Level of Depression and Anxiety among School Age Children with Acute Lymphoblastic Leukemia under Chemotherapy Treatment at Pediatric Teaching Hospitals in Baghdad City

مستوى الإكتئاب والقلق لدى الأطفال في سن المدرسة المصابين بإبيضاض الدم اللمفاوي الحاد تحت العلاج الكيميائي في مستشفيات الأطفال التعليمية في مدينة بغداد

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المستخلص

الأهداف: لتقييم مستوى الاكتئاب والقلق لدى الأطفال في سن المدرسة المصابين بإبيضاض الدم الليمفاوي الحاد تحت العلاج الكيميائي ومعرفة العلاقة بين مستوى الإكتئاب والقلق بين الأطفال المصابين وخصائصهم الديموغرافيه.

منهجية البحث: أجريت دراسة وصفية مقطعية على الأطفال في سن المدرسة المصابين بأبياض الدم الليمفاوي الحاد تحت العلاج الكيميائي وأعمارهم بين ٦ سنوات إلى ١٢ سنة. خلال الفترة (من ١٩ سبتمبر ٢٠٢٠ إلى ١ مارس٢٠٢١). اختيرت عينة غير احتمالية (غرضيه) من ١١٤ طفلاً مصابين بإبيضاض الدم الليمفاوي الحاد تحت العلاج الكيميائي.. تم تصميم الاستبيان المكون من جزأين: الجزء الأول يتضمن على قسمين تناول البيانات الديموغرافية للأطفال ، ومعلومات عن المرض للأطفال ، والجزء الثاني يتضمن مقياس القلق والاكتئاب في المستشفى . حدد ثبات الاستبانه من خلال اجراء الدراسة المصغرة وحددت مصداقيتها من خلال مجموعة خبراء بالاختصاص (١٢) خبير، وجمعت البيانات من خلال الاستبانة، استخدم الاحصاء الوصفي لتحليل البيانات.

النتائج: بينت نتائج الدراسة الحالية إلى أن مستوى الاكتئاب والقلق كان متوسط لدى معظم الأطفال المصابين بسرطان الدم الليمفاوي الحاد ، ولا توجد دلالة بين مستوى الاكتئاب والقلق والخصائص الديموغرافية للأطفال..

التوصيات: إنشاء مركز متخصص بمعالجة القلق والكآبة للاطفال المصابين بإبيضاض الدم اللمفاوي

الكلمات المفتاحية: الإكتئاب، القلق، إبيضاض الدم اللمفاوي الحاد، العلاج الكيميائي

Abstract

Objective(s): To assess the level of depression and anxiety among school age children with acute lymphoblastic leukemia under chemotherapy treatment and to find out the relationship between the level of depression and anxiety among the affected children and their demographic characteristics.

Methodology: A cross-sectional study was conducted on school age children both gender having acute lymphoblastic leukemia under chemotherapy treated and their age between 6 years to 12 years. The study started from the period of September, 19th 2020 to March,1st 2021. Non-probability (Purposive) sample of (114) children with acute lymphoblastic leukemia under chemotherapy was selected in attending hospital wards, outpatient and counseling clinics. The questionnaire is designed and composed of two parts: the first part includes two sections that deal with the children's demographic data, and information about disease to children, the second part includes hospital anxiety and depression scale. The reliability of the questionnaire is determined through a pilot study and the validity through a panel of (12) experts. The data are collected by the use of the questionnaire. The data are described statistically and analyzed through the use of descriptive and inferential statistical analysis procedures.

Results: The results of the present study indicated that level of depression and anxiety of the most children with acute lymphoblastic leukemia had moderate level, no Significance is found between the level of depression and anxiety and their demographic characteristics of children

Recommendations: Establishment of specialized centers to treat depression and anxiety for children who are treated for acute lymphoblastic leukemia.

Keywords: Depression، Anxiety, Acute Lymphoblastic Leukemia, Chemotherapy

Introduction

Acute lymphoblastic leukaemia (ALL) has been well-described in western countries. It is the most common cancer seen in (25) per cent of children. The age distribution in developed countries shows a pronounced early value peak between 2-5 years, followed by a minor peak between 10-12 years. Boys are more affected with a sex ratio of 1.3:1. The reasons for this disparity may be due to less frequent acute lymphoblastic leukaemia at the early peak and more T cells at the second peak [1]. ALL care includes long-term chemotherapy ranging from 30 to 36 months with a 20 percent risk of relapse. The diagnosis and stressful treatment of childhood leukaemia not only adversely affects the physical and psychological wellbeing of children with leukaemia, but also creates a major psychological burden on their parents [2].

Acute lymphoblastic leukemia survivors report higher risk for adverse psychological outcomes such as depression and somatic distress. Systematic and narrative reviews describe childhood cancer survivors (CCS) as experiencing lower psychological well-being, greater anxiety, more problem behaviors and more post-traumatic stress disorder [3].

Depression has a significant impact on the psychosocial and school-related growth of adolescents. Neurocognitive impairments that frequently accompany depression, such as diminished concentration, reduced capacity to coordinate one's job, and reduced processing of memory, may be the causes. These reinforce the altered self-perception that follows depression about one's own ability [4].

The important to recognize psychosocial risks before and after ALL care for children and their families, as well as ways to minimize anxiety and help patients and families. However, in various paediatric oncology contexts, there is a wide variability in psychosocial services provided to patients. In addition, there are no written, systematic, evidence-based paediatric psycho-oncology treatment guidelines [5].

Cancer can affect child's mental health due to frequent hospital visits, children can be years behind in school, they might prefer isolation as they could feel embarrassed of their appearance due to hair loss or considerable weight change. Children with cancer are more prone to anxiety, depression and posttraumatic stress [6].

Methodology

Study Design: A descriptive study design (cross-sectional study) was conducted on school age children both gender having acute lymphoblastic leukemia under chemotherapy treated and their age between 6 years to 12 years. The study started from the period of September, 19th 2020 to March,1st 2021 and aimed to assess level of depression and anxiety of school age children with acute

lymphoblastic leukemia at pediatric teaching hospitals in Baghdad City.

Study Sample: A non-probability (Purposive) sample of 114 acute lymphoblastic leukemia under chemotherapy children with their parents either (father or mother) were selected from the oncology center at the children welfare teaching hospital and child's central teaching hospital, at AL-iskan sector of Baghdad city.

The Study Instruments: A qquestionnaire format is adopted for the purpose of the study throughout a review of relevant literature and consultation from panel of experts and related studies. It is composed of three parts:

Part I: Demographic Characteristics: This part includes two sections. The first section is a demographic characteristic of children with acute lymphoblastic leukemia like child's gender, age, age at diagnosis, child ranking among his/her sibling and the level of education.

Part II: Disease Related Information

This part includes (6) items concerning the child's with acute lymphoblastic leukemia disease itself such as duration of the disease since diagnosis, child's age during diagnosis, type of chemotherapy, the duration of chemotherapy, family health history regarding blood disease and their any children with leukemia in the family.

Part III: Hospital Anxiety and Depression Scale (HADS)

The questionnaire is adopted and developed to level of depression and anxiety of school age children, based on the Hospital Anxiety and Depression Scale of and it was submitted to a committee of experts in various related fields. Minor changes have been made to some elements, such as rewriting the text. These changes were made in accordance with expert suggestions. This part is composed of 12 items, it was scoring according to the 3 level (Always, Usually, Never) Hospital Anxiety and Depression Scale divided to two domains which describe as following:

1. Signs of Depressions: 7 items.
2. Signs of Anxiety: 5 items.

Ethical Considerations: Scientific Research Ethical Committee at the University of Baghdad, College of Nursing has approved the study to be conducted. All mothers who have participated in the study have signed consent form for the human subjects' rights.

Validity of the Study Instrument: To make the instrument more valid, it is presented to a panel of (12) experts which have more than (10) years' experience in their field. Those experts were asked to review the instruments of the study.

Reliability of the Study Instrument: Acceptable reliability of the questionnaire format depending on the value of the Cronbach's Alpha which is (0.8855).

Rating and Scoring: The responses for these questions are rated and scored on (3 level type Likert scale) as; Never =1, usually =2 , Always =3. Evaluation intervals of relative sufficiency: [L: Low (0.00 – 33.3)]; [M: Moderate (33.4 – 66.7)]; [H: High (66.8 – 100)].

Data collection: Data were obtained through face to face interview techniques as a method of data collection. Early childhood's mothers and fathers asked to complete a self-administered questionnaire, after taking the initial consent of each mothers and fathers to participate in the study.

Data Analysis: Descriptive and inferential statistics are used to analyze the results of the study under application of the statistical package (SPSS) version (22.0).

Results

Table (1): Distribution of the Sample by their Socio-demographic Characteristics

Child's (SDCv.)	Groups	No.	%	C.S. P-value
Gender	Male	63	55.3	P=0.303
	Female	51	44.7	(NS)
Age Groups Yrs.	6 _ 7	24	21.1	χ^2= 9.649 P=0.022 (S)
	8 _ 9	28	24.6	
	10 _ 11	42	36.8	
	12 above	20	17.5	
	Mean ± SD	9.53 ± 1.87		
The age of the mother when she gives a birth to a child (Yrs.)	< 20	7	6.1	χ^2= 43.982 P=0.000 (HS)
	20 _24	44	38.6	
	25 _29	32	28.1	
	30 _34	23	20.2	
	35 -39	8	7	
	Mean ± SD	26.19 ± 5.22		
Brothers and sisters numbers	1 _ 2	44	38.6	χ^2= 20.421 P=0.000
	3 _ 4	54	47.4	

	5 above	16	14	(HS)
His / Her lineage between sons	1 _ 2	64	56.1	$\chi^2= 37.000$ P=0.000 (HS)
	3 _ 4	39	34.2	
	5 above	11	9.6	
The education level for a child	Non Applicable	19	16.7	$\chi^2= 10.158$ P=0.118 (NS)
	First primary school	9	7.89	
	Second primary school	11	9.64	
	Third primary school	17	14.9	
	Fourth primary school	17	14.9	
	Fifth primary school	16	14.03	
	Sixth primary school	25	21.92	
Doesn't enrolled in school	Non Applicable	95	83.3	P=1.000 (NS)
	Was rejected by school	10	8.76	
	Incapable of learning	9	7.89	

HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05; Testing based on One-Sample Chi-Square test

Table (1) shows that most of the study sample represented 63(55.3%) who were males, 36.8% within age groups of 10-11years, were the age of the mother when she gives a birth to a child are focusing at the second groups (20 – 24)yeas, (3-4)47.4% were the brothers and sisters number in the family, child's lineage between sons were(1-2)56.1% ,Education level for a child shows in the sixth primary school 25(21.92) and 8.76% of the study sample rejected the school.

Table (2): Distribution of Hospital Anxiety and Depression Score for the Studied Sample

Items	Responses	No.	%	MS	SD	RS%	Ev.
The 2nd Main Domain: Hospital Anxiety and Depression Score							
The 1st Sub Domain: Signs of Depressions							
1.child's thinks of ending his life.	Never	113	99.1	1.02	0.19	34.0	L
	Usually	0	0.0				
	Always	1	0.9				
2.child's feels alone.	Never	15	13.2	2.27	0.68	75.7	M
	Usually	53	46.5				
	Always	46	40.4				
3.child's spends a lot of time alone.	Never	8	7	2.41	0.62	80.3	H
	Usually	51	44.7				
	Always	55	48.2				
4.child's feels disinterested in things.	Never	17	14.9	2.23	0.69	74.3	M
	Usually	54	47.4				
	Always	43	37.7				
5.child's feels desperate of the future.	Never	69	60.5	1.47	0.64	49.0	L
	Usually	36	31.6				
	Always	9	7.9				
6.child's feels worthless.	Never	70	61.4	1.49	0.68	49.7	L
	Usually	32	28.1				
	Always	12	10.5				
7.chils's response is quick and unpredicted.	Never	43	37.7	1.88	0.79	62.7	M
	Usually	42	36.8				

	Always	29	25.4				
The 2ⁿᵈ Sub Domain: Signs of Anxiety							
1.child's feels nervous or unconfident.	Never	7	6.1	2.66	0.59	88.7	H
	Usually	25	21.9				
	Always	82	71.9				
2.child's suddenly feels scared for no reason	Never	12	10.5	2.28	0.65	76	M
	Usually	58	50.9				
	Always	44	38.6				
3.child's feels nervous or stressed very quickly because of the severity of illness.	Never	12	10.5	2.32	0.66	77.3	M
	Usually	54	47.4				
	Always	48	42.1				
4.child's feels panic or frighten	Never	19	16.7	2.22	0.71	74	M
	Usually	51	44.7				
	Always	44	38.6				
5.child's feels so uncomfortable that he cannot sit.	Never	40	35.1	1.92	0.79	64	M
	Usually	43	37.7				
	Always	31	27.2				

Ev. : Evaluated (33.33 – 55.55) Low (L) ; (55.56 – 77.77) Moderate (M) ; (77.78– 100) High (H), (RS%)Relative Sufficiency , (MS) Mean of Score, (SD)Stander Deviation.

This table shows that observed response of high evaluating assigned only 2 (16.67%) items, and responses of assigned a moderate evaluate are accounted 7 (58.33%) items, while the leftover items were assigned low evaluation, and are accounted 3 (25.0%).

Table (3): Distribution of Sub Domains Concerning Level of Depression and Anxiety among School Age Children with Acute Lymphoblastic Leukemia under Chemotherapy Treatment at Pediatric Teaching Hospitals

Symptom	Low		Moderate		High		GMS
	F	%	F	%	F	%	
Depression	3	42.8	3	42.2	1	14.2	1.82
Anxiety	0	0	4	80	1	20	2.27

This table demonstrates that Hospital Anxiety and Depression Score of children with acute lymphoblastic leukemia are at moderate level in all main domains

Table (4): Distribution of Main and Sub Domains Concerning Level of Depression and Anxiety among School Age Children with Acute Lymphoblastic Leukemia under Chemotherapy Treatment at Pediatric Teaching Hospitals

Main and Sub Domains	No	Min.	Max	GMS	PSD	GRS%	Ev.
Signs of Depressions	114	1.000	2.714	1.825	0.419	60.821	M
Signs of Anxiety	114	1.200	3.000	2.279	0.493	75.965	M
Hospital Anxiety and Depression Score	114	1.272	2.857	2.052	0.423	68.393	M

Ev. : Evaluated (33.33 – 55.55) Low (L) ; (55.56 – 77.77) Moderate (M) ; (77.78– 100) High (H). GMS: Global Mean of Score, PSD%:Pooled Standard Deviation, GRS%: Grand/or Global Relative Sufficiency

Table(5): Association between Studied Main Domains and Child's Socio-demographic Characteristics (SDCv.)

Child's (SDCv.)	Hospital Anxiety and Depression Score			((Overall))		
	C.C.	Sig.	C.S.	C.C.	Sig.	C.S.
Gender	0.100	0.284	NS	0.150	0.105	NS
Age of child (Yrs.)	0.179	0.285	NS	0.165	0.364	NS
Brothers and sisters numbers	0.051	0.861	NS	0.073	0.738	NS
Brothers and sisters numbers	0.198	0.099	NS	0.189	0.122	NS
The education level for a child	0.174	0.734	NS	0.163	0.795	NS
He wasn't enrolled in school	0.188	0.405	NS	0.188	0.405	NS
The age of the mother when she gives a birth to a child	0.168	0.505	NS	0.192	0.358	NS

NS : Non Sig. at P>0.05; Testing are based on a Contingency Coefficient test.

This table shows that regarding to contingency coefficients and testing significant levels in contrast with studied main domains observing that weak relationships with no significant levels at P>0.05 are accounted.

Discussion

Table (1) indicates that more than half of the study sample is males, it has been mentioned that males are more affected than females in percentage 63 (56.3). male was the dominant gender and represented approximately more than half sample of acute lymphoblastic leukemia children this might be related to prevalence rates for ALL are two times higher in males than females in ratio 3:1 This findings agree with study done in New York around (Family Life Events In The First Year Of Acute Lymphoblastic Leukemia Therapy), they found that 159 children with ALL participant in the study (83 (52%) males children and 76 (48%) female children [7]. and this result agree with a prospective cohort study indicated that the majority of study sample 23 (56%) were males [8]. The result of the present study revealed that the dominant age group of the study sample is (10-11) years old of age group and accounted for 42 (36.8),because in this stage characterized by activity , effectiveness and emptying of energies, and the child remains lying on the bed for a long time as a result of the effect of disease leads to disturbance of his/her psychological status. This findings agree with study in Egypt that was reported that the average age of the children with ALL in the (9-11) age group was (45.6%) [9].

In regarding to the his/her lineage between sons, the findings of the present study reveals that the dominant of the study sample their order in the number of their siblings is with (3-4) 39 and reported that (34.2%). This phenomena perhaps related to several factors such as parent's early marriage and not having the domestic planning to the number of children [2]. The present study mentions also that the education level for children with acute lymphoblastic leukemia treatment under chemotherapy more than in Sixth primary school and account for 25(21.92 %) This result might be development of the cultural awareness of the family and the children's love to completing his-her education. This result agree with A cross-sectional study which is done in Kuala Lumpur, Malaysia, indicates that 29(61.7%) is primary school [10]. The age of the mother when she gives a birth to a child that the dominant of study sample at age group with (20-24) accounted for 44 (38.6%). This result agrees with study mentions that the dominant age group of study sample is with in age group (20-34) years old and accounted for (75.7%) [11].

The present study finding reveals that the overall main domain assessment of hospital anxiety and depression score of acute lymphoblastic leukemia children are at moderate level and indicates (68.39), which may refer to the presence of anxiety

problems and unsatisfactory level of depression of acute lymphoblastic leukemia child's stay in the bed and limited to activity ,social isolation in addition to that side effected of chemotherapy such as bone pain nausea vomiting and hair loss. The results of this study report that acute lymphoblastic leukemia child's show moderate level of anxiety and accounted mean anxiety scores are 53.2, 52.3, and 50.0 and depression scores are 52.1, 53.1, and 52.9 at one, six, and twelve months after diagnosis, respectively from 159 sample and reported that overall hospital anxiety and depression of children with ALL had a high level of anxiety (15%)   and depression (28%). This result of the present study may be related to the healthy family functioning and more reliance on social support coping strategy people around the child and their parents [12].

The result of the present study showed that socio-demographic characteristic that includes (child age, gender, child's age at diagnosis, Brothers and sisters numbers, the education level for a child and the age of the mother when she gives a birth to a child) did not affect in relation to the psychological impact of chemotherapy upon school age children table (3). Some side effect of chemotherapy, such as pain, vomiting, nausea, hair loss and feels weak in his body. These symptoms can lead to limit

their ability to engage in normal activities such as attending school. The results of the current study agrees with A descriptive study done in Iran ,that was stated that no significant association was found between socio-demographic characterize of acute lymphoblastic leukemia children and their level of depression and anxiety [13].

Recommendations

Establishment of counseling clinic especially for treatment of children with acute lymphoblastic leukemia, to maintain care, reduce depression and anxiety, and their consequences.

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