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A Comparative Study of the Components of Quality of Life and Adjustment in Both Cancer-stricken and Healthy Children: A Cross-sectional Study in Kermanshah City, Iran

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Abstract

Background: According to the results of epidemiological studies, human beings from various races, colors, cultural, educational and economic backgrounds are affected by cancer worldwide, thereby encouraging researchers to conduct extensive studies in this regard. We aimed to compare the components of quality of life and adjustment in both cancer-stricken and healthy children.

Materials and Methods

In this descriptive-comparative study, the statistical population consisted of two groups: 10-19-year-old children, diagnosed with leukemia, who were referred to Kermanshahi Children's Hospital based in Kermanshah, Iran, and healthy students in elementary, secondary and high schools in Kermanshah. As for the sample population, 80 subjects were selected from each group through convenience sampling. As for data collection, the World Health Organization Quality of Life (WHOQOL) scale, and the Adjustment Inventory for School Students (AISS) scale were employed.

Results: Mean of quality of life in healthy female subjects measured 105.93±10.70, which exceeded that of subjects with cancer. In contrast, the mean of adjustment of girls in the normal group was 19±5.12, which was better than that of subjects with cancer. Furthermore, in terms of the components of adjustment, the male subjects in the cancer group had the highest mean and standard deviation (12.20±1.37), which was an indication of their lack of compatibility. Besides, the results of MANOV revealed that there were significant differences between the two groups in terms of the components of quality of life and adjustment at the significance level of $P<0.001$.

Conclusion

According to the findings, children with cancer had significantly lower levels of quality of life and adjustment in comparison with healthy children.

Key Words: Adjustment, Cancer, Children, Iran, Quality of Life.

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1- INTRODUCTION

Nowadays, with the advancements in medical science and its related technologies, cancer has become a chronic disease in more than half of the cases of children and adolescents diagnosed with this issue (1, 2). Cancer is the second leading cause of death in children after accidents (3). This disease accounts for about four percent of deaths under five years of age and 13% of deaths in Iranian children aged between 5 and 15. However, childhood cancer is considered a curable disease. For instance, according to the Iranian Cancer Society, 80% of today's patients are fully recovered, and if they see a doctor on time, there will be a 95-percent chance of survival (4). Cancer is regarded as a chronic and life-threatening illness with a long-term process, and the uncertainty about the outcome of the illness can lead to many stresses in adolescents (5).

Although the term 'cancer' is not synonymous with death nowadays, the patient's life changes from the moment that he/she is diagnosed with cancer (6), and his/her quality of life is disrupted through unpleasant conditions such as nausea and vomiting. It should be mentioned that the lack of proper control over these complications can exacerbate the negative effects on the quality of life of patients and may neutralize any benefits of the rise in survival level due to the high side effects costs (7). Koller et al. (8) reported that the quality of life in cancer patients was significantly reduced after radiotherapy.

In addition, the results of a study conducted by Nazari et al. (9) demonstrated that the quality of life, anxiety and depression in children and adolescents with cancer were significantly different from the non-patient children and adolescents. The quality of life is so important that it is described as the major goal of therapeutic considerations and the greatest importance is for patients with chronic illnesses who are not definitely treated (10). Despite such evidence, concerns about the problems of people with cancer and their families are on the rise. Research suggests that people with cancer suffer from a wide range of psychological symptoms in the early and late months of diagnosis, and for the most part, it is extremely difficult to adapt to the illness (11). The quality of life in cancer patients results from the interactions between health variables and psychosocial variables. Concerns about the quality of life and psychosocial needs of these patients have noticeably increased over the past decade because so little attention has been paid to the emotional and social adjustment of these people. What makes this area of study interesting to researchers is the ability of cancer patients to cope with the surrounding environment since the social environment can enhance their health and protect them from the negative effects and stressors associated with the disease (12).

This chronic disease may isolate patients, affect their social adjustment, limit their social activities and even in some cases, the patients avoid talking about their illness and concerns (13). Mosher and Danoff-Burgin (2006) reported that social support, type of treatment and age factor could affect the social adjustment of these patients (14). Today, the evaluation of the disease treatment should include assessing its impact on health and quality of life (15). On the other hand, the quality of life in cancer patients results from the interaction of health and psychosocial variables (6). In a specific sense, adjustment denotes the enjoyment of interpersonal relationships and working in ways that personal goals are met (8). In general, adjustment can be defined as the ability to adapt, compromise, co-operate and cope with oneself, the environment and others (15, 16). Given the specific situations that cancer patients face, it can

be assumed that one's adjustment is significantly affected by cancer. For example, the incidence of hair loss due to chemotherapy or the side effects of anti-cancer drugs prevents the proper relationship of these people with their friends and the community. Considering the said issues, the present study aimed to compare the components of quality of life and adjustment in both cancer-stricken and healthy children.

2- MATERIALS AND METHODS

2-1. Study design and population

In this descriptive-comparative study, the statistical population consisted of two groups. The first group consisted of 10 to 19 year-old children, diagnosed with leukemia, who were referred to Kermanshahi Children's Hospital based in Kermanshah, Iran, in 2017. In contrast, the second group included all students from the Kermanshah-based ordinary schools.

2-2. Methods

As for the sample population, 80 subjects were selected from each group through convenience sampling.

2-3. Measuring tools

2-3-1. World Health Organization Quality of Life (WHOQOL)

The scale of WHOQOL is 100 (17), which was extracted from the original form by Mousavi et al. (2010), and was shortened into a 26-item questionnaire with four categories (18): 1. Physical health (seven questions), 2. Psychology (six questions), 3. Social relations (three questions), and 4. Life style (eight questions). It should be noted that the first two questions of this questionnaire do not belong to any of the categories and generally assess the health condition and quality of life. In the original version of the questionnaire (19), the internal consistency was used based on the Cronbach's alpha coefficient to assess reliability, which was as follows: 0.87 for physical health, 0.74 for mental health, 0.55 for social relationships, 0.55 for health, and 0.74 for environmental health. These coefficients are all indicative of the optimum reliability of the test. In an Iranian research, the Cronbach's alpha coefficient for the subscales of physical health, mental health, social relations, and environmental health measured 0.70, 0.73, 0.55, and 0.84, respectively. In addition, the scores of 130 and 26 were indicative of high and low quality of life, respectively (17). In the present research, the Cronbach's alpha coefficient for the subscales of physical health, mental health, social relations and environmental health measured 0.70, 0.69, 0.55, and 0.85, respectively.

2-3-2. The Adjustment Inventory for School Students (AISS)

This questionnaire is a paper-pencil self-report tool by Sinha and Singh (18), which was edited and translated by Karami in 1998 (20). This 60-item questionnaire was designed in the form of Yes and No questions, which distinguishes between well-adjusted students and weak ones in three fields of adjustment (social, emotional, and educational). In practice, a higher score denotes more incompatibility. In this questionnaire, for responses that are indicative of adjustment in three fields, a score of zero is considered. Otherwise, a score of one is considered. Moreover, the reliability coefficient of the original version of the questionnaire has been reported 0.95, and 0.93 through split-half method, and test-retest reliability, respectively (15). As for the Persian version of the tool, the validity was confirmed by a group of psychologists through internal consistency (0.90 and 0.91) (21). In the present study, the Cronbach's alpha for the social, emotional and educational subscales measured 0.93, 0.94, and 0.96, respectively.

2-4. Procedure

To commence the study, the required permits were obtained from both Kermanshahi Children's Hospital and the Vice Chancellery for the Department of Research and Technology at Kermanshah University of Medical Sciences. Then, the questionnaires were distributed among the target sample. To this end, the objectives of the present study were explained to the target subjects, and they were assured that their information would be kept confidential.

2-5. Ethical consideration

Participation in the study was voluntary, and informed consent was obtained from all participants before the study began.

2-6. Inclusion and exclusion criteria

The inclusion criteria were agreement to participate in the research, being in the 10-19 year age range, the ability to fill in questionnaires, cancer patient diagnosed with leukemia, and lack of physical or mental illness in the case of healthy children based on the information presented in the records at school. In contrast, the exclusion criteria were suffering from other illnesses and mental disability at the same time as leukemia.

2-7. Data Analyses

Data were analyzed through the descriptive statistics (percentage, mean, and standard deviation) and inferential statistics (MANOVA). In addition, the data were analyzed using the SPSS Statistics Software Version 23.0.

3- RESULTS

In the present study, 160 children participated in the study (80 girls and 80 boys). In **Table.1**, the distribution frequency and percentage of participants are reported. The results of the present study demonstrated that the mean and standard deviation (SD) of quality of life in healthy female subjects measured 105.93±10.70, which exceeded that of subjects with cancer. In contrast, the mean and standard deviation of adjustment of girls in the normal group was 19±5.12, which was better than that of subjects with cancer. Further, the components of quality of life, including mental health, physical health, health of social relationships and health of the living environment in the normal group had higher mean scores than the patient group (**Table.2**).

Besides, prior to conducting MANOVA, the Levin's test was used to observe the defaults of this analysis. Note that if two groups are equal or greater than 40 subjects, it is not necessary to observe the avoidance of the equality of equivalence of variance (Levine), and consistency of covariance (Box's M test). Here, the homogeneity of variance was observed. Therefore, the use of multivariate variance analysis was possible (**Table.3**).

The results of MANOVA revealed that there was a significant difference between the normal and patient groups in terms of quality of life and adjustment ($p<0.001$), and the statistical power of 42% also showed that the sample size was sufficient for analyses (**Table.4**). The difference between the groups under study (normal and sick children) was significant in terms of the subscales of quality of life and adjustment at $p<0.001$ (**Table.5**).

Table-1: The Participants' baseline Characteristics.

Variables	Healthy Children	Children with Cancer	Total
	Frequency (%)	Frequency (%)	Frequency (%)
Girl	53 (33%)	53 (33%)	106 (66%)
Boy	27 (17%)	27 (17%)	54 (34%)
Elementary school	7 (3.2%)	7 (3.2%)	14 (6.4%)
Secondary school	28 (20.4%)	28 (20.4%)	56 (40.8%)
High school	45 (28%)	45 (28%)	90 (56%)

Table-2: The Mean of Quality of Life and Adjustment Dimensions.

Variables	Healthy children		Children with cancer	
	Girls	Boys	Girls	Boys
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Mental Health	29.13 ± 3.29	28.60 ± 4.01	11.87 ± 2.13	11.60 ± 2.38
Physical Health	24.07 ± 3.34	23.53 ± 3.75	10.40 ± 2.23	10.27 ± 2.28
Health of Social Relationships	11.20 ± 1.74	12.07 ± 2.71	5.27 ± 1.58	5.47 ± 1.45
Living Environment Health	32.20 ± 3.34	31.67 ± 4.08	14.33 ± 2.82	14.20 ± 3.52
Emotional Adjustment	5.27 ± 2.49	9.20 ± 3.66	11.67 ± 2.12	12.20 ± 1.37
Social Adjustment	7.13 ± 2.20	8.73 ± 2.71	9.47 ± 1.80	8.73 ± 1.33
Educational Compatibility	6.40 ± 2.29	8.33 ± 2.38	9.47 ± 1.80	9.40 ± 1.88

SD: Standard deviation.

Table-3: The Results of Levin's Test on the Adjustment and Quality of Life of Subjects under Study.

Variables	F	df 1	df 2	P-value
Compatibility	15.04	1	58	0.21
Quality of Life	5.41	1	58	0.24

F: Levin's test; df: degree of Freedom.

Table-4: The Summary of MANOVA for the Components of Quality of Life and Adjustment in Subjects under Study

Test	Value	F	dfh	dfe	P-value	Test power
Pillai trace	0.428	13.98	3	56	0.001	0.42
wilks lambda	0.572	13.98	3	56	*0.001	0.42
Hoteling trace	0.749	13.98	3	56	0.001	0.42
Roys largest rot	0.749	13.98	3	56	0.001	0.42

F: MANOVA, dfh: degrees of freedom for the hypothesis, dfe: degrees of freedom for error.

Table-5: The Results of MANOVA for the Components of Adjustment in Subjects under Study.

Dependent variable	Sum of Squares	df	Mean of Squares	F	P-value	Power test
Emotional Adjustment	331.35	1	331.35	39.77	0.001	0.40
Social Adjustment	20.41	1	20.41	4.47	0.039	0.07
Educational Adjustment	64.06	1	64.06	13.44	0.001	0.18
Mental Health	4403.26	1	434.82	315.88	0.001	0.88
Physical Health	2720.26	1	2720.26	315.88	0.001	0.84
Health of Social Relationships	586.06	1	586.06	158.22	0.001	0.73
Living Environment Health	4681.66	1	4681.66	400.65	0.001	0.87

df: degree of Freedom, F: MANOVA.

4- DISCUSSION

The present study aimed to compare the components of quality of life and adjustment in both cancer-stricken and healthy children. The results indicated that there were significant differences between the two groups under study in terms of the components of quality of life and adjustment. The results demonstrated that quality of life was lower in children with cancer, which was consistent with the results of earlier studies (6, 9, 13, 22, 23). While struggling with the disease, in addition to body involvement and depletion of physical strength and ability, the patients become mentally and socially vulnerable, and their quality of life is reduced due to the continuation of the disease. As Malkina et al. (2008) stated, higher quality of life would result in a reduction in stress and a rise in the body's defense against physical illness (24). Nuri et al. (25), showed that coronary patients did not have a good quality of life and patients who had a good lifestyle and quality of life hoped for improvement and life expectancy more than the others.

Accordingly, quality of life acts as a mediator and affects the human body and mind. Therefore, when people are exposed to low quality of life, their physical, psychological, social and environmental aspects are likely to be more exposed to physical illnesses, including cancer. Moreover, the results revealed that children with cancer had less adjustment. This finding is consistent with the results of earlier studies (15, 26, 27). Cancer adjustment is a continuous process in which cancer patients are challenges numerous with faced in solving illness problems, their threshold of tolerance is lowered and the ability to adjust to those around them is ultimately reduced. Furthermore, reactions are often inappropriate and excessive to the issues, they become bored, and they sometimes talk about their illness and avoid others with the aim of hiding their illness from them. According to the results of epidemiological studies, human beings from various races, colors, cultural, educational and economic backgrounds are affected by cancer worldwide (23). Through provision of social support, cancer patients' adjustment can be boosted, the psychological effects of the disease can be reduced, and their quality of life can be improved. The results of a study conducted by Khanjari et al. (2013) on 30 children with cancer, aged between 9 and 12 years old, demonstrated that cancer could affect the levels of adjustment (28). Research indicates that 50 to 80 percent of cancer patients simultaneously suffer from a psychiatric disorder (29), which was confirmed in the present study. The study, like any other research, had some limitations. One of the limitations was the small size of the sample. Hence, extreme caution should be exercised regarding the generalization of the results to other communities.

In addition, due to the large number of questions, it is recommended that alternative methods such as interviews be used instead of self-assessment tools. Another limitation of the present study was the use of convenience sampling, which may not be generalized to other patients and areas. Therefore, it is suggested that in subsequent studies, a sample of the whole society be randomized.

5- CONCLUSION

According to the findings of the present study, it can be concluded that children with cancer have significantly lower levels of quality of life and adjustment in comparison with healthy children. Given the effects of psychological factors in improving cancers, especially in children, it is highly recommended that psychological treatments and drug therapies be applied together towards boosting the quality of

life and adjustment in this group of patients.

6- CONFLICT OF INTEREST: None.

7- ACKNOWLEDGMENTS

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