

The Effect of Cognitive Behavioral Therapy (CBT) on Reducing the Anxiety Level of Breast Cancer Patients Undergoing Chemotherapy at Hasanuddin University Hospital

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ABSTRACT

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Breast cancer is the number one cancer in women in the world both globally and nationally. In Indonesia, breast cancer is in the top position of all types of cancer experienced by women in Indonesia. Cancer treatment is generally done by surgery and chemotherapy. Several studies describing the mental effects of breast cancer patients showed that 33.3% experienced anxiety. Psycho-educational interventions have proven effective in overcoming mental problems faced by patients with chronic illnesses such as cancer. One type of psycho-education that can be done includes Cognitive Behavioral Therapy (CBT). This study aims to determine the effect of Cognitive Behavioral Therapy (CBT) on Reducing the Anxiety Level of Breast Cancer Patients Undergoing Chemotherapy at Makassar City Hospital. This study used a Quasi-Experimental Design Pre-Post Test Design with Control Group. The results showed that the majority of respondents' anxiety before being given treatment had no anxiety/low anxiety in the intervention group and in the control group even though there were 16% of respondents who felt high anxiety. After treatment, the anxiety of the respondents in the intervention group remained the same as before the treatment and the anxiety of the respondents in the control group changed by 1 respondent (8.3%) who had experienced high anxiety decreased to moderate anxiety. Cognitive Behavioral Therapy (CBT) therapy did not show any significant results in reducing the patient's anxiety level. It is recommended that the CBT implementation session be maximized again to get maximum results.

Keywords : Psycho-Education; Mental Health; Chronic Disease

INTRODUCTION

Breast cancer is the number one cancer in women in the world both globally and nationally. There were 2,261,419 (11.7%) new cases reported with 684,996 (6.9%) deaths, overall in the last 5 years to 2020 the number of breast cancer cases was 7,790,717 (30.3%)(WHO, 2020). In Indonesia in 2020 the incidence of breast cancer is 65,858 (16.6%) cases, so that breast cancer is in the top position of all types of cancer experienced by women in Indonesia(WHO, 2020). Data from the South Sulawesi Provincial Health Office in 2017, breast cancer cases in Makassar have increased by 1,181 cases, of which there were 339 new cases, 830 old cases and 12 deaths. This

shows that breast cancer is still a big problem. Therefore, strategies are needed in the prevention and treatment of breast cancer.

Treatment of cancer at all ages is 61.8% surgery, 24.9% chemotherapy, 17.3% radiation and the remaining 24.1% are other treatments (Ministry of Health, 2015). Systemic treatment such as chemotherapy will have an effect on normal cells (Khorinal, 2019). Thus causing side effects of chemotherapy in breast cancer patients. Several studies describing the mental effects of breast cancer patients showed that 33.3% experienced anxiety (4). Another study showed that 41.5% experienced anxiety and 19.5% experienced depression while undergoing chemotherapy (5). The study also reported that 26% of breast cancer patients reported moderately severe depression, 41% reported severe anxiety during chemotherapy (6). Some of these studies describe the many mental health problems in breast cancer patients with chemotherapy.

Anxiety also causes changes in behavior by reducing motivation, cognition and coping abilities in patients (7). Unstable emotions in breast cancer patients are caused by unaddressed anxiety which will affect disease development and treatment adherence (8). Thus, untreated mental health problems can worsen the condition of patients undergoing chemotherapy.

Psycho-educational interventions have proven effective in overcoming mental problems faced by patients with chronic illnesses such as cancer. One type of psycho-education that can be done is Cognitive Behavioral Therapy (CBT), which is a therapy that integrates two approaches, namely cognitive therapy and behavioral therapy. Several previous studies have shown the effectiveness of Cognitive Behavioral Therapy (CBT) on mental health problems (anxiety). The results of research on the effect of Cognitive Behavioral Therapy (CBT) on anxiety levels in Diabetes Mellitus (DM) patients found that there was an effect of CBT on reducing anxiety in DM patients (9). Other studies to see the effect of CBT on depression in Type 2 DM patients have proven to have a positive effect (10). CBT is effective in treating mental health problems in patients with chronic illnesses.

set the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results. Explain how you addressed the problem and clearly state the aims of your study. As you compose the introduction, think of readers who are not experts in this field. Please describe in narrative format and not use sub-chapter.

METHODS

This study used a Quasi-Experimental Design Pre-Post Test Design with Control Group. The independent variable is Cognitive Behavioral Therapy (CBT), the dependent variable is the level of anxiety. The study population was breast cancer patients undergoing chemotherapy, the number of samples was 22 respondents, 11 intervention groups and 11 control groups. The intervention group was given educational videos on anxiety management and Cognitive Behavioral Therapy (CBT), the control group was only given educational videos related to anxiety management. This research was conducted in the chemotherapy room at Hasanuddin University RSPTN, from August to October 2022. The instrument for assessing anxiety levels used The State-Trait Anxiety Inventory (STAI), which consisted of 20 questions. Data were analyzed using SPSS software version 26. A descriptive analysis was performed to display the proportion of data (frequency distribution, mean, minimum maximum) of the characteristics and anxiety of the respondents. Then proceed with the homogeneity test of the characteristics of the respondents using the levene' test. Inferential analysis was also performed as a hypothesis test. Before that, the data was assessed for normality using the Shapiro Wilk test. This research has received ethical approval with number: 651/STIKES-NH/KEPK/VIII/2022.

RESULTS

Table 1. Distribution of the characteristics of the respondents

Characteristics <i>Homogeneity*</i>	Intervention (n=12)	Control (n=12)	
Age			
<45 years	4 (33.3%)	4 (33.3%)	0.430
45-55 years	4 (33.3%)	6 (50%)	
>55 years	4 (33.3%)	2 (16.7%)	
Religion			
Islam	11 (91.7%)	11 (91.7%)	0.659
Christian	1 (8.3%)	0 (0%)	
Catholic	0 (0%)	1 (8.3%)	
Ethnic group			
Bugis	5 (41.7%)	9 (75%)	0.238
Kaili	1 (8.3%)	0 (0%)	
Luwu	2 (16.7%)	0 (0%)	
Makassar	2 (16.7%)	2 (16.7%)	
Toraja	2 (16.7%)	1 (8.3%)	
Education			
Primary Education	0 (0%)	1 (8.3%)	0.391
Junior Secondary	2 (16.7%)	1 (8.3%)	

Characteristics	Intervention (n=12)	Control (n=12)	
<i>Homogeneity*</i>			
Education			
Senior Secondary	6 (50%)	5 (41.7%)	
Diploma	1 (8.3%)	0 (0%)	
Bachelor	3 (25%)	5 (41.7%)	
Occupation			
Unemployment	5 (41.7%)	1 (8.3%)	
Homemaker	5 (41.7%)	8 (66.7%)	0.610
Civil Servant	1 (8.3%)	2 (16.7%)	
Retired	1 (8.3%)	0 (0%)	
Self-employed	0 (0%)	1 (8.3%)	
Marital status			
Single	2 (16.7%)	2 (16.7%)	1,000
Married	10 (83.3%)	10 (83.3%)	
Duration of illness			
<1 year	6 (50%)	3 (25%)	0.069
1-5 years	6 (50%)	9 (75%)	
Therapy cycle			
Mean (min-max)	4 (1-9)	4.42 (1-10)	0.648
Anxiety level			
No anxiety	6 (50%)	7 (58.3%)	0.581
Anxious	6 (50%)	5 (41.7%)	

**levene's test of homogeneity of variance*

Table 1 shows that all characteristics of respondents between intervention groups and control groups have homogeneous variances

Table 2. Distribution of respondents' anxiety intensity before and after treatment

No	Anxiety items	Intervention (n=12)		Control (n=12)	
		Mean (min-max)		Mean (min-max)	
		Pre-test	Post test	Pre-test	Post test
1	I feel calm	1.83 (1-4)	1.42 (1-3)	1.58 (1-3)	1.50 (1-3)
2	I feel safe	1.42 (1-2)	1.33 (1-3)	1.58 (1-4)	1.42 (1-3)
3	I feel tensed	1.92 (1-3)	1.75 (1-4)	2.08 (1-3)	1.83 (1-3)
4	I feel pressured	1.17 (1-3)	1.25 (1-2)	1.50 (1-3)	1.33 (1-2)
5	I feel at ease	1.83 (1-4)	1.92 (1-4)	1.67 (1-3)	1.50 (1-3)
6	I feel annoyed	1.42 (1-4)	1.50 (1-3)	1.42 (1-4)	1.17 (1-2)
7	I feel worried that I will experience bad luck / misfortune	1.50 (1-3)	1.83 (1-3)	1.83 (1-4)	1.83 (1-3)
8	I feel satisfied	1.25 (1-2)	1.42 (1-3)	1.17 (1-2)	1.42 (1-3)
9	I feel scared	1.92 (1-4)	2.00 (1-4)	2.00 (1-4)	2.08 (1-3)
10	I feel comfortable	1.50 (1-4)	1.58 (1-3)	1.42 (1-3)	1.42 (1-3)
11	I feel confident	1.33 (1-2)	1.58 (1-3)	1.58 (1-3)	1.42 (1-3)
12	I feel nervous	1.67 (1-3)	1.83 (1-3)	1.83 (1-3)	2.00 (1-4)
13	I feel uneasy	1.75 (1-3)	1.92 (1-3)	1.92 (1-4)	1.83 (1-3)
14	I feel unable to decide	1.83 (1-4)	1.42 (1-4)	1.75 (1-4)	1.83 (1-3)

No	Anxiety items	Intervention (n=12)		Control (n=12)	
		Mean (min-max)		Mean (min-max)	
		Pre-test	Post test	Pre-test	Post test
	something				
15	I feel relaxed	1.50 (1-2)	1.67 (1-4)	1.75 (1-3)	1.92 (1-3)
16	I feel satisfied with the current conditions	1.50 (1-4)	1.67 (1-4)	1.75 (1-3)	1.92 (1-4)
17	I feel worried	1.92 (1-4)	1.92 (1-4)	2.00 (1-4)	2.33 (1-4)
18	I feel confuse	1.58 (1-3)	1.58 (1-3)	1.67 (1-4)	1.75 (1-4)
19	I feel strong in dealing with the current conditions	1.33 (1-2)	1.33 (1-3)	1.50 (1-3)	1.25 (1-2)
20	I feel happy	1.42 (1-4)	1.42 (1-3)	1.33 (1-3)	1.58 (1-3)
	Overall average	1.50 (1-3)	1.58 (1-3)	1.58 (1-3)	1.58 (1-3)

Table 2 shows the distribution of respondents' anxiety intensity in terms of the average answers in each item of the statement

Table 3. Respondents' anxiety categories before and after treatment

Anxiety	Intervention (n=12)	Control (n=12)	Total
Before treatment			
1. No anxiety/low anxiety	9 (75%)	8 (66.7%)	17 (70.8%)
	1 (8.3%)	2 (16.7%)	3 (12.5%)
2. Moderate anxiety	2 (16.7%)	2 (16.7%)	4 (16.7%)
3. High anxiety			
After treatment			
1. No anxiety/low anxiety	9 (75%)	8 (66.7%)	17 (70.8%)
	1 (8.3%)	3 (25%)	4 (16.7%)
2. Moderate anxiety	2 (16.7%)	1 (8.3%)	3 (12.5%)
3. High anxiety			

Table 3 shows that respondents before treatment were still the majority of the absence of low anxiety in the intervention group or in the control group although 16% of respondents felt high anxiety. After treatment, respondents' anxiety in the intervention group remained as it was before treatment and respondents' anxiety in the control group changed 1 respondent (8.3%) who had experienced high anxiety decreased to moderate anxiety.

Table 4. Differences of anxiety before and after treatment in the intervention group and the control group

Anxiety Score	Intervention (n=12)	Control (n=12)
Decrease	7 (58.3%)	7 (58.3%)
Increase	3 (25%)	4 (33.3%)
Stay the same	2 (16.7%)	1 (8.3%)
<i>p-value*</i>	0.878	0.789

**Wilcoxon test*

Table 4 shows the difference in respondents' anxiety before and after CBT therapy

plus videos has not been statistically meaningful with a $p > 0.05$ value which means that Cognitive Behavioral Therapy (CBT) plus videos have an insignificant effect on reducing the level of anxiety of breast cancer patients undergoing chemotherapy in Makassar City. However, the majority of respondents experienced a decrease in anxiety (58.3%) after administering CBT therapy and video. Something similar happened to the results of the control group's anxiety measurements before and after the video administration.

DISCUSSION

This study found that the effectiveness of CBT plus video therapy was not statistically significant in reducing anxiety levels in breast cancer patients undergoing chemotherapy and the results obtained were that both respondents experienced a decrease in anxiety levels after giving videos and CBT interventions. Similar studies have also been put forward in several studies that have tested the effectiveness of CBT in minimizing side effects, reducing anxiety and depression in breast cancer patients. This is in line with a review study that breast cancer patients who received CBT showed improvements in anxiety (Sun et al., 2019). Other studies also present that CBT interventions performed by nurses can improve the quality of life of breast cancer patients with chemotherapy (Lee et al., 2011). In addition, several studies also described the effectiveness of CBT therapy which has a significant effect on reducing anxiety, including a study in China reported that women with breast cancer in the CBT group showed significantly reduced anxiety symptoms compared to breast cancer women in the self-management group and usual care from time to time (Ren et al., 2019). In addition, a non-randomized trial with a control group in breast cancer patients undergoing chemotherapy showed a significant decrease in anxiety and depression scales in the intervention group (Kalke et al., 2020).

Anxiety that occurs in breast cancer patients undergoing chemotherapy due to feelings of discomfort or fear resulting from self-anticipation of danger, either caused by the disease or from side effects of the treatment received (Oetami, et.al. 2014). A study states that untreated anxiety can exacerbate the clinical course and treatment of life-threatening diseases (Karamoozian et.al, 2014). Anxiety in breast cancer patients needs to be assessed by a trained professional cancer care team, especially nurses, nurses are at the forefront of cancer care and are the first to detect patients experiencing anxiety (NCCN, 2020). In this study, it was found that the majority of respondents experienced low anxiety, and some others experience high anxiety. In contrast to what was stated in

the study that most breast cancer patients undergoing chemotherapy experienced moderate anxiety (Pratiwi et al., 2017). The low level of anxiety in this study was also caused by the age of the respondents who were all in the early (middle) old age, this is in line with other studies which stated that daily life disturbances in young breast cancer patients were greater than in early elderly patients who already have coping, cognitive and emotional skills that are better prepared to accept illness (Bosire et al., 2020; Pratiwi et al., 2018; Linden et al., 2012).

CBT is a form of psychosocial therapy to assist individuals in training their ways of thinking and behaving in dealing with problems to find solutions to problems according to the individual's own conditions (Gerald, 2013). Based on cognitive behavioral theory, CBT forms the basis of a targeted intervention to change thoughts first which is then followed by behavior changes such as building good health habits (Petrak et al., 2015; Wroe et al., 2018). In this study, CBT sessions and the provision of videos which were conducted once in one meeting in the intervention group reduced anxiety, namely feelings of tension, fear and worry. After the treatment, there were also 3 conditions that were felt more often, namely the presence of a more peaceful feeling, and there are still feelings of anxiety and worry. This is because the number of sessions of CBT is given only once, so statistically there does not appear to be a significant change even though it still shows a decrease in the anxiety score. In contrast to several studies that provides CBT interventions in several sessions to have a statistically significant effect on anxiety (Ren et al., 2019; Kalke et al., 2020).

Beck's theory states that thinking will affect mood and adaptive thinking behavior will feel more positive emotions and lead to more functional behavior, negative thinking causes cognitive distortions that require a cognitive restructuring approach (Beck, 2011) and the need to realize that individuals experience different beliefs mistaken so it is easy to change emotions and behavior (Ramadan, 2020). With CBT therapy, wrong thinking patterns or perceptions make individuals more adaptive in dealing with anxiety. Breast cancer patients with chemotherapy tend to experience negative thoughts due to the diagnosis and therapeutic effects obtained (American Cancer Society, 2019). Anxiety that occurs in breast cancer patients undergoing chemotherapy is mostly due to thinking about the impact or effects of treatment (Oetami, et.al. 2014), so it is necessary to do an initial screening to determine the level of anxiety in breast cancer patients undergoing chemotherapy and determine the type of therapy that is needed.

CONCLUSIONS

Cognitive Behavioral Therapy (CBT) therapy was not statistically significant in reducing anxiety, although there was still a change in anxiety scores after being given the intervention. Providing CBT therapy to patients with mental health problems such as anxiety can be an option for nursing intervention. Further research can be carried out by administering CBT therapy in accordance with the recommended sessions and involving psychologists.

REFERENCES

- Almadani AS, Majid A, Dewi SC. The effect of cognitive behavior therapy on anxiety level in diabetes mellitus patients: literature review. JPoltekkes Ministry of Health Yogyakarta [Internet]. 2021;1–7. Available from: http://eprints.poltekkesjogja.ac.id/7826/10/NASKAH_PUBLIKASI.pdf
- American Cancer Society. Cancer treatment and survivorship facts and figures 2019. In: American Cancer Society, Inc, Surveillance Research Cancer [Internet]. New Atlanta: Global Headquarters; 2019. p.s. 1–48. Available from: <https://www.cancer.org/research/cancer-facts-statistics/survivor-facts-figures.html>
- Antonio Rubio Sánchez, M. (2015). Study of the Relationship between Anxiety and Obesity by Means of the State-Trait Anxiety Inventory (STAI) Questionnaire. *Journal of Surgery*, 3(1). <https://doi.org/10.11648/j.js.s.2015030101.15>
- Beck, JS (2011). Cognitive Behavior Therapy Basic and Beyond. In *the Guilford Press New York London* (2nd ed., Vol. 2, Issue 1). <https://jppbr.ub.ac.id/index.php/jppbr>
- Bosire, A., Mageto, I., & Kimani, S. (2020). Psychological effects of chemotherapy experienced by patients diagnosed with breast and cervical cancer attending Kenyatta National Hospital Cancer Treatment Centre. *International Journal of Health Sciences and Research*, 10(1), 166–174. https://www.ijhsr.org/IJHSR_Vol.10_Issue.1_Jan2020/27.pdf
- Browall M, Brandberg Y, Nasic S, Rydberg P. A prospective exploration of symptom burden clusters in women with breast cancer during chemotherapy treatment. *Support Care Cancer* [Internet]. 2017;25:1423–9. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5378737/>
- Gerald, C. (2013). *Theory and Practice of Counseling and Psychotherapy* (Ninth). Cengage. <http://perpus.univpancasila.ac.id/repository/EBUPT190498.pdf>

- Kalke, K., Ginossar, T., Bentley, JM, Carver, H., Shah, SFA, & Kinney, AY (2020). Use of evidence-based best practices and behavior change techniques in breast cancer apps: Systematic analysis. *JMIR MHealth and UHealth*, 8(1), 1–14. <https://doi.org/10.2196/14082>
- Karamoozian, M., Baghery, M., Darekordi, A., & Aminizadeh, M. (2014). Impact of cognitive – behavioral group therapy stress management intervention on mental health and pain coping strategies for breast cancer patients. *Iranian Quarterly Journal of Breast Disease*, 7(2), 56–66.
- Kayikcioglu, O., Bilgin, S., Seymenoglu, G., & Deveci, A. (2017). State and Trait Anxiety Scores of Patients Receiving Intravitreal Injections. *Biomedicine Hub*, 2(2), 1. <https://doi.org/10.1159/000478993>
- Lee, H., Lim, Y., Yoo, M.-S., & Kim, Y. (2011). Effects of a Nurse-Led Cognitive-Behavior Therapy on Fatigue and Quality of Life of Patients With Breast Cancer Undergoing Radiotherapy: An Exploratory Study. *Cancer Nursing*, 34(6). https://journals.lww.com/cancernursingonline/Fulltext/2011/11000/Effects_of_a_Nurse_Led_Cognitive_Behavior_Therapy.16.aspx
- Nakamura ZM, Deal AM, Nyrop KA, Chen YT, Quillen LJ, Brenizer T, et al. Serial assessment of depression and anxiety by patients and providers in women receiving chemotherapy for early breast cancer. *Oncologists* [Internet]. 2021 Feb;26(2):147–56. Available from: <https://pubmed.ncbi.nlm.nih.gov/32946156/>
- NCCN. (2020). Distress during cancer care. In *National Comprehensive Cancer Network*. <https://www.nccn.org/patients/guidelines/content/PDF/distress-patient.pdf>
- Oetami, F., M. Thaha, IL, & Wahiduddin. (2014). Psychological impact of breast cancer treatment in hospital Dr. Wahidin Sudirohusodo Makassar. *Anzdoc*, 1, 1–16. <https://adoc.pub/analysis-impact-psychological-pengobat-cancer-payudara-di-rs-.html>
- Petrak, F., Herpertz, S., Albus, C., Hermanns, N., Hiemke, C., Hiller, W., Kronfeld, K., Kruse, J., Kulzer, B., Ruckes, C., Zahn, D., & Müller, MJ (2015). Cognitive behavioral therapy versus sertraline in patients with depression and poorly controlled diabetes: The Diabetes and Depression (DAD) Study: A randomized controlled multicenter trial. *Diabetes Care*, 38(5), 767–775. <https://doi.org/10.2337/dc14-1599>
- Pratiwi, SR, Widiati, E., & Solehati, T. (2017). An overview of the factors associated with anxiety in breast cancer patients undergoing chemotherapy. *Jurnal Pendidikan*

- Indonesia*, 3(2), 167–174.
<https://ejournal.upi.edu/index.php/JPKI/article/view/9422/5799>
- Ramadhan, D. (2020). Cognitive Behavioral Therapy To Reduce Anxiety In Fibroadenoma Mammary Patients. *Journal of Psychiatry Psychology and Behavioral Research*, 1, 6–9. <https://jppbr.ub.ac.id/index.php/jppbr>
- Ren, W., Qiu, H., Yang, Y., Zhu, X., Zhu, C., Mao, G., Mao, S., Lin, Y., Shen, S., Li, C., Xie, X., Shi, H., Jiang, S., Zhao, K., Chen, L., He, J., Xu, L., Fu, Y., Hu, X., ... He, J. (2019). Randomized controlled trial of cognitive behavioral therapy for depressive and anxiety symptoms in Chinese women with breast cancer. *Psychiatry Research*, 271, 52–59. <https://doi.org/https://doi.org/10.1016/j.psychres.2018.11.026>
- Sun, H., Huang, H., Ji, S., Chen, X., Xu, Y., Zhu, F., & Wu, J. (2019). The Efficacy of Cognitive Behavioral Therapy to Treat Depression and Anxiety and Improve Quality of Life Among Early-Stage Breast Cancer Patients. *Integrative Cancer Therapies*, 18(1), 1–9. <https://doi.org/10.1177/1534735419829573>
- Thomas, CL, & Cassidy, JC (2021). Validation of the State Version of the State-Trait Anxiety Inventory in a University Sample. <https://doi.org/10.1177/21582440211031900>, 11(3). <https://doi.org/10.1177/21582440211031900>
- WHO. Breast Source: Globocan 2020 [Internet]. Vol. 419. 2020. Available from: <https://gco.iarc.fr/today/data/factsheets/cancers/20-Breast-fact-sheet.pdf>
- Wroe, AL, Rennie, EW, Sollesse, S., Chapman, J., & Hassy, A. (2018). Is Cognitive Behavioral Therapy focusing on Depression and Anxiety Effective for People with Long-Term Physical Health Conditions? A Controlled Trial in the Context of Type 2 Diabetes Mellitus. *Behavioral and Cognitive Psychotherapy*, 46(2), 129–147. <https://doi.org/10.1017/S1352465817000492>
- Wu PH, Chen SW, Huang WT, Chang SC, Hsu MC. Effects of a psychoeducational intervention in patients with breast cancer undergoing chemotherapy. *J Nurs Res*. 2018;26(4):266–79.