positive effects on depression and anxiety in breast cancer patients. Emotional awareness and expression therapy is an emotion-focused therapy that helps in character development and self-development. The key to this type of treatment is the acquisition of self-regulation skills.

In the treatment of awareness and emotional expression, psychologists help to change the feelings and emotions associated with negative and distorted beliefs about the disease and the painful experiences caused by these feelings. They are also helped to become aware of their emotional experience and accept and understand it so that the painful feelings caused by irrational beliefs about the disease can be changed and they can gain more peace. In this therapeutic approach, patients are helped to achieve a new meaning of their bodily experiences by focusing on their emotions and distorted mental content [30].

It is often difficult for patients to get close to bitter spiritual and emotional experiences and negative thoughts and beliefs, so in this regard, therapists help patients to consciously focus on their feelings by creating an efficient relationship and continuous training in several sessions and managing them adaptively. Creating hope and achieving spirituality to gain peace and deal with the anxiety of the disease is another goal of this therapeutic approach. Cancer challenges patients' lives, a challenge that can have important psychological consequences for a person. When faced with this disease, a person uses suppression of emotions as a strategy [31, 32]. According



to research, emotional dyslexia and difficulty in identifying emotions have a direct relationship with pain. Suppressed emotions such as anger in some people show themselves as psychosomatic symptoms including various pains. Therefore, emotional suppression causes symptoms and intensification of physical symptoms such as pain in patients, while emotional expression affects the pain of women with breast cancer through changing physical sensations and pain perception. Positive emotional expression causes women with cancer to experience less pain during the treatment process. On the other hand, according to the findings, the awareness and correct expression of emotion as the correct experience of anger prevents the raw projection of anger in the form of aggression and conflict [33-35].

## Conclusion

The purpose of this research was to determine the effect of awareness and emotional expression interventions on the anger and pain intensity of women with breast cancer. The results showed that awareness and emotional expression therapy has a significant effect on the overall score of pain and anger intensity in breast cancer patients and this effect continued until the follow-up stage. In breast cancer patients, due to the lack of knowledge about the nature of the disease and the determining role of psychological factors in the rate of recovery and the treatment process, it is necessary to provide conditions for their feelings and emotions to be well-regulated and expressed. Therefore, it is recommended that along with drug treatments, health psychologists in medical centers and psychological clinics use awareness therapy and emotional expression to reduce the pain and anger of breast cancer patients.

**Acknowledgments:** None.

**Conflict of interest:** None.

**Financial support:** None.

**Ethics statement:** None.

## References

1. World Health Organization, Breast cancer. Updated 13 March 2024. Available from: <https://www.who.int/news-room/fact-sheets/detail/breast-cancer>
2. Mokhatri H, Montazeri A. Health-related quality of life in breast cancer patients: Reviews from 2008 to 2018. *Health Qual Life Out.* 2002;18(338):252-67. doi:10.1186/s12955-020-01591-x
3. Ngo NTN, Nguyen HT, Nguyen PTL, Vo TTT, Phung TL, Pham AG, et al. Health-related quality of life in breast cancer patients in low-and-middle-income countries in Asia: A systematic review. *Front Glob Womens Health.* 2023;4:1180383. doi:10.3389/fgwh.2023.1180383
4. Chen S, Liu Y, Fong DY, Zhou J, Chen H, Wan C. Health-related quality of life and its influencing factors in patients with breast cancer based on the scale QLICP-BR. *Sci Rep.* 2023;13(1):15176. doi:10.1038/s41598-023-41809-8
5. Rolf AH, Snijders L, Brom L, Theunissen M, Marieke HJ, Everdingen B. Update on prevalence of pain in patients with cancer 2022: A systematic literature review and meta-analysis. *Cancers (Basel).* 2022;15(3):1530-91.
6. Cascella M. Introductory chapter: The rationale for a multimodal approach to pain treatment. In: Cascella M, editor. *From Conventional to Innovative Approaches for Pain Treatment*. Ebook: <https://www.intechopen.com/chapters/66613;2019;214>.
7. Spivey TL, Gutowski ED, Zinboonyahgoon N, King TA, Dominici L, Edwards RR, et al. Chronic pain after breast surgery: A prospective, observational study. *Ann Surg Oncol.* 2018;25(10):2917-24. doi:10.1245/s10434-018-6644-x
8. Giacomo D, Rimier J, Guerra F, Perilli E, Sanchez MG, Passafiume D, et al. Survivorship in young women after early breast cancer: A cross-sectional study of emotional traits along 3-year perspective. *Riv Psichiatr.* 2019;54(4):160-7. doi:10.1708/3202.31798
9. Soldato D, Arecco L, Agostinetto E, Franzoi MA, Mariamidze E, Begijanashvili S, et al. The future of breast cancer research in the survivorship field. *Oncol Ther.* 2023;11(2):199-229. doi:10.1007/s40487-023-00225-8
10. Sommer I, Lukic N, Rössler W, Ettlin DA. Measuring anger in patients experiencing chronic pain – A systematic review. *J Psychosom Res.* 2019;9(125):78-109. doi:10.1016/j.jpsychores.2019.109778

11. Lotsch J, Sipila R, Tasmuth T, Kringel D, Estlander AM, Meretoja T. Machinelearning-derived classifier predicts the absence of persistent pain after breast cancer surgery with high accuracy. *Breast Cancer Res Treat.* 2018;171(2):399-411. doi:10.1007/s10549-018-4841-8
12. Wang Y, Yi J, He J, Chen G, Li L, Yang Y, et al. Cognitive emotion regulation strategies as predictors of depressive symptoms in women newly diagnosed with breast cancer. *Psychooncology.* 2014;23(1):93-9. doi:10.1002/pon.3376
13. Brioso EK, Costa L, Ouakinin S. Association of anger expression-out with NK cell counts in colorectal cancer patients. *Acta Med Port.* 2018;31(3):152-8. doi:10.20344/amp.9573
14. Bruno A, Pandolfo G, Scimeca G, Leonardi V, Cedro C, Racchiusa S. Anger in health, benign breast disease, and brt can: A prospective case-control study. *InVivo.* 2014;28(5):973-7.
15. Brandão T, Schulz MS, Matos PM. Attachment and adaptation to breast cancer: The mediating role of avoidant emotion processes. *Cancer Care.* 2018;27(2):67-74. doi:10.1111/ecc.12830
16. Beuken VD, Everdingen MHJ, Kuijk SMJ, Janssen DJA, Joosten EAJ. Treatment of pain in cancer: Towards personalized medicine. *Cancers (Basel).* 2018;10(12):502. doi:10.3390/cancers10120502
17. Guarino A, Polini C, Forte G, Favier F, Boncompagni I, Casagrande L. The effectiveness of psychological treatments in women with breast cancer: A systematic review and meta-analysis. *J Clin Med.* 2020;9(1):209-32.
18. Lumley MA, Schubiner H, Lockhart NA, Kidwell KM, Harte SE, Clauw D, et al. Emotional awareness and expression therapy, cognitive-behavioral therapy, and education for fibromyalgia: A cluster-randomized controlled trial. *Pain.* 2017;158(12):2354-63. doi:10.1097/j.pain.0000000000001036
19. Maroti D, Ek J, Widlund RM, Schubiner H, Lumley MA, Lillengren P, et al. Internet-administered emotional awareness and expression therapy for somatic symptom disorder with centralized symptoms: A preliminary efficacy trial. *Front Psychiatry.* 2021;12:620359. doi:10.3389/fpsyt.2021.620359
20. Ziadni MS, Sturgeon JA, Lumley MA. "Pain, Stress, and Emotions": Uncontrolled trial of a single-session, telehealth, emotional awareness and expression therapy class for patients with chronic pain. *Front Pain Res.* 2022;3:1028561. doi:10.3389/fpain.2022.1028561
21. Lumley MA, Keefe FJ, Mosley-Williams A, Rice JR, McKee D, Waters SJ, et al. The effects of written emotional disclosure and coping skills training in rheumatoid arthritis: A randomized clinical trial. *J Consult Clin Psychol.* 2014;82(4):644-5. doi:10.1037/a0036958
22. Lumley MA, Schubiner H. Emotional awareness and expression therapy for chronic pain: Rationale, principles and techniques, evidence, and critical review. *Curr Rheumatol Rep.* 2019;21(7):103-16. doi:10.1007/s11926-019-0829-6
23. Lumley MA, Sklar ER, Carty JN. Emotional disclosure interventions for chronic pain: From the laboratory to the clinic. *Transl Behav Med.* 2012;2(1):73-81. doi:10.1007/s13142-011-0085-4
24. Khatibi A, Dehghani M, Sharpe L, Asmundson GJG, Pouretmad H. Selective attention towards painful faces among chronic pain patients: Evidence from a modified version of dot- probe. *Pain.* 2009;142(1-2):42-7. doi:10.1016/j.pain.2008.11.020
25. Boonstra AM, Preuper HRS, Reneman MF, Posthumus JB, Stewart RE. Reliability and validity of the visual analogue scale for disability in patients with chronic musculoskeletal pain. *Int J Rehabil Res.* 2008;31(2):165-9. doi:10.1097/MRR.0b013e3282fc0f93
26. Siegel D, Judith M. The multi-dimensional anger inventory. *J Pers Soc Psychol.* 1986;51(1):191-200.
27. Hedayati M, Hajjalizade K, Hedayati M, Fathi E. An investigation of the effectiveness of emotionally-focused couple's group therapy (EFCT) on relational aggression of couples with breast cancer in wives: A semi-experimental study. *Iran J Breast Dis.* 2021;13(4):23-34. doi:10.30699/ijbd.13.4.40
28. Sipilä R, Hintsala T, Lipsanos J, Tasmuth T, Islander AM, Kalso E. The relationship between anger regulation, mood, pain, and pain-related disability in women treated for breast cancer. *Psycho-Oncology.* 2019;28(10):2002-8.
29. Sud A, Jones M, Broggio J, Loveday C, Torr B, Garrett A, et al. Collateral damage: The impact on outcomes from cancer surgery of the COVID-19 pandemic. *Ann Oncol.* 2020;31(8):1065-74. doi:10.1016/j.annonc.2020.05.009
30. Diamond GM, Shahar B, Sabo D, Tsvieli N. Attachment-based family therapy and emotion-focused therapy for unresolved anger: The role of productive emotional processing. *Psychotherapy.* 2016;53(1):34-44. doi:10.1037/pst0000025
31. Costa-Cordella S, Soto-Icaza P, Borgeaud K, Grasso-Cladera A, Malberg NT. Towards a comprehensive approach to mentalization-based treatment for children with autism: Integrating attachment, neurosciences, and mentalizing. *Front Psychiatry.* 2023;14:1259432. doi:10.3389/fpsyt.2023.1259432
32. Goodman G, Blum B, Rentrop C, Malberg N, Agrawal P. The efficacy of two group interventions on mental representations, attachment security, and trauma symptoms in ethnically and socioeconomically minoritized young adolescents in an urban middle school. *Int J Environ Res Public Health.* 2023;20(10):5789. doi:10.3390/ijerph20105789

33. Toledano-Toledano F, Luna D, Moral de la Rubia J, Martínez Valverde S, Bermúdez Morón CA, Salazar García M, et al. Psychosocial factors predicting resilience in family caregivers of children with cancer: A cross-sectional study. *Int J Environ Res Public Health*. 2021;18(2):748. doi:10.3390/ijerph18020748
34. Mezgebu E, Berhan E, Deribe L. Predictors of resilience among parents of children with cancer: Cross-sectional study. *Cancer Manag Res*. 2020;12:11611-21. doi:10.2147/CMAR.S276599
35. Aaron R, Noel M, Dudeney J, Wilson A, Holley A, Palermo T. The role of sleep quality on the relationship between posttraumatic stress symptoms and pain in women. *J Behav Med*. 2019;42(5):924-33. doi:10.1007/s10865-019-00016-5