ORIGINAL RESEARCH ARTICLE

The Relationship Between Emotional Intelligence and Illness Perception in Leukemia Patients: A Cross-Sectional Study

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Abstract

Background Emotional intelligence is a crucial factor in psychological well-being, playing an essential role in adapting to stressful life events. Illness perception is a key factor in the ability to manage illness and recover functionally. Finding strategies to cope with negative illness perception in patients with leukemia and its destructive effects in individuals with blood cancer will be helpful. This study aimed to determine the relationship between emotional intelligence and illness perception in patients with leukemia.

Methods This descriptive correlational study included 200 leukemia patients from selected hospitals affiliated with Tehran University of Medical Sciences in 2023. The research tools comprised a demographic information form, the Schutte Self-Report Emotional Intelligence Test (SSEIT), and Broadbent et al.'s Brief Illness Perception Questionnaire (BIPQ). Data analysis was performed using descriptive and inferential statistical methods in SPSS version 16.

Results The mean emotional intelligence score was 127.17 (maximum: 165), and the mean illness perception score was 37.45 (maximum: 80). A significant negative correlation was found between emotional intelligence and illness perception ($r=-0.477$, $P<0.001$).

Conclusion Patients with higher emotional intelligence demonstrated a more positive perception of their illness. Therefore, implementing programs and interventions aimed at enhancing emotional intelligence will foster a more positive perception of the disease in these patients. By reducing negative illness perceptions, patients' ability to cope with stress, their adherence to treatment, and their overall quality of life will improve.

Keywords Emotional Intelligence, Illness, Perception, Leukemia, Neoplasms

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1 Introduction

Despite significant advancements in medicine and the development of human knowledge in treating diseases, cancer remains the second leading cause of death after cardiovascular diseases, is often considered incurable, and threatens the lives of individuals.[1] According to projections from the World Health Organization (WHO), the incidence of cancer is expected to increase exponentially, with new cases rising annually from 14.1 million in 2012 to 26.1 million in 2030.[2] Leukemia is a type of malignancy that affects hematopoietic stem cells, thereby inhibiting normal blood production.[3] Based on its cellular origin, this disease is categorized into two types: myeloid and lymphoid. In terms of its course, it is divided into acute and chronic forms. Among the various types of leukemia, acute myeloid leukemia has the highest prevalence.[4] According to the report by the Global Cancer Observatory, leukemia was the 15th most common cancer and the 11th leading cause of cancer-related deaths worldwide in 2018 [5], and its incidence is also increasing in Iran. Furthermore, leukemia has been reported as the sixth most common cancer in Iranian men and the seventh most common cancer in Iranian women.[6] Cancer treatments can be accompanied by side effects that may compromise an individual's quality of life in the short or long term. The more severe the side effects experienced during treatment, the greater the threat to quality of life.[7] Long-term chemotherapy treatments can pose a significant challenge for individuals with leukemia. Severe anemia, neutropenia, thrombocytopenia, mucositis, fatigue, nausea, and vomiting, as well as changes in the patient's body image, may disrupt their quality of life.[8] In general, patients with cancer often face conditions such as dysthymia and major depression. Therefore, one crucial aspect of care for cancer patients is focusing on improving and enhancing their psychological well-being.[9] Patients with leukemia experience low emotional states and significant mental disorders. Although these conditions do not directly affect the cancer itself, they impact the patient's ability to adapt to cancer and adhere to their treatment.[8] One of the practical components influencing a patient's adaptation is the individual's emotional intelligence. According to Salovey and Mayer, emotional intelligence is defined as the ability to accurately perceive, evaluate, and appropriately express emotions.[10] Previous studies suggest that cancer patients with higher emotional intelligence experience less worry and report a better quality of life.[11,12] Through emotional intelligence, nurses can effectively reduce the harmful mental health effects of chronic diseases in leukemia patients.[13] This is because emotional intelligence is not innate or genetic; it is acquirable and can be developed through training.[13-15] Individuals with higher emotional intelligence can more easily cope with stress and daily life problems. Emotional intelligence is considered an indicator of psychological adaptation and is associated with happiness, well-being, and life satisfaction.[16]

A cancer diagnosis, as a major psychological stressor, can elicit a range of emotional responses depending on how the illness is perceived. If the diagnosis is interpreted as a loss of future opportunities, it may lead to feelings of depression. When perceived as a threat to one's independence and stability, it can provoke anxiety and fear. If the patient attributes their illness to others, anger and aggression may be the expected reactions.[8] Adherence to the treatment regimen and implementation of the care plan can be influenced by an individual's accurate perception of the illness.[17,18] The stronger an individual's belief, the more active and diligent they become in achieving their specific goal. In essence, illness perception is a key factor in managing the disease and regaining functional capacity. A negative illness perception can lead to a prolonged treatment period and intensified patient anxiety.[17] Atadokht et al. (2018) showed that illness perception could predict psychological distress in patients, and patients who have a clear understanding of their illness and the ability to accept reality tend to exhibit less depression and anxiety.[19] On the other hand, an individual's perception of illness is crucial in guiding coping strategies and specific illness-related behaviors, such as adherence to treatment.[20] Fanakidou et al. (2018), in their study on women with breast cancer, demonstrated that a lower quality of life was associated with more negative illness perception.[21] Cancer patients require various techniques and skills to adapt to the disease and its complications. Patients with leukemia often experience negative emotions due to the disease's impact on their personal and social lives, as well as the side effects of treatment, particularly chemotherapy. Studies show that illness perception significantly affects quality of life, disease management, and treatment adherence. Since eliminating the challenging situation is impossible, finding strategies to address negative illness perceptions and their harmful effects can greatly benefit individuals with leukemia. Emotional intelligence, given its teachable and learnable nature, can be considered a supportive ability for improving self-concept and reducing anxiety and depression, which requires further investigation and understanding, especially in relation to cancer patients.

In the literature review, no study was found that specifically examined the relationship between emotional intelligence and illness perception. Therefore, the present study was conducted to investigate the relationship between emotional intelligence and illness perception in patients with leukemia.

2 Methods

This study was a descriptive, cross-sectional, correlational investigation conducted among patients with leukemia. Among the hospitals affiliated with Tehran University of Medical Sciences, two hospitals are referral centers for patients with leukemia. Therefore, patients from these two hospitals were selected using convenience sampling from May to November 2023.

The sample size was estimated to be 200 individuals, based on a 95% confidence level and 80% statistical power, assuming a correlation coefficient of at least 0.2 between emotional intelligence and each of its variables, as well as illness perception, which would make the relationship between the two variables statistically significant. This estimation also referenced a similar article.[22]

$$n = \frac{(z_{1-\alpha/2} + z_{1-\beta})^2}{w^2} + 3$$

$$w = \frac{1}{2}\ln\frac{1+r}{1-r} \qquad w = \frac{1}{2}\ln\frac{1+0.2}{1-0.2} = 0.2$$

$$n = \frac{(1.96 + 0.84)^2}{(0.2)^2} + 3 = 200$$

For sampling, the researcher visited the hematology wards in the mornings, and eligible samples were recruited using convenience sampling based on the inclusion criteria. Questionnaire completion was supervised by the researcher. The inclusion criteria for the study included informed consent to participate, an age between 18 and 70 years, at least two months having passed since the disease diagnosis, awareness of being diagnosed with leukemia, and no self-reported history of psychological disorders. Incomplete questionnaires were considered as an exclusion criterion. Data were collected using a demographic information form, the Schutte Self-Report Emotional Intelligence Test (SSEIT), and the Brief Illness Perception Questionnaire (BIPQ) by Broadbent et al.

The Emotional Intelligence Questionnaire was developed by Schutte et al. (1998) based on Mayer and Salovey's (1990) model of emotional intelligence. This questionnaire consists of 33 items and aims to measure the components of emotional intelligence (perception and understanding of emotion, managing one's own emotions, managing others' emotions, and utilizing emotions). It is scored on a 5-point Likert scale from one (strongly disagree) to five (strongly agree). Items 5, 28, and 33 are reverse-scored. The score range is from 33 to 165, with a higher score indicating higher emotional intelligence.[23] In the study of Goracci et al., the Cronbach's alpha coefficient for the emotional intelligence scale was 0.78.[24] In the study by Saati et al., the content and face validity of this questionnaire were confirmed, and its reliability was assessed using a Cronbach's alpha coefficient of 0.84.[25]

The Brief Illness Perception Questionnaire, developed by Broadbent et al., comprises 9 items that assess consequences, timeline, personal control, identity, treatment control, concern, illness comprehension, emotional response, and cause of illness, respectively. The score range for the first 8 items is from 0 to 10. Items 3, 5, and 7 are reverse-scored. Item 9 is open-ended and asks about the three main causes of the illness in order of importance. The total score range is from 0 to 80. A higher score indicates a more negative perception of the disease.[26-27] Broadbent et al. reported correlations of the BIPQ subscales ranging from 0.32 to 0.63 in a sample of patients with asthma, diabetes, and kidney disease. The Cronbach's alpha for this questionnaire was reported as 0.80.[27] Karimi-Ghasemabad et al.[28] and Bassak Nejad et al.[29] reported Cronbach's alpha values of 0.90 and 0.84, respectively, for the Broadbent questionnaire.To establish validity, the questionnaires were provided to five faculty members of Tehran University of Medical Sciences, and their content and face validity were confirmed.

After obtaining approval from the Ethics Committee (IR.TUMS.FNM.REC.1402.012) eligible participants were included in the study. Initially, the researcher explained the research objectives and methodology, and written informed consent was obtained from the patients. It was explained that they were free to withdraw from the study at any time if they no longer wished to participate. Given the normal distribution of the data, data analysis was performed using descriptive statistics (frequency, mean, and standard deviation) and inferential statistics, including Pearson's correlation test, independent t-test, and ANOVA, using SPSS software version 16. The significance level for this study was set at less than 0.05.

3 Results

The mean age of participants in the study was 36.83±11.13 years. Demographic findings indicated that the majority of patients were male (62%) and married (66.5%). Most participants were self-employed (39.5%), followed by those who were unemployed (15%), and then government employees (12%). The economic status of most participants was moderate (70%). Regarding education level, the majority of patients held a high school diploma (49%) or had less than a high school diploma (36.5%), with only 14.5% having a university education. Findings related to disease characteristics showed that 71% of individuals had no underlying diseases, and 27.5% were candidates for bone marrow transplantation. Regarding disease recurrence, most participants (77.5%) were not in the recurrence phase of the disease. The type of leukemia was Acute Myeloid Leukemia (AML) in 40.5% of patients, Acute Lymphocytic Leukemia (ALL) in 27.5%, Chronic Lymphocytic Leukemia (CLL) in 23%, and Chronic Myeloid Leukemia (CML) in 9% (Table 1).

Table 1 Frequency Distribution of Demographic Characteristics and Correlation with Illness Perception and Emotional Intelligence in Studied Patients with Leukemia

Patient Demographic Characteristics		Frequency	Percentage (%)	Illness Perception	Emotional Intelligence
Age (Years)	< 30	76	38	f=0.688 p=0.560	f=0.581 p=0.625
	30-39	47	23.5		
	40-49	49	24.5		
	≥ 50	28	14		
Gender	Female	76	38	t=−0.237, df=198, p=0.813	t=1.50, df=188.60, p=0.134
	Male	124	62		
Marital Status	Single	67	33.5	t=0.578, df=198, p=0.564	t=0.236, df=198, p=0.814
	Married	133	66.5		
Education	Below Diploma	73	36.5	F=1.34 p=0.263	F=0.803 p=0.449
	Diploma	98	49		
	University	29	14.5		
Economic Status	Weak	52	26	f=0.741 p=0.478	F=0.436 p=0.647
	Moderate	140	70		
	Good	8	4		
Occupation	Unemployed	30	15	F=1.59 p=0.165	F=0.347 p=0.884
	Self-employed	79	39.5		
	Government Employee	24	12		
	Retired	18	9		
	Student	7	3.5		
	Housewife	42	21		
Underlying Disease	Yes	58	29	t=0.996, df=198, p=0.321	t=1.32, df=198, p=0.185
	No	142	71		
Disease Recurrence	Yes	45	22.5	t=2.52, df=198, p=0.012	t=−2.55, df=198, p=0.011
	No	155	77.5		
Candidate for Bone Marrow Transplant	Yes	55	27.5	t=2.20, df=198, p=0.029	t=−1.41, df=198, p=0.160
	No	145	72.5		
Type of Leukemia	AML	81	40.5	F=2.00 p=0.115	F=3.40 p=0.019
	ALL	55	27.5		
	CML	18	9		
	CLL	46	23		

df = degree of freedom, F = f-test, T = t-test, P = p value

The mean total emotional intelligence score in patients with leukemia was 127.17 ± 4.39 (Table 2), and the mean total illness perception score was 37.45 ± 9.10 (Table 3). Based on the study results, a significant negative correlation was found between emotional intelligence and illness perception (r = -0.477, P < 0.001). Among the components of emotional intelligence, only the "utilization of emotion" component had no significant relationship with any of the illness perception components (P>0.05). However, for other components, this correlation was significant and negative (Table 4).

Regarding the correlation with demographic variables, the results showed that the emotional intelligence of patients who did not experience disease recurrence was significantly higher than that of patients in the recurrence phase of the disease (P = 0.011). Additionally, the difference in emotional intelligence among patients with different types of leukemia was reported as significant (P = 0.019). Other demographic variables did not show a significant relationship with emotional intelligence. Furthermore, the study results indicated no significant relationship between illness perception and patients' demographic characteristics, except for the variables of being a candidate for bone marrow transplantation (P = 0.029) and being in the disease recurrence phase (P = 0.012) (Table 1).

4 Discussion

The purpose of the present study was to examine the relationship between emotional intelligence and illness perception in leukemia patients referred to selected hospitals of Tehran University of Medical Sciences.

Table 2 Frequency Distribution of Demographic Characteristics and Correlation with Illness Perception and Emotional Intelligence in Studied Patients with Leukemia

Emotional Intelligence and Its Components	Min	Max	Mean	SD	Scores based on 0-100			
					Min (Scaled)	Max (Scaled)	Mean (Scaled)	SD (Scaled)
Perception and Understanding of Emotion (10-50)	29	46	38.19	2.28	47.50	90	70.46	5.69
Management of Self-Emotions (9-45)	31	41	35.56	2.07	61.11	88.89	73.79	5.75
Management of Others' Emotions (8-40)	23	36	29.85	2.14	46.88	87.50	68.26	6.69
Utilization of Emotion (6-30)	18	28	23.57	1.35	50	91.67	73.20	5.65
Emotional Intelligence (33-165)	115	139	127.17	4.39	62.12	80.30	71.33	3.33

SD = Standard Deviation

Table 3 Mean and Standard Deviation of Illness Perception and its Components in Studied Patients with Leukemia

Illness Perception and Its Components	Min	Max	Mean	SD
Illness Consequences (0-10)	0	10	6.67	2.65
Illness Timeline (0-10)	0	10	4.85	2.77
Personal Control (0-10)	0	10	3.15	2.54
Illness Identity (0-10)	3	10	7.14	1.51
Treatment Control (0-10)	0	8	1.87	1.67
Concern (0-10)	0	10	4.92	3.02
Illness Comprehension (0-10)	0	10	3.63	2.19
Emotional Response (0-10)	0	10	5.23	3.05
Illness Perception (0-80)	10	67	37.45	9.10

SD = Standard Deviation

Table 4 Correlation between Emotional Intelligence and Illness Perception in Studied Patients with Leukemia

Emotional Intelligence and Its Components	Perception of illness and its components								
	Illness Consequences	Illness Timeline	Personal Control	Illness Identity	Treatment Control	Concern	Illness Comprehension	Emotional Response	Total Illness Perception
Perception and Understanding of Emotion	r=−0.060	r=−0.152	r=−0.164	r=−0.160	r=−0.049	r=−0.140	r=−0.223	r=−0.132	r=−0.289
	p=0.401	**p=0.032**	**p=0.020**	**p=0.023**	p=0.490	**p=0.048**	**p=0.002**	p=0.062	**p<0.001**
Management of Self-Emotions	r=−0.146	r=−0.062	r=−0.159	r=−0.159	r=−0.182	r=−0.099	r=−0.135	r=−0.204	r=−0.301
	p=0.039	p=0.381	**p=0.024**	**p=0.024**	**p=0.010**	p=0.165	p=0.056	**p=0.004**	**p<0.001**
Management of Others' Emotions	r=−0.104	r=−0.098	r=−0.200	r=−0.161	r=−0.054	r=−0.256	r=−0.074	r=−0.244	r=−0.337
	p=0.141	p=0.168	**p=0.004**	**p=0.023**	p=0.444	**p<0.001**	p=0.295	**p<0.001**	**p<0.001**
Utilization of Emotion	r=−0.072	r=−0.025	r=−0.035	r=−0.077	r=−0.105	r=−0.015	r=−0.075	r=−0.036	r=−0.069
	p=0.308	p=0.723	p=0.622	p=0.280	p=0.138	p=0.838	p=0.289	p=0.614	p=0.332
Total Emotional Intelligence	r=−0.173	r=−0.163	r=−0.269	r=−0.260	r=−0.170	r=−0.248	r=−0.192	r=−0.295	r=−0.477
	p=0.014	**p=0.021**	**p<0.001**	**p<0.001**	**p=0.016**	**p<0.001**	**p=0.006**	**p<0.001**	**p<0.001**

r = correlation coefficient, p = p value

In the present study, the overall mean of emotional intelligence was above the moderate level. This finding is consistent with the studies by Saati et al. (2018)[25], Oyur Celik (2017)[30], Ghiabi et al. (2011)[31], and Rahmanian et al. (2023).[32]

Based on the study results, the overall mean of illness perception was reported as moderate, which aligns with the study by Schoormans et al. (2020) on leukemia survivors in the Netherlands[33] and the study by Lee et al. (2023) on patients with stomach cancer.[34] The survey by Erisian et al. (2020), conducted on women with breast cancer, reported a more negative illness perception, which is inconsistent with the present study. This discrepancy can be attributed to differences in the research population.[18] Since patients with breast cancer face changes in their body image, as well as challenges related to social and marital relationships, and experience more objective consequences, this can influence their

perception of their illness.

The results showed a significant negative relationship between emotional intelligence and illness perception. Consequently, individuals with higher emotional intelligence have a more positive perception of their illness. Although studies on leukemia patients in this regard are limited, findings from other studies on various patients and similar variables confirm our results. The study of Nasiri Ziba et al. (2019) on patients with gastrointestinal ostomy (colostomy and ileostomy) in Iran showed that higher emotional intelligence significantly contributes to increased self-efficacy.[22] The study of Chen et al. (2021) on breast cancer patients in China revealed a significant negative relationship between emotional intelligence and fear of cancer recurrence. Therefore, by increasing the emotional intelligence of breast cancer patients, the fear of cancer recurrence in these individuals can be reduced.[12] Emotional intelligence can be a suitable predictor of individual reactions to a stressful event.[35] In a study on patients with esophageal and gastric cancer, Baudry et al. (2019) demonstrated that a higher level of emotional intelligence is associated with more positive subjective responses to stressors, reduced emotional distress, and a more positive mood.[36] Cerezo et al. (2022) found, in their study on breast cancer patients, that those with higher emotional intelligence experienced greater happiness and were more optimistic about their future.[37] García-Maroto Fernández et al. (2015) demonstrated that resilience is higher in patients with higher emotional intelligence.[38] Individuals with low emotional intelligence consistently experience feelings of emptiness and breakdown and exhibit inappropriate emotional reactions. Therefore, low emotional intelligence can be considered a risk factor for developing mental illnesses and causing difficulties in individuals' adaptation to their environment.[39,40] In contrast, high emotional intelligence is associated with a sense of self-efficacy, coping with stressful situations, and evaluating them as learning opportunities.[41] The results of Yar Ahmadi et al.'s study (2015) showed that emotional intelligence training, by strengthening stress tolerance, problem-solving ability, and flexibility, can significantly reduce anxiety in these patients.[42] Kotsou et al. (2019) demonstrated in their systematic review study that organizing educational workshops based on emotional intelligence knowledge and skills can play a significant role in promoting emotional intelligence.[43]

The results of the present study regarding the relationship between demographic characteristics and emotional intelligence in leukemia patients showed a significant correlation with disease recurrence and diagnosis type. Patients who were not in the disease recurrence phase had higher emotional intelligence compared to those who were. Disease recurrence can negatively impact the patient's perception and emotions, leading to increased tension and concern. With each disease cycle, the patient's energy and ability decrease due to the severe nature of the illness. No comparative study was found in this regard to compare the results. Furthermore, the emotional intelligence of patients with CLL was higher than that of patients with ALL, which could be due to the acute and life-threatening nature of the disease in ALL patients. No comparative study was found in this area to compare the results.

Although our study provides valuable insights into patients with leukemia, it has some limitations. The study was conducted only in selected hospitals of Tehran University of Medical Sciences, which might affect population and cultural diversity and limit the generalizability of the results to other regions. Self-report instruments may be subject to social desirability bias, where respondents may report results in a manner that appears more favorable. In this regard, participants were assured that the questionnaires were anonymous and data confidentiality would be maintained.

5 Conclusion

Based on the results of the present study, a significant negative correlation was found between emotional intelligence and illness perception. This relationship suggests that higher emotional intelligence has a positive influence on individuals' illness perception, which can lead to an improvement in patients' quality of life and adherence to treatment. Therefore, by conducting emotional intelligence training courses, it is possible to positively impact the emotional intelligence of these patients and subsequently take a positive step towards strengthening a positive perception of illness in individuals with leukemia. This can help improve patients' quality of life, their adaptation to the disease, and better adherence to the treatment process, including chemotherapy.

It is suggested that interventional studies be conducted to investigate the effect of educational interventions on improving emotional intelligence and reducing negative illness perceptions in leukemia patients. Furthermore, to uncover hidden aspects of the relationship between emotional intelligence and illness perception, and to provide a deeper explanation of the concepts of emotional intelligence and illness perception in leukemia patients, conducting qualitative studies in this area is recommended.

Declarations

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Authors' Contributions
In this study, the authors participated in the initial conceptualization, study design, data collection, and manuscript preparation. All authors have read and approved the final version and declare no conflicts of interest regarding its various sections.

Availability of Data and Materials
The datasets generated and/or analyzed during the current study are not publicly available due to privacy and confidentiality agreements with the participants but are available from the corresponding author on reasonable request.

Conflict of Interest
As declared by the authors, there is no conflict of interest in the present research.

Consent for Publication
All authors have read and approved the final manuscript and provided their consent for publication.

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Ethical Considerations
This study received ethical approval from the joint committee of the Faculty of Nursing and Midwifery and the Faculty of Rehabilitation at Tehran University of Medical Sciences and Health Services with the code IR.TUMS.FNM.REC.1402.012. Written informed consent was obtained from the participants, and they were assured of anonymity and data confidentiality.

References

1. Alizadeh N, Mirzaian B, Abbasi G. Comparison of the Effectiveness of Schema Therapy and Short-Term Psychodynamic Therapy on Psychological Capital in Females with Breast Cancer. Rooyesh-e-Ravanshenasi Journal (RRJ). 2022;10(11):229-40.
2. Grassi L, Spiegel D, Riba M. Advancing psychosocial care in cancer patients. F1000 Fac Rev. 2017;6:2083.
3. Zhao Z, Hu Y, Li J, Zhou Y, Zhang B, Deng S. Applications of PET in diagnosis and prognosis of leukemia. Technol Cancer Res Treat. 2020;19:1533033820956993.
4. Parizad N, Hassanpour A, Nozad A, Khalkhali H. The effect of acupressure on the SP6 point on fatigue in the patients with lukemia hospitalized in imam khomeini hospital: A Single-blind clinical trial. Nursing And Midwifery Journal. 2023;20(11):864-73.
5. Bispo JAB, Pinheiro PS, Kobetz EK. Epidemiology and etiology of leukemia and lymphoma. Cold Spring Harb Perspect Med. 2020;10(6):a034819.
6. Koohi F, Ghoncheh M, Salehiniya H. Epidemiology and trend of incidence of the Leukemia in Iran. Journal of Isfahan Medical School. 2016;33(361):2055-61.
7. Hashemi Z, Afshari A, Einy S. The effectiveness of acceptance and commitment education on improving the mental health and quality of life of elderly people with cancer. Iran J Health Educ Health Promot 2020;8(2):160-71.
8. ÇALIŞKAN EG, ŞEN K, MERDİN A, DAL MS, ALTUNTAŞ F. Illness perception of the patients with hematological cancers: A single center study. Int J Pharma Bio Sci. 2019;10(2):204-10.
9. Khodabakhash R, Khosravi Z, Shahangian S. Effect of positive psychotherapy in depression symptoms and character strengths in cancer affected patients. Positive psychology research. 2015;1(1):35-50.
10. Fayaz I, Shang A, Luo M, Xu X-Y, Li H-B. Emotional Intelligence, Hope and Gratitude among Adolescents of Kashmir Valley: A Comparative Study. International Journal of Modern Social Sciences. 2020;9(1):1-19.
11. Rey L, Extremera N, Trillo L. Exploring the relationship between emotional intelligence and health-related quality of life in patients with cancer. J Psychosoc Oncol. 2013;31(1):51-64.
12. Chen WY, Wang S, Peng X, Zhu Y. Trait emotional intelligence and quality of life among breast cancer patients: The mediating role of fear of cancer recurrence. Int J Nurs Pract. 2022;28(4):e12953.
13. Taghizadeh B, Masoumpoor A, Farahani AS, Borumandnia N. Effectiveness of emotional intelligence training on the quality of life of mothers of children with leukemia. Supportive & Palliative Care in Cancer. 2017;1(1).
14. de Looff P, Nijman H, Didden R, Embregts P. Burnout symptoms in forensic psychiatric nurses and their associations with personality, emotional intelligence and client aggression: A cross-sectional study. J Psychiatr Ment Health Nurs. 2018;25(8):506-16.
15. Higuchi Y, Inagaki M, Koyama T, Kitamura Y, Sendo T, Fujimori M, et al. Emotional intelligence and its effect on pharmacists and pharmacy students with autistic-like traits. Am J Pharm Educ. 2017;81(4):74.
16. Pérez-Fernández A, Fernández-Berrocal P, Gutiérrez-Cobo MJ. The relationship between emotional intelligence and diabetes management: A systematic review. Front Psychol. 2021;12:754362.
17. Basharpoor S, NasriNasrabadi B, Heidari F, Molavi P. The role of health beliefs and illness perceptions in predicting health-promoting behaviors in cancer patients. Iran J Health Educ Health Promot. 2018;6(2):102-13.
18. Erisian Z, Torkan H, Mokarian F. The role of emotional regulation, self-efficacy of pain and perception of disease in predicting the negative mood of women with breast cancer. Journal of Research in Behavioural Sciences. 2020;18(3):360-70.
19. Atadokht A, Hashemi J, Habibi Y, Fallahi V, Rahimi F. The role of illness perception and perceived social support in predicting psychological distress in patients with multiple sclerosis. Nursing and Midwifery Journal. 2018;15(11):863-73.
20. Najafi Ghezeljeh T, Eydi M, Haghani S. Illness perception in patients with heart failure admitted to selected centers of iran university of medical sciences. Nursing And Midwifery Journal. 2019;17(2):91-101.
21. Fanakidou I, Zyga S, Alikari V, Tsironi M, Stathoulis J, Theofilou P. Mental health, loneliness, and illness perception outcomes in quality of life among young breast cancer patients after mastectomy: the role of breast reconstruction. Qual Life Res. 2018;27(2):539-43.
22. Nasiri Ziba F, Saati M, Haghani H. The Correlation of Emotional intelligence and self-efficacy in patients with intestinal stoma. Iran Journal of Nursing. 2019;32(117):33-47.
23. Schutte NS, Malouff JM, Hall LE, Haggerty DJ, Cooper JT, Golden CJ, Dornheim L. Development and validation of a measure of emotional intelligence. Pers Individ Dif. 1998;25(2):167-77.
24. Goracci A, Fagiolini A, Martinucci M, Calossi S, Rossi S, Santomauro T, et al. Quality of life, anxiety and depression in sarcoidosis. Gen Hosp Psychiatry. 2008;30(5):441-5.

25. Saati M, NasiriZiba F, Haghani H. The correlation between emotional intelligence and self-esteem in patients with intestinal stoma: A descriptive-correlational study. Nurs Open. 2021;8(4):1769-77.
26. Broadbent E, Petrie KJ, Main J, Weinman J. The brief illness perception questionnaire. J Psychosom Res. 2006;60(6):631-7.
27. Zhang M, Hong L, Zhang T, Lin Y, Zheng S, Zhou X, et al. Illness perceptions and stress: mediators between disease severity and psychological well-being and quality of life among patients with Crohn's disease. Patient Prefer Adherence. 2016:2387-96.
28. Karimi-Ghasemabad S, Akhbari B, Saeedi A, Talebian Moghaddam S, Nakhostin Ansari N. The Persian brief illness perception questionnaire: Validation in patients with chronic nonspecific low back pain. ScientificWorldJournal. 2021;2021(1):3348011.
29. Bassak Nejad S, Shakerinejad G, Moradi B, Shirmardi S, Fathi K. Treatment and predicting life expectancy for women with breast cancer based on perception of the disease, perceived social support, and coping styles. Razi Journal of Medical Sciences. 2022;29(2):28-38.
30. Oyur Celik G. The relationship between patient satisfaction and emotional intelligence skills of nurses working in surgical clinics. Patient Prefer Adherence. 2017;11:1363-8.
31. Ghiabi B, Besharat MA. An investigation of the relationship between personality dimensions and emotional intelligence. Procedia Soc Behav Sci. 2011;30:416-20.
32. Rahmanian A, Makaremnia S, Abdian T. Role of emotional intelligence in the quality of nursing care in nurses working in Covid-19 Care Units. Avicenna Journal of Nursing and Midwifery Care. 2023;31(1):46-56.
33. Schoormans D, Jansen M, Mols F, Oerlemans S. Negative illness perceptions are related to more fatigue among haematological cancer survivors: a PROFILES study. Acta Oncol. 2020;59(8):959-66.
34. Lee JY, Jang Y, Hyung W. Mediating Effect of Illness Perception on Psychological Distress in Patients With Newly Diagnosed Gastric Cancer: Based on the Common-Sense Model of Self-regulation. Cancer Nurs. 2023;46(3):E138-E45.
35. Peña-Sarrionandia A, Mikolajczak M, Gross JJ. Integrating emotion regulation and emotional intelligence traditions: a meta-analysis. Front Psychol. 2015;6 1-27.
36. Baudry A-S, Anota A, Mariette C, Bonnetain F, Renaud F, Piessen G, et al. The role of trait emotional intelligence in quality of life, anxiety and depression symptoms after surgery for esophageal or gastric cancer: A French national database FREGAT. Psycho Oncology. 2019;28(4):799-806.
37. Cerezo MV, Soria-Reyes LM, Alarcón R, Blanca MJ. The Satisfaction with Life Scale in Breast Cancer Patients: Psychometric Properties. Int J Clin Health Psychol. 2022;22(1):100274.
38. Fernández SG-M, Delgado MLL, Postigo JML. Ansiedad, resiliencia e inteligencia emocional percibida en un grupo de mujeres con cáncer de mama. Ansiedad y estrés. 2015;21:115-25.
39. Taylor GJ, Parker JDA, Bagby RM. Emotional Intelligence and the Emotional Brain: Points of Convergence and Implications for Psychoanalysis. J Am Acad Psychoanal. 1999;27(3):339-54.
40. Mehmood T, Gulzar S. Relationship between Emotional Intelligence and Psychological Well-Being among Pakistani Adolescents. Asian Journal of Social Sciences & Humanities. 2014;3(3):178-85.
41. Mehrabi Z, Nazari F, Mehrabi T, Shaygannejad V. The Effect of Emotional Intelligence Training on Self-efficacy in Women with Multiple Sclerosis. Iran J Nurs Midwifery Res. 2017;22(6):421-6.
42. Yarahmadi F, Ghasemi SF, Forooghi S. The effects of emotional intelligence training on anxiety in hemodialysis patients. Journal of Nursing and Midwifery Sciences. 2015;2(4):8-14.
43. Kotsou I, Mikolajczak M, Heeren A, Grégoire J, Leys C. Improving Emotional Intelligence: A Systematic Review of Existing Work and Future Challenges. Emot Rev. 2019;11(2):151-65.