



Physical well-being and School Performance in Children with Thalassemia in Mosul City

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Abstract:

Objectives: This study aimed at assess physical well-being and school performance for children with thalassemia. And to find out the association between some demographic characteristics and physical well-being and school performance.

Methodology: A cross-sectional survey of (101) thalassemic children between the age of (3-12) years who received treatment at Al-Hadbaa Specialist Hospital for, Mosul City, Iraq for the period from 1st November 2023 to 5th January 2024. physical well-being and school performance were assessed by utilizing the version 4.0 of the Pediatric Quality of Life (PedsQL) Generic Core Scale questionnaire.

Results: The result of the study showed that the majority of the participants was the age group (9-12) and (50.5%) of the study sample was female. Over half (65.3%) of patient have family history of thalassemia. The highest percentage of patients (59.4%) received three weekly blood transfusions. The general mean for physical well-being and school performance was 2.063 and 1.86, respectively

Conclusion: The present study indicates that thalassemia children has a moderate physical well-being and a good school performance.

Recommendations: The study recommended providing programs that educate parents about thalassemia to improve their understanding of managing thalassemia. The dissemination of knowledge regarding thalassemia and its mode of transmission should be emphasized by the media.

Key words: Physical well-being, School performance, Children, Thalassemia.

Introduction:

Thalassemia is a group of genetic blood disorders resulting from abnormalities in one or more of the genes that produce the globin chains of hemoglobin. ⁽¹⁾ This synthetic abnormality causes the production of Fragile aberrant red blood cells, which readily hemolyzes, resulting in chronic anemia ⁽²⁾. Worldwide, thalassemia has been reported in almost every racial and geographic group. On the other hand, people from tropical and subtropical areas seem to have it more frequently ⁽³⁾. The Mediterranean Sea, Turkey, Iran, India, and South East Asia—primarily Thailand and South China—are the regions with higher rates of thalassemia. In Italy and Greece, its prevalence is 5 to 15% ⁽⁴⁾ Every year, thalassemia causes about 56,000 pregnancies worldwide. another 3,500 of these have hypertensive or α -thalassaemia syndrome, while another 30,000 have β -thalassaemia ⁽⁵⁾. Children with thalassemia may experience a range of lifelong health issues. These health issues will cause the physical, emotional, social, and school activities to be disrupted ⁽⁶⁾. Patient with thalassemia have a variety of physical problems may experience insufficient sexual development, skeletal problems, and small stature ⁽⁷⁾. Thalassemia patients frequently experience severe complications, including infections, liver illness, cardiac arrhythmia, heart failure, and endocrine problems. The issues mentioned have an impact on patients' emotional, social, and academic performance in addition to their physical functioning, which lowers their quality of life in relation to their health. ⁽⁸⁾. Thalassemia children have a range of social difficulties, such as reduced social interactions, family conflict, and school dropout. The main causes of school dropout are either inadequate understanding of the illness or inaccurate reactions and views from parents. Thalassemia is a serious health issue for patients, their families, and the public health systems of all nations because of the high expense of treatment, which includes frequent hospitalization, iron chelation, regular blood transfusions, and general medical follow-up ⁽⁹⁾. Though the most prevalent forms of thalassemia are α - and β -thalassaemia, β -thalassaemia is the most significant genetic variety. It results from reduced β -globin chain type production, which causes severe transfusion-dependent anemia and significantly decreases quality of life ⁽¹⁰⁾. In some cases, all forms of thalassemia can be lethal, especially if there are numerous gene alterations influencing the globin chain formation ⁽¹¹⁾. If appropriate therapy for thalassemia is not administered, it might be fatal. The past few decades have seen a major improvement in patient survival rates and prognoses due to the development of new treatments and clinical care. ⁽¹²⁾

Methodology:

A cross-sectional survey was performed between 1st November 2023 to 5th January on children with thalassemia who presented to Al- hadbaa specialist hospital, Mosul, Iraq. Every patient was chosen randomly, and before any patient was included in the study, their parents had to provide written, informed consent. Inclusion criteria were age between 3-12 years and with or without chronic disease. Exclusion criteria were children younger than two years old or older than twelve years old. Permission to conduct the study at the hospital was obtained. The Pediatric Quality of Life Inventory (PedsQL) version 4.0 was used to collect data. PedsQL questionnaire was developed by the researcher. In children older than 7 years, the questionnaire was self-administered, or filled during an interview. Parents filled out the questionnaire for younger children (under 8 years old). The questionnaire composed of two sections. The first section includes socio-demographic data. The second section was created to explore level of quality of life of participants. This section assess QoL using a five-point Likert scale (1= never, 2= almost, 3= sometimes, 4= often, 5 = always). By presenting the study's instruments and their content to a panel of fifteen (14) experts from various specialties, its validity and content were confirmed. Cronbachs' alpha test were used to measure the internal consistency of the instrument and the result was ($r = 0.873$). A descriptive statistical data analysis was used to analyze the data using the Statistical Package of Social Sciences (SPSS) version 26.

Results:

Table (1) Distribution of demographical variables of the study sample.

Variables		F	%
Age	(3-5)	31	30.69
	(6-8)	29	28.71
	(9-12)	41	40.59
Total		101	100
Gender	Male	50	49.5
	Female	51	50.5
Total		101	100
Residence	Urban	71	70.3
	Rural	30	29.7
Total		101	100
Education	Student	68	67.3
	Non-student	33	32.7
Total		101	100
Family history of thalassemia	Positive	66	65.3
	Negative	35	34.7
Total		101	100
Is there a consanguinity between parents	Yes	71	70.3
	No	30	29.7
Total		101	100
Frequency of blood transfusion	Once a week	0	0
	Every 2 weeks	17	16.8
	Every 3 weeks	60	59.4
	Once a month	24	23.8
Total		101	100
Splenectomy undergone	Positive	9	8.9
	Negative	92	91.1
Total		101	100

Table (1) shows that the majority of children's age was ranged (9-12) years which represents (40.59%). The results shows that the major percentage of sample (50.5%) reported the females more than males. It shows

that the highest percentage of subjects (70.3%) was living in urban area and regarding the education the study results revealed that (67.3%) was students. Regarding family history of thalassemia, the highest percentage was positive to be (65.3%).the table shows the the majority of participants had Consanguineous parents to be (70.3%). Regarding blood transfusions, the highest percentage was (once every 3 weeks) to be (59.4%). Regarding splenectomy undergone the table shows that the majority of children (91%) reported negative.

Table (2) Classification of socio-economic classes according to Kuppuswamy's Score

class	Total score	F	%
Upper class	26-29	0	0
Upper middle class	16-25	4	4
Lower middle class	11-15	33	32.7
Upper lower class	5-10	63	62.4
Lower class	<5	1	1

The socio-economic status of study sample is upper lower class according to Kuppuswamy's scale with percentage of (62.4%). Table (2).

Table (3): Patients' responses to physical domain questions:

Items	Rating	F	%	Mean	Sd.	Rank
You face difficulty in walking	Never	47	46.5	1.9703	1.10865	5
	Rarely	24	23.8			
	Sometimes	18	17.8			
	Often	10	9.9			
	Always	2	2			
You have difficulty in running	Never	42	41.6	2.0990	1.12699	4
	Rarely	23	22.8			
	Sometimes	21	20.8			
	Often	14	13.9			
	Always	1	1			
You find difficulty in making daily activities	Never	91	90.1	1.1980	0.64838	7
	Rarely	3	3			
	Sometimes	4	4			
	Often	3	3			
	Always	0	0			
You find difficulty in lifting something heavy	Never	14	13.9	3.7228	1.37927	1
	Rarely	5	5			
	Sometimes	14	13.9			
	Often	30	29.7			
	Always	38	37.6			
You face difficulty in taking a bath by yourself	Never	35	34.7	3.0297	1.74043	2
	Rarely	10	9.9			
	Sometimes	8	7.9			
	Often	13	12.9			
	Always	35	34.9			
	Never	88	87.1	1.2178	0.67237	6

You find difficulty doing light household chores	Rarely	8	7.9			
	Sometimes	2	2			
	Often	2	2			
	Always	1	1			
Do you feel pain in all body ?	Never	34	33.7	2.1089	1.00897	3
	Rarely	32	31.7			
	Sometimes	27	26.7			
	Often	6	5.9			
	Always	2	2			
You are getting tired of least effort	Never	94	93.1	1.1584	0.64394	8
	Rarely	2	2			
	Sometimes	2	2			
	Often	2	2			
	Always	1	1			
General mean				2.0631		

Table (3) appeared that the statement (You find difficulty in lifting something heavy) is the highest level, while the statement (You are getting tired of least effort) is the lowest level.

Table (4): Patients' responses to school domain questions

Items	Rating	F	%	Mean	Sd.	RANK
You have difficulty in paying attention in class	Never	26	38.2	1.9706	0.91375	3
	Rarely	21	30.9			
	Sometimes	18	26.5			
	Often	3	4.4			
	Always	0	0			
Do you have a problem with school work ?	Never	47	69.1	1.4559	0.78100	5
	Rarely	13	19.1			
	Sometimes	6	8.8			
	Often	2	2.9			
	Always	0	0			
Missing school due to illness	Never	32	47.1	2.0000	1.13295	2
	Rarely	12	17.6			
	Sometimes	19	27.9			
	Often	2	2.9			
	Always	3	4.4			
Missing school due to going to doctor or hospital admission	Never	1	1.5	2.2941	0.62435	1
	Rarely	50	73.5			
	Sometimes	14	20.6			
	Often	2	2.9			
	Always	1	1.5			
Attaining less scholastic achievement level than before	Never	44	64.7	1.5882	0.90166	4
	Rarely	11	16.2			
	Sometimes	10	14.7			
	Often	3	4.4			
	Always	0	0			
General mean				1.8618		

The results in Table (4) shows that the statement " missing school due to going to doctor or hospital admission " is the highest level, while the statement (do you have a problem with school work) is the lowest level .

Table (5) statistics relationship between quality of life, physical domain and socio-demographic variables

Correlation type	socio-demographic variables	Correlation indicators	physical domain
Spearman's rho	Age	Correlation Coefficient	-.583
		P-value	.047
	Gender	Correlation Coefficient	.049
		P-value	.628
	Residence	Correlation Coefficient	.129
		P-value	.200
	Education	Correlation Coefficient	.079
		P-value	.433
	Family history of thalassemia	Correlation Coefficient	-.130
		P-value	.195
	Is there a consanguinity between parents	Correlation Coefficient	-.041
		P-value	.684
	Frequency of blood transfusion	Correlation Coefficient	-.139
		P-value	.165
	Splenectomy undergone	Correlation Coefficient	.069
		P-value	.494
	Father's educational Level	Correlation Coefficient	-.069
		P-value	.495
	Mother's educational Level	Correlation Coefficient	.078
		P-value	.436
	Profession as head of a family	Correlation Coefficient	-.091
		P-value	.365
	Monthly household income	Correlation Coefficient	-.115
		P-value	.254

Table (5) showed the there is an inverse correlation between the child's age and his physical performance, in terms of the value of the correlation coefficient, which reached (-0.583). This correlation is significant at P-value less than (0.05).

Discussion:

Concerning table (1), The results revealed that the majority of participants (40.59%) were at age group (9-12) Concerning gender, the highest percentage of samples (50.5) were female . these findings consistent with a previous study that showed that the majority of patients were within age group (10_12) and most of them were female ⁽¹³⁾. concerning to the residency, most patients (70.3%) came from urban areas. these findings agree with a study result which revealed that the highest percentage was from urban areas ⁽¹⁴⁾. Concerning education, the majority of study sample (67.3%) were students, this result comes along with another study that showed that the majority of participants are students ⁽¹⁵⁾. Concerning with family history of thalassemia, the highest percentage (65.3%) were positive, and most of participants (59.4%) received blood transfusions every three weeks. These findings agree with another study result that appeared that the majority of sample had history of thalassemia and the highest percentage receive blood every 3 weeks ⁽¹⁶⁾. Regarding to splenectomy undergone,

the majority of participants (91.1%) reported negative. This result congruent with a study finding that stated that the highest percentage of patients didn't undergo splenectomy⁽¹⁷⁾.

Concerning socioeconomic status, table (2) appeared that most of participants (62.4%) was upper lower class according to Kuppuswamy's scale. The present study congruent with another study result that found that the majority of the participants were from lower socio-economic status⁽¹⁸⁾

Related to table (3), The results appeared that statement (you find difficulty in lifting something heavy) is the first rank and ended by the statement (You are getting tired of least effort).Thalassemia patients have difficulty lifting heavy objects because lifting large objects takes significant muscle exertion and increases oxygen demand, thalassemia patients are unable to do so due to their anemia, which also causes weariness, muscle weakness, and exercise intolerance. This finding agrees with a study results that appeared that anemia in thalassemic children limit exercise and affects patients' ability to do daily activities⁽¹⁹⁾. Another study also supports our results, as it showed that the majority of children that the majority of kids had problems with self-care and routine physical activity⁽²⁰⁾.

Concerning table (4), The results revealed that the statement (missing school due to going to doctor or hospital admission) is the first rank and the end is the (do you have a problem with school work). This indicates that thalassemia may have a major impact on children's academic performance through disruptions in their education. This may be brought on by frequent hospital stays for exams, monthly blood transfusions, and the management of conditions that cause frequent absences from school. This result agrees with a study finding that found out that thalassemia affects school functioning for children by frequent absenteeism due to hospitalization for treatment and monthly blood transfusions⁽²¹⁾. The present study also supported by another study that stated that thalassemia has a significant negative impact on children's academic performance and disrupts their schooling⁽²²⁾.

In Table (5) there is an inverse correlation between age and physical functioning. This means that physical performance of patients with thalassemia decreases with age, because anemia worsens with age, resulting in less energy and trouble carrying out everyday tasks. Additionally, thalassemia-related problems including enlarged liver and spleen increase in severity with age and impair a patient's ability to function This study is consistent with (Mikael & Al-Allawi, 2018), this study showed that quality of life of thalassemic children reduce with increasing age⁽²³⁾.

Conclusion:

The present study concluded that the highest percentage of the sample were within age group (9-12) and most of them was living in urban. the majority of children have a history of thalassemia and most of them were students (67.3%). The scores of physical functioning and school performance were range between moderate (2.06) for physical functioning and good (1.86) for school performance. The study results appeared that there a statistical difference between child's age and physical functioning for children with thalassemia.

Recommendations:

The study recommended providing programs that educate parents about thalassemia to improve their understanding of managing thalassemia. The dissemination of knowledge regarding thalassemia and its mode of transmission should be emphasized by the media. The study also recommended providing programs that educate teachers and students about this sickness and urge them to pay more attention to these kids.

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