QUALITY OF LIFE OF PEDIATRIC CANCER PATIENTS UNDERGOING CANCER THERAPY IN SULAIMANI CITY, IRAQ (PATIENT'S REPORT)

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ABSTRACT

Background

Assessing the quality of life has become an essential aspect in the treatment of pediatric cancer patients. Previously studies concerning this issue were limited but nowadays increased; the literature has shown that the quality of life of children and adolescents is negatively affected by cancer disease and its treatment.

Objectives

To assess the quality of life of pediatric cancer patients receiving cancer therapy at Hiwa Cancer Hospital in Sulaimani City according to patients' reports.

Patients and Methods

A Quantitative-descriptive design has been carried out on (110) pediatric patients who received cancer therapy. Data was collected using standard quality of life inventory 4.0. Data analyzed using statistical package of social science version (24).

Results

According to the patients' report, the main findings in the present study are that the quality of life among pediatric cancer patients was at a reasonable level (64.54±10.02). The social function domain got the highest score with equaled (76.04 %); physical function domain (60.28 %), the emotional function domain (63.31%), and the lowest domain was school function (58.30 %).

Conclusion

The social and emotional function domains in the quality of life of pediatric cancer patients were good levels in which patients rarely have a problem. At the same time, physical and school functioning got an acceptable level in which patients sometimes have a problem.

Keywords: *Quality of life, Pediatric cancer patients, Cancer therapy.*

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INTRODUCTION

Cancer is the leading cause of death for children and adolescents worldwide, and nearly 300,000 children aged 0 to 19 are diagnosed with cancer each year in the world. The most common categories of childhood cancers include leukemia, brain cancers, lymphomas, and solid tumors such as neuroblastoma and Wilms tumor [(1)]. According to the annual statistics of Hiwa cancer Hospital in Sulaimani city for cancer disease among children, about 250 cases of different types of cancers were diagnosed in 2019.

There are many types of cancer treatment; types of treatment depend on the type and progress of cancer. Common treatments include surgery, chemotherapy, radiation therapy, immunotherapy, stem cell transplantation (SCT), children facing unique problems during their cancer treatment, after completion of treatment, and as survivors of cancer [(2)].

Health-related quality of life (HRQoL) refers to the impact of a specific illness, injury, medical treatment, or health service policy on quality of life (QoL). QoL describes a child's ability to function in situational contexts (family, school, and peer) and derive personal satisfaction from doing so. QoL can further be divided into physical health or physical functioning, psychological functioning, and social functioning. As such the study of HRQoL is a critical component for evaluating long-term outcomes of chronic conditions and how they can affect physical, psychological, and social functioning [(3)].

The quality of life, QoL of children with cancer decreases due to surgical interventions, radiation therapy, chemotherapy, prolonged hospitalization, side effects of treatment. Being isolated from the community, being at home or in a closed place, physical and emotional problems, and changes in the course of the disease and the child's position and absence of role within the family and society the disruption of school life, the lack of support systems and methods of adaptation [(4)].

METHODS

A Quantitative-descriptive design (cross-sectional) has been carried out in Hiwa Cancer Hospital to assess the quality of life of pediatric cancer patients undergoing cancer therapy from 20th November 2018 to the end of August 2019. The Scientific Committee accepted this study at the College of Nursing. Accordingly, it is approved by the ethical committee at the College of the Medicine/University of Sulaimani. Furthermore, an official letter has been submitted from the College of the Nursing/University of Sulaimani to the General Directorate of Health (DOH) in Sulaimani to obtain agreement for data collection of the current study. Consequently, an agreement letter has been submitted from DOH to Hiwa Cancer Hospital. A non-probability, purposive sample size of (110) pediatric patients with cancer have been selected from consecutive attendances to outpatient units and in-patients at Hiwa Cancer Hospital. The patients were chosen according to the following inclusion criteria: All pediatric patients diagnosed with cancer, both genders, aged between (8-18) years old, and patients who were agreed to participate in the current study. Exclusion Criteria were pediatric cancer patients less than eight years old and newly diagnosed (who are not receiving cancer therapy yet). A questionnaire was used to conduct this study which consists of three parts. Part one and two were developed by the researcher and part three was a standard tool of Pediatric Quality of Life. Inventory Version 4.0 has been used internationally for data collection to measure the variables underlying the present study, mainly to assess the quality of life of pediatric cancer patients. The developed questionnaire was based on an intensive review of the literature, relevant studies, and the Pediatric standardized quality of life inventory (version IV).

The questionnaire was developed including the following parts: Part one is composed of socio-demographic characteristics of the children, which are: age, gender, birth order, school level, leave school after diagnosis, parents' marital situation, patient's caregiver, type of family, number of a family member, residency, and economic status. Part two is the patients' medical history which includes: type of cancer, duration of disease, type of therapy, number of chemotherapy cycles, and family history of cancer. Finally, part three is quality of life inventory 4.0., composed of (23) items. These items fall under four domains. The first is a physical domain with eight items, the second is an emotional domain with five items, the third is a social

domain with five items, and the last is a school domain with five items.

The items are scored using five Likert scales as (0=never problem, 1=almost never problem, 2=sometimes problem, 3=often problem, 4=almost always problem). Items were scored reversely and linearly transformed to 0-100 (never problem=100, rarely problem=75, sometimes problem=50, often problem=25, almost always problem=0). The higher the mean score indicates better quality of life. Content validity of the questionnaire was determined through a panel of (10) experts, who were asked to review the questionnaire's items for clarity, adequacy, and relevancy and whether they could collect the data correctly. The pilot study was carried out on ten children to test the validity of the study tool. Pearson Correlation Coefficient was (r=0.85), which is highly reliable. For data collection, in-patients and outpatients were selected during their visit to Hiwa Cancer Hospital and inclusion criteria. Before the interview, first, an introduction was given, and the researcher explained the purpose of the research to obtain verbal informed consent. Second, face to face interview was held by the researcher with the subjects through using the constructed questionnaire at Hiwa cancer hospital. Data is encoded and entered into the excel sheet before analysis. Data were analyzed using SPSS version 24.0, according to the objectives of the study. First, descriptive statistics (frequency, percentage, mean and standard deviation) were used. Then inferential statistics (Pearson Coefficient Correlation and chi-square) were used to determine the statistical association of quality of life with the study sample's socio-demographic characteristics and medical history.

There is a particular set of probability (p-value) that indicated the degree of significance in the present study as follows: Not significant ($P>0.05$) Significant ($P\leq0.05$) Highly significant ($P< 0.01$).

RESULTS

Table 1 shows that more than half of the sample (56.4%) their age ranged between (8-12) years old with a mean of age (11.87) years old, (57.3%) of the sample were male, (37.3%) of the sample were second birth order, follow by first birth order (25.5%), (58.18%) of respondents were in primary school, and (41.81%) ,were from secondary school, it's worth to mention that (44.54%) of sample leaves school after diagnosis. The vast majority of the sample's parents (94.5%) were living together, and (80%) of patients their first caregivers were his /her mothers. Regarding the type of family (95.5%) were from the nuclear family, (50%) of the sample living in urban, and (73.6%) had barely sufficient economic status.

Table 2 demonstrate that ALL records the highest percentage (35.5%) of cancer, followed by brain tumor which account (13.6%), more than half of the sample (51.8%) diagnosed before one year of data collection, and only (6.4%) of sample diagnosed about more than two years, about the type of cancer therapy (40.9%) took only chemotherapy, (30%) chemotherapy and surgery, and (12.7%) chemotherapy and radiation. The same table represents that (72.7%) of the sample received chemotherapy between one to nine cycles which recorded the highest percentage. On the contrary, only the lowest percentage of the sample (8.2%) received twenty to twenty-nine cycles. The majority of the sample (75.5%) has no previous family history of cancer.

Table 3 reveals that total mean and standard deviation in all domains in general was (64.54±10.02) social function record the highest total mean (76.04±10.98) followed by emotional function (63.31±14.96), physical functioning (60.28±18.36), and the lowest total mean records by school functioning (58.30±16.95).

Table 4 demonstrates that high significant relation was found between patients' quality of life and patients who left school after diagnosis as well as patients' caregivers at a p-value (0.001). while no significant relation was found between patients' age, gender, and school level, parents' marital situation, type of family, residency, and economic status.

Table 5 demonstrate that a statistically significant relation was found between patients' quality of life and patients type of cancer at Value (0.03), it's worth mentioning that no significant relation was found between patient's quality of life and duration of cancer, number of cycles, patient past medical history, and family history of cancer.

Table 1. Distribution of sample according to their socio-demographic characteristics.

Patients' socio-demographic variables		Frequency	Percent
Age	8-12	62	56.4
	13-18	48	43.6
	Mean =11.87		
Gender	Male	63	57.
	Female	47	42.7
Birth Order	1	28	25.5
	2	41	37.3
	3	24	21.8
	4	10	9.1
	5	3	2.7
	6	3	2.7
	7	1	0.9
School Level	Primary school	64	58.18
	Secondary school	46	41.81
Leave school after diagnosis	Yes	49	44.54
	No	61	55.45
Patient's caregivers	Mother	88	80
	Father	21	19.1
	Other	1	0.9
Parent's marital situation	living together	104	94.5
	Separated	2	1.8
	Death	4	3.6
Type of family	Nuclear	105	95.5
	Extended	5	4.5
Residency	Urban	55	50
	Suburban	39	35.5
	Rural	16	14.5
Economic status	Sufficient	2	1.8
	Barely sufficient	81	73.6
	Insufficient	27	24.5
Total		110	100

Table 2. Distribution of the sample according to the patient's medical history.

Patients' medical history		Frequency	Percent
Type of cancer	Adrenal gland	1	0.9
	Acute lymphoblastic leukemia	40	36.4
	Acute myloblastic leukemia	9	8.2
	Bone and cartilage	1	0.9
	Brain tumor	15	13.6
	Burkitt lymphoma	3	2.7
	Ewin sarcoma	6	5.5
	Hodgking lymphoma	1	0.9
	Nasopharengeal carcinoma	1	0.9
	Neoplasm ovary	1	0.9
	Neuroblastoma	7	6.4
	Non-hodgkin lymphoma	9	8.2
	Osteosarcoma	4	3.6
	Rhabdomyosarcoma	5	4.5
	Testicular carcinoma	3	2.7
	Wilms tumor	4	3.6
Duration of disease	<1 year	57	51.8
	1-2years	46	41.8
	More than two years	7	6.4
Type of therapy	Chemotherapy	45	40.9
	Chemotherapy+Surgery	33	30
	Chemotherapy+Radiation	14	12.7
	Chemotherapy+Surgery+Radiation	18	16.4
No. of cycle	1-9 Cycle	80	72.7
	10-19 Cycle	21	19.1
	20-29 Cycle	9	8.2
Family history of cancer	Yes	27	24.5
	No	83	75.5
	Total	**110**	**100**

Table 3.Distribution of sample according to pediatric cancer patient's quality of life.

	Child report	Never problem		Rarely problem		Sometime problem		Often problem		Almost always problem		total		Mean SD
	Physical functioning	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
1	**It is hard to walk more than one block**	47	42.7	45	40.9	14	12.7	3	2.7	1	.9	110	100	80.45 20.98
2	**It is hard to run**	1	0.9	28	25.5	46	41.8	21	19.1	14	12.7	110	100	45.68 24.62
3	**It is hard to do sports activities or exercise**	3	2.7	42	38.2	46	41.8	15	13.6	4	3.6	110	100	55.68 21.32
4	**It is hard to lift something heavy**	5	4.5	45	40.9	43	39.1	16	14.5	1	0.9	110	100	58.41 20.39
5	**It is hard to take a bath or shower**	22	20.0	38	34.5	30	27.3	14	12.7	6	5.5	110	100	62.73 27.87
6	**It is hard to do chores around the house**	15	13.6	45	40.9	41	37.3	8	7.3	1	0.9	110	100	64.77 21.22
7	**I hurt or ache**	9	8.2	61	55.5	30	27.2	10	9.1	0	0	110	100	65.68 19.11
8	**I have low energy**	1	0.9	22	20.0	59	53.6	27	24.5	1	0.9	110	100	48.86 18.02
	Mean (SD)=60.28(18.36)													
	Emotional functioning													
	I feel afraid or scared	15	13.6	50	45.5	36	32.7	8	7.3	1	0.9	110	100	65.91 21.07
	I feel sad or blue	10	9.1	43	39.1	46	41.8	9	8.2	2	1.8	110	100	61.36 18.04
	I feel angry	2	1.8	34	30.9	52	47.3	11	10.0	11	10.0	110	100	51.14 23.55
	I have trouble sleeping	49	44.5	42	38.2	15	13.6	4	3.6	0	0	110	100	80.91 20.57
	I worry about what will happen to me	2	1.8	38	34.5	61	55.5	8	7.3	1	0.9	110	100	57.27 16.70
	Mean (SD)=63.31(14.96)													
	Social functioning													
1	**I have trouble getting along with other teens**	8	7.3	64	58.2	32	29.1	5	4.5	1	.9	110	100	66.59 18.00
2	**Other teens do not want to be my friend**	101	91.8	5	4.5	4	3.6	0	0	0	0	110	100	97.05 10.56
3	**Other teens tease me**	107	97.3	2	1.8	1	.9	0	0	0	0	110	100	99.09 5.79
4	**I cannot do things that other teens my age can do**	2	1.8	47	42.7	52	47.3	7	6.4	2	1.8	110	100	59.09 17.83
5	**It is hard to keep up with other teens my age**	3	2.7	48	43.6	43	39.1	15	13.6	1	0.9	110	100	58.41 19.53
	Mean (SD)=76.04 (10.98)													

School functioning														
1	**It is hard to pay attention in class**	6	9.8	29	47.5	21	34.4	4	6.5	1	1.6	61	100	64.40 20.86
2	**I forget things**	33	54.0	16	26.2	10	16.3	1	1.6	0	0	61	100	83.89 21.15
3	**I have trouble keeping up with schoolwork**	3	4.9	30	49.1	20	32.7	7	11.4	0	0	61	100	62.28 19.89
4	**I miss school because of not feeling well**	1	1.6	13	21.3	29	47.5	8	13.1	8	13.1	61	100	44.91 24.02
5	**I miss school to go to the doctor or hospital**	0	0	7	11.4	22	36.0	22	36.0	10	16.3	61	100	32.62 20.89
	Mean (SD)=58.30 (16.95)													
	TOTAL MEAN(SD)=(64.54±10.02)													

Table 4.Demonstrates that high significant relation was found between patients' quality of life and patients

Socio-demographic characteristics		**Child quality of life**								**Total**		**P.Value**
		never		**Rarely**		**Sometime**		**often**				
		No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
Age	8-12 years	4	3.6	34	30.9	23	20.9	1	0.9	62	56.3	**0.507 NS**
	13-18years	2	1.8	21	19.0	23	20.9	2	1.8	48	43.6	
Gender	male	2	1.8	32	29.0	28	25.4	1	0.9	63	57.2	**0.499 NS**
	female	4	3.6	23	20.9	18	16.3	2	1.8	47	42.7	
School-level	primary school	4	3.6	33	30	23	20.9	2	1.8	61	55.4	**0.898 NS**
	secondary school	2	1.8	23	20	23	20.9	1	0.9	49	44.5	
leave school after diagnose	yes	0	0	8	7.5	37	34.9	2	1.8	47	42.7	**0.001 HS**
	no	6	5.6	47	42.5	9	8.1	1	0.9	63	57.2	
Parent's marital situation	Living Together	6	5.4	53	48.1	42	38.1	3	2.7	104	94.5	**0.774 NS**
	Separated	0	0	0	0	2	1.8	0	0	2	1.8	
	Death	0	0	2	1.8	2	1.8	0	0	4	3.6	
Patient's care givers	Mother	3	2.7	41	37.2	42	38.1	2	1.8	88	80	**0.001 HS**
	Father	3	2.7	14	12.7	4	3.6	0	0	21	19.0	
	Other	0	0	0	0	0	0	1	0.9	1	0.9	
Type of family	Nuclear	6	5.4	52	47.2	44	40	3	2.7	105	95.4	**0.911 NS**
	Extended	0	0	3	2.7	2	1.8	0	0	5	4.5	
Residency	Urban	4	3.6	28	25.4	21	19.0	2	1.8	55	50	**0.774 NS**
	Suburban	2	1.8	20	18.1	17	15.4	0	0	39	35.4	
	Rural	0	0	7	6.3	8	7.2	1	0.9	16	14.5	
Economic status	Sufficient	0	0	1	0.9	1	0.9	0	0	2	1.8	**0.756 NS**
	Barely Sufficient	5	4.5	44	40	30	27.2	2	1.8	81	73.6	
	In Sufficient	1	0.9	10	9.0	15	13.6	1	0.9	27	24.5	
	Total	6	5.4	55	50	46	41.8	3	2.7	110	110	

Table 5. Distribution of the sample according to the relationship between child's quality of life- and medical characteristics.

patients' medical characteristics		Child quality of the life-self report								total		P.Value
		never		Rarely		Sometime		often				
		No.	%	No.	%	No.	%	No.	%	No.	%	
Type of cancer	Adrenal gland	0	0	1	0.9	0	0	0	0	1	0.9	0.031 S
	ALL	4	3.6	28	25.4	7	6.3	0	0	39	35.4	
	AML	0	0	3	2.7	6	5.4	0	0	9	8.1	
	Aplastic anemia	0	0	1	0.9	0	0	0	0	1	0.9	
	Bone and cartilage	0	0	0	0	1	0.9	0	0	1	0.9	
	Brain tumor	0	0	6	5.4	8	7.2	1	0.9	15	13.6	
	Burkitt lymphoma	0	0	2	1.8	1	0.9	0	0	3	2.7	
	Ewin sarcoma	0	0	4	3.6	2	1.8	0	0	6	5.4	
	Hodgkin lymphoma	0	0	1	0.9	0	0	0	0	1	0.9	
	Nasopharyngeal carcinoma	0	0	0	0	1	0.9	0	0	1	0.9	
	Neoplasm ovary	0	0	1	0.9	0	0	0	0	1	0.9	
	Neuroblastoma	0	0	2	1.8	5	4.5	0	0	7	6.3	
	Non-Hodgkin lymphoma	2	1.8	3	2.7	4	3.6	0	0	9	8.1	
	Osteosarcoma	0	0	0	0	4	3.6	0	0	4	3.6	
	Rhabdomyosarcoma	0	0	1	0.9	2	1.8	2	1.8	5	4.5	
	Testicular carcinoma	0	0	1	0.9	2	1.8	0	0	3	2.7	
	Wilms tumor	0	0	1	0.9	3	2.7	0	0	4	3.6	
Duration of diagnosis	<1 year	5	4.5	29	26.3	23	20.9	0	0	57	51.8	0.061 NS
	1-2years	1	0.9	12	10.9	14	12.7	3	2.7	30	27.2	
	More than 2 years	0	0	14	12.7	9	8.1	0	0	16	14.5	
Type of therapy	Chemotherapy	2	1.8	24	21.8	19	17.2	0	0	45	40.9	0.061 NS
	Chemotherapy+Surgery	4	3.6	13	11.8	14	12.7	2	1.8	33	30	
	Chemotherapy+Radiation	0	0	11	10	2	1.8	1	0.9	14	12.7	
	Chemotherapy+Surgery+Radiation	0	0	7	6.3	11	10	0	0	18	16.3	
No. of cycle	1-9 Cycle	5	4.5	35	31.8	38	34.5	2	1.8	80	72.7	0.257 NS
	10-19 Cycle	1	0.9	12	10.9	7	6.3	1	0.9	21	19.0	
	20-29 Cycle	0	0	8	7.2	1	0.94	0	0	9	8.1	
Family history of cancer	yes	2	1.8	10	9.0	13	11.8	2	1.8	83	75.4	0.055 NS
	no	4	3.6	45	40.9	33	30	1	0.9	27	24.5	
	Total	6	5.4	55	50	46	41.8	3	2.7	110	100	

DISCUSSION

The purpose of the current study was to assess the quality of life of pediatric cancer patients undergoing cancer therapy; the findings showed that more than half of the sample their age ranged between (8-12)years old and the rest of the sample their age ranged between (13-18)years old with a mean of age (11.87), the result of current study consistent with the findings of the study done in China they found that the lower percentage of their study their age ranged between (13-18) [5] also the findings in agreement with the report done in 2019 by International Agency for Research on Cancer (IARC), they mention that cancer more common among age group1-15 (215000) than age group15-19 (85000) [6].

The proportion of males higher than females in the present study which agrees with the study done in Basra-Iraq, their result was ((Males= 395, Females= 328) [7] in addition, that the findings in agreement with another study who found that (55.5%)of his sample were male [8]. More than one-third of the sample was second birth order followed by first and third birth order which record one quarter and (21.8%) respectively, the finding in agreement with the result of the study they found that first and second birth order record the highest percentage than the other birth orders [9].

At the school level, more than half of the sample was at the primary level of study, and the rest of the sample was at the secondary level. This related to that more than half of the patients in the current study their an age range between (8-12)years old; it is worth mentioning that (44.3%) of our sample were leaving school after a diagnosis of cancer.

This result indicated that because of many complications of cancer and treatments, recurrent hospital admission, and prolong treatment of cancer; this result is consistent with a study done in USA,they mention that for most children with cancer, school attendance can be limited by hospitalizations, treatments, and side effects [10].

Fortunately, most of the parents in the current study were living together, few percentages of family not living together because of separation or death one of the mother or father, certainly parents marital situation has a positive effect on child's quality of life in all aspects especially if the child is sick, this results supported by a study done in 2016 [11]. They found that 91.1% of patients parent were living together. Obviously, in current findings, mothers were the first caregiver due to in pediatric word of Hiwa Cancer Hospital, females must stay with their patients. This result, in agreement with a study done in Tennessee, revealed that 78.1 % of the sample their mothers were first caregivers [12].

In the same table, most families were nuclear type and extended family records very few percentages. However, compared to another study done in China, the study showed that a higher percentage of their sample live in the nuclear family [13].

Regarding respondent's residency, exactly half of the sample lived in urban areas, and more than one-third were from suburban.

It is worth mentioning that the proportion of rural residency records the lowest percentages of the sample; without doubt, the urban environment is one of the risk factors. That causes most diseases, especially cancer; the fewest percentage of the sample were from rural, consistent with a study done in Taiwan, which showed that most of the sample live in the urban area [14]. Furthermore, approximately three-quarters of the sample was at barely sufficient economic status, and very few percent of the sample had good economic status. Landolt and colleagues support this result; in their study, 73% of the sample have middle socioeconomic status [15].

The analysis clearly shows that acute lymphoblastic leukemia records the highest percentages than the other types of cancer, more than one-third of the sample diagnosed by acute lymphoblastic leukemia, the most typical type of cancer during childhood. The second common type of cancer in the current study is a brain tumor; these results are consistent with the Basrah-Iraq study.

They found that higher percentages (35.4%) of their sample were diagnosed by ALL(7), and disagree with another study which showed that a higher percentage(35.9%)of sample diagnosed by solid tumor followed by a brain tumor and acute lymphocytic leukemia [12].

Regarding the disease duration, more than half of the sample suffered from cancer for about less than one year, and (41.8%) diagnosed between one to two years; the rest of the patients were diagnosed more than two years. This finding close to the results of the study done in Pakistan, the study found that 46% of their sample diagnosed before one year [16] and disagree with Salah and colleges, in their study, more than half of the patients diagnosed about more than two years [17].

The findings in the present study demonstrate that most of the patients received only chemotherapy, more than one-quarter of cases received chemotherapy and surgery, while the fewest percentages of the sample received chemotherapy and radiation or chemotherapy with radiation and surgery, findings agree with another study, they found that higher percentages of their study sample receive only chemotherapy [4]. In addition that approximately three-quarters of the sample received (1-9) cycles of chemotherapy and 19%received (10-19) cycles of chemotherapy because most of the patients were diagnosed before one year, it's worth mentioning that approximately one-quarter of the sample have a family history of cancer this agree with results of a study done Gaza, Palestine,they found that (23.0%) of his study sample have a family history of cancer [17].

Quality of life according to patients report was (64.54±10.02)indicated that pediatric cancer patients have rarely a problem. The findings of this study are congruent with another study title "Health-related quality of life and its association with self-esteem and fatigue among children diagnosed with cancer". which illustrated that the total QOL score was (65.5)[18], also findings were confirmed by another two studies [19, 20], in their studies, the total mean of pediatric cancer patient quality of life was (62.29),(62.68)) respectively, but present findings disagree with the result of another study which showed that the total mean of child's quality of life was (43.76) [21].

Patients social functioning domain records the highest mean and SD (76.04±10.98) than the other domains which indicate to cancer patient have rarely a problem. This result is consistent with a study done in China, they found that total mean of social domain recorded (78.31) [5] in the other hand findings inconsistent with another study showed that social domain in his study got (60.98) [17].

The total mean and SD of patients emotional functioning is the second order in the rank (63.31±14.96) which indicated to sometimes have a problem, Results approximately agree with another two study in their study shows that the total mean of the emotional domain was (61.1) [22], and (61.4) [23].

Domain number one patient's physical functioning is the third order in the rank among all four domains, total mean and SD was (60.28±18.36)indicated to the sometimes problem,in contrast, two study showed that total mean of physical domain recorded (66.22)[12],and (68.1) [25].

About last domain in ranking school functioning records the lowest total mean S and SD (58.30±16.95), which indicated to patients some time suffering from a problem or fair quality of life. a study in Indonesia approximately supports this result which the total mean of their samples school domain got (63.5) [26] in reverse of this result another research done in Gaza-Palestine found that total mean of school domain was (48.85)[17].

Based on the findings, highly significant associations were found between patients' quality of life and patients leaving school after a diagnosis of cancer disease at a p-value of 0.001. this result is congruent with a study done in 2005 that mentions that this absence of school by pediatric cancer patients influences the child's ability to develop across physical, cognitive, and social-emotional domains [26].

Statistically, no significant relationships were found between patient's quality of life and patient's age, gender, and patents school level, which is consistent with a study done in Portugal to describe health-related quality of life among children with cancer and indicated that there is no statistically significant difference in the QOL with age and gender [27] regarding patients caregivers statistically highly significant relationships were found at p. value 0.001, as shown in table three most of the mothers were housewife and all of the fathers were employed or have a free job except one of them so most of the mothers were patients caregiver, results agree with a study done in Colombia [28].

No significant relationships were found between parent marital situation, type of family, residency, and economic state with child's QOL at p. value more than 0.05, in term of parent's marital situation and family size, this result disagree with a study done in Greece, which found that children and adolescents living with both of their parents reported better QOL than those whose parents were divorced or separated[11],about the type of family, also results inconsistent with another study revealed that children and adolescents living in a nuclear family, had a better QOL[13],In terms of residency, a study [19] found that statistically no significant differences in QOL and its subscales between the urban, suburban, and rural residences.

Regarding the type of cancer significant relation was found between pediatric cancer patient's quality of life and types of cancer at P.Value 0.03 finding supported by the study done in 2006 who mention that type of cancer

can affect QOL [29]. While no significant relationships were found between duration of disease and patient's quality of life, this result was confirmed by Batalha and colleagues [30]. Statistically, no significant difference was found between quality of life and type of cancer therapy and some chemotherapy cycle, results disagree with the result of another study [31] that found that Patients undergoing chemotherapy with radiotherapy or a combination of chemotherapy, surgery, and radiotherapy were found to show less improvement in scores, due to treatment-related complication. Finally, there is no statistically significant difference in the QOL among children between those who have a family history of cancer and those who do not at P.Value 0.055 this result is supported by Fawzy and his colleagues [19].

In conclusion, according to patient report overall quality of life of the pediatric patient in all domains was at a good level in general, (social and emotional function) were at a good level in which patients rarely have a problem, but (physical and school functioning) was at a fair level in which patient some time have a problem, Statistically, significant relationships were found between quality of life with the type of cancer, leave school after diagnosis, patients caregiver.

REFERENCES

1. Steliarova-Foucher E, Colombet M, Ries L, Moreno F, Dolya A, Bray F et al. International incidence of childhood cancer, 2001–10: a population-based registry study. The Lancet Oncology. 2017;18(6):719-731.

2. Rare Cancers of Childhood Treatment (PDQ®)–Health Professional Version [Internet]. National Cancer Institute. 2019 [cited 23 October 2020]. Available from: https://www.cancer.gov/types/childhood-cancers/hp/rare-childhood-cancers-pdq#section/all

3. Wilmot I, Marino BS. Quality of Life and Psychosocial Care in Pediatric Heart Failure. In Heart Failure in the Child and Young Adult: From Bench to Bedside. Winnetka, IL: Elsevier. 2017. p. 467-471 https://doi.org/10.1016/B978-0-12-802393-8.00035-1

4. Bektas M, Akdeniz Kudubes A, Ugur O, Vergin C, Demirag B. Developing the Scale for Quality of Life in Pediatric Oncology Patients Aged 13–18: Adolescent Form and Parent Form. Asian Nursing Research. 2016; 10(2):106-115.

5. Ji Y, Chen S, Li K, Xiao N, Yang X, Zheng S, et al. Measuring health-related quality of life in children with cancer living in mainland China: feasibility, reliability, and validity of the Chinese mandarin version of PedsQL 4.0 Generic Core Scales and 3.0 Cancer Module. Health and Quality of Life Outcomes. 2011; 9(1):103.

6. WHO | IARC - International Agency for Research on Cancer [Internet]. Who.int. 2019 [cited23October2020].

7. Al-Asadi JN, Ibrahim SJ. Childhood Cancer in Basrah, Iraq During 2012-2016: Incidence and Mortality. Asian Pac J Cancer Prev. 2018; 19(8):2337-2341

8. Elnuweiry H, Abed Y. Risk factors for paediatric cancer in the Gaza Strip: a case-control study. The Lancet. 2018; 391:S13 Issue Number 10156.

9. Von Behren J, Spector L, Mueller B, Carozza S, Chow E, Fox E, et al. Birth order and risk of childhood cancer: A pooled analysis from five US States. International Journal of Cancer. 2010; 128(11):2709-2716.

10. Boles J, Winsor D, Mandrell B, Gattuso J, West N, Leigh L, et al. Student/patient: the school perceptions of children with cancer. Educational Studies. 2017; 43(5):549-566

11. Vlachioti E, Matziou V, Perdikaris P, Mitsiou M, Stylianou C, Tsoumakas K, et al. Assessment of quality of life of children and adolescents with cancer during their treatment. Japanese Journal of Clinical Oncology. 2016; 46(5):453-461.

12. Russell K, Hudson M, Long A, Phipps S. Assessment of health-related quality of life in children with cancer. Cancer. 2006; 106(10):2267-2274.

13. Pan H, Wu L, Wen S. Quality of Life and Its Predictors Among Children and Adolescents With Cancer. Cancer Nursing. 2017; 40(5):343-351.

14. Li X, Deng Y, Tang W, Sun Q, Chen Y, Yang C, et al. Urban-Rural Disparity in Cancer Incidence, Mortality, and Survivals in Shanghai, China, During 2002 and 2015. Frontiers in Oncology. 2018;v 8. 4.

15. Landolt M, Vollrath M, Niggli F, Gnehm H, Sennhauser F. Health-related quality of life in children with newly diagnosed cancer: a one-year follow-up study. Health and Quality of Life Outcomes. 2006; 4:63.

16. Chaudhry Z, Siddiqui S. Health-related quality of life assessment in Pakistani paediatric cancer patients using PedsQLTM 4.0 generic core scale and PedsQL™ cancer module. Health and Quality of Life Outcomes. 2012; 10(1):52.

17. Motasem Salah, Mohammed Abu Reyala, Mohammed Al Jerjawy, Quality of Life Among Children with Cancer in Gaza Strip, American Journal of Health Research. 2018, 6(5), p.119.125. .

18. Al-Gamal E, Long T. Health-related quality of life and its association with self-esteem and fatigue among children diagnosed with cancer. Journal of Clinical Nursing. 2016; 25(21-22):3391-3399.

19. Fawzy M, Saleh M, El-Wakil M, Monir Z, Eltahlawy E. Quality of Life in Egyptian Children with Cancer. Journal of Cancer Therapy. 2013; 4(7):1256-1261.

20. Mounir G, Abolfotouh M. Assessment of health-related quality of life among school children with cancer in Alexandria. The Journal of the Egyptian Public Health Association. 2007; 82(3-4): pp. 219-238.

21. Nazari, Babak, Bakhshi, Saeedeh, Kaboudi, Marzieh, et al. A Comparison of Quality of Life, Anxiety and Depression in Children with Cancer and Healthy Children, Kermanshah-Iran. International Journal of Pediatrics. 2017;5:5305-5314.

22. Sung L, Klaassen R, Dix D, Pritchard S, Yanofsky R, Dzolganovski B, et al. Identification of paediatric cancer patients with poor quality of life. British Journal of Cancer. 2008; 100(1):82-88.

23. Al-Nassan S, Al-Bitar N, Saad D, Zahran A, Elayyan F, Al-Awadi S et al. Health- Related Quality of Life Among Jordanian Adolescent Cancer Patients Receiving Active Treatment. Asian Pacific Journal of Cancer Prevention. 2019;20(10):3107-3111.

24. Kabak V, Yakut Y, Çetin M, Düger T. Reliability and Validity of the Turkish Version of the PedsQL 3.0 Cancer Module for 2- to 7-Year-Old and the PedsQL 4.0 Generic Core Scales for 5- to 7-Year-Old: The Hacettepe University Experience. Turkish Journal of Hematology. 2016; 33(3):236-243.

25. Sitaresmi M, Mostert S, Gundy C, Sutaryo S, Veerman A. Health-related quality of life assessment in Indonesian childhood acute lymphoblastic leukemia. Health and Quality of Life Outcomes. 2008; 6(1):96.

26. BARRERA A, McKenna P, BERRIOS G. Formal thought disorder in schizophrenia: an executive or a semantic deficit? Psychological Medicine. 2005; 35(1):121-132.

27. González-Ramírez L, Gómez-Martínez R, Luna-Flores C, Colunga-Rodríguez C, Orozco-Solis M, Ortega-Cortés R. Sociodemographic Factors and Quality of Life in Children and Adolescents under Cancer Treatment. Psychology. 2017; 08(04):563-575.

28. López León A, Carreño Moreno S, Arias-Rojas M. Relationship Between Quality of Life of Children With Cancer and Caregiving Competence of Main Family Caregivers. Journal of Pediatric Oncology Nursing. 2020;38(2):105-115.

29. Speechley K, Barrera M, Shaw A, Morrison H, Maunsell E. Health-Related Quality of Life Among Child and Adolescent Survivors of Childhood Cancer. Journal of Clinical Oncology. 2006; 24(16):2536-2543.

30. Batalha L, Fernandes A, Campos C. Quality of life among children with cancer: the agreement between child and parent reports. Escola Anna Nery - Revista de Enfermagem. 2015; 19(2):6.

31. Batra P, Kumar B, Gomber S, Bhatia M. Assessment of quality of life during treatment of pediatric oncology patients. Indian Journal of Public Health. 2014; 58(3):168