

Analysis of the content of paintings of children with cancer undergoing chemotherapy

Zahra Tahmasebi¹, Zahra Babaei^{2*}

¹Department of nursing, Faculty of Borujen school of nursing, Shahrekord university of medical sciences, shahrekord, Iran. ²Department of Psychology, Faculty of Humanities, University of Science and Art, Yazd, Iran.

Correspondence: Zahra Babaei. Department of Psychology, Faculty of Humanities, University of Science and Art, Yazd, Iran. Mitra.752001@yahoo.com

ABSTRACT

This study was conducted in order to analyze the content of paintings of children with cancer undergoing chemotherapy, Small children who have tasted the harshness of the disease and chemotherapy. The physical, mental and social health of these children will be severely affected as a result of the disease and its treatment. A child's drawing is a copy of an image in his mind, and the technology of a child's drawings is an open window to thoughts and feelings. Children show their inner conflicts with the help of drawing, and even reduce these conflicts by drawing. The present study was conducted using the qualitative content analysis method in Isfahan University of Medical Sciences in 2015. The number of 30 cancer children undergoing chemotherapy in the hospital of (Isfahan, Iran) was selected according to available methods and they were asked to draw freely so that the children could express their inner feelings completely freely. Then the drawings were analyzed by a clinical psychologist of children and the emotional indicators of the drawing were extracted and analyzed. in the interpretation of the painting to discover the child's conflicts with parents, discover the child's conflicts with siblings, identify regressions, discover the inner psychological conflicts of the child, measure the degree of the child's adaptation, discover the distances and measure the child's intimacy with the family. , assessment of child's mood problems, identification of childhood psychological nodes were discussed And content analysis of the data extracted from children's drawings led to the achievement of emotional indices. The most common indexes obtained were anxiety, depression and aggression. Cancer children's drawings showed emotional indicators such as anxiety, depression and aggression. Their paintings can represent their inner world. In general, by using children's drawings, it is possible to investigate problems such as (depression, aggression, and anxiety) that children may face in connection with problems such as illness.

Keywords: Children with cancer, Chemotherapy, Free drawing, Interpretation of painting, Emotional indicators

Introduction

Cancer refers to a variety of diseases that are the result of uncontrolled growth and proliferation of body cells, and this disease can be caused by various environmental and genetic factors (1). One of the age groups affected by cancer is children and teenagers. Pediatric cancer refers to cases of cancer diagnosed in children under the age of 15. The diagnosis of cancer causes considerable stress and may lead to acute or chronic maladaptive psychological reactions (2). In addition, children with cancer are not only at risk of side effects resulting from medical procedures, but their mental and social health may also be severely affected as a result of cancer and its treatment (3). Although with recent advances in the treatment of children's cancers, the survival rate of children with cancer is

higher than ever, but the treatment period in this disease is still a very stressful experience in a child's life (4). Chemotherapy is one of these treatments. Chemotherapy is one of the cancer treatments that is performed with the aim of destroying cancer cells. This method is associated with many side effects that reduce the patient's quality of life (5).

In order to evaluate children's problems, different methods can be used in psychology, including drawing. From the perspective of psychoanalysis, painting or illustration is a clinical-projection activity, that is, through painting, a person can express what he has in his subconscious mind and probably causes him discomfort and anxiety. Therefore, painting and visual arts in general are used as a tool for projecting, emotional discharge, presenting thoughts and showing emotions, conflicts and inner desires. Since children have a limited vocabulary compared to

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

adults to express their emotional experiences, painting can be used as a language to express emotions such as aggression (6). Painting is a familiar and normal activity that has a great impact on the mental development of children. Children are interested in painting and with whatever is available to them, they draw a design that suits their mood, these designs gradually become more complete with the growth of the child and find a clearer meaning for us(7). Although all children enjoy physical, social, emotional, and cognitive benefits when engaged in art or other creative activities, this need is intensified in hospitalized children. Drawing and coloring is a great way to express the unsaid. Children easily express their thoughts and feelings through art (8).

Drawing or illustration is a means by which children can establish a kind of spiritual connection with others; Therefore, it is possible to understand his moods, tendencies and personality in this way. The image that children draw of themselves has a direct relationship with the image they have of themselves in their minds (9). Therefore, free drawing is an intelligence test, a personality test, and a tool for projecting and decoding. Relatively early, children realize that drawing is a means of expression that frees them in their imaginations and at the same time provides them with great pleasure. Besides that, drawing allows children to show their inner thoughts (10). It seems that many of the early researchers assumed to some extent that children's drawings are a version of an image formed in their minds, and therefore their drawings are a window into the world of their thoughts and feelings. (11). Children show their inner conflicts with the help of drawing. They even reduce these conflicts by drawing pictures (12).

In general, by using children's drawings, it is possible to get a definite understanding of problems (such as depression, aggression, and anxiety) that children may face in relation to their families. For example, studies on children's drawings indicate that the size of children's drawings is different under the influence of their emotional and psychological conditions. Children who have favorable psychological conditions draw a larger picture than children who have an inappropriate environment and negative psychological conditions (13). Since cancer and its treatment often have a heavy burden of emotional and psychological consequences related to the chronic nature of the disease and due to the fact that so far no research has been found on the analysis of the content of the paintings of children with cancer undergoing chemotherapy, therefore, researchers decided to analyze the content of these children's paintings.

Materials and Methods

The present study is a qualitative content analysis that was conducted with the aim of analyzing the content of drawings of cancer children in Isfahan University of Medical Sciences. A number of 30 children were selected as available from cancer children undergoing chemotherapy in the hospital, Isfahan. The inclusion criteria for this study include children between the ages of 7 and 12 years, suffering from one of the types of

cancer, children having at least one round of chemotherapy, absence of physical and mental retardation, absence of physical problems and anxiety and depression disorders. Exclusion criteria included: exposure to acute and severe stress such as parents' divorce, death of parents, death of siblings, change of residence.

Projective tests are one of the types of psychological tests. One of these types is painting analysis, which can be used for all ages (childhood to middle age). In psychology, tests have been developed by psychologists for the evaluation of personality and the diagnosis of mental disorders. Personality tests can be divided into two categories: A) Analytical tests: this category of tests often break down the personality in a conventional way to measure them separately, such as Neo and Kettle's option tests. B) Combined tests (projector): These tests rely on the concept of mental unity and place the person in an ambiguous situation. The reason is that the experimenter can write down the reactions of the subject and interpret them in psychological terms. Combined tests are also divided into five categories: organizational methods, constructive methods, interpretive methods, refining (empty) and refraction methods.

Painting analysis is one of the projection tests that are included in construction methods. In this type of constructive tests, the examiner provides drawing tools to children and asks them to draw a picture. These interpretations are analyzed based on concepts, components, quality, proportion of components, perspective, time spent, children's explanations and their personal criticism. Basically, this test is a qualitative test based on Freud's point of view, and it is possible to examine people's unconscious mind and their inner conflicts through this test. Drawing pictures means projecting people and looking for a way to express themselves, through which children can express their problems to others. In projection, people show themselves indirectly, and in projection painting, they attribute their own characteristics to another (12-9).

There are four main goals in the analysis of the content of the painting: investigating the unconscious, discovering thoughts, discovering conflicts, and discovering self-blames. The way of drawing was that the children were asked to draw a picture with a house, tree and family in it and to draw it as beautiful as possible and no matter how long it takes. In the next step, the child and adolescent clinical psychologist interpreted each component of the line interpretation. In order to interpret children's drawings, the following items were considered: child's chronological age, children's left or right hand, interpretation of space, image size, animal in the drawing, level of formal structure, tree (roots, stems, leaves, nodes), house (Height of the house, door, window, size and smallness of the house, chimney, stairs), family (where did they draw each member, in which part of the page, which one they started first, scoring each part of the drawings). Then the psychological analysis of the following cases was done: defense mechanisms against external anxiety, anxiety caused by internal triggers, how defense mechanisms are expressed, aggressive reaction, depressive reactions and oedipal conflicts. Also, in the interpretation of the children's family drawing, the following

issues were examined: discovering the child's conflicts with parents, discovering the child's conflicts with siblings, identifying regressions, discovering the child's inner psychological conflicts, measuring the child's adaptation level, discovering the distance and measuring the child's closeness with the family, measuring the child's emotional problems, identifying childhood psychological nodes.

Results and Discussion

Evaluation of the frequency distribution of quantitative variables using the Kolmogorov-Smirnov test showed that the data distribution was normal ($p > 0.05$). The average age of children was 9.3 ± 2 and the average number of chemotherapy courses was 4.5 ± 2.1 . In terms of the frequency of the type of cancer, the most common type of cancer among children was leukemia (Table 1).

Table 1. Demographic characteristics of children with cancer (n=30)

Variable	frequency (percentage)	
sex	female	18(60%)
	male	12(40%)
type of cancer	leukemia	12(40%)
	Sarcoma	4(13.33%)
	Brain Tumor	6(20%)
	lymphoma	2(6.66%)
	Wilms tumor	2(6.66%)
	Neuroblastoma	3(10%)
place of residence	Bone tumors	1(3.33%)
	Esfahan	15(50%)
	Suburbs of Isfahan	10(33.33%)
	Other provinces	5(16.66%)

According to Table 2, the content analysis of the data extracted from children's drawings led to the achievement of emotional indicators. The most common indicators obtained are anxiety, depression and aggression. The results of the analysis of the content of the drawings of children with cancer undergoing chemotherapy are shown in Table 2.

Table 2. Content analysis of the drawings of children with cancer (n=30)

Row	Content analyzed painting	Emotional indicators of painting
Child number 1	Secure attachment, favorable relationships with family members, being conservative, suffering from illness and the desire to return home, which is caused by the anxiety of illness and the hospital, but at the same time with a sense of security due to parental support.	anxiety
Child number 2	Secure attachment, the child pays more attention and focus on his feelings and has a calm personality, but does not feel comfortable in the family and feels guilty due to the illness, even though the parents give him a lot of love and give him a sense of peace. He considers himself unimportant and a threat to the family's happiness, he understands issues simply and has a desire to influence and dominate the environment, being reasonable.	depression
Child number 3	secure attachment, ambition and ambition, good relationship with family, happy life and feeling comfortable in life, excitement and tension and desire to return home and safe environment, a kind and dreamy person	anxiety
Child number 4	Insecure attachment is a calm and loving behavior, establishing friendly relations with family members, but having an emotional vacuum or being unable to express feelings, but at the same time, having fear, sadness, and despair due to illness.	Depression, anxiety and obsession
Child number 5	Secure attachment, happy life and feeling comfortable at home, beautiful and distant dreams, romantic yet conservative nature, balanced and confident personality, violence and sense of competition and need to prove yourself.	Obsession and anxiety, anger, impulsiveness
Child number 6	Secure attachment, desire to return home, balanced personality, desire to have a closer relationship with the family and have peace and happiness in the family, mother is the embodiment of strength and has strong emotions, emotions and imagination.	anxiety
Child number 7	Safe attachment, despite the suffering of the disease, the parents have created a safe psychological and emotional base for him, emotions and feelings are strong, beautiful and far from reach, the desire to change the situation	anxiety
Child number 8	Anxious attachment, feeling worried, high values, physical weakness, dreaming and desire to be freed from suffering and pain.	Aggression and depression
Child number 9	A secure attachment requires more caressing and support, a dreamer, and strong emotions and feelings.	fear and anxiety
Child number 10	Insecure attachment, desire to return home, feeling lonely and on the sidelines, desire for more intimate relationships with family members, in search of mental and spiritual refuge.	Aggression and depression

Child number 11	Insecure attachment, wanting more intimacy with father and father symbol of strength and masculinity; Feeling afraid and guilty because of the disease	Stress and depression
Child number 12	Secure attachment, desire to return home, emotional person, likes to always stay in your dreams, has a kind spirit and social person with friends, desire for power, desire to retreat, need to depend on mother.	anxiety
Child number 13	She has anxious attachment, a desire to return home, sociability, a desire to be lively and happy, a dreamer, a desire to reveal issues within the family, ambition and a desire to be confirmed and prove herself. She always tries to acknowledge her abilities and talents.	anxiety
Child number 14	Secure attachment, intimacy between family members, sense of security, conflict and aggression, anger, desire to show power, high self-confidence, desire for pleasure	aggression
Child number 15	Secure attachment, desire to be pampered, ambition and desire to be highly approved and prove oneself, tendency to one's strength and will to overcome obstacles, mother who feels her presence every moment.	anxiety
Child number 16	Secure attachment, desire to return home, intimate relationships with parents, emotional, social, beautiful and remote, lack of freedom of the child and limited to communicate with the environment outside the home.	separation anxiety
Child number 17	insecure attachment; The desire to form a new family, the desire for a bright future, luxury, showing off, valuing oneself, the desire to raise the social rank, the need for affection and love, a strong sense of aesthetics.	Anxiety and narcissism
Child number 18	Secure attachment, feeling the need to caress and pamper, ambition, a great desire to confirm and prove oneself, in decisions, one-sidedness, acts and always tries to acknowledge one's abilities and talents, power, anger	anxiety
Child number 19	Secure attachment, this, inability to express emotions, emotional and imaginative, dreamy, kind spirit	Stress and depression
Child number 20	Secure attachment, dreamer and fantasist, strong emotional intelligence, meddling mother	anxiety
Child number 21	Secure attachment, desire for power, dependence of the person on the outside world and preferring a cold life, idealist and dreamer, sense of comfort and peace, desire to be loved and noticed	separation anxiety
Child number 22	Secure attachment, desire for beauty and altruism, secretive, optimistic about life, female power, emotions, feelings and imagination, anger	aggression
Child number 23	Secure attachment, anger, masculinity, the presence of a strong mother, the desire to belong to a special person, returning to the mother's arms and seeking emotional support.	Anxiety, anger and fear
Child number 24	Secure attachment, beautiful and distant, romantic nature yet conservative, sentimental, kind spirit, social, talkative	anxiety
Child number 25	Anxious attachment, desire to have a closer relationship with father, anger, likes to eat but is on a special diet, aggression, daydreaming, panicking	aggression
Child number 26	Secure attachment, desire for power, aesthetic sense and altruism, desire to belong to a special person, desire to be loved	Separation and dependency anxiety
Child number 27	Secure attachment, desire to return home, fear and anxiety, seeking mental and spiritual refuge, violence and aggression.	Aggression, anxiety and depression
Child number 28	Secure attachment, desire for power, seeking the will to overcome problems, emotional and kind spirit, desire to create more intimate relationships with father, aesthetic sense and altruism.	anxiety
Child number 29	Secure attachment, desire to have a close relationship with parents, emotional, loving, sociable temperament, desire for a source of power	anxiety
Child number 30	Insecure attachment, insidious, tendency to be aggressive, need to be cuddled, desire to create happiness and dream, falling behind in school, need to prove oneself and gain status, desire to make connections with others.	Aggression and depression

conclusion:

The analysis of the drawings of children with cancer indicated the presence of emotional indicators such as anxiety, depression, and aggression. Anxiety is a normal human emotion and consists of a mental unpleasant feeling, fear and discomfort, tension and vague concern that is accompanied by one or more

physical symptoms (14). Anxiety is the feeling of fear that occurs when facing threatening or stressful situations. When faced with danger, anxiety is a natural response, but if it is overwhelming or continues, it can be considered as an anxiety disorder (15). Today, it is accepted that anxiety disorders are the most common disorders among psychiatric disorders, and it

is also one of the most common emotional-psychological disorders of children and teenagers (16).

When children with cancer feel this disease as a serious threat to their lives; they become extremely anxious and gradually anxiety becomes an important clinical problem in them. Symptoms of anxiety in children with cancer include sweating, palpitations, restlessness, seeking reassurance, changes in thinking (perception, worry, and concentration) and physical symptoms such as muscle tension or fatigue (17). Long-term treatments and painful chemotherapy increase these symptoms and the severity of psychological problems in children (18). The results of Mohammadi *et al.*'s study, which was conducted with the aim of determining the frequency of anxiety in children with cancer admitted to the oncology department of Hospital in Sanandaj city in 2016, showed that the frequency of anxiety disorders is higher in children with cancer (19). Also, the results of the Ardestani study, which was conducted with the aim of investigating the prevalence of behavioral and mental health disorders in children with cancer, also showed that the level of anxiety in children with cancer is higher than in children without cancer (20). It is consistent with the present study.

Another emotional index obtained from the content analysis of the drawings of children with cancer is depression. Depression as a mood disorder is characterized by decreased energy, feelings of guilt, difficulties in concentration, anorexia, and thoughts of death and suicide (21). Depression is known as one of the most common psychiatric disorders among the psychological problems associated with cancer in children and adolescents (22). Also, depression at the same time as cancer is a risk factor in reducing the survival rate of cancer patients and an important factor in non-acceptance of treatment by these patients. In general, the simultaneous occurrence of depression with cancer leaves numerous side effects in various fields of personal and social life, mental and physical health, treatment and progress of the individual's disease; Therefore, prevention, diagnosis and timely intervention in the field of depression disorder in cancer patients are of particular importance and necessity (23). The results of the study by AtariFard and his colleagues in 2012 indicate that depression is more common in children and adolescents with cancer than in healthy children and adolescents, so effective psychological interventions are necessary to reduce depression in these patients (24). Also, the results of Ardestani's study showed that the level of depression in children with cancer is higher than in children without cancer (20). These results are consistent with the present study.

The third emotional index obtained from the content analysis of the drawings of children with cancer is aggression. Aggression is a negative mental state with cognitive defects and deviations and maladaptive behaviors, this concept also refers to overt behavior, both physical and verbal, that leads to harm to another person, object or system (25). Aggression in the early years of life causes irreparable problems such as poor self-concept, impulsiveness and hyperactivity and poor academic performance. There are various factors in the child's environment, including home and care centers, which can lead to aggressive behavior in them. For example, stressful family

problems such as the loss of a loved one, moving to a new neighborhood, the difficulties of immigration, the level of exposure of the child to violence in the environment, and things such as divorce, lead to the feeling of discomfort and failure in children and children react to these tensions by using different mechanisms of adaptation, such as aggression and violence (8). In addition, children with cancer may show signs of aggression due to the restrictions caused by the cancer disease (26).

Children and teenagers show different emotional reactions to cancer; including fear of painful treatment methods, sadness and aggression, depression and anxiety. During the treatment process, they show anger and rage in front of taking nauseating drugs and frequent and long-term hospitalizations (27). Barvan (2006) showed in a study that there is a significant difference between three groups of healthy children, children with diabetes and children with cancer, in the three subscales of internal anger and anger expression and anger control. Physical illness causes more expression of anger and there is a significant difference between children with cancer and healthy children in expressing anger (28). Children with cancer show fear, anxiety and anger in front of the stressors related to the disease (29). The above results are consistent with the present study.

In a meta-analysis, 110 articles published from 1990 to 2007 were examined. In all these articles, a single topic was investigated: the symptoms and psychological problems that children and teenagers with cancer experience during and after treatment. The results of the meta-analysis indicated that there is convincing evidence that children and adolescents with cancer experience complex and multiple psychological symptoms during and after treatment. One of these symptoms is bad mood. Children and adolescents with cancer show symptoms of bad mood in the form of getting angry early, crying frequently, depression, feeling alone, feeling sorry, sadness, anxiety and fatigue (30). Therefore, according to the results of other studies and the analysis of the content of the paintings of children with cancer undergoing chemotherapy, it can be concluded that there are psychological disorders such as anxiety, depression and aggression in these children and the treatment staff's attention to the psychological care of these children is of special importance.

The limitations of the current research can be mentioned in the small number of studied samples and the lack of proper access to patients, the need for a long period of time to gain the trust of patients and establish proper communication with children with cancer. On the other hand, the limitation of the research results to a specific age period and geographical region, the lack of control of some variables such as the economic and social status of the families of the children under study, and the lack of use of random sampling methods were other limitations of the current research. Therefore, it is suggested that the current research be conducted in other geographical regions, other age groups and more samples to increase the generalization power of the findings.

Conclusion

Based on the findings of the present research, the analysis of the content of the paintings of children with cancer showed emotional indicators such as anxiety, depression and aggression, and it can be said that there are more psychological disorders related to the disease and its treatment in children with cancer under chemotherapy. Children's drawings can represent their inner world. Children show their inner conflicts with the help of drawing. In general, by using children's drawings, problems such as (depression, aggression, and anxiety) can be investigated. In order to progress in the continuation of the treatment and chemotherapy process, it is possible to provide counseling and psychotherapy classes as well as the necessary support for this group and their families.

Acknowledgments: This article is the result of a research project with code of ethics (IR.mui.research.rec.1394.413) which was approved in Isfahan University of Medical Sciences. We hereby thank and appreciate all the children participating in the research, their parents and the staff of Isfahan Medical Education Center.

Conflict of interest: None

Financial support: None

Ethics statement: None

References

- Hatam N, Bastani P, Ahmadloo N, Kiadaliri AA. Health related Quality of life in breast cancer patients undergoing current chemotherapy protocols. *J Kerman Univ Med Sci.* 2012; 19:58–49.
- Kebudi R, Ozdemir GN. Secondary Neoplasms in Children Treated for Cancer. *Curr Pediatr Rev.* 2017;13(1):34-41. DOI: [10.2174/1573396313666161114233135](https://doi.org/10.2174/1573396313666161114233135).
- Li HC, Lopez V, Joyce Chung OK, Ho KY, Chiu SY. The impact of cancer on the physical, psychological and social well-being of childhood cancer survivors. *Eur J Oncol Nurs.* 2013;17(2):214-9. doi: 10.1016/j.ejon.2012.07.010 pmid: 22898653.
- Shelmerdine SC, Chavhan GB, Babyn PS, Nathan PC, Kaste SC. Imaging of late complications of cancer therapy in children. *Pediatr Radiol.* 2017; 47(3):254-266. doi: 10.1007/s00247-016-3708-6.
- Linder LA, Hooke MC. Symptoms in Children Receiving Treatment for Cancer-Part II: Pain, Sadness, and Symptom Clusters. *J Pediatr Oncol Nurs.* 2019; 36(4):262-279. doi: 10.1177/1043454219849578.
- Jangi S, Shirabadi A, Ansarhosein S, Alizadeh Ghoradel J. Efficacy of painting therapy in reducing aggression in children with conduct disorder, *Journal of Kermanshah University of Medical Sciences.* 2014; 18(8), 443-451. (Persian)
- Faramarzi S, Moradi MR. The effectiveness of art therapy with paint approach on reducing the hopelessness and solitude of deaf children. *Audiology* 2015;23(6):25-31.
- Hockenbary MJ, Wilson D. Wong's nursing care of infant and children. 11th edition. st.Louis: Mosby Elsevier, last edition 2019; Pp:981,125,664.
- Anna Oliverioferrari. Children's drawing and its concepts. Translation: Abdolreza Sarafan. Tehran: Dostan Publications. 14th edition. 2018; Pp: 125-120.
- Jafar Nazari, Shagaig Tilab. The art of painting interpretation. Tehran: Andisheh Arshad Publications. First Edition. 2018; Pp: 20-42.
- Mahnaz Hajlo. Analysis of children's drawings: analysis of symbolic meanings and drawing elements (house, tree, person test, colored dummy test, family drawing test). Tehran: Qaseidah Publications. Eighth edition 2015.
- Glynn Thomas, Angela M.J. Silk. An introduction to the psychology of children's drawing. Translation: Mohammad Taghi Faramarizi. Tehran: New World Publications. Fifth Edition 2019.
- Burkitt E, Barnett N. The effects of brief and elaborate mood induction procedures on the size of young children's drawings. *J Educ Psychol.* 2006; 26(1): 93-108.
- Kushan M, Vaghei S. Mental Health. Andishe Rafi Publications, 15th edition, 2022; page 240.
- Dean E. Anxiety. *Nurs Stand.* 2016 Jul 13;30(46):15. doi: 10.7748/ns.30.46.15.s17. PMID: 27406490.
- Bartik K & Toruner EK. Effectiveness of a preoperative preparation program on children's emotional states and parental anxiety. *Journal of PeriAnesthesia Nursing.* 2018; 33(6), 972–980. <https://doi.org/10.1016/j.jopan.2017.09.008>
- Harris, C.A. and S.G. Zakowski, Comparisons of distress in adolescents of cancer patients and controls. *Psycho- Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer,* 2003;12(2): Pp: 173-182.
- Bolton, P., et al., Interventions for depression symptoms among adolescent survivors of war and displacement in northern Uganda: a randomized controlled trial. *Jama,* 2007; 298(5): Pp:519-527.
- mohammadi bahram H. Frequency of anxiety in children and adolescents with cancer admitted in oncology ward of Besat hospital. *Zanko J Med Sci* 2019; 20 (66) :25-34.
- Ardestani M. Investigating the prevalence of behavioral disorders and mental health of children with cancer. *Journal of Research of Nations.* 2017; 2(19): 137.
- Mullen S. Major depressive disorder in children and adolescents. *The mental health clinician,* 2018; 8(6), 275–283. <https://doi.org/10.9740/mhc.2018.11.275>.
- Matziou V, Perdikaris P, Galanis P, Dousis E, Tzoumakas K. Evaluating depression in a sample of children and adolescents with cancer in Greece. *Journal of International Nursing Review* 2008; 55, 314–319.

23. Banki Y, Abedin AR, Monirpour N. Examines the role of cognitive variables in depressed adolescents with cancer. *Journal of Health and Psychology* 2011;1(1).
24. Atrifard M, Zahiredin A, Dibaei S, Zahed G. Comparing depression in children and adolescents with cancer with healthy ones. *URMIA Medical Journal* 2014;25(1):21-31.
25. Sangani A, Talebzadeh M, Jangi P, Ramek N, Homayoni A. The Role of aggression and self-compassion in the forgiveness in the Mother Assistants of the Rehabilitation Centers for Mentally Retarded People. *JOEC* 2019; 18 (4) :31-40. URL: <http://joec.ir/article-1-730-en.html>
26. Liu, H., Lin, X., Huang, T., Song, L., Zhu, C., Ma, H., Long, T., Zeng, H., Li, R., Wang, H., Huang, Y., Chen, L., Wu, X. A short peptide reverses the aggressive phenotype of prostate cancer cells. *European Journal of Pharmacology*,2018; 838: 129-137.
27. Kupst MJ, Patenaude AF. The psychiatric and psychological dimensions of pediatric cancer symptom management. *Charlottesville V A.* 2009; 130-139.
28. Brown TA. *Confirmatory Factor Analysis for Applied Research.* New York: Guilford Press; 2006;Pp:97.
29. McCulloch R, Comac M, Craig F. Paediatric palliative care: coming of age in oncology? *Eur J Cancer.* 2008;44(8):1139-45.
30. Ruland CM, Hamilton GA, Schjodt-Osmo B. The complexity of symptoms and problems experienced in children with cancer: a review of the literature. *J Pain Symptom Manage.* 2009;37(3):403-18.