

Research Paper:

The Effect of Self-care Training by Peer Group on the Resilience of Patients With Cancer: A Randomized Clinical Trial



Zahra Mollaei¹, Zahra Rahemi², Fatemeh-Sadat Izadi Avanj^{1*}, Mostafa Sarvizadeh³, Masoumeh Hosseinian¹, Hossein Akbari⁴

1. Trauma Nursing Research Center, School of Nursing, Kashan University of Medical Sciences, Kashan, Iran.

2. School of Nursing, Clemson University, Clemson, USA.

3. The Advocate Center for Clinical Research, Ayatollah Yasrebi Hospital, Kashan, Iran.

4. Department of Biostatistics and Public Health, Faculty of Health, Kashan University of Medical Sciences, Kashan, Iran.



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ABSTRACT

Background: Resilience is the individual's ability to maintain or restore mental health and physical function in the face of stressful events and adversity. However, educational interventions can enhance resilience. The present study was conducted to determine the effect of self-care education by peer groups on the resilience of patients with cancer.

Methods: A Randomized Clinical Trial (RCT) was conducted on 80 patients with cancer referring to the chemotherapy center of Ayatollah Yathrebi Hospital in Kashan City, Iran. The subjects were randomly assigned into the control and intervention groups (40 per group). Peer group members trained the intervention group in 4 sessions (one session per week), but the control group received routine care. The Connor-Davidson Resilience Scale (CD-RISC) was used to collect data at the beginning of the trial and then one week and three months after the intervention. Data analysis was performed using the independent t-test and repeated measures ANOVA in SPSS software, v. 16.

Results: There was a significant difference between the mean score of the groups' resilience one week after the intervention ($P=0.01$), but no significant difference was seen between the groups' resilience scores three months after the study ($P=0.11$). However, based on the repeated measures ANOVA and the model's results using the Huynh-Feldt correction, there was an increase in the resilience score of the intervention group over time ($P=0.008$). Furthermore, there was a significant difference between the two groups in terms of time*group interaction, indicating a significant difference between the two groups in terms of resilience score over time ($P=0.004$).

Conclusion: It is suggested that this intervention be provided by the healthcare team along with routine treatments to improve the resilience and mental health of patients with cancer.

* Corresponding Author:

Fatemeh Sadat Izadi Avanj, PhD.

Address: Trauma Nursing Research Center, School of Nursing, Kashan University of Medical Sciences, Kashan, Iran.

Tel: +98 (31) 55540021

E-mail: fs.izadi@gmail.com

Highlights

- This study determined the effect of peer group education on the resilience of patients with cancer.
- In the intervention group, the mean score of resilience significantly increased one week after the intervention.
- Compared to before the intervention, the mean score of resilience in the intervention group significantly increased three months after the intervention.
- Between-group comparison indicated a significant difference between the groups one week after the study.
- The effect of time on the resilience score changes was significant.
- There was a significant difference between the two groups regarding the interaction of time and group.

Plain Language Summary

In oncology nursing, resilience research is critical in reducing the psychological and physical issues associated with a cancer diagnosis and its long-term treatments. This study determined the effect of sharing peer group experiences on the resilience of patients with cancer. The results showed that sharing experiences by peer groups improves the resilience of these patients.

1. Introduction

Nowadays, cancer is one of the most critical health problems in the world (Siegel, Miller, & Jemal, 2015). The International Agency for Research on Cancer reports that almost half of all new cancer cases are reported in Asia (Bray et al., 2018).

Iran, a developing country in southwest Asia, is undergoing an epidemiological transition from communicable to non-communicable diseases. Cancer as a non-communicable disease is the third leading cause of death after heart disease and accidents in Iran (Farhood, Geraily, & Alizadeh, 2018). The number of new cancers in Iran is projected to increase from 112000 registered cases in 2016 to 160000 in 2025, a general increase of 42.6%, and respective increases of 13.9% and 28.7% relative to changes in risk and population structure. In terms of specific cancers, the highest increase is predicted in cases for thyroid (113.8%), prostate (66.7%), female breast (63.0%), and colorectal cancer (54.1%) (Roshandel et al., 2021). In other words, the incidence of cancer in Iran is increasing, and it is expected to double in the next two decades (Forouzanfar et al., 2016).

Cancer diagnosis and its treatment can be stressful for everyone (Tamagawa et al., 2013; Morel et al., 2015). Despite the progress in medicine, the patients get involved with many physical and mental problems such

as emotional distress, anxiety, depression, sleep disturbance, fatigue, and decreased quality of life (Dooley et al., 2017; Seiler, & Jenewein 2019; Wu et al., 2016). It can also affect the work, social activities, and sexual functioning of the patients (El Fakir et al., 2016). Dealing with these problems depends on the patient's resilience (Kordan, & Azimi Lolaty, 2019).

There is growing research on resilience, especially in oncology nursing, as a way to counter the threat of cancer diagnosis and its long-term treatment (Ashktorab, 2012). The concept of resilience is defined as the ability to maintain or restore mental health and physical functioning in stressful events and adversities (Bonanno, Westphal, & Mancini, 2011; Seiler and Jenewein, 2019). Resilience is a dynamic process in which cancer patients experience adversity. This process can be supported by teaching interventions (Eicher et al., 2015). Applying interventions to increase resilience can maintain or improve an individual's capacity to adapt to hardships (Ghanei Gheshlagh et al., 2017) and react with appropriate cognitive, behavioral, and emotional responses in stressful situations (Smith et al., 2018).

The resilience of cancer patients has been reported as moderate in some studies (Fradelos et al., 2017; Alizadeh et al., 2019). Those with cancer should have a high resilience capacity and ability to positively adapt to

physical and mental distress associated with the disease throughout their treatment (Molina et al., 2014).

Resilience has had a protective role in the multiple myeloma treatment trajectory (Maatouk et al., 2018). Another study on patients with cancer showed that resilience could improve depressive symptoms (Alizadeh et al., 2019). The emotional, social, economic, and educational supports can help patients cope better with cancer and treatment complications, especially chemotherapy (Chagani et al., 2017; Hassani et al., 2017). Healthcare providers should strive to create interventions that enable patients to enhance their resilience (Rištevska-Dimitrovska et al., 2015). One way to foster resilience in cancer patients is support by peer groups. It has been shown that peer meetings with breast cancer patients make them more confident (Taleghani, Parsa Yekta, & Nikbakht Nasrabadi, 2006) because it reduces the feeling of loneliness and helps patients to be optimistic about their future (Dunn et al., 1999).

Proper self-care is an essential factor in successful disease management (Shaikh and Nadar 2018). Lack of information about self-care can reduce patients' cooperation and resilience. Peer groups, with their successful experiences, can provide patients with valuable training (Alilu et al. 2020). Cancer survivors play an important role in patients' adaptation to their disease (Bozo, Gündoğdu, & Büyükaşık-Çolak, 2009; Petersen et al., 2008; Rištevska-Dimitrovska G 2015). They use positive coping styles and are full of optimism about the future (Tallman et al., 2010). Therefore, they may help patients cope with adverse outcomes of treatment by educating themselves. In addition, studies show a high level of effectiveness of peer group programs. However, evidence for its psychological and social benefit is uncertain (Hoey et al., 2008). This study aimed to determine the effect of self-care education by peer groups on the resilience of patients with cancer.

2. Materials and Methods

The present clinical trial was performed from June 2018 to March 2019. The subjects were patients with cancer referring to the chemotherapy center of Ayatollah Yathribi Hospital in Kashan Province, Iran, for outpatient chemotherapy. The inclusion criteria for patients were Mini-Mental State Exam (MMSE) score above 20, physical, verbal and auditory ability, no history of other chronic diseases, no history of cancer in close relatives, aged between 20 and 60 years, and cancer stage 1-3 according to the oncologist's diagnosis. The exclusion criteria were as follows: not attending more than one session of education and critical changes in physical condition.

According to a similar study (Tarkhan, 2014), with a 95% confidence interval and 95% test power, the minimum required sample was calculated as 40 per group. Using the convenient sampling method, 130 patients were recruited and evaluated for inclusion criteria. Among the subjects, 30 did not meet the inclusion criteria, 15 withdrew from the study, and 5 were excluded for other reasons. Finally, 80 subjects were randomly assigned into the control (n=40) and intervention (n=40) groups (Figure 1).

Criteria for entry of the peer group were the age range of 20-60 years, willingness to participate in the study, MMSE score above 20, literacy, and having a letter from the oncologist indicating completion of their treatment. The peer group comprised a woman with breast cancer, a woman with uterine cancer, a man with Hodgkin's cancer, and a man with colorectal cancer. In the first phase of the study, the peer group underwent self-care training. Then an educational topic was assigned to each member of the group.

The Connor and Davidson Resilience Questionnaire (CD-RISC)

The study data were collected using a demographic and clinical information questionnaire (including gender, age, number of children, occupation, marital status, education, stage of cancer, and duration of the disease) and the Connor-Davidson Resilience Scale (CD-RISC). The CD-RISC is a 5-point Likert type scale (1= false to 5= always true) and includes 25 items (Maßen 2001). An example of the items is "I am not easily discouraged by failure". The total score ranges from 25 to 125. Higher scores indicate higher levels of resilience. The Cronbach α value of the original version of the scale was 0.89 (Connor, & Davidson 2003). The Cronbach α value of the Persian version of the CD-RISC was 0.89 (Alhosseini Almodarresi, & Firouzkouhi Berenjabadi 2017). Finally, the Cronbach α value of the scale in this study was 0.93. If the subjects were illiterate, the first author would read the questions and help them complete the survey.

Study intervention

The program's content was developed based on the experiences of cancer survivors. The intervention was performed over 6 weeks. After obtaining written consent, the patients completed the CD-RISC in both groups. Then the sessions were held for the experimental group (Table 1).

In addition to the cancer patients' routine care, the intervention group received four weekly education sessions

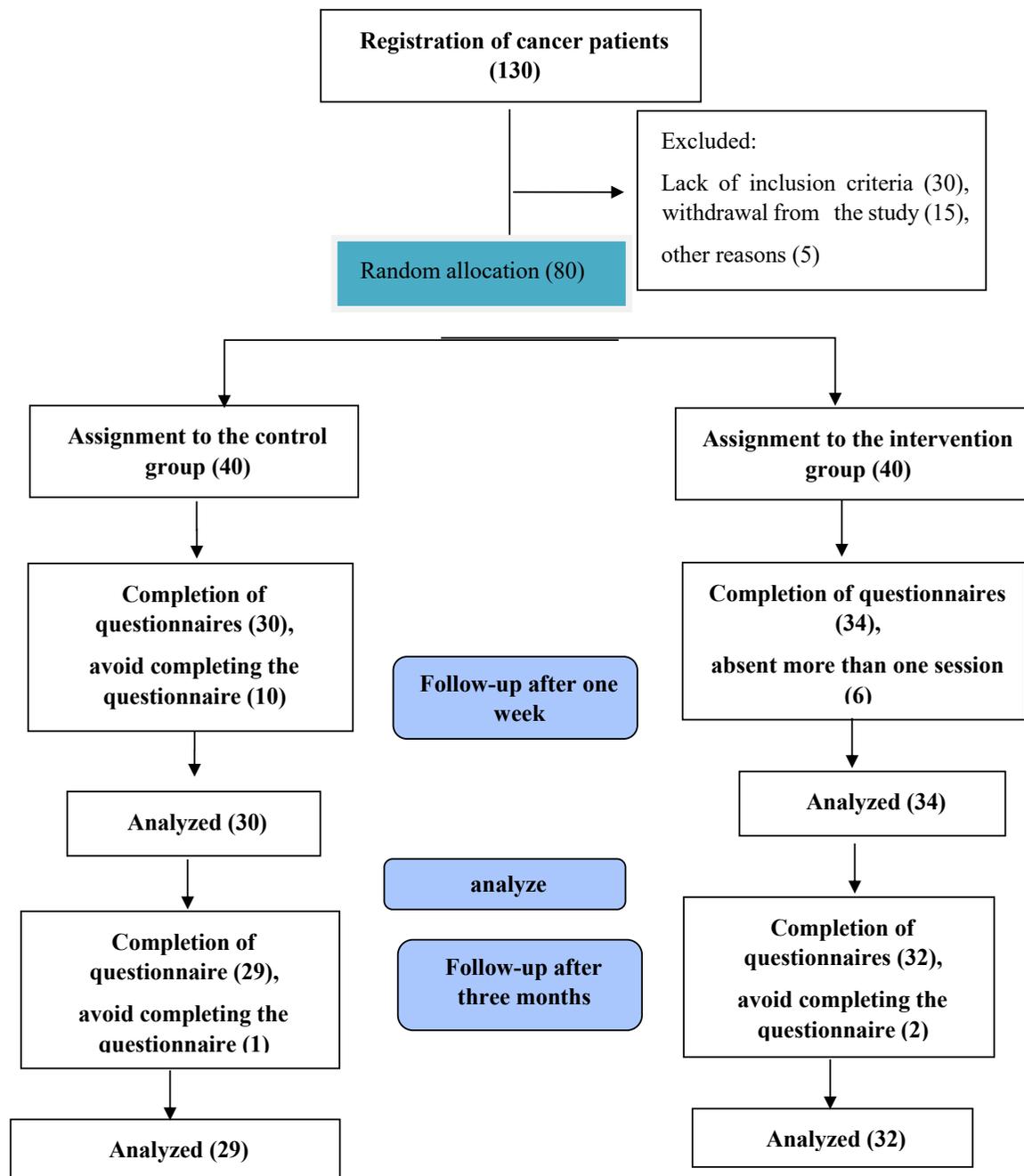


Figure 1. The consort flow diagram of the study

by the peer group. The intervention group was divided into four subgroups, with ten participants (males and females) in each subgroup. Accordingly, each peer group member alternately undertook training in four subgroups.

Each session lasted about 60 minutes. At the beginning of each session, the lead peers shared their experiences with the intervention group’s participants for 20-30 minutes. Then, the participants had 15 to 30 minutes to discuss their ideas via questions and answers with the lead peers. These sessions were performed in a private room

in the hospital. During each session, the first author only helped organize the sessions and the training venue as a facilitator and was not involved in the group discussion. In the control group, the participants only received their routine care. To evaluate the effect of the intervention, the first author contacted the control and intervention groups by phone and invited them to the hospital to complete the survey one week after the intervention and three months later.

Table 1. Educational sessions

Sessions		Content
	First stage	Discussion of the first author with the peer group about the educational content
Second stage	One week before the intervention	Familiarity of participants with the research team, objectives, and study methods, completion of the demographic questionnaire and CD-RISC
	Peer A: A woman with breast cancer	Learning to search for meaning in life after a cancer diagnosis by emphasizing the importance of understanding unchangeable problems and purposeful living
Intervention: Education by the peer group	Peer B: A woman with uterine cancer	Self-care related to infection and bleeding in cancer
	Peer C: A man with Hodgkin's cancer	Self-care related to nutrition, activity, and fatigue
	Peer D: A man with colorectal cancer	Getting to know social support sources and how to use them
	One week after the intervention	Completion of CD-RISC
	Three months after the intervention	Completion of CD-RISC

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At the end of the study, due to the desire of the control group, self-care training sessions were held for them by the peer group. At the end of the intervention, all subjects were rewarded for appreciating their participation.

Statistical analysis

The data were analyzed using SPSS software version 16 (PASW Statistics 16, SPSS Inc, and Chicago, IL). The Kolmogorov-Smirnov test was used to examine the normality of the data. The Chi-square and Fisher's exact-tests were used to compare categorical variables between the two groups, and the independent t-test was used to compare continuous variables. The repeated measures Analysis of Variance (ANOVA) was used to assess the interaction of time and group. Mauchly's W test of sphericity indicated that the assumption of sphericity had been violated ($P=0.005$), and therefore, a Huynh-Feldt correction was used. Group differences were tested using Analysis of Covariance (ANCOVA). The resilience score before the intervention (T1) was considered as a covariate. The level of significance was set at 0.05.

3. Results

The results indicated no significant difference between the intervention and control groups in terms of demographic and clinical information (Table 2).

The mean scores of resilience in the intervention group were 95.3, 105.43, and 103.31, respectively before, one week after, and three months after the intervention. In the intervention group, the mean score of resilience significantly increased one week after the intervention ($P<0.001$). Moreover, there was a significant increase

in the mean score of resilience three months after compared to before the intervention ($P=0.001$). In the control group, the mean resilience scores before, one week after, and three months after the intervention were 98.48, 97.87, and 98.41, respectively. In the control group, the mean scores of resilience before and one week after the intervention were not significantly different ($P=0.48$). Moreover, there was no significant difference between the mean scores of resilience before and three months after the intervention ($P=0.93$) (Table 3).

Between-group comparison showed that the difference between the two groups before the study was not significant ($P=0.42$). But there is a significant difference between the groups one week after the study ($P=0.01$), and the mean score of resilience was higher in the intervention group. However, there was no significant difference between the groups three months after the study ($P=0.11$) (Table 3).

Based on the repeated measures ANOVA, the results of the Mauchly's W test were significant ($P=0.005$), indicating that the assumption of compound symmetry was not met. The results of the model using the Huynh-Feldt correction showed that the effect of time on the resilience changes was significant ($P=0.008$). This result indicated an increase in the resilience score of the intervention group over time. There was a significant difference between the two groups regarding the interaction of time and group ($P=0.004$). This result indicated a significant difference between the two groups regarding resilience scores over time (Table 3).

The ANCOVA was used to determine the significance of resilience score differences between groups over time

Table 2. Participants' demographic and clinical characteristics

Variables	No. (%) / Mean±SD		P	
	Intervention (n=32)	Control (n=29)		
Gender	Female	20(62.5)	24(82.8)	0.09 ^a
	Male	12(37.5)	5(17.2)	
Occupation	Unemployed	21(65.6)	14(48.3)	0.46 ^b
	Government's employee	5(15.7)	6(20.7)	
	Self-employed	6(18.7)	9(31.0)	
Marital status	Married	26(81.3)	23(79.3)	0.2 ^a
	Single	6(18.7)	6(20.7)	
Stage of cancer	1	6(18.7)	5(17.2)	0.98 ^b
	2	23(71.9)	21(72.4)	
	3	3(9.4)	3(10.4)	
Types of cancer	Breast	15(46.9)	15(55.2)	0.59 ^b
	Leukemia	3(9.4)	5(17.2)	
	Colorectal & stomach	9(28.1)	6(20.7)	
	Prostate	4(12.5)	1(3.4)	
	Uterine	1(3.1)	1(3.4)	
Duration of cancer (y)	2.25±2.03	1.37±1.26	0.15 ^c	
Age (y)	45.9±9.1	48.2±10.9	0.38 ^c	
Number of children	2.56±1.75	2.72±2.21	0.75 ^c	

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^aFisher's exact-test; ^bChi-square test; ^cIndependent samples t-test.

(Table 4). The ANCOVA showed that with T1 score as the covariate, resilience improves one week after the intervention in the intervention group compared to the control group ($F=15.58$, $P<0.001$, $\eta^2=0.21$). The ANCOVA also showed that with T1 score as the covariate, resilience improves three months after the intervention in the intervention group compared to the control group ($F=11.36$, $P=0.001$, $\eta^2=0.16$).

4. Discussion

The present study results showed that self-care education by a peer group increases the resilience score of the subjects. It has been demonstrated in other studies that peer group interventions can improve cancer patients' resilience capacity, psychosocial functioning, and post-traumatic growth. It could also help improve treatment adaptation and psychosocial outcomes, such as stress

management, coping skills, and goal setting. These positive outcomes can enhance cancer patients' resilience capacity during treatments and after their completion (Molina et al., 2014; Rutter, 2006). Peer counseling has improved wellbeing and decreased depression among patients with newly-diagnosed breast cancer (Giese Davis et al., 2016). Peer support has improved stress management, interpersonal relationships, nutrition, physical activity, and the sense of responsibility for health among breast cancer patients Najafi, Moghaddam Tabrizi, & Ebrahimi, 2018). In Gürsoy et al.'s study, peer education program enhanced breast self-examination knowledge and attitudes toward health. Their results also indicated that group education was more effective than individual education (Gursoy et al., 2009).

Table 3. Comparison of resilience scores between the intervention and control groups

Time	Mean±SD		Between-group	r ANOVA ^b P	
	Intervention Group (n=32)	Control Group (n=29)	P ^a	Time*Group	Time
Before the intervention (T1)	95.3±17.68	98.48±12.0	P=0.42 t=-0.8		
One week after the intervention (T2)	105.43±11.7	97.82±12.9	P=0.01 t=-2.4	F=6.47 P=0.004	F=5.3 P=0.008
Three months after the intervention (T3)	103.31±11.22	98.41±12.45	P=0.11 t=-1.6		

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^a Independent samples t-test; ^b Repeated measures ANOVA (r ANOVA)

Additionally, regarding the associations between peer group interventions and resilience, when patients know about other patients with similar experiences, they can develop a deeper understanding of the condition, leading to a higher resilience capacity (Dehghani, & Sham-sizadeh 2013). The expression of experiences by peer groups can create a friendly and intimate environment and a sense of empathy (Mental Health Foundation, 2013). This safe environment can be considered a proper and acceptable resource for patients with similar diseases (Taleghani, Parsa Yekta, & Nikbakht Nasrabadi, 2006). Ashktorab explained that peer group relationships could help patients improve personal growth using others' experiences, accept their diagnosis and disease, develop a sense of control over their health conditions, and cultivate new meanings in life. These outcomes can lead to a more sustainable level of resilience and mental health (Ashktorab, 2012). Regarding the importance of peer group interventions for cancer patients, Legg et al. emphasized that peer group support may be particularly beneficial for cancer patients because, in isolation, cancer patients frequently consider their disease equal to death (Legg et al., 2011).

5. Conclusion

This study showed that peer education for people with cancer leads to their increased resilience because it provides opportunities for interaction and access to new methods to deal with the disease and its complications. It creates conditions to which they did not have access before. Therefore, this intervention is recommended to be considered a complementary treatment to promote the mental health of these patients. Healthcare professionals should be aware of the potential of people with cancer and facilitate interaction between cancer patients through the use of peer groups, thereby helping to promote their resilience and mental health. The specific strength of the present study was that the program's content was developed based on the experiences of cancer survivors. However, in our study, the intervention period was short, and the subjects were diagnosed with different types of cancer. In future studies, we recommend recruiting patients with similar cancers to have a homogeneous sample and reduce confounding variables. To have more robust evidence-based results, the outcomes should be verified through further studies with homogeneous and larger sample sizes.

Table 4. Results of ANCOVA in the intervention and control groups

Dependent Variables	Independent Variables	ANCOVA ^a			
		F	P	η ²	Adjusted R ²
T2 ^b	T1 ^c	58.26	0.000	0.5	0.524
	Group	15.58	<0.001	0.21	
T3 ^d	T1 ^c	81.6	<0.001	0.58	0.587
	Group	11.36	0.001	0.16	

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^a Analysis of covariance (ANCOVA); ^b One week after the intervention (T2); ^c Before the intervention (T1); ^d Three months after the intervention (T3).

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of Kashan University of Medical Sciences (Code: IR.KAUMS.NUHEPM.REC.1397.013). It was also registered in the Iran Registry Of Clinical Trials (Code: IRCT20180801040663N1). Informed consent was sought from the subjects, and the purpose of the research and its implementation stages were explained. They were also assured about the confidentiality of their information and the right to withdraw from the study.

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Authors' contributions

Conceptualization and methodology: Fatemeh-Sadat Izadi Avanjani and Zahra Mollaei; Supervision: Fatemeh-Sadat Izadi Avanjani and Masoumeh Hosseinian; Investigation, writing the original draft: Zahra Mollaei, Zahra Rahemi, and Mostafa Sarvizadeh; Data analysis: Hossein Akbari and Fatemeh-Sadat Izadi Avanjani; Funding acquisition; Fatemeh-Sadat Izadi Avanjani; Review and editing: All authors.

Conflict of interest

The authors declared no conflict of interest.

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References

- Alhosseini Almodarresi, S. M. & Firouzkouhi Berenjabadi, M., 2017. [Analysis of relationship between resilience with dimensions of work engagement (Persian)]. *Management Studies in Development and Evolution*, 25(83), pp. 1-24. [DOI:10.22054/JMSD.2017.7476]
- Alilu, L., et al. 2020. [The effect of peer education on gastrointestinal complications-based self-care in patients with cancer referred to Imam Khomeini and Omid hospitals of Urmia in 2018-2019 (Persian)]. *Nursing and Midwifery Journal*, 17(12), pp. 947-54. <http://unmf.umsu.ac.ir/article-1-3865-en.html>
- Alizadeh, S., et al. 2019. The relationship between resilience with self-compassion, social support and sense of belonging in women with breast cancer. *Asian Pacific Journal of Cancer Prevention*, 19(9), pp. 2469-74. [DOI:10.22034/APJCP.2018.19.9.2469] [PMID] [PMCID]
- Ashktorab, T., 2012. Effect of peer support groups on promotion of physical health status in multiple sclerosis: testing reed's self-transcendence theory. *Journal of Health Promotion Management*, 1(1), pp. 34-45.
- Kordan, Z. & Azimi Lolaty, H., 2019. [Cancer patients' psychosocial dimensions associated with resilience: A narrative review study (Persian)]. *Clinical Excellence*, 8(3), pp. 32-47. <http://ce.mazums.ac.ir/article-1-421-en.html>
- Bonanno, G. A., Westphal, M. & Mancini, A. D., 2011. Resilience to loss and potential trauma. *Annual Review of Clinical Psychology*, 7, pp. 511-35. [DOI:10.1146/annurev-clinpsy-032210-104526] [PMID]
- Bozo, O., Gündoğdu, E. & Büyükaşık-Çolak, C., 2009. The moderating role of different sources of perceived social support on the dispositional optimism-posttraumatic growth relationship in postoperative breast cancer patients. *Journal of Health Psychology*, 14(7), pp. 1009-20. [DOI:10.1177/1359105309342295] [PMID]
- Bray, F., et al. 2018. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*, 68(6), pp. 394-424. [DOI:10.3322/caac.21492] [PMID]
- Chagani, P., et al. 2017. Quality of life and its determinants in adult cancer patients undergoing chemotherapy treatment in Pakistan. *Asia-Pacific Journal of Oncology Nursing*, 4(2), pp. 140-6. [DOI:10.4103/2347-5625.204499] [PMID] [PMCID]
- Connor, K. M. & Davidson, J. R. T., 2003. Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depression and Anxiety*, 18(2), pp. 76-82. [DOI:10.1002/da.10113] [PMID]
- Dehghani, A., H. H. & Shamsizadeh, M., 2013. [The effect of peer-led education on depression of multiple sclerosis patients (Persian)]. *Iranian Journal of Psychiatric Nursing*, 1(1), pp. 63-71. <http://ijpn.ir/article-1-61-en.html>
- Dooley, L. N., et al. 2017. Strength through adversity: Moderate lifetime stress exposure is associated with psychological resilience in breast cancer survivors. *Stress and Health*, 33(5), pp. 549-57. [DOI:10.1002/smi.2739] [PMID] [PMCID]
- Dunn, J., et al. 1999. Evaluation of a peer support program for women with breast cancer-lessons for practitioners. *Journal of Community & Applied Social*, 9(1), pp. 13-22. [DOI:10.1002/(SICI)1099-1298(199901/02)9:13.0.CO;2-F]
- Eicher, M., et al. 2015. Resilience in adult cancer care: An integrative literature review. *Oncology Nursing Forum*, 42(1), pp. E3-16. [DOI:10.1188/15.ONF.E3-E16] [PMID]
- El Fakir, S., et al., 2016. Health-related quality of life among breast cancer patients and influencing factors in Morocco. *Asian Pacific Journal of Cancer Prevention*, 17(12), pp. 5063-9. [DOI:10.22034/APJCP.2016.17.12.5063] [PMID] [PMCID]

- Farhood, B., Geraily, G. & Alizadeh, A., 2018. Incidence and mortality of various cancers in Iran and compare to other countries: A review article. *Iranian Journal of Public Health*, 47(3), pp. 309-16. [PMID] [PMCID]
- Forouzanfar, M. H., et al. 2016. Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990-2015: A systematic analysis for the Global Burden of Disease Study 2015. *The Lancet*, 388(10053), pp. 1659-724. [DOI:10.1016/S0140-6736(16)31679-8] [PMID] [PMCID]
- Fradelos, E. C., et al. 2017. Psychological distress and resilience in women diagnosed with breast cancer in Greece. *Asian Pacific Journal of Cancer Prevention*, 18(9), pp. 2545-50. [DOI:10.22034/APJCP.2017.18.9.2545] [PMID] [PMCID]
- Ghanei Gheshlagh, R., et al. 2017. Resilience of patients with chronic physical diseases: A systematic review and meta-analysis. *Iranian Red Crescent Medical Journal*, 18(7), p. e38562. [DOI:10.5812/ircmj.13537]
- Giese-Davis, J., et al. 2016. Peer-counseling for women newly diagnosed with breast cancer: A randomized community/research collaboration trial. *Cancer*, 122(15), pp. 2408-17. [DOI:10.1002/ncr.30036] [PMID]
- Gürsoy, A. A., et al. 2009. The effects of peer education on university students' knowledge of breast self-examination and health beliefs. *Journal of Cancer Education*, 24(4), pp. 331-3. [DOI:10.1007/BF03182390] [PMID]
- Hassani, P., et al. 2017. A phenomenological study on resilience of the elderly suffering from chronic disease: A qualitative study. *Psychology Research and Behavior Management*, 10, pp. 59-67. [DOI:10.2147/PRBM.S121336] [PMID] [PMCID]
- Hoey, L. M., et al. 2008. Systematic review of peer-support programs for people with cancer. *Patient Education and Counseling*, 70(3), pp. 315-37. [DOI:10.1016/j.pec.2007.11.016] [PMID]
- Legg, M., et al. 2011. When peer support may be most beneficial: The relationship between upward comparison and perceived threat. *Psycho-Oncology*, 20(12), pp. 1358-62. [DOI:10.1002/pon.1862] [PMID]
- Maatouk, L, et al. 2018. Association of resilience with health-related quality of life and depression in multiple myeloma and its precursors: Results of a German cross-sectional study. *BMJ Open*, 8(7), p. e021376. [DOI:10.1136/bmjopen-2017-021376] [PMID] [PMCID]
- Masten, A. S., 2001. Ordinary magic. Resilience processes in development. *American Psychologist*, 56(3), pp. 227-38. [DOI:10.1037/0003-066X.56.3.227] [PMID]
- Mental Health Foundation., 2013. *Peer support in long-term conditions* [Internet]. Cited January 2022. <https://www.mentalhealth.org.uk>.
- Molina, Y., et al. 2014. Resilience among patients across the cancer continuum: Diverse perspectives. *Clinical Journal of Oncology Nursing*, 18(1), pp. 93-101. [DOI:10.1188/14.CJON.93-101] [PMID] [PMCID]
- Morel, N., et al. 2015. Emotional specificities of autobiographical memory after breast cancer diagnosis. *Consciousness and Cognition*, 35, pp. 42-52. [DOI:10.1016/j.concog.2015.04.016] [PMID]
- Najafi, L., Moghaddam Tabrizi, F. & Ebrahimi, M., 2018. [The effect of peer-based support on health-promoting behaviors in breast cancer survivors in academi hospitals and research centers in Urmia in 2015-16 (Persian)]. *Nursing and Midwifery Journal*, 15(11), pp. 795-805. <http://unmf.umsu.ac.ir/article-1-3066-en.html>
- Petersen, L. R., et al. 2008. Relationship of optimism-pessimism and health-related quality of life in breast cancer survivors. *Journal of Psychosocial Oncology*, 26(4), pp. 15-32. [DOI:10.1080/07347330802359578] [PMID]
- Ristevska-Dimitrovska, G., et al. 2015. Resilience and quality of life in breast cancer patients. *Open Access Macedonian Journal of Medical Sciences*, 3(4), pp. 727-31. [DOI:10.3889/oam-jms.2015.128] [PMID] [PMCID]
- Roshandel, G., et al. 2021. Cancer in Iran 2008 to 2025: Recent incidence trends and short-term predictions of the future burden. *International Journal of Cancer*, 149(3), pp. 549-605. [DOI:10.1002/ijc.33574] [PMID]
- Rutter, M., 2006. Implications of resilience concepts for scientific understanding. *Annals of the New York Academy of Sciences*, 1094, pp. 1-12. [DOI:10.1196/annals.1376.002] [PMID]
- Seiler, A. & Jenewein, J., 2019. Resilience in cancer patients. *Frontiers in Psychiatry*, 10, p. 208. [DOI:10.3389/fpsy.2019.00208] [PMID] [PMCID]
- Shaikh, M. M. & Nadar, S. N., 2018. Peer-facilitated patient education: An underutilised resource. *Sultan Qaboos University Medical Journal*, 18(1), pp. e1-2. [DOI:10.18295/squmj.2018.18.01.001] [PMID] [PMCID]
- Siegel, R. L., Miller, K. D. & Jemal, A., 2015. Cancer statistics, 2015. *CA: A Cancer Journal for Clinicians*, 65(1), pp. 5-29. [DOI:10.3322/caac.21254] [PMID]
- Smith, B., et al. 2018. Improvements in resilience, stress, and somatic symptoms following online resilience training: A dose-response effect. *Journal of Occupational and Environmental Medicine*, 60(1), pp. 1-5. [DOI:10.1097/JOM.0000000000001142] [PMID] [PMCID]
- Taleghani, F., Parsa Yekta, Z. & Nikbakht Nasrabadi, A., 2006. Coping with breast cancer in newly diagnosed Iranian women. *Journal of Advanced Nursing*, 54(3), pp. 265-72. [DOI:10.1111/j.1365-2648.2006.03808.1.x] [PMID]
- Tallman, B., et al. 2010. Wellbeing and posttraumatic growth in unrelated donor marrow transplant survivors: A nine-year longitudinal study. *Rehabilitation Psychology*, 55(2), pp. 204-10. [DOI:10.1037/a0019541] [PMID]
- Tamagawa, R., et al. 2013. Trait mindfulness, repression, suppression, and self-reported mood and stress symptoms among women with breast cancer. *Journal of Clinical Psychology*, 69(3), pp. 264-77. [DOI:10.1002/jclp.21939] [PMID]
- Tarkhan, M., 2014. [Effectiveness of group critical thinking training on the social self-efficacy and resilience (Persian)]. *Social Cognition*, 2(2), pp. 100-10. http://sc.journals.pnu.ac.ir/article_730.html?lang=en
- Wu, Z., et al. 2016. Resilience and associated factors among mainland Chinese women newly diagnosed with breast cancer. *PLoS One*, 11(12), p. e0167976. [DOI:10.1371/journal.pone.0167976] [PMID] [PMCID]

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