



Empirical validation of the integrative psychological group intervention for women with breast cancer – preliminary results

Empirijska procena efekta psihološke grupne intervencije sa integrativnim pristupom kod žena sa karcinomom dojke – preliminarni rezultati

Ivana Novakov*, Svetlana Popović-Petrović*[†], Tihomir Dugandžija*[†],
Milanka Tatić*[†]

*Oncology Institute of Vojvodina, Sremska Kamenica, Serbia; University of Novi Sad,

[†]Faculty of Medicine, Novi Sad, Serbia

Abstract

Background/Aim. Breast cancer diagnosis is an extremely stressful life event that brings a number of physical and psychological challenges. However, supportive and psycho-educational group interventions can significantly decrease psychological distress in patients. The aim of this study was to empirically validate the effects of the integrative psychological group intervention, regarding the affective state of women who underwent breast cancer surgery at the Oncology Institute of Vojvodina. **Methods.** This study was conducted on a sample of 30 women, with the average age of 53.17 years (standard deviation – SD = 10.09). Following the surgical intervention, the inpatients participated in an integrative group session consisting of the following parts: 1) supportive-expressive, 2) psycho-educational and 3) health-educational. Before the session, participants filled in a demographic data questionnaire, measures of positive and negative affect (PANAS), optimism (LOT-R), hope (AHS), neuroticism (BFI) and symptoms of depression (DASS-21). At the end of the group sessions, the participants filled in the PANAS again. **Results.** A paired-samples *t*-test showed that following an intervention, a statistically significant in-

crease in positive affect had occurred ($t(29) = -4.44, p < 0.001$). For negative affect, the *t*-test also yields the statistically significant results ($t(29) = 5.60, p < 0.001$), showing that intervention led to a significant decrease in negative affect. The nonparametric Wilcoxon Signed-Rank test also confirmed these results. The multiple regression analysis ($F(4, 25) = 3.46, p = 0.02$) showed that high neuroticism and low symptoms of depression significantly predicted a greater increase in positive affect following the session. Another regression analysis ($F(4, 25) = 3.32, p = 0.03$) showed that the higher symptoms of depression and, marginally, higher hope significantly predicted a greater decrease in negative affect. **Conclusion.** Our results showed that the integrative psychological group intervention had positive short-term effects regarding the affective state of women who underwent breast cancer surgery, and that different psychological variables can play a significant role in prediction of changes in patients' affect.

Key words:

breast neoplasms; postoperative period; integrative oncology; psychotherapy group; surveys and questionnaires; women; treatment outcome.

Apstrakt

Uvod/Cilj. Dijagnoza karcinoma dojke predstavlja izuzetno stresan životni događaj koji donosi niz fizičkih i psiholoških izazova. Međutim, intervencije u vidu suportivnih ili psiho-edukativnih grupa mogu u značajnoj meri ublažiti psihološki distres kod bolesnika. Cilj istraživanja bio je da se empirijski validiraju efekti psihološke grupne intervencije sa integrativnim pristupom na afektivno stanje žena koje su operisane zbog karcinoma dojke na Institutu za onkologiju Vojvodine. **Metode.** Istraživanje je sprovedeno na uzorku od 30 ispitanica, prosečne starosti 53,17 godina [standardna devijacija (SD) = 10,09]. Nakon operacije, hos-

pitalizovane pacijentkinje su učesvovala u integrativnoj grupnoj sesiji koja se sastojala od: 1) suportivno-ekspresivnog dela, 2) psiho-edukativnog i 3) zdravstveno-edukativnog segmenta. Pre učešća u intervenciji, pacijentkinje su popunile upitnik o demografskim podacima, meru pozitivnog i negativnog afekta (PANAS), skalu optimizma (LOT-R), nade (AHS), meru neuroticizma (BFI) i simptoma depresije (DASS-21), a na kraju grupne sesije, ponovo su popunile PANAS. **Rezultati.** *T*-test za zavisne uzorke pokazao je da, nakon učešća u psihološkoj grupnoj intervenciji, dolazi do statistički značajnog povećanja pozitivnog afekta ($t(29) = -4.44, p < 0.001$), kao i do statistički značajnog smanjenja negativnog afekta ($t(29) = 5.60, p < 0.001$).

Neparametrijski Vilkoksonov test rangova takođe je pokazao da su dobijene razlike statistički značajne. Multipla regresiona analiza ($F(4, 25) = 3.46, p = 0.02$) pokazala je da povišen neuroticizam i sniženi simptomi depresije značajno predviđaju povećanje pozitivnog afekta. Druga regresiona analiza ($F(4, 25) = 3.32, p = 0.03$) pokazala je da žene koje imaju povišene simptome depresije i, marginalno značajno, višu nadu, ostvaruju izrazitije smanjenje negativnog afekta nakon intervencije. **Zaključak.** Rezultati studije su pokazali da integrativna psihološka grupna intervencija ima pozitivan

kratkoročni efekat na afektivno stanje pacijentkinja operisanih zbog karcinoma dojke, te da različite psihološke varijable mogu igrati značajnu ulogu u predikciji promene na planu afektivnog stanja.

Ključne reči:

dojka, neoplazme; postoperativni period; onkologija, integrativna; psihoterapija, grupna; ankete i upitnici, žene; lečenje, ishod.

Introduction

Being diagnosed with breast cancer, one of the most common forms of malignant disease in women worldwide, represents an extremely stressful life event. Moreover, the long-lasting and demanding process of oncological treatment is an additional source of stress for the majority of patients. Facing the diagnosis and treatment of breast cancer brings not only numerous physical but also psychological challenges. Although the general prognosis for breast cancer nowadays is relatively good, the prevalence of psychological distress among breast cancer patients remains high, leading to an increased risk of developing serious symptoms of anxiety and depression as well as mood disorders¹⁻³. Previous research has found that depression and anxiety are overall most prominent shortly after the diagnosis and that they mainly drop off during the treatment and over the time⁴⁻⁶. Various difficulties in adjustment to illness manifest not only through the anxiety and depression symptoms, but also via intense feelings of anger, guilt, sense of worthlessness and hopelessness⁷.

In order to reduce these adverse psychological effects of the illness, many oncology institutions organize the group therapy interventions for the patients. Although there is a plenty of group interventions which differ in their approach and basic philosophy, most of them can be specified as predominantly supportive or psychoeducational⁸. Supportive interventions are primarily focused on overcoming social isolation, sharing painful emotions, personal experiences and concerns, while psychoeducational groups include health education, stress management techniques, problem solving and various other coping strategies⁸. Some studies found that supportive groups were beneficial in diminishing the patients' emotional distress^{9,10}. Problem-solving focused training was also shown to significantly reduce emotional distress¹¹. Moreover, when compared to supportive interventions, the psychoeducational groups were found to be more efficient in diminishing the symptoms of anxiety and depression, leading to improved coping style and better adaptation to illness¹². One interesting study examined relative efficacy of group coping skills treatment, supportive group therapy and control group, for the patients with different cancer types¹³. In their research, the authors offered strong support for the efficacy of group treatment focused on skills training¹³. They found that the patients who took part in the coping skills training achieved positive changes regarding affect, work, physical and social activities, intimacy and sexuality,

distress, communication and coping with medical procedures¹³. The same study revealed that the patients who received a supportive group therapy showed little improvement, while the functioning of the control patients deteriorated over time¹³. More recent studies which examined the long-term effects of supportive in contrast to the psychoeducational groups showed that both interventions resulted in improvement over the course of time⁸. However, psychoeducational groups showed the superior short-term effects in respect of the enhanced coping skills, but not long-term benefits⁸. While the majority of studies regarding group interventions in oncology setting were more interested in the question of which type of treatment works better, some research was more focused to the question of which kind of treatment is more beneficial for whom. Thus, one study explored the extent to which psychosocial variables moderated the effects of different types of group interventions for the breast cancer patients¹⁴. This study revealed that the educational groups showed greater benefits for the functioning of those women who entered the study with more difficulties, lacked social support and had scarce personal recourses, such as a low self-esteem, negative body image, or high illness uncertainty. The peer discussion (supportive) groups were more beneficial to those women who lacked medical and partner support, but showed to be harmful for the women who had already had high levels of social support¹⁴.

All in all, the empirical data generally indicate that the group approach is, one way or another, beneficial for the women facing emotional distress due to breast cancer. Knowing that the group experience can be emotionally curative and socially strengthening, a standard procedure of psychological group support was likewise introduced and established at the Oncology Institute of Vojvodina. These interventions are designed as one-session meetings which are integrative and semi-structured in their nature, with elements both of supportive and educational approach.

The aim of our research was to empirically validate the short-term effects of these integrative group interventions on the emotional state of women who underwent breast cancer surgery. Firstly, we wanted to explore whether a participation in the group results in a short-term improvement regarding the emotional state of patients, and secondly, we wanted to examine if the psychological variables such as optimism, hope, neuroticism and symptoms of depression are significant predictors of possible changes in emotional well-being after the treatment. These variables were taken into account

knowing that the neuroticism and symptoms of depression are often regarded as vulnerability factors related to subjective experience of distress. On the other hand, there is a growing interest in constructs that aim to explain the process of positive thinking, with optimism and hope being considered as the factors of psychological resilience among the oncology patients.

Methods

Study design and procedure

This study was approved by the Ethics Committee of the Oncology Institute of Vojvodina. The research design was quasi-experimental with repeated measures, more precisely, a one-group pretest-posttest design. Although it is known that the quasi-experimental approach without the control group makes causal inferences more difficult, we decided to use this design due to the ethical issues. Since psychological groups have been previously established as a standard part of early psycho-oncology rehabilitation, it would be ethically problematic to exclude some participants who needed psychological support. Anyhow, knowing that the time interval between pretest and posttest measurements was short, the possibility of causal inferences was increased. In the second part of our study, the correlational approach was used.

The first measurement (pretest) was carried out on the second postoperative day, in the morning hours, during the inclusion of inpatients in the program of early psycho-oncology rehabilitation. Taking part in the research was voluntary, the participants were informed in detail about the purpose of the research and every individual signed an informed consent before entering the study. Before completing the questionnaires in the pretest, all the inpatients were checked for the severity of postoperative pain, or any other difficulties that could have a significant impact on their answers. If this was the case, the patients approached the research only after the symptoms were alleviated. Those participants who agreed to take part in a group intervention attended a one-session meeting. At the end of the session, the participants filled in the questionnaire again (posttest).

Sample

The study was conducted on the total of 30 female participants aged from 33 to 69 years [mean (M) = 53,17; standard deviation (SD) = 10,09] who were diagnosed with breast cancer and hospitalized for surgical treatment at the Clinic for Operative Oncology at the Oncology Institute of Vojvodina. The inclusion criteria were as follows: a) participants had never been diagnosed with a malignant disease before, and b) the presence of metastases was not registered at the time of psychological assessment.

In respect to the level of education, 46,7% of the participants had completed secondary school, 16,7% of them had graduated from a college, and 36,7% had a university degree. Furthermore, 30% of the patients reported that they were employed, 26,7% were unemployed, while 43,3% were

retired. Regarding the marital status, 63,3% participants were married, 6,7% lived in a common-law relationship, 10% were divorced and 20% were widowed. Moreover, 93,3% of the participants had children. Regarding the place of residence, 23,3% participants lived in the countryside, 13,3% lived in a town, and 63,3% resided in a city. Of the total sample, 66,7% inpatients had already had some surgical interventions that were not related to malignant disease, while for other respondents this was the first operation.

Treatment

A group session lasted from 75 to 90 minutes, depending on the number of participants, which varied from 3 to 6 inpatients. The first part of the session was supportive-expressive and aimed at sharing personal experiences, emotions, disease-related attitudes and concerns. All participants had the opportunity to present their reflections or to give a feedback to one another. The next part of the session was psychoeducational and contained brief skills training, such as stress management, problem solving and assertive communication. The third part of the session was dedicated to the health education, promotion of healthy lifestyle and prevention of functional complications. The supportive and psychoeducational parts of the session were guided by a psychologist, while the health-educational segment was led by a specialist in psychiatry and epidemiology.

Instruments

Basic demographic data questionnaire was designed by the authors in order to gather information about the age of participants, a place of residence, their level of education, working, marital and birth status. In addition, we collected the data about possible previous surgical interventions and the referential diagnosis with which the patients were admitted to the Clinic for Operative Oncology.

The Positive and Negative Affect Schedule (PANAS)¹⁵ was used as a general measure of subjective distress. It is a self-reporting questionnaire which consisted of 20 items, 10 of which measure positive, and the other 10 negative affect. The participants responded to the items on a five-point Likert scale. Positive affect implied the presence of emotional experiences such as joy, excitement, enthusiasm, alertness, interest, etc. On the other hand, negative affect implied the presence of subjective distress and unpleasant emotional experiences such as fear, anxiety, guilt, hostility, etc. In this study, the participants were given a "state" version of the instrument, directing them to answer how they felt "right now, at a given moment". In this research, the PANAS was used as a pretest and posttest measure, while all the other questionnaires were administrated only in the pretest period of assessment.

The Life Orientation Test-Revised (LOT-R)¹⁶ is an instrument used for evaluation of optimism as a dispositional personality trait. The individuals who achieved high scores on this scale had a greater tendency to believe that the good things were more likely to happen than the bad things¹⁶. This scale consisted of the total of 10 items (e.g. "In uncertain times, I usually expect the best"), 4 of which are fillers and

did not enter the total score. The items were answered on a five-point Likert scale.

The Adult Hope Scale (AHS)¹⁷ is a self-report measure used for the assessment of hope as a relatively stable personality disposition. The instrument included two subscales corresponding to the Snyder's cognitive model of hope – Agency (representing a goal-oriented energy) and Pathways (standing for the perceived ways for reaching goals). The scale had the total of 12 items. Each of the two subscales had 4 items, while the remaining 4 items were fillers and did not enter the final score. In the original version of the questionnaire, the answers were given on an eight-point Likert scale. Nevertheless, in our study a four-point Likert scale was applied, in order to make answering more accessible to the senior participants.

The Big Five Inventory (BFI)¹⁸ is a 44-item questionnaire, designed to measure the traits based on the Big-Five personality dimensions. For the assessment of neuroticism, we used the Neuroticism subscale from the BIF which consisted of 8 items with a five-point Likert scale. Higher neuroticism implied a tendency towards frequent experiences of anxiety, dysphoria, hostility, irritability, vulnerability, low self-esteem, etc. Diminished neuroticism represented the emotional stability.

The Depression Anxiety Stress Scales–21 (DASS-21)¹⁹ is a self-report measure of three unpleasant emotional states: depression, anxiety and stress. In order to evaluate the symptoms of depression, we used the Depression subscale from DASS-21 which contained 7 items (e.g., “I felt that I had nothing to look forward to.”) with answers presented on a four-point Likert type scale (with 0 meaning “never” and 3 meaning “almost always”). The total score on the Depression subscale varies from 0 to 21. This instrument is not a diagnosis-specific measure, but rather an indicator of emotional distress²⁰.

Results

The descriptive statistics and reliability coefficients for all the variables/scales in the study are presented in Table 1. It can be seen that the values of skewness and kurtosis for all variables are within the acceptable range, which is +/- 1.5²¹, except for negative affect in the posttest phase. The reliability of the scales, expressed by the Cronbach's alpha coefficient for all measures, is good to acceptable.

Table 1

Descriptive statistics and reliability coefficients for all the variables/scales

Variables	M	SD	Skewness	Kurtosis	Cronbach's alpha
Positive affect (pretest)	31.50	7.75	0.20	0.14	0.89
Negative affect (pretest)	16.20	5.85	0.84	-0.58	0.90
Positive affect (posttest)	35.83	7.36	-0.21	-0.78	0.89
Negative affect (posttest)	12.70	3.69	1.40	1.61	0.89
Optimism	24.60	3.88	-0.70	0.25	0.77
Hope	25.73	3.61	-0.81	0.58	0.84
Neuroticism	21.13	4.61	-0.23	-0.83	0.74
Depression	3.30	2.85	0.88	0.30	0.75

M – mean; SD – standard deviation

In order to answer our first research question – whether a participation in our group intervention leads to the statistically significant short-term improvement of patients' emotional state, we analyzed the differences between the measures of positive and negative affect in the pretest and posttest phases. We used both parametric and nonparametric statistical analysis with intention to overcome possible violation of normality assumption and to provide more powerful support for our findings. Using the IBM SPSS Statistics 21.0, two within-subjects (paired-sample) Student's *t*-tests were obtained. The independent variable was the measurement at two time points for one sample, while the dependent variables were the scores on positive/negative affect on the PANAS. For positive affect, a statistically significant *t*-test was obtained, meaning that there was a significant difference in the scores before ($M = 31.50$, $SD = 7.75$) and after ($M = 35.83$, $SD = 7.36$) a group intervention; $t(29) = -4.44$, $p < .001$. This result indicated that, as seen in Figure 1, the positive affect of inpatients increased at a statistically significant level after the group intervention. For negative affect, the *t*-test also yields the statistically significant results, showing that the difference in the scores before ($M = 16.20$, $SD = 5.85$) and after ($M = 12.70$, $SD = 3.69$) a group treatment was not likely to occur purely by chance; $t(29) = 5.60$, $p < 0.001$. More precisely, there was a statistically significant decrease in negative affect of inpatients after the participation in the group intervention. Reduction of negative affect after the group session can also be seen in Figure 1.

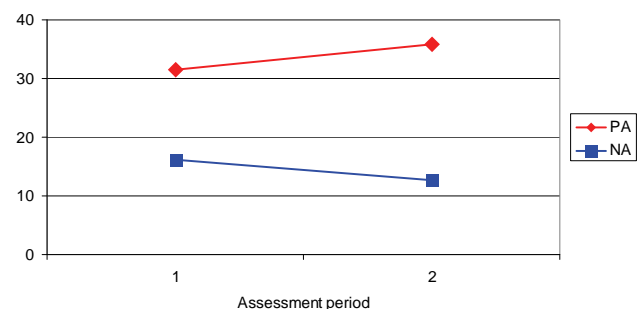


Fig. 1 – Mean scores for positive and negative affect in the pretest and posttest phases
PA – positive affect; NA – negative affect; 1 – pretest; 2 – posttest.

Table 2**Prediction of increase in positive affect by some psychological variables (Model 1)**

Predictor variables	Standardized coefficient β	t	p
(Constant)		-0.64	0.53
Optimism	-0.16	-0.63	0.54
Hope	0.18	0.96	0.34
Neuroticism	0.56	2.32	0.03
Depression	-0.37	-2.08	0.05

Table 3**Prediction of decrease in negative affect by some psychological variables (Model 1)**

Predictor variables	Standardized coefficient β	t	p
(Constant)		1.59	0.12
Optimism	-0.02	-0.06	0.95
Hope	-0.39	-2.01	0.05
Neuroticism	-0.40	-1.64	0.11
Depression	-0.38	-2.12	0.04

The smaller were the values of posttest-pretest difference, the greater was the decrease in negative affect

Furthermore, the nonparametric test, which did not make the normality assumption, was used in order to verify our results due to possible normality violation. The Wilcoxon Signed-Rank test is the most frequently used alternative to the paired sample t -test. The Wilcoxon Signed-Rank test indicated that the posttest scores on positive affect were significantly higher than the pretest scores, $Z = -3.63$, $p < 0.001$. The same test showed that the scores for negative affect in the posttest phase were significantly lower than the pretest scores, $Z = -4.22$, $p < 0.001$.

From the above-mentioned results, it can be seen that both parametric and nonparametric statistical approaches showed that the differences in positive and negative affect before and after a group intervention were statistically significant, and therefore likely to be caused by the treatment.

In order to answer our second research question, that is – which psychological variables are statistically significant predictors of change in positive and negative affect after the treatment, two multiple regression analysis were performed. In our research, the change in affect was defined as a difference between the posttest and pretest scores¹. Hence, in the first regression model, the criterion variable was the difference in the posttest and pretest scores on positive affect, while the predictor variables were optimism, hope, neuroticism and symptoms of depression. In the second regression analysis, the criterion variable was the difference in the posttest and pretest scores on negative affect, while a set of predictors remained the same as in the previous model.

In the first regression analysis, a statistically significant model was obtained ($F(4, 25) = 3.46$, $p = 0.02$). The coefficient of determination (R^2) indicated that 36% of the variance of the criterion variable can be explained by the given

model. In Table 2 we can see that neuroticism ($p = 0.03$) and, in negative direction, depression ($p = 0.048$) turned out to be the significant predictors of elevated positive affect after a group intervention. More precisely, our results showed that those individuals who were higher in neuroticism tended to achieve a greater increase in positive affect after the group session. However, those women who had more symptoms of depression tended to respond with less enhancement of positive affect.

In the second regression analysis, once again, a statistically significant model was obtained ($F(4, 25) = 3.32$, $p = 0.03$). The value of the coefficient of determination (R^2) indicated that 35% of the criterion variable's variance can be explained by the given model. In Table 3, we can see that a statistically significant predictor of change in negative affect following the group session was the level of depression symptoms ($p = 0.04$), and marginally significant, hope ($p = 0.05$). More specifically, those participants who had more prominent symptoms of depression and/or were higher in hope, showed greater reduction of negative affect after the group session. However, those women who did not have heightened symptoms of depression, nor highly expressed hope, had weaker effect of alleviation of unpleasant emotions after the group intervention.

Discussion

The findings of our research show that taking part in an integrative, one-session group intervention for women who underwent breast cancer surgery, may lead to an increased positive and decreased negative affect, to a statistically significant level. These results verified positive effects of an integratively formulated psychological group intervention, showing that the group experience with both supportive and educational content may indeed have a beneficial effect on the patients' emotional state on a short-term level. Our results are in line with findings of previous research which indicated that participation in a group intervention with the supportive and psychoeducational approach may reduce the

¹ For positive affect, the following rule was applied: the higher were the values of the posttest-pretest difference, the greater was elevation of pleasant emotions after the group intervention. For negative affect, the following rule was applied: the higher were the values of the posttest-pretest difference, the weaker was the decrease of unpleasant feelings after the group intervention; the smaller were the values, the greater was the decrease of negative affect.

emotional distress of cancer patients^{9-11,14}, additionally emphasizing the importance of health education. The findings of this study provide a strong support for the notion that a psychological group support should be a standard part of in-patients' care after breast cancer surgery, especially knowing that the emotional difficulties are the most severe shortly after the diagnosis and in earlier phases of treatment⁴⁻⁶.

Additionally, our research revealed some interesting findings regarding the prediction of change in the emotional state, following group treatment. It turned out that those patients with more severe symptoms of depression actually benefited more from the reduction in negative affect than from elevation in positive affect. This finding could be explained with the fact that trait anhedonia, which is one of the core symptoms of the depressive state, is associated with deficits in so called "hedonic response", i.e., the capacity for experience of pleasant emotions and satisfaction is reduced²². On the other hand, the participants with the low levels of symptoms of depression showed higher tendency towards an increase in positive affect and a poor decrease in negative affect, probably because they had already had low negative affect at the pretest measuring point.

Moreover, our research revealed a somehow unexpected finding – that those participants who were higher in neuroticism were more likely to have a greater increase in positive affect following a group session. However, some earlier studies on the general population have also shown that individuals who are high in neuroticism could improve their subjective well-being by increasing the positive emotions via certain cognitive strategies, rather than decreasing the negative emotions²³. This finding is very promising, for it shows that negative effects of neuroticism, which is known to be an important risk factor for certain affective disorders²⁴, may be buffered at least in a short-term perspective.

Eventually, our findings suggest that women who are higher in hope tend to have a greater decrease in negative affect after the group intervention. It could be assumed that a participation in a psychological group intervention fosters a

goal-oriented motivation and strategies¹⁷, which in turn diminishes unpleasant mood.

Interestingly, optimism did not turn out to be a significant predictor of increase in positive affect, nor of decrease in negative affect. This finding could be explained by the assumption that the individuals high in optimism already had elevated levels of positive affect and low levels of negative affect, and therefore could not benefit that much from the group intervention.

To sum up, it seems that the benefits reflected in the improvement of emotional state via fostering positive emotions are most powerful for those individuals high in neuroticism and low in depression. On the other hand, for the women high in depression, the reduction in negative affect seems to be more beneficial. Possibly, group process activates the intrapersonal resources due to which the individuals high in hope manifest greater reduction in negative affect after the session.

As the results of our study are preliminary, future research should be conducted on a larger sample. Moreover, a wider range of psychological variables related to adaptation to disease (such as body image, self-efficacy and coping strategies) should be taken into account. Also, it would be recommendable to examine not only the short-term but also the long-term effects of such group interventions, with more sophisticated methodological approach.

Conclusion

The results of this study not only showed that the integrative psychological group intervention combining supportive and educational elements has the short-term benefits on the participants' emotional state but also shed some additional light on the predictive power of some important psychological variables with regard to the change in affect, following a group intervention. Our findings offer strong support to a well-known standpoint, that the group experience has „a healing effect“ on emotional well-being of women who face breast cancer treatment, and therefore such interventions should be a standard part of patients' care in an oncology setting.

R E F E R E N C E S

1. Mehnert A, Koch U. Psychological comorbidity and health-related quality of life and its association with awareness, utilization, and need for psychosocial support in a cancer register-based sample of long-term breast cancer survivors. *J Psychosom Res* 2008; 64(4): 383–91.
2. Deshields T, Tibbs T, Fan M, Taylor M. Differences in patterns of depression after treatment for breast cancer. *Psychooncology* 2006; 15(5): 398–406.
3. Burgess C, Cornelius V, Love S, Graham J, Richards M, Ramirez A. Depression and anxiety in women with early breast cancer: five year observational cohort study. *BMJ* 2005; 330(7493): 702.
4. Jadoulle V, Rokbani L, Ogez D, Maccioni J, Lories G, Bruchon-Schweitzer M, et al. Coping and adapting to breast cancer: a six-month prospective study. *Bull Cancer* 2006;93(7): 67–72.
5. Bang S, Park SH, Kang HG, Jue JI, Cho IH, Yun YH, et al. Changes in quality of life during palliative chemotherapy for solid cancer. *Support Care Cancer* 2005; 13(7): 515–21.
6. Iconomou G, Mega V, Koutras A, Iconomou AV, Kalofonos HP. Prospective assessment of emotional distress, cognitive function, and quality of life in patients with cancer treated with chemotherapy. *Cancer* 2004; 101(2): 404–11.
7. Meyerowitz BE. Psychosocial correlates of breast cancer and its treatments. *Psychol Bull* 1980; 87(1): 108–31.
8. Schou BI, Kåresen R, Smeby NA, Espe R, Sorensen EM, Amundsen M, et al. Effects of a Psychoeducational Versus a Support Group Intervention in Patients With Early-Stage Breast Cancer: results of a randomized controlled trial. *Cancer Nurs* 2014; 37(3): 198–207.
9. Ferlic M, Goldman A, Kennedy BJ. Group counseling in adult patients with advanced cancer. *Cancer* 1979; 43(2): 760–6.
10. Vachon MLS, Lyall WA, Rogers J, Cochrane J, Freeman SJ. The Effectiveness of Psychosocial Support during Post-Surgical Treatment of Breast Cancer. *Int J Psychiatry Med* 1982; 11(4): 365–72.

11. *Weisman AD, Worden JW, Sobel HJ*. Psychosocial screening and intervention with cancer patients. Boston, MA: Project Omega; 1980.
12. *Edelman S, Craig A, Kidman AD*. Group Interventions with Cancer Patients: efficacy of psychoeducational versus supportive groups. *J Psychosoc Oncol* 2000; 18(3): 67–85.
13. *Telch CF, Telch MJ*. Group coping skills instruction and supportive group therapy for cancer patients: A comparison of strategies. *J Consult Clin Psychol* 1986; 54(6): 802–8.
14. *Helgeson VS, Cohen S, Schulz R, Yasko J*. Group support interventions for women with breast cancer: Who benefits from what?. *Health Psychol* 2000; 19(2): 107–14.
15. *Watson D, Clark LA, Tellegen A*. Development and validation of brief measures of positive and negative affect: The PANAS scales. *J Pers Soc Psychol* 1988; 54(6): 1063–70.
16. *Scheier MF, Carver CS, Bridges MW*. Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *J Pers Soc Psychol* 1994; 67(6): 1063–78.
17. *Snyder CR, Harris C, Anderson JR, Holleran SA, Irving LM, Sigmon ST, et al*. The will and the ways: Development and validation of an individual-differences measure of hope. *J Pers Soc Psychol* 1991; 60(4): 570–85.
18. *John OP, Donahue EM, Kentle RL*. The big five inventory. Versions 4a and 54. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research; 1991.
19. *Lovibond SH, Lovibond PF*. Manual for the depression anxiety stress scales. 2nd ed. Sydney: Psychology Foundation of Australia; 1995.
20. *Henry JD, Crawford JR*. The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *Br J Clin Psychol* 2011; 44(Pt 2): 227–39.
21. *Tabachnick BG, Fidell LS*. Using multivariate statistic. 6th ed. Boston: Pearson; 2013.
22. *Chentsova-Dutton Y, Hanley K*. The effects of anhedonia and depression on hedonic responses. *Psychiatry Res* 2010; 179(2): 176–80.
23. *Ng W*. Neuroticism and well-being? Let's work on the positive rather than negative aspects. *J Positive Psychol* 2012; 7(5): 416–26.
24. *Roelofs J, Huibers M, Peeters F, Arntz A*. Effects of neuroticism on depression and anxiety: Rumination as a possible mediator. *Pers Individ Diff* 2008; 44(3): 576–86.

Received on October 11, 2017.

Revised on December 18, 2017.

Accepted on January 08, 2018.

Online First January, 2018.