

Assessment of Physical Quality of Life Domain of Adolescents with Acute Lymphocytic Leukemia at Teaching Hospitals in Baghdad City

تقييم المحور الجسمي لنوعية حياة المراهقين بابيضاض الدم الليمفاوي الحاد في المستشفيات التعليمية لمدينة بغداد

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الخلاصة:

الهدف: تقييم المجال الجسمي لنوعية الحياة للمراهقين المصابين بابيضاض الدم الليمفاوي الحاد في المستشفيات التعليمية في مدينة بغداد وإيجاد العلاقة بين المجال الجسمي للمراهقين المصابين وخصائصهم الديموغرافية.

المنهجية: أجريت الدراسة للمدة من 20 تشرين الثاني 2011 إلى ولغاية الثاني من تموز 2012. واختيرت عينة غير احتمالية (غرضية) من 50 مريضاً من المراهقين المصابين بابيضاض الدم الليمفاوي الحاد. وصممت استمارة الاستبيان حيث تألفت من: محورين الأول يتضمن ثلاثة أجزاء تتعلق بالمعلومات الديموغرافية للمراهقين، والمعلومات المتعلقة بالمرض، ومقياس الحالة الاقتصادية والاجتماعية، الثاني يشمل الجانب الجسمي لنوعية الحياة. وتم تحديد ثبات استمارة الاستبانة من خلال إجراء الدراسة المصغرة وحددت مصداقيتها من خلال عرضها على (22) خبير من ذوي الاختصاص وجمعت البيانات من خلال ملئ استمارة الاستبيان لمقابلات شبه المنظمة. تم تحليل البيانات باستعمال الإحصاء الوصفي.

النتائج: نتائج الدراسة الحالية أشارت إلى أن (58٪) كانوا الذكور، (56٪) من مجموع العينة ضمن الفئة العمرية (15-19) سنة، و (49٪) في حين . لنوعية حياة هؤلاء المراهقين بشكل متوسط.

الاستنتاجات: استنتجت الدراسة أن ابيضاض الدم الليمفاوي الحاد غالباً ما يحدث عند الرجال أكثر من النساء وأن ابيضاض الدم الليمفاوي الحاد شائع الحدوث بين المراهقين في المناطق الحضرية. وأكدت الدراسة على أن ابيضاض الدم الليمفاوي الحاد يؤثر سلباً في المجال الجسمي لنوعية حياة المراهقين.

التوصيات: أوصت الدراسة بإنشاء مركز أمراض الدم والأورام والعمل على إقامة برنامج تعليمي للمراهقين المصابين بابيضاض الدم الليمفاوي الحاد لمساعدتهم لعيش حياة أفضل.

Abstract

Objective(s): To assess the physical quality of life's domain of adolescents with acute lymphocytic leukemia at teaching hospitals in Baghdad city and find out the relationships between the physical quality of life domain of adolescents with acute lymphocytic leukemia and their demographic characteristics.

Methodology: The study started from the period of 20th November 2011 to 2nd July 2012. A non-probability (purposive) sample of 50 patients was selected from adolescents with ALL. The questionnaire was designed and composed of two parts: the first part includes three sections deal with the adolescent demographic data, disease related information and socio-economic status scale, second include physical quality of life domain. And determined reliability of the questionnaire through a pilot study and determined validity through a panel of (22) experts. The data was collected through questionnaire and semi-structured interviews. The data were described statistically and analyzed through use of the descriptive and inferential statistical analysis procedures.

Result: The findings of the present study indicate that (58%) were male, (56%) of the total sample are within the age groups (15-19) years, and (49%) of ALL adolescents were from family of low level of socioeconomic status. While physical domain of the quality of life for these adolescents affected at moderate level.

Conclusion: The study concludes that the acute lymphocytic leukemia most occurs in male than in females. Acute lymphocytic leukemia most common occurs among adolescents in urban residential area. Also the study confirmed that the acute lymphocytic leukemia affects negatively on the physical QoL domain of adolescent.

Recommendation: The study recommended the establishment of hematology and oncology center, an education program for adolescents with ALL started to help them live a better life.

Key words: Assessment, Physical Quality of Life, Adolescents, Acute Lymphocytic Leukemia

INTRODUCTION

Acute lymphoblastic leukemia (ALL) is a disease characterized by an uncontrolled proliferation and maturation arrest of lymphoid progenitor cells in the bone marrow resulting in an excess of malignant cells. It is a complex malignant blood disease that affects hematopoietic cells of the bone marrow and is typified by the malignant proliferation of lymphoblast that affect the normal process of maturation and differentiation of cells in the bone marrow, resulting in the replacement of normal bone marrow tissue with cancerous cells ⁽¹⁾.

Cancer is the most common cause of disease related death in children in industrialized societies. And ALL is the most common cancer in adolescents ⁽²⁾⁽³⁾.

The annual incidence of ALL is 3 to 4 cases per 100,000 children. It occurs more frequently in males than in females, and the peak onset is between 2 and 6 years of age ⁽³⁾. ALL accounting for one-third of cancer diagnoses in children younger than 15 and 28% of cancer diagnoses in those younger than 20 ⁽⁴⁾.

Aggressive therapies have led to dramatic improvements in survival, but they also have raised concerns about the impact of pediatric cancer and its treatment on quality of life (QoL) and behavioral adjustment ⁽⁵⁾. The survival rate of ALL, the most common malignancy in children, has improved in recent years to a 5-year survival rate of about 80%. Because cure rates have increased, more emphasis has been placed on reducing toxicities of therapy, improving QoL during treatment and minimizing long-term effects of therapy ⁽²⁾.

QoL is now considered an important outcome measure for children with cancers not just in the long term but also during courses of treatment. The focus on ALL is important because, ALL accounts for most childhood cancers ⁽¹⁾.

In health care, the concept or term of QoL, often used interchangeably with the term 'health related quality of life' (HRQOL). Generally QoL is understood as a multi-dimensional construct concerning an individual's perception of the impact of illness and its treatment upon his/her health, wellbeing or functioning in relation to physical, psychological, and social aspects of life ⁽¹⁾⁽⁶⁾.

This study aims to assess the physical quality of life's domain of adolescents with acute lymphocytic leukemia at teaching hospitals in Baghdad city and find out the relationships between the physical quality of life domain of adolescents with acute lymphocytic leukemia and their demographic characteristics.

MATERIALS AND METHODS

Study Design: A descriptive study design was conducted on adolescents having ALL and their age range between 10 years to 19 years. The study started from the period of 20th November 2011 to 2nd July 2012 and aims to assess the physical quality of life's domain of adolescents with acute lymphocytic leukemia at teaching hospitals in Baghdad city.

Study Sample: A non-probability purposive sample of 50 adolescents with ALL and the duration period of disease equal or more than 6 months and the ages of all participants are between 10 years to 19 years and they meet the inclusion criteria were selected from hospitals in Baghdad City: oncology department at the Children Welfare Teaching

Hospital, Child's Central Teaching Hospital, Baghdad Teaching Hospital, AL-kadimiya Teaching Hospital and the National Center for Research and Treatment of Hematology in Baghdad.

The Study Instruments: For the purpose of the study, the instrument, questionnaire format, was designed and constructed by the investigators depending on WHO QoL domains and extensive review of available literature and studies related to the concept of QoL⁽⁷⁾. The questionnaire format consists of two parts:

Part I: Adolescent's Patient Demographic Characteristics which includes three sections:

Section I: Adolescent's Demographic Data This section includes data concerning the respondents' general characteristics: gender, age, residency, occupation and their Level of education.

Section II: Disease Related Information It includes items concerning ALL disease itself such as, adolescents' age at the onset of illness, and the duration of chemotherapy treatment.

Section III: Socio-economic Status Scale (SESS) Socioeconomic status scale obtained after the calculation of socioeconomic information about parents' occupation, parents' education, crowding index, family type and family properties (house expenses like, type of housing, housing size, household asset, possession of a car & other house excess) according to⁽⁶⁾. The calculated score help in classified the family level of socioeconomic as high or moderate or low level. The following equation used to the following calculate of: Crowding index = $\frac{\text{The number of persons}}{\text{The number of bed rooms}}$

According to the total scores of SESS three social economic levels represented as following: high SES (80-100), middle SES (60-79), and low SES (59 and less)⁽⁶⁾.

Part II: Physical quality of Life Measurement Scale:

This questionnaire format comprised of structured questions (15 items), concerning the physical quality of life's domain of adolescents with ALL & composed of: pain and discomfort (3 items), activities of daily living (4 items), fatigue (5 items), and sleep and rest (3 items), all of these items explained how the disease affects the physical characteristics of adolescents with ALL.

Data collection: The data collected by the investigators and semi-structured interview technique used with adolescent, individually interviewed" face to face", after taking the initial consent of each adolescent to participate in the study. The process started from 1st of February until the 15th of April 2012. An approximately (20-25) minutes spends with each sick adolescent to complete the interview and filling of the questionnaire format.

Rating and Scoring of the Questionnaire Format

The items have been rated and scored according to the following patterns: Three point likert scales is used for rating the items as always=3, some time=2, never=1, for all items. The lowest score explains no effects on QoL domain while the highest score reflects the effects of ALL upon QoL domain of adolescents .

Data Analyses: The data of the present study were analyzed by using statistical package of social sciences (SPSS) version 12. The descriptive and inferential statistical data analysis approaches were used in order to analyze the study data.

The mean of score calculated according to the following equation:

$$\text{Mean of Score: } MS = \frac{f_1 \times S_1}{n} + \frac{f_2 \times S_2}{n} + \frac{f_3 \times S_3}{n}$$

f = Frequency, S = score, n = Sample size

A mean of score of < 1.5 was considered low; (1.5-2.4) was considered moderate and ≥ 2.5 was considered high.

Multiple Linear Regression that perform to examine the correlation between two variable dependent variable x and independent variable y more than one variable.

RESULTS

Table(1A):Demographic Characteristics of Adolescents with Acute Lymphocytic Leukemia

No.	Variables	F.	%
1.1	Gender		
	Male	29	58
	Female	21	42
	Total	50	100
1.2	Age (years)		
	10 – 14	22	44
	15 - 19	28	56
	Total	50	100
1.3	Residency		
	Rural	11	22
	Urban	39	78
	Total	50	100
1.4	Adolescents' occupation		
	Student	23	66
	Unemployed	17	34
	Total	50	100
1.5	Level of education		
	Not read and write	6	12
	Read and write	13	26
	Primary school	15	30
	Intermediate	14	28
	Secondary	2	4
	Total	50	100

No. : Number, F : frequency, % : percentage

Table (1A): Shows that more than half (58%) of the study sample were males, 56% were within age groups of (15-19) years, the highest percentage (78%) of the study sample are living in urban residential area. With respect to the adolescents' occupation, status (66%) of the study sample was students and 34% unemployed. Relative to the level of adolescents' education, one-third (30%)

were graduates of primary school.

Table (1B):Disease Information of Adolescents with Acute Lymphocytic Leukemia

No.	Variables	F.	%
2.1	Age at the onset of illness (years)		
	7 - 10	17	34
	11 - 14	10	20
	15 - 18	23	46
	Total	50	100
2.2	Duration of chemotherapy treatment (months)		
	1 - 6	22	44
	7 - 12	14	28
	13 - 18	14	28
	Total	50	100
2.3	Any relatives having the same disease		
	Yes	11	22
	No	39	78
	Total	50	100
2.4	Supply of Chemotherapy		
	From hospital	44	88
	From hospital and patient	6	12
	Total	50	100

No. : Number, F : frequency , % : percentage

Table (1B): Demonstrates disease information, (46%) of the study sample were within age (15-18) years at the onset of illness,(44%) their duration of chemotherapy treatment is within (1-6) months,(78%) of the sample didn't have relatives with the same disease,(88%) of the sample got the medication (chemotherapy) from Hospitals.

Table(1C):Family Socioeconomic Status level for Adolescents with Acute Lymphocytic Leukemia

No.	Variables	F.	%
	Socioeconomic Status		
1.	High income (121 - 150)	9	18
2.	Middle income (90 -120)	18	36
3.	Low income (89 and less)	23	46
	Total	50	100

No. : Number, F : frequency , % : percentage

Table (1C): Demonstrates family socioeconomic status, the results shows that almost half of the study sample (46%) are coming from families of low level of socio-economic status

Table (2) : Distribution of Frequencies, Percentages and Mean of Score and Level of Physical Domain Items of Adolescent with Acute lymphocytic leukemia

No.	Items	Always		Sometime		Never		MS	Average MS
		F	%	F	%	F	%		
1.1. Pain and Discomfort									
1.1.1	I feel pain and discomfort when I do any thing	12	24	20	40	18	36	1.88	1.96 Moderate
1.1.2	I feel pain in bones or joints	5	10	26	52	19	38	1.72	
1.1.3	I feel discomfort because of pain	26	52	15	30	6	12	2.28	
1.2. Daily Living Activity									
1.2.1	I disturbed because I can't practicing my hobbies (Football, bike riding)	26	52	18	36	6	12	2.4	1.76 Moderate
1.2.2	I need help when walk more than one block	4	8	15	30	9	18	1.02	
1.2.3	I need help when to take bath or shower	2	4	12	24	36	72	1.32	
1.2.4	My Disease prevent me to practice sports activity or exercise	25	50	15	30	10	20	2.3	
1.3. Fatigue									
1.3.1	I feel tired when doing thing that not heavy	1	2	9	18	40	80	1.22	1.75 Moderate
1.3.2	I feel tired when standing for short time	9	18	27	54	14	28	1.9	
1.3.3	I feel tired to spend time with my friends	7	14	13	26	30	60	1.54	
1.3.4	I feel physically weak (not strong)	13	26	22	44	15	30	1.96	
1.3.5	I feel tired to do things that I like to do	20	40	17	34	13	26	2.14	
1.4. Sleep and Rest									
1.4.1	I have trouble sleeping	7	14	10	20	33	66	1.48	1.37 Low
1.4.2	I have decreased sleeping	4	8	9	18	37	74	1.34	
1.4.3	I have bad dreams	2	4	11	22	37	74	1.3	
Total average MS									1.71 Moderate

No.: Number, *F:* frequency , *%:* Percentage, *MS:*mean of score, *Low*<1.5, *Moderate:*1.5-2.4, *High* ≥2.5

Table(2): Distribution of the adolescents' responding to the (3) level by frequencies, percentages & means of score (MS), reflected that physical domain items are affected at moderate level, & also all subdomin except sleep and rest.

Table (3): Multiple Regression of Physical Quality of Life's Domain and Adolescents' Demographic Characteristics, Disease Information and family Socioeconomic Status.

No.	1. Demographic Characteristics	β	T	Sig.
1.1	Gender	1.185	2.664	.012 S
1.2	Age (years)	11.991	5.836	.000 HS
1.3	Residency	1.747	5.184	.000 HS
1.4	Adolescent Occupation	1.635	1.235	.225 NS
1.5	Level of education	1.269	1.379	.177 NS
No.	2. Disease information	β	T	Sig.
2.1	Age at the onset of illness (years)	7.006	3.434	.002 HS
2.2	Duration of chemotherapy treatment (months)	32.941	3.905	.000 HS
2.3	Any relatives having the same disease	2.752	9.581	.000 HS

2.4	Supply of Chemotherapy	603	1.260	.216 NS
No.	3. Adolescent family socioeconomic status	T	T	Sig.
	Socioeconomic status	111.909	5.545	.000 HS

Significant level at $P \leq 0.05$

Table(3) show significant and high-significant statistical relationships between physical domain and all items except items number (1.4,1.5, 2.4) of demographic characteristics & disease information

DISCUSSION

The findings of the present study table (1A), indicated that more than half of the sample were male and agrees with (Sung, et al., 2011)⁽²⁾ reported that most of their study sample were males 119(57.8%).

The dominant age group of the present study sample are within (15-19) years , this findings disagreed with (Plasschaert, et al., 2004)⁽⁸⁾ who stated that (ALL) occurs in children as well as in adults, but the incidence changes with age. The highest incidence is in children under the age of five years old (5.7 per 100,000 person years), followed by the 5- to 9-years old (2.7) and the 10- to 14-years old (1.6).

The results also revealed that highest percentage of the study sample are living in urban area and this result agrees with a study conducted by (Ma'ala, 2001)⁽⁶⁾ mentioned that majority of her sample 138(86.2) were living in urban areas. Moreover, the present study revealed that two third of the sample were students and this result agrees with (Ma'ala, 2001)⁽⁶⁾ study who mentioned that most of her sample (58.8%) were students. Moreover the findings also revealed that the highest percentage of ALL adolescents were graduated from primary school and intermediate respectively. This findings inconsistent with (Al-Mosooi, 2004)⁽⁹⁾ studied results that highest percentage of her study sample (51.7%) of adolescents graduated from primary school (table 1A).

(Table 1 B) shows that almost half of the sample have the disease between the age of (15-18) years. This findings disagreed with (Ma'ala, 2001)⁽⁶⁾ reported that most of her sample (43.8%) have the disease at the age of (10-12 years). Concerning the duration of chemotherapy treatment the highest percentage of the study sample are within (1 - 6) months and most of the sample not having relative with the same disease. A high percentage of sample take free medication (chemotherapy) from hospitals which help in reducing the burden of the disease on adolescents' condition and these findings were supported by (Abdullah, 2011)⁽¹⁰⁾ study (Impact of Chemotherapy upon Quality of Life for Patients with Chronic Myeloid Leukemia) who mention that all the patients of his study sample 130(100%) receiving of the medication from hospitals.

In relation to the Socioeconomic status (SES) the present study findings revealed that the most of the sample came from the low level of the SES (table 1C). This result agrees with a study conducted by (Ma'ala, 2001)⁽⁶⁾ and her findings that (61.3%) of the sample came from family of a low SES.

All aspect of the physical domain and sub domain affected by the diseases and its treatment at moderate level except sleep and rest sub domain that revealed low level affect (table 2).

According to (AL Ahwal, 2005)⁽¹¹⁾ who indicated that the majority of cancer patients have some form of physical or practical problems that may affect their QoL.

Moreover the treatment of leukemia is long, painful and invasive which also mention by (Golchin, et al., 2004)⁽¹²⁾. They also mentioned that frequent hospitalizations, numerous physical side effects and limitations in daily activities following the treatment all affects significantly on the child's QoL. Consequently, treatment side effects and its impact on children's QoL has gained great importance and QoL issue will be paid more attention than survival duration. (Barbosa, et al., 2002)⁽¹³⁾ findings of the (Musculoskeletal manifestations as the onset of acute leukemias in childhood) supported the findings of the present study and they reported that thirty-eight of their sample (62%) had limb pain and/or joint pain. The daily living activities subdomain affects adolescent's with ALL of the present study at the moderate level and this result supported by (Aznar, et al., 2006)⁽¹⁴⁾ study report that ALL patients demonstrated significantly lower intensity and reduced amounts of total activity during weekdays. These study results correspond with previous investigations, that have shown that physical activity levels in survivors of childhood leukemia tend to be lower than in healthy controls.

In regard to fatigue, the present study results presented that most of ALL adolescent experience fatigue. Moreover, the subjects' are affected at moderate level. This result supported by (Savage, et al., 2009)⁽¹⁾ specifically measured fatigue which was reported as problematic for children on treatment for ALL compared to children off treatment.

Concerning sleep and rest, the present study findings revealed that subjects are affected at low level. This result might be due to the burden of ALL and its treatment on the bone and body organs and leads to fatigue, restless and appear obviously on patients' rest and sleep

Table (3) reflects the results of multiple regression analyses which indicated statistical significant association between physical domain and adolescents' gender at P-value (0.012,). This result agree with⁽²⁾ mentioned that there is significant relationship between the patients' gender with physical domain and psychosocial domain.

The age is highly significant with physical domain and the result showed that residency of adolescent were affected in physical domain too. Moreover, there is also non-significant correlation between the adolescents' occupation with physical domain. According to (Al-Mosooi, 2004)⁽⁹⁾ stated that no significant relationship between adolescents occupation and physical domain of her sample. There is non-significant relationship between the adolescents' level of education and physical domain. The present findings also reflected high significant relationship between physical domains and adolescents' age at the onset of illness.

The results of the present study shows high significant relationship between physical domain and duration of chemotherapy treatment & relatives having the same disease. The family history has significant relationship with physical domain (Al-Mosooi, 2004)⁽⁹⁾. The results of the present study also shows no significant relationship of supply of chemotherapy with physical domain. While there is high significant relationship between physical domain and SES. This findings was supported by (Ma'ala, 2001)⁽⁶⁾ who reported that statistical significant association between physical domain with SES.

CONCLUSIONS

- The present study indicated that the physical QoL domain was affected by ALL at moderate level.

- Gender, age and residency of adolescents have negative effects on physical QoL domain.
- Adolescents of low levels of SES have high-significant association with physical QoL domain.

RECOMMENDATION:

1. The establishment of hematology and oncology center
2. An education program for adolescents with ALL started to help them live a better life.

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