

“Vitality” a Missing Link in Adjustment to Childhood Cancer

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Abstract

Background: A number of randomized trial studies and longitudinal researches emphasize that despite problems in social adjustment and cognitive damages, children with cancer demonstrate good emotional adjustment.

Methods: Most of the research findings in this area are obtained using objective tools such as questionnaires. “Vitality of children”, as a drawing tool, was used as a basis to draw a comparison between children with cancer and healthy children in this study. Accordingly, 112 children with cancer (5 girls and 57 boys aged 3 to 12 years) and 123 healthy children (77 girls and 46 boys aged 3 to 12 years) participated in the study.

Results: Findings showed that the vitality of the two groups differed significantly. Perhaps, children with cancer repress negative emotions and avoid expressing their feelings. MANOVA was used to compare the vitality scores between groups and to explore the impact of different variables.

Conclusion: Making use of such tools that indirectly examine the emotional experience of children with cancer would be beneficial. Neglecting this issue can cause children with cancer to be deprived of receiving supportive counselling.

Key words: Child; Malignancy; Emotions; Vitality

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Introduction

Dramatic increase in the number of survivors of childhood cancer over the last decades has increased the need to investigate the consequences of the disease and its treatment [1].

Pioneer researches pointed out the cognitive damage impact of malignancy and treatment in children with cancer [2]. For example, cancers of the central nervous system (CNS) and treatment side effects are associated with a number of dysfunctions in neurologic, endocrine, and neurocognitive areas [3]. At the same time, researchers found out that children with cancer would have more social problems than healthy children. Also, they have difficulty maintaining friendships during treatment course. After recovery from illness, such survivors are slightly less likely than expected to attend college, and are more likely to be unemployed and not to get married as young adults do [4, 5]. However, suddenly the direction of researches changed as studies demonstrated no differences between survivors and control groups in adjustment; even,

children with cancer are at times better treated than healthy children [6].

For instance, children with cancer did not have an increased prevalence of anxiety in comparison to children without cancer [7]. In addition there were no significant differences between the depression scores of children with cancer and healthy children [8]. Despite traumatic experiences, most studies have not shown a significant elevation in levels of post-traumatic stress symptoms (PTSS) in the pediatric cancer population [9, 10, and 11]. Investigation about the quality of life was to some extent dissimilar, showing no insignificant differences between survivors and controls in psychological distress or Health-related quality of life (HRQOL). However, survivors with the highest level of treatment intensity, low age at diagnosis, recurrent malignancy and other factors influenced distress rate and Health-related quality of life (HRQOL) [12].

Phips [13] comes up with “repressive adaptive style” as one pathway to resilience in this population. He believes adaptive style is a much stronger

Table 1. General characteristics of the study sample

	Children with cancer (%)	Healthy children (%)
Age	Mean:9.3	Mean: 9.6
Sex:		
Girls	49.11	62.6
boys	50.89	37.4
Grade:		
Preschool	60.71	41.9
primary	39.29	58.1
Duration of disease	Mean: 3.8 year	-
Duration of hospital stay	Mean: 2 weeks	-
Residency:		
Tehran	39.2	100
Other cities	60.8	

Table 2. Comparison of vitality test subscales between groups

Components of vitality in drawing	Group	X	SD	F statistic	P-value
force	Cases	46.25	23.59	277.87	0.000
	controls	73.15	22.03		
color	Cases	54.76	17.11	31.51	0.000
	controls	79.84	14.10		
content	Cases	39.53	34.35	71.67	0.000
	controls	61.81	39.89		
structure	Cases	81.81	11.6	3.57	0.344
	controls	81.63	12.3		
total score	Cases	83.63	21.31	33.93	0.000
	controls	99.88	2.5		

predictor of psychosocial outcomes. Other researchers suggest patients who were treated very young, or understood little of what was happening, report a degree of self protection [14]. Attention bias is another explanation to good adjustment in children with cancer [15]. In the other words, children with cancer do not pay attention to negative stimuli.

Perhaps, the confusion among findings originates from focusing on measures of maladjustment and depression, rather than health components. Furthermore, not a lot of attention has been paid to positive psychological aspects. Vitality is defined as "a subjective feeling of aliveness that arises from feelings of freedom, autonomy support, and intrinsic motivation [16]. In this study, we investigate psychological vitality in children with cancer. If malignancy and its treatments do not affect emotional adjustment, children with cancer and control groups must be identical in vitality.

Materials and Methods

Dictionary - Participants

One hundred and twelve (girls=55; boys=57) children with Acute Lymphoblastic Leukemia (ALL) participated in this study. Potential participants were

identified from the list of Outpatient Chemotherapy Room and were selected randomly. Eligibility criteria for inclusion in the original study were: 1) the child was between 3 and 12 years of age, 2) the child was diagnosed with Acute Lymphoblastic Leukemia (ALL), 3) the child was undergoing chemotherapy. From the initial list of potential participants, three children did not take part in the research. One hundred and twenty three healthy children (girls=77; boys=46), who were almost identical to experimental group, had been selected from four pre-schools.

Procedure

Samplings of experimental groups were selected among patients admitted in a specialized pediatric oncology center (Mahak Hospital). The control groups were chosen among four elementary schools in Tehran. Both groups were matched by age, gender and socioeconomic status. Before performing the test, parents signed the Consent Form to participate in this research. The test was carried out between 9 to 11 Am. every day (for the control of time), except holidays. The control group like the children with cancer performed the test individually. In this

Table 3. MANOVA general F-test and factors of vitality test

Factor	F statistic	P-value	Eta squared
Age	6.776	0.000	0.10
Sex	2.197	0.74	0.041
Duration of disease	3.197	0.000	0.11
Duration of hospital stay	1.88	0.000	.012
residency:			
Tehran	0.02	0.35	0.017
Other cities	0.34	0.42	0.015
Financial situation	5.84	0.000	0.046

Table 4. MANOVA Univariate test

Vitality subscales	Factors	F statistic
Force	Age	7.81
Color		5.38
Content		4.83
Force	Duration of disease	9.96
Color		8.54
Content		6.60
Force	Duration of hospital stay	7.15
Color		8.92
Content		6.98
Force	Financial situation	8.82
Color		15.95
Content		6.91
Structure		13.73
Content	Sex	1.33

investigation, A4 white papers and 24 count sets of colored pencils were utilized.

We requested children to draw “themselves” and asked them to explain about their paintings.

Measure

Children’s Vitality Test is a drawing test for measuring subjective vitality that is reflected in the drawings created by children [17]. This test has four components and seven items. For example, forcing on the paper shows the level of energy, and colors indicate emotional disruption or emotional vitality. Every item takes score in 3-point scales based on the protocol. Also the calculated Cronbach’s alpha for the test was 0.83 using $p < 0.05$ which is suitable.

Results

General characteristics of the study sample

The total number of the studied cases was 235 which included children with cancer and healthy children as illustrated in table 1. Their ages ranged 3-12 years and the mean was 9.3 for cases and 9.6 for control group. 49.11% of the cases included girls vs. 62.6% of healthy group and 50.89% of cancer group included boys vs. 37.4% of healthy group. Most of the cancer group (60.71%) didn’t start

school education, not because they were under education age but due to the fact that the children with cancer had to deal with illness and treatment. The participants who were student (39.29%) had to go on their education in withdrawal period. The median duration of illness from symptom onset to the time of this evaluation, was 3.8 years. The mean of last hospital stay period for cancer group was 2 weeks. About 39.2% of participants (cancer group) were resident in Tehran and the others came from other cities.

Vitality test

The prediction of the difference between children with cancer and the control group in vitality level was supported.

Table 2 revealed that children with cancer had significantly worse mean scores in most of vitality test subscales (except for structure) when compared to healthy children. The most striking differences were observed in the force subscale (46.25 vs. 73.15), color (54.76 vs. 79.84) and content (39.53 vs. 61.81). The difference between structures of drawing was not significant (81.81 vs. 81.63). The overall statistical test ($P < 0.001$) was significant for the four subscales, indicated that children with cancer

demonstrate a decreasing level of vitality in comparison to healthy children.

MANOVA indicated a significant impact of age ($F= 6.77, p < 0.001$), duration of disease ($F= 3.197, p < 0.001$), duration of hospital stay ($F= 1.88, p < 0.001$) and financial situation ($F= 5.84, p < 0.001$), on vitality of children with cancer. Sex and residency were not statistically significant ($F= 2.197, p= 0.74$) and ($F= 0.02, P= 0.35; F=0.34, P= 0.42$). Respectively, as shown in table 3, Eta square describes the proportion of total variability according to a given factor.

The results of the univariate analysis are shown in table 4. Age of the child was associated significantly with force ($F= 7.81, P < 0.05$), colour ($F= 5.38, P < 0.001$) and content ($F= 4.83, P < 0.05$). Also duration of disease and duration of hospital stay were associated to a poorer vitality in three of areas of the vitality domains including: Force, Colour and Content ($F= 9.96, P < 0.05; F= 8.54, P < 0.05$ and $F= 6.60, P < 0.05$) and ($F= 7.15, P < 0.001; F= 8.92, P < 0.001$ and $F= 6.98, P < 0.001$). Notably, financial situation had a significant impact on poorer vitality in all Vitality domains ($F= 8.82, P < 0.05; F= 15.95, P < 0.001; F= 6.91, P < 0.05$ and $F= 13.73, P < 0.001$). The only domain that was significantly effected by variable of sex was Content ($F= 1.33, P < 0.05$).

Conclusion

Prior researches have shown children with cancer report fewer symptoms of emotional problems such as depression, in many cases significantly fewer than their healthy peer controls [14]. Results of the present paper did not confirm the previous findings that children with cancer demonstrated lower vitality in comparison to the controls. The reduction in the level of children's vitality is the result of several factors.

Firstly, most participants in the experimental group were treated with chemotherapy. Fatigue and insomnia are amongst the side effects of chemotherapy [18], which both deplete psychological energy and lead to decreasing vitality. In addition, the chemical effects of these drugs on the body cause mobility to decrease and energy to exhaust. Secondly, most children in the hospital are undergoing painful treatments such as injections [12]. Separately, pain acts as a risk factor for reducing vitality. Thirdly, to prevent the illness from degeneration, parents do not allow children to perform physical activities in the hospital and at home, encouraging sedentary behaviours. This reduces opportunities for the physical activities, which allow energy loss [19]. Finally, children in the

hospital are isolated from family members and friends, limiting the communication with network of friends which leads to depression, as well as energy exhaustion.

There are some justifications which clarify the difference between our findings and other results. Foremost, most of the researches in the field of pediatric psycho-oncology are designed based on either self report or other types of reports. In this study, we used "children's vitality test" which is a drawing test to reflect the real feelings of children. Second of all, many studies have focused on the psychological characters of survivors regarding childhood cancer and have paid less attention to children in the hospital. Findings may not be generalizable to hospitalized children population. In addition, maybe defensive mechanisms, such as repressive adaptation [6], play an important role to deny reality. Perhaps children with worse physical condition had lost their lives before adulthood.

Thirdly, lack of psychopathology such as PTSD or depression does not reflect emotional health. Concentrating on positive variables (for instance, vitality), provides useful knowledge about children with cancer and allows the development of diverse treatment strategies in order to improve their quality of life.

Finally, sometimes children express their emotional problems in different ways, such as lack of interest to play, longing for snacks, nagging, or stopping speaking (mothers reported when we were collecting data). Therefore, self report is not enough to conclude that children with cancer are completely well adjusted.

This paper proposes two implications. Firstly, hospitalized children with cancer demonstrate less vitality in comparison to their peers. Consequently future researches should be more focused on the identification of the risk factors involved. Secondly, intervention and treatment plans must be designed to elevate vitality. Treatment plans, such as improving hospital environments, providing children with the opportunity to play, designing special computer games, and providing happiness to mothers, are amongst techniques that can improve vitality in children with cancer.

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Conflict of Interest

The authors have no conflict of interest.

Authors' Contribution

MF conceived and designed the study, interpreted the results and drafted the manuscript. MAB participated in revising the manuscript. HF and AGR gathering and analyses the data. All authors read and approved the final revision.

References

1. Bruce M. A systematic and conceptual review of posttraumatic stress in childhood cancer survivors and their parents. *Clinical Psychology, Review*. 2006;26: 233-56.
2. Mulhern RK, Fairclough D, Ochs J. A prospective comparison of neuropsychologic performance of children surviving leukemia who received 18-Gy, 24-Gy or no cranial radiation. *Journal of Clinical Oncology*. 1991;9:1348-56.
3. Naomi W. Neuro-cognitive outcome in survivors of pediatric cancer. *Pediatrics*. 2011;23: 27-33.
4. Gurney JG, Krull KR, Kadan-Lottick N, Nicholson HS, Nathan PC, Zebrack B, et al. Social Outcomes in the Childhood Cancer Survivor Study Cohort. *Journal of clinical psychology*. 2009; 27:230-9.
5. Noll RB, Marsland A, Cheong J, Bukowski WM. Peer Relationships of Children with Cancer: Homophily and Social Acceptance. *Master of Science*. 2010;30:101-19.
6. Phipps S, Larson S, Long A, Rai SN. Adaptive style and symptoms of posttraumatic stress in children with cancer and their parents. *Journal of Pediatric Psychology*. 2006;31:298-309.
7. Wogelius P, Rosthoj S, Dahllof G, Poulsen S. Dental anxiety among survivors of childhood cancer: a cross-sectional study. *International journal of pediatric dentistry*. 2009;19:121-6.
8. Bragado C, Hernández-Lloreda MJ, Sánchez-Bernardos ML, Urbano S. Physical self-concept, anxiety, depression, and self-esteem in children with cancer and healthy children without cancer history, *Psicothema*. 2008;20:413-9.
9. Langveld NE, Grootenhuis MA, Voute PA, Haan RJ. Posttraumatic stress symptoms in adult survivors of

childhood cancer. *Pediatric Blood Cancer*. 2004;42:604-10.

10. Phipps S, Jurbergs N, Long A. Symptoms of post-traumatic stress in children with cancer: Does personality trump health status? *Psycho-oncology*, 2010; 18: 992-1002.

11. Rourke MT, Hobbie WL, Schwartz L, Kazak AE. Posttraumatic stress disorder (PTSD) in young adult survivors of childhood cancer. *Pediatr Blood Cancer*. 2007;49:177-82.

12. Kazak AE, De Rosa BW, Schwartz LA, Wendy HW, Carlson C, Ittenbach RF, et al. Psychological Outcomes and Health Beliefs in Adolescent and Young Adult Survivors of Childhood Cancer and Controls. *Journal of clinical oncology*. 2010;28:202-7.

13. Phipps S, Larson S, Long A, Rai SN. Adaptive style and symptoms of posttraumatic stress in children with cancer and their parents. *Journal of Pediatric Psychology*. 2006;31:298-309.

14. Dejong, M, Fombonne, E. Depression in pediatric cancer: An overview. *Psycho-Oncology*. 2006;15:553-66.

15. Derryberry D, Reed MA. Regulatory processes and the development of cognitive representations. *Development and Psychopathology*. 2011;8:215-34.

16. Ryan RM, Frederick C. On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*. 1997; 65:529-65.

17. Firoozi M, Besharat MA. Reliability, factorial analysis of Children's Vitality Test. *Contemporary psychology*. 2010;8:34-40.

18. Judy A, Rollins JA. The Influence of Two Hospitals' Designs and Policies on Social Interaction and Privacy as Coping Factors for Children With Cancer and Their Families *Journal of Pediatric Oncology Nursing*. 2009;26(6):340-53.

19. Hills A, King N, Armstrong T. The Contribution of Physical Activity and Sedentary Behaviours to the Growth and Development of Children and Adolescents: Implications for Overweight and Obesity. *Sports Medicine*. 2007;37(6):533-45.