

The effect of peer support psychoeducation based on experiential learning on self-care demands among breast cancer patients with post-chemotherapy

Journal of Public Health Research
2023, Vol. 12(1), 1–9
© The Author(s) 2023
DOI: 10.1177/22799036221146901
journals.sagepub.com/home/phj


Erika Untari Dewi^{1,2} , Nursalam³, Mahmudah¹
and Esti Yunitasari³

Abstract

Background: Breast cancer patients with post-chemotherapy had self-care deficit problems. The patient is unable to perform activities of daily living which can decrease the quality of life. One of the factors that affected self-care deficit among breast cancer patients was inadequate information. This study aimed to determine the effects of peer support psychoeducation based on experiential learning on the self-care demand.

Design and methods: This study used a quasi-experimental design with pretest and posttest. The independent variable of the study was the application of peer support psychoeducation based on experiential learning and the dependent variable was the self-care demand. The inclusion criteria in this study were breast cancer patients with post-chemotherapy. The exclusion criteria in this study were patients who were unconscious. We selected the experimental and control group randomly. The total sample in this study was 60 people, 30 respondents for the experiment group and 30 respondents for the control group. Peer support psychoeducation based on experiential learning was developed from Wauchope's psychoeducational theory, Orem's self-care, and David Kolb's experiential learning. We used a self-report questionnaire to measure self-care demand. Data were analyzed using Wilcoxon signed rank and Mann–Whitney *U* tests.

Results: Peer support psychoeducation based on experiential learning has a significant effect on self-care demand, namely ADL ($p = 0.002$), pain management ($p = 0.002$), nutritional management ($p = 0.000$), and rest and sleep ($p = 0.000$).

Conclusion: Psychoeducation based on experiential learning was recommended for nursing care or physician to increase self-care demand.

Keywords

Psychoeducation, self-care, breast cancer, chemotherapy

Date received: 21 May 2022; accepted: 5 December 2022

Introduction

Based on data from The Global Cancer Observatory, there were 18.1 million new cases of cancer with a mortality rate of 9.6 million. One in five men and one in six women in the world also experience cancer.¹ Meanwhile, in Indonesia, the number of breast cancer patients was 42.1 per 100,000 population with an average death rate of 17 per 100,000.²

Breast cancer patients undergoing chemotherapy had problems especially related to self-care.^{3,4} The patient is unable to perform activity daily living which can decrease the quality of life and lead to anxiety and depression.⁵ A

previous study mentioned that in breast cancer patients, almost 50% of respondents need assistance from other people to fulfill their nutritional and fluid needs mobilization, toileting, bathing, and personal hygiene supervision.⁶

¹Faculty of Public Health, Universitas Airlangga, Surabaya, Indonesia

²William Booth Health Science College in Surabaya, East Java, Indonesia

³Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

Corresponding author:

Nursalam, Faculty of Nursing, Universitas Airlangga, Surabaya, 60115, Indonesia.

Email: nursalam@fkn.unair.ac.id



Table 1. Topics of intervention.

Variable	Indicator
Peer support psychoeducation based on experiential learning	Peer support psychoeducation based on experiential learning for post chemotherapy breast cancer patients. The intervention provides information, motivation, and self-care training for the topics: <ol style="list-style-type: none"> 1. Activity day living (ADL) 2. Pain management 3. Nutrition management 4. Rest and sleep management

Factors that affect self-care deficit among breast cancer patients were inadequate information about the disease, management of the disease, and side effects of the chemotherapy received from health care providers.⁷⁻⁹ Lack of information and knowledge had a negative effect among patients.¹⁰

Psychoeducation can improve cognitive abilities¹¹ and is a process of providing psychological understanding and education to individuals or groups that is offered professionally by integrating psychotherapeutic and educational interventions.¹² Peer support can enhance the effect of psychoeducation intervention, by providing information and education carried out by the same group.¹³ A previous study mentioned that peer support psychoeducation had a positive influence on health outcomes.^{13,14} Nurses or physicians can take measures to overcome the problem of independence in breast cancer patients by providing psychoeducation with peer support.

Psychoeducation is still focused on advice or suggestions in order to maintain personal health and advises patients to accept the conditions. Various interventions of psychoeducation have been developed, but most of them only cover physical and psychological aspects, while the skills aspects are still not developed.¹⁵⁻¹⁷

Peer support psychoeducation based on experiential learning combines health education in post-chemotherapy cancer patients by considering psychological conditions and using experiential learning methods. Experiential learning aims to improve skills so the patient will be independent in dealing with the side effects of chemotherapy. Experiential learning emphasizes a holistic learning model in the learning process, building knowledge, and skills through direct observation.^{18,19} There were several studies about the effectiveness of psychoeducational intervention in patients with breast cancer.²⁰⁻²² This study focused on the psychoeducational element to increase knowledge about the disease as well as skills that can help patients to increase their self-care deficit. Based on this phenomenon, the aim of this study was to determine the effects of peer support psychoeducation based on experiential learning on the self-care demand of post-chemotherapy breast cancer patients.

Methods

Research design

The purpose of this study was to determine the effects of peer support psychoeducation based on experiential learning on the self-care demand among post-chemotherapy breast cancer patients. Two groups will be involved in this research, namely the experimental and the control group. A quasi-experimental design was used in this study and it was conducted with a pretest and posttest. The independent variable of the study was the application of peer support psychoeducation based on experiential learning and the dependent variable was the self-care demand among post-chemotherapy breast cancer patients.

Participants

The inclusion criteria in this study were post-chemotherapy breast cancer patients. The exclusion criteria were unconscious patients. We selected the experiment and control group randomly. The previous references recommended a minimum sample size of 10–30 respondents.^{23,24} The total sample in this study was 60 people, 30 respondents for the experiment group and 30 for the control group.

Intervention programs

Peer support psychoeducation based on experiential learning was developed from Wauchope's psychoeducational theory,²⁵ Orem's self-care,²⁶ and David Kolb's experiential learning.²⁷ Peer support psychoeducation has five stages: opportunity and choice, reflection, listing options and decision-making, formal documentation, and activating and utilizing. Each stage has four steps of experiential learning, namely concrete experience, reflective observation, abstract conceptualization, and active experimentation (Table 1).

Data collection

We selected respondents according to the inclusion criteria. The respondents were divided into two groups, the

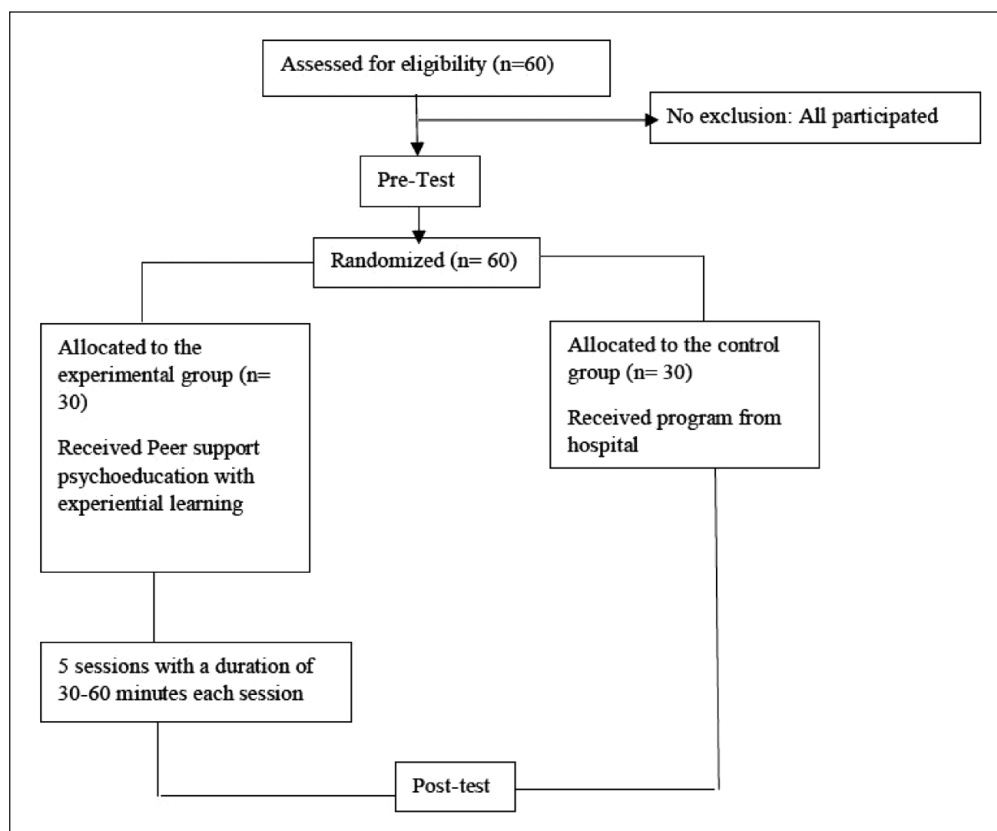


Figure 1. Method of the research.

control group and the experimental group. Initially, we collected the pre-test data regarding self-care demand using a self-report questionnaire. The intervention was conducted in 5 sessions with a duration of 30–60 min each. There were one to five respondents in one group. The control group only received the intervention carried out by the hospital. At the end of the session, we collected the final data using a questionnaire.

Instruments

Self-care demands have several indicators, namely: activity daily living, pain management, nutrition management, and rest and sleep.

Activity day living was measured by Lawton's Instrument Activity Day Living (IADL).²⁸ The dimensions of this questionnaire were worship, doing housework, shopping, managing finances, transportation, preparing medicine, making decisions in the family, and doing leisure activities.

Pain management was measured using a modified questionnaire from Pain Management for patients with cancer.²⁹ It had 20 items using a Likert scale, 4: always, 3: often, 2: sometimes, and 1: never. The total score was categorized into: independent pain management >75%, need assistance 56%–75%, and dependent <56%.

A nutrition management questionnaire was asked regarding nutrition, consuming healthy foods, managing food, and fulfilling balanced nutrition.³⁰ It had 20 items using a Likert scale, 4: always, 3: often, 2: sometimes, and 1: never. The total score was categorized into: independent nutrition management >75%, requiring assistance 56%–75%, and dependent <56%.

Rest and sleep assessed rest and sleep. It had 20 items, using a Likert scale, 4: always, 3: often, 2: sometimes, and 1: never. The total score was categorized: independent >75%, need assistance: 56%–75%, and dependent <56%.

The questionnaires were examined using content validity and corrected item-total correlation. They fulfilled the requirements ($r > 0.5$).³¹ They were also tested using reliability, and the results of the Cronbach's alpha were >0.7.^{32,33}

Data analyzed

All the data were keyed in SPSS. A descriptive analysis was used to measure the distribution and percentage of each variable. An inferential analysis was used to analyze the effect of the intervention whether distributed normally or not. We used Wilcoxon signed rank test if the data had an abnormal distribution and paired *t*-test with normal distribution to measure the difference between the pre-test

Table 2. Characteristic of respondents.

Variables	Experimental		Control		Total		χ^2
	<i>n</i> = 30		<i>n</i> = 30				
	Frequency	%	Frequency	%	Frequency	%	<i>p</i> value
Age (years)							
17–25	0	0	0	0	0	0	0.739
26–45	2	6.70	6	20.0	8	13.33	
46–55	18	60.0	16	53.3	34	56.67	
56–65	4	13.3	4	13.3	8	13.33	
>65	6	20.0	4	13.3	10	16.67	
Education							
Elementary school	2	6.7	2	6.7	4	6.67	0.976
Junior high school	6	20.0	8	26.7	14	23.33	
Senior high school	16	53.3	14	46.7	30	50.00	
University	6	20.0	6	20.0	12	20.00	
Occupation							
Unemployed	18	60.0	16	53.3	34	56.67	0.879
Private employee	8	26.7	8	26.7	16	26.67	
Civil servant	4	13.3	6	20.0	10	16.67	
Others	0	0	0	0	0	0.00	
Marital status							
Not marriage	2	6.7	2	6.7	4	6.67	1.000
Marriage	26	86.7	26	86.7	52	86.67	
Divorce	2	6.7	2	6.7	4	6.67	
Stadium							
Stadium 1	0	0	0	0	0	0	0.500
Stadium 2	6	20.0	4	13.3	10	16.67	
Stadium 3	24	80.0	26	86.7	50	83.33	
Mastectomy							
Yes	20	66.7	18	60.0	38	63.33	0.500
No	10	33.3	12	40.0	22	36.67	
Chemotherapy type							
Oral	0	0	0	0	0	0.0	–
Topical	0	0	0	0	0	0.0	
Intravenous	30	100.0	30	100.0	60	100.0	
Length of disease (months)							
<6	4	26.7	5	33.3	18	30.0	0.919
6–12	9	60.0	8	53.3	34	56.67	
13–24	2	13.3	2	13.3	8	13.33	

**p* < 0.05.

and the post-test in the experiment and control group. We used Mann–Whitney *U* test statistical test on data with abnormal distribution and an independent *t*-test on data with normal distribution to measure the difference in post-test scores between the experiment and control groups. Furthermore, we used statistical significance (*p* < 0.05).

Ethical clearance

This study was granted ethical clearance from Nursing Faculty, Universitas Airlangga, number 2135-KEPK.

Significance for public health

The factors that lead to decreased self-care among post-chemotherapy breast cancer patients were inadequate information about the disease, management of the disease, and side effects of the chemotherapy received from health care providers. Psychoeducation is a public health strategy to increase knowledge and skills among post-chemotherapy breast cancer. Knowledge, skill, and information are needed to increase self-care among breast cancer patients. This study provides the effectiveness of peer support

Table 3. Descriptive statistic of variables.

Variables	Experimental (n=30)				Control (n=30)			
	Pretest		Posttest		Pretest		Posttest	
	F	%	F	%	F	%	F	%
ADL								
Dependent	2	6.7	0	0.0	2	6.7	0	0.0
Need assistance	10	33.3	0	0.0	10	33.3	6	20.0
Independent	18	60.0	30	100.0	18	60.0	24	80.0
Pain management								
Dependent	12	40.0	0	0.0	10	33.3	6	20.0
Need assistance	10	33.3	18	60.0	18	60.0	20	66.7
Independent	8	26.7	12	40.0	2	6.7	4	13.3
Nutrition management								
Dependent	8	26.7	0	0.0	4	13.3	6	20.0
Need assistance	20	66.7	10	33.3	20	66.7	20	66.7
Independent	2	6.7	20	66.7	6	20.0	4	13.3
Activity and rest								
Dependent	6	20.0	0	0.0	16	53.3	14	46.7
Need assistance	24	80.0	14	46.7	12	40.0	16	53.3
Independent	0	0.0	16	53.3	2	6.7	0	0.0

Table 4. The results of control group on the self-care demand indicators.

Variables	Group	Test	\bar{x}	SD	Δ	Statistics	Sig.
ADL	Control	Pretest	3.86	1.80	0.4000	-1.508	0.132 ^d
		Posttest	4.26	1.53			
	Experimental	Pretest	3.93	1.90	2.4667	-3.087	0.002 ^{d*}
		Posttest	6.40	1.12			
Pain management	Control	Pretest	62.50	16.19	2.5000	-0.816	0.414 ^d
		Posttest	65.00	13.73			
	Experimental	Pretest	57.91	21.71	20.0000	-3.327	0.001 ^{d*}
		Posttest	77.91	13.12			
Nutrition management	Control	Pretest	67.08	12.15	-0.4166	0.144	0.887 ^c
		Posttest	66.66	11.96			
	Experimental	Pretest	60.41	12.42	20.4166	-5.047	0.000 ^{c*}
		Posttest	80.83	10.68			
Activity and rest	Control	Pretest	55.83	13.46	2.5000	-0.512	0.609 ^d
		Posttest	58.33	11.73			
	Experimental	Pretest	60.83	10.42	18.3334	-5.047	0.000 ^{c*}
		Posttest	79.16	7.71			
Self-care demand	Control	Pretest	57.39	6.92	1.9786	-1.742	0.103 ^c
		Posttest	59.37	6.33			
	Experimental	Pretest	55.83	7.64	16.9800	-8.125	0.000 ^{c*}
		Posttest	72.81	4.75			

^cPaired T Test.^dWilcoxon signed rank test.* $p < 0.05$.

Table 5. Comparison of the mean scores of self-care demand in control and experiment group and its aspects among two groups.

Variables	Test	Group	\bar{x}	SD	Δ	Statistics	Sig.
ADL	Pretest	Control	3.86	1.80	0.0666	-1.508	0.948 ^b
		Experiment	3.93	1.90			
	Posttest	Control	4.26	1.53	2.1333	-3.087	0.001 ^{b*}
		Experiment	6.40	1.12			
Pain management	Pretest	Control	62.50	16.19	-4.5833	-0.816	0.572 ^b
		Experiment	57.91	21.71			
	Posttest	Control	65.00	13.73	12.9167	-3.327	0.019 ^{b*}
		Experiment	77.91	13.12			
Nutrition management	Pretest	Control	67.08	12.15	-6.6666	0.144	0.149 ^a
		Experiment	60.41	12.42			
	Posttest	Control	66.66	11.96	14.1666	-5.047	0.002 ^{a*}
		Experiment	80.83	10.68			
Activity and rest	Pretest	Control	55.83	13.46	5.0000	-0.512	0.265 ^a
		Experiment	60.83	10.42			
	Posttest	Control	58.33	11.73	20.8334	-5.047	0.000 ^{b*}
		Experiment	79.16	7.71			
Self-care demand	Pretest	Control	57.39	6.92	-1.562	0.586	0.562 ^a
		Experiment	55.83	7.64			
	Posttest	Control	59.37	6.33	13.4394	25.972	0.000 ^{a*}
		Experiment	72.81	4.75			

^aIndependent *t* test.

^bMann–Whitney *U* test.

**p* < 0.05.

psychoeducation based on experiential learning. It was expected to increase health outcomes as well as the quality of life

Results

Participants' characteristic

Table 2 showed the characteristic of respondents. Most of the respondents were predominantly between 46 and 55 years old (56.67%), had senior high school degree (50%), were unemployed (56.67%), married (86.67%), with mastectomy (63.3%), and suffering from breast cancer in stadium 3 (83.3%). Most of the respondents used intravenous chemotherapy (100.0%) and had been suffering from breast cancer for about 6–12 months (56.67%). The results of the study showed no significant statistical difference between the experimental and control groups regarding the respondents' characteristics.

Table 3 showed the descriptive statistic of variables. In the treatment group, the post-test results showed that most of the respondents in the independent category increased in variable ADL pain management, nutrition management, activity and rest as well as in the control group.

Table 4 showed the results of the Wilcoxon analysis or paired *t*-test for the control group on the self-care demand

indicators, namely ADL (*p*=0.132), pain management (*p*=0.414), nutrition management (*p*=0.887), and rest and sleep (*p*=0.609). The results showed no significant effect of providing education given by the hospital on the self-care demand among respondents. Meanwhile, the experiment group showed ADL (*p*=0.002), pain management (*p*=0.001), nutrition management (*p*=0.000), and rest and activity (*p*=0.000). It was shown that there was a significant influence of peer support psychoeducation based on experiential learning on the self-care demand among post-chemotherapy breast cancer patients. The average results of the post-test on the indicator of self-care demand were greater than the pretest.

Table 5 showed that the results of the independent *t*-test or Mann–Whitney *U* test on the self-care demand had these indicators: ADL (*p*=0.948), pain management (*p*=0.572), nutrition management (*p*=0.149), and rest and sleep (*p*=0.265). It showed that there was no significant difference. Meanwhile, in the experiment group, there was a significant difference in the indicators of self-care demand: ADL (*p*=0.001), pain management (*p*=0.019), nutrition management (*p*=0.002), and rest and sleep (*p*=0.000). The average post-test score in the treatment group was greater than in the control group, indicating that self-care demand and its indicators in the treatment group were higher than in the control group. Thus, it can be

concluded that peer support psychoeducation based on experiential learning was significantly more effective in increasing the self-care demand compared to hospital treatment.

Discussion

The effect of peer support psychoeducation based on experiential learning on self-care demand: Activity daily living (ADL)

This study showed that the intervention of peer support psychoeducation based on experiential learning increases self-care demand, activity daily living for breast cancer patients with post-chemotherapy. Peer support psychoeducation based on experiential learning in this study includes sharing about activity daily living. The intervention aimed to develop skills and knowledge to fulfill ADL in everyday life post-chemotherapy. In this section, the participants were evaluated on their performance and clarified their ability as well as their perception. So, this intervention emphasizes the patient's readiness to deal with the effects of chemotherapy. This study is in line with previous research which states that psychoeducational interventions increase ADL independence among cancer patients³⁴.

The effect of peer support psychoeducation based on experiential learning on self-care demand: Pain management

This study showed the treatment group's effectiveness in pain management. Cancer patients in developing countries often suffer from various problems, such as pain.³⁵ Pharmacotherapy is needed to reduce it.³⁶ Pain management affected health outcome and patients' quality of life.³⁷ Providing health education can increase patient knowledge in terms of pain management.³⁸

Research on Cancer Health Empowerment for Living without Pain (Ca-HELP) exhibited that patient-centered intervention is effective in improving cancer pain management and the patient's clinical condition.³⁹ Peer support psychoeducation based on experiential learning in this study includes pain assessment and explanation of several non-pharmacological interventions that can be implemented by patients at home. The most frequently used non-pharmacological therapy by respondents was warm compresses with aroma therapy and progressive relaxation therapy. Warm compresses can reduce pain because heat stimulates thermoreceptors in the skin and underlying tissue and causes vasodilation of blood vessels. Aromatherapy can activate the olfactory receptors in the nose and send chemical signals to the limbic system through the olfactory nerves which can affect the patient's emotions, blood pressure, pulse, and breathing patterns.

Relaxation techniques were reported to be effective in reducing pain.³⁹ The technique used in this study is relaxation technique and guided imagery.

The effect of peer support psychoeducation based on experiential learning on self-care demand: Nutrition management

This study showed that peer support psychoeducation based on experiential learning treatment had an effect on nutrition management. Chemotherapy has side effects, such as nausea and vomiting which affect the nutritional status.⁴⁰ The side effects of chemotherapy depend on the type of drug, drug dose, and the duration of the therapy.^{41,42} Nausea and vomit can reduce patients' quality of life.⁴³

Peer support psychoeducation based on experiential learning in this study includes progressive muscle relaxation techniques, guided imagery, hypnosis, and exercises. These interventions were effective in reducing the side effect of chemotherapy.⁴⁴⁻⁴⁶ Progressive muscle relaxation includes tension training and muscle relaxation. This exercise is combined with massage for 20 min during chemotherapy. Guided imagery is a technique to increase the patient's concentration on an object related to sensory experience. The combination of these techniques and antiemetics had a positive effect among respondents.

The effect of peer support psychoeducation based on experiential learning on self-care demand: Rest and sleep

This study showed that peer support psychoeducation based on experiential learning had an effect on rest and sleep management. Sleep disturbances often occur in patients undergoing chemotherapy.⁴⁷⁻⁴⁹ They were suffering a decrease in duration of sleep, less than 5 h, long sleep latency, and decreased sleep efficiency. In addition, they also experienced depression and fatigue.^{50,51}

Peer support psychoeducation based on experiential learning for rest and sleep management includes the application of non-pharmacological therapies, such as music therapy, massage, cognitive behavioral therapy, and physical activity therapy. These interventions were similar to previous studies.^{52,53} Further study was needed to manage hospital environmental factors such as noise to increase sleep quality among patients.

Since the patients had various characteristics, further studies are needed to homogeneity the stadium of disease as well as the length of the disease. Several studies showed that psychoeducation intervention could increase the knowledge and skill among patients and this knowledge is needed to increase self-care. This study exhibited that using peer support psychoeducation based on experiential learning has an effect on self-care demand and its indicators,

namely: ADL, pain management, nutrition management, and rest and sleep. This intervention was recommended for nursing care or physicians to increase self-care demand.

Conclusion

Psychoeducation based on experiential learning was recommended for nursing care or physicians to increase self-care demand; it is also a public health strategy to increase knowledge and skill among post-chemotherapy breast cancer patients. The intervention provides information, motivation, and self-care training on the topics: activity day living (ADL), pain management, nutrition management, and rest and sleep management. This intervention was recommended in clinical practice as well as for family caregivers.

Acknowledgments

We would like to thank all the respondents Indonesia Cancer Foundation and Shelter House, Surabaya, Indonesia. Also, the oncology nurses from William Booth Hospital, Universitas Airlangga Hospital, Vincentius A Paulo Hospital, and Indonesia Cancer Foundation and Shelter House for helping and high contribution to this study.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Author contribution

The authors contributed equally.

Ethical consideration

This study was granted ethical clearance number 2135-KEPK by Health Research Ethics Committee, Faculty of Nursing, Universitas Airlangga.

Patient consent for publication

We asked participants to fill the informed consent.

ORCID iD

Erika Untari Dewi  <https://orcid.org/0000-0002-1885-531X>

References

1. World Health Organization. Indonesia Source GLOBOCAN 2018. *International Agency for Research on Cancer*, 256, 2019, p.1–2.
2. Ri K. Laporan hasil riset kesehatan dasar (Riskesdas) Indonesia tahun 2018. *Jakarta: Badan Penelitian dan Pengembangan Kesehatan Kemenkes RI*, 2018, pp.5–10.
3. Ortiz A, Tirado M, Hughes DC, et al. Relationship between physical activity, disability, and physical fitness profile in sedentary Latina breast cancer survivors. *Physiother Theory Pract* 2018; 34(10): 783–794.
4. Phillips SM, Welch WA, Fanning J, et al. Daily physical activity and symptom reporting in breast cancer patients undergoing chemotherapy: an intensive longitudinal examination. *Cancer Epidemiol Biomarkers Prev* 2020; 29(12): 2608–2616.
5. Lewandowska A, Rudzki G, Lewandowski T, et al. Quality of life of cancer patients treated with chemotherapy. *Int J Environ Res Public Health*. 2020; 17(19): 6938.
6. Hasibuan OB. Pengaruh activity daily living training terhadap Kemandirian Pasien Kanker Payudara di Murni Teguh Memorial Hospital. *Jurnal Ilmiah Keperawatan Imelda* 2018; 4(2): 487–494.
7. Ridner SH, Dietrich MS and Kidd N. Breast cancer treatment-related lymphedema self-care: education, practices, symptoms, and quality of life. *Support Care Cancer* 2011; 19(5): 631–637.
8. Ghazavi-Khorasgani Z, Ashrafi-Rizi H, Mokarian F, et al. Health information seeking behavior of female breast cancer patients. *J Educ Health Promot* 2018; 7: 138.
9. Wang Z, Yin G and Jia R. Impacts of self-care education on adverse events and mental health related quality of life in breast cancer patients under chemotherapy. *Complement Ther Med* 2019; 43: 165–169.
10. Sanoff HK, Morris WL, Mitcheltree A-L, et al. Lack of support and information regarding long-term negative effects in survivors of rectal cancer. *Clin J Oncol Nurs* 2015; 19(4): 444–448.
11. Indriani C, Hayati YS and Wihastuti TA. Family psychoeducation in reducing the occurrence of depression in elderly: a systematic review. *Int J Sci Soc* 2020; 2(3): 100–114.
12. Walsh JF. *Psychoeducation in mental health*. Chicago, IL: Lyceum Books, 2010.
13. Bergin RJ, Grogan SM, Bernshaw D, et al. Developing an evidence-based, nurse-led psychoeducational intervention with peer support in gynecologic oncology. *Cancer Nurs* 2016; 39(2): E19–E30.
14. Rouse MJ. *Exploring the effects of being a peer educator on African American breast cancer survivors* [Doctoral dissertation]. The University of North Carolina, 2013.
15. Rodrigues F, Bartolo A, Pacheco E, et al. Psycho-education for anxiety disorders in adults: a systematic review of its effectiveness. *J Forensic Psychol* 2018; 3(2): 1–5.
16. Jones RB, Thapar A, Stone Z, et al. Psychoeducational interventions in adolescent depression: a systematic review. *Patient Educ Couns* 2018; 101(5): 804–816.
17. Lo HH-M, Ho W-C, Lau EN-S, et al. A brief mindfulness-based family psychoeducation intervention for Chinese young adults with first episode psychosis: a study protocol. *Front Psychol* 2019; 10: 516.
18. Morris TH. Experiential learning—a systematic review and revision of Kolb's model. *Interact Learn Environ* 2020; 28(8): 1064–1077.
19. Kolb DA, Boyatzis RE and Mainemelis C. Experiential learning theory: previous research and new directions. In: Sternberg RJ and Zhang L-F (eds.) *Perspectives on thinking, learning, and cognitive styles*. London: Taylor & Francis, 2014, pp.227–248.
20. Pei-Hua W, Shang-Wen C, Huang W-T, et al. Effects of a psychoeducational intervention in patients with breast cancer undergoing chemotherapy. *J Nurs Res* 2018; 26(4): 266–279.

21. Al-Alawi KS, Al-Azri M, Al-Fahdi A, et al. (eds.). Effect of psycho-educational intervention to reduce anxiety and depression at postintervention and follow-up in women with breast cancer: a systematic review and meta-analysis. *Semin Oncol Nurs* 2022; 38(6): 151315.
22. Ghanbari E, Yektatalab S and Mehrabi M. Effects of psychoeducational interventions using mobile apps and mobile-based online group discussions on anxiety and self-esteem in women with breast cancer: randomized controlled trial. *JMIR Mhealth Uhealth* 2021; 9(5): e19262.
23. Clough BA, Nazareth SM and Casey LM. Making the grade: a pilot investigation of an e-intervention to increase mental health literacy and help-seeking intentions among international university students. *Br J Guid Couns* 2020; 48(3): 347–359.
24. Sya'diyah H, Nursalam N, Mahmudah N, et al. Effectiveness of home care intervention on family ability to do caregiving at home and increase the independence among elderly with dementia. *J Public Health Res*. Epub ahead of print 16 August 2022. DOI: 10.1177/22799036221115774.
25. Wauchope B, Terlich A and Lee S. Rel8: demonstrating the feasibility of delivering an 8-week social skills program in a public mental health setting. *Australas Psychiatry* 2016; 24(3): 285–258.
26. Hartweg D. *Dorothea Orem: self-care deficit theory*. Thousand Oaks, CA: SAGE, 1991.
27. Kolb DA. *Experiential learning: Experience as the source of learning and development*. Upper Saddle River, NJ: FT Press, 2014.
28. Graf C. The Lawton instrumental activities of daily living (IADL) scale. *Gerontologist* 2009; 9(3): 179–186.
29. Scarborough BM and Smith CB. Optimal pain management for patients with cancer in the modern era. *CA A Cancer J Clin* 2018; 68(3): 182–196.
30. McMillan DC. An inflammation-based prognostic score and its role in the nutrition-based management of patients with cancer: nutrition society and BAPEN medical symposium on 'nutrition support in cancer therapy'. *Proc Nutr Soc* 2008; 67(3): 257–262.
31. Gaut DA and Kieckhefer GM. Assessment of self-care agency in chronically ill adolescents. *J Adoles Health Care* 1988; 9(1): 55–60.
32. Morera OF and Stokes SM. Coefficient α as a measure of test score reliability: review of 3 popular misconceptions. *Am J Public Health* 2016; 106(3): 458–461.
33. Streiner DL. Starting at the beginning: an introduction to coefficient alpha and internal consistency. *J Pers Assess* 2003; 80(1): 99–103.
34. Xiao W, Chow KM, So WK, et al. The effectiveness of psychoeducational intervention on managing symptom clusters in patients with cancer: a systematic review of randomized controlled trials. *Cancer Nurs* 2016; 39(4): 279–291.
35. Li Z, Aninditha T, Griene B, et al. Burden of cancer pain in developing countries: a narrative literature review. *Clinicoecon Outcomes Res* 2018; 10: 675.
36. Darkovska-Serafimovska M, Serafimovska T, Arsova-Sarafimovska Z, et al. Pharmacotherapeutic considerations for use of cannabinoids to relieve pain in patients with malignant diseases. *J Pain Res* 2018; 11: 837.
37. Clauw DJ, Essex MN, Pitman V, et al. Reframing chronic pain as a disease, not a symptom: rationale and implications for pain management. *Postgrad Med* 2019; 131(3): 185–198.
38. Rustøen T, Valeberg BT, Kolstad E, et al. The PRO-SELF© pain control program improves patients' knowledge of cancer pain management. *J Pain Symptom Manage* 2012; 44(3): 321–330.
39. Kravitz RL, Tancredi DJ, Grennan T, et al. Cancer health empowerment for living without pain (Ca-HELP): effects of a tailored education and coaching intervention on pain and impairment. *Pain* 2011; 152(7): 1572–1582.
40. Farrell C, Brearley SG, Pilling M, et al. The impact of chemotherapy-related nausea on patients' nutritional status, psychological distress and quality of life. *Support Care Cancer* 2013; 21(1): 59–66.
41. Oun R, Moussa YE and Wheate NJ. The side effects of platinum-based chemotherapy drugs: a review for chemists. *Dalton Trans* 2018; 47(19): 6645–6653.
42. Astolfi L, Ghiselli S, Guarani V, et al. Correlation of adverse effects of cisplatin administration in patients affected by solid tumours: a retrospective evaluation. *Oncol Rep* 2013; 29(4): 1285–1292.
43. Abegaz TM, Ayele AA and Gebresillassie BM. Health related quality of life of cancer patients in Ethiopia. *J Oncol* 2018; 2018: 1467595.
44. Sulistyawati E, Allenidekania A and Gayatri D. Effect of progressive muscle relaxation on sleep quality and side effects of chemotherapy in children with cancer: randomized clinical trial. *Open Access Maced J Med Sci* 2021; 9(T4): 300–308.
45. De Paolis G, Naccarato A, Cibelli F, et al. The effectiveness of progressive muscle relaxation and interactive guided imagery as a pain-reducing intervention in advanced cancer patients: a multicentre randomised controlled non-pharmacological trial. *Complement Ther Clin Pract* 2019; 34: 280–287.
46. Berlière M, Roelants F, Watremez C, et al. The advantages of hypnosis intervention on breast cancer surgery and adjuvant therapy. *Breast* 2018; 37: 114–148.
47. Fakhir R, Rahal M, Hilal L, et al. Prevalence and severity of sleep disturbances among patients with early breast cancer. *Indian J Palliat Care* 2018; 24(1): 35.
48. Strollo SE, Fallon EA, Gapstur SM, et al. Cancer-related problems, sleep quality, and sleep disturbance among long-term cancer survivors at 9-years post diagnosis. *Sleep Med* 2020; 65: 177–185.
49. Fox RS, Ancoli-Israel S, Roesch SC, et al. Sleep disturbance and cancer-related fatigue symptom cluster in breast cancer patients undergoing chemotherapy. *Support Care Cancer* 2020; 28(2): 845–855.
50. Pozzar RA, Hammer MJ, Paul SM, et al. Distinct sleep disturbance profiles among patients with gynecologic cancer receiving chemotherapy. *Gynecol Oncol* 2021; 163(2): 419–426.
51. Hooke MC and Linder LA. Symptoms in children receiving treatment for cancer—part I: fatigue, sleep disturbance, and nausea/vomiting. *J Pediatr Oncol Nurs* 2019; 36(4): 244–261.
52. Kwekkeboom KL, Cherwin CH, Lee JW, et al. Mind-body treatments for the pain-fatigue-sleep disturbance symptom cluster in persons with cancer. *J Pain Symptom Manage* 2010; 39(1): 126–138.
53. Garland SN, Mahon K and Irwin MR. Integrative approaches for sleep health in cancer survivors. *Cancer J* 2019; 25(5): 337–342.