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## Effect of Educational Program on Quality of Life among Children Receiving Chemotherapy at Zagazig University Hospital

Gehan Elsayed Mohammed<sup>1</sup>, Eman Mahmoud Aboelela<sup>2</sup>, Rasha Abd El-Lateef Abd El-Aziz Ramdan<sup>3</sup>, Amal Mohamed EL-Dakhakhny<sup>4</sup>

1 Clinical Instructor, Technical Institute of Nursing, Zagazig University, Egypt.

[g.elsayed022@nursing.zu.edu.eg](mailto:g.elsayed022@nursing.zu.edu.eg)

2 Lecturer of Pediatric Nursing, Faculty of Nursing, Zagazig University, Egypt. [EMAbaelaa@nursing.zu.edu.eg](mailto:EMAbaelaa@nursing.zu.edu.eg)

3 Lecturer of Pediatric Nursing, Faculty of Nursing, Zagazig University, Egypt.

[RAAbdelazyz@nursing.zu.edu.eg](mailto:RAAbdelazyz@nursing.zu.edu.eg)

4 Professor of Pediatric Nursing, Faculty of Nursing, Zagazig University, Egypt

Corresponding author: Gehan Elsayed Mohammed

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**Abstract: Background:** Cancer is a life threatening illness and its treatment affects the entire life of the affected children and deteriorates their Quality of life (QoL). **Aim of the present study:** was to evaluate the effect of educational program on quality of life among children receiving chemotherapy. **Subjects and Methods:** a quasi-experimental study was conducted on a purposive sample of 58 children receiving chemotherapy at oncology unite of university children hospital and oncology unite and in internal Medicine hospital at Zagazig University Hospitals . **Tools for data collection :**Two tools were used to collect necessary data as follows :structure questionnaire form and Quality of Life Inventory-32 (PCQL-32) . **Results :**The current study revealed that 56.9%of the studied cancer children had bad quality of life symptom level before the educational program and this percentage decreased to 19.0% after implementation of the educational program. Poor quality of life among cancer children receiving chemotherapy may be due to treatment impact on children physical, psychological, and social well-being. **Conclusion:** The educational program had positive effect on improving quality of life scores among studied children. **Recommendations :**Dissemination of the educational program to other pediatric oncology hospitals, with involvement of other family members in the program is recommended.

**Keywords:** : Cancer, Chemotherapy Children, Educational Program, Quality of life

### Introduction.

Childhood cancer refers to a group of diseases that characterized by the uncontrolled growth and spread of abnormal cells in children under the age of 15 years. These cancer differ significantly from adult cancers in their types, causes, and response to treatment. Common types of childhood cancer include leukemia, brain tumors, and lymphomas(American Cancer Society,2024). According to the **World Health Organization**

(WHO 2023), over 400,000 children and adolescents (0–19 years old) are diagnosed with cancer, and children die from the disease every three minutes and chemotherapy agent is the most common treatment cancer for children and teenagers .

**Egypt National Cancer registry program (2015)** documented that 31.9% of children under the age of 15 years have cancer. Recent research by **Soliman et al. (2021)** documented that total cancer rates in Egypt will increase three times by 2050 and childhood cancer will increase 1.2 times. Most children admitted to pediatric oncology units require chemotherapy agent to save their lives. Despite the benefits these drugs, it is associated with many adverse events, such as teratogenic, mutagenic, and carcinogenic to humans (**Ferlay et al., 2022**).

These medications all have unique pharmacological characteristics that prevent cell division. Unfortunately, because of their nonselective mode of action, they affect both healthy and cancerous cells, which can have a negative impact on patients' health as well as the health of healthcare professionals who deal with them on a regular basis (**Oncology Nursing Society, 2018**).

Chemotherapy can induce a spectrum of side effects, including nausea, vomiting, dyspepsia, ovarian failure, oral ulcers, oral mucositis, hyperuricemia, neuropathy, cardiomyopathy, hemorrhagic cystitis, and renal failure. Reduced renal drug clearance and renal dysfunction of various severity can occur as a side effect of administering anti-cancer medications (**Aldiss et al. 2023**). Moreover, long-term treatment of cancer not only affects the biological, psychological, social, and spiritual conditions of children, but will also affect the quality of life of children. Quality of life is something that is subjective and multidimensional (**Utami et al., 2020**).

Quality of life (QOL) is a broad multidimensional concept that usually includes subjective evaluations of both positive and negative aspects of life, (**Haraldstad et al., 2019**). It is the degree to which an individual is healthy, comfortable, and able to participate in or enjoy life events. The term quality of life is inherently ambiguous, as can refer both to the experience an individual has of own life and to the living conditions in which individuals find selves. Hence, quality of life is highly subjective. Whereas one person may define quality of life according to wealth or satisfaction with life, another person may define in terms of capabilities (having the ability to live a good life in terms of emotional and physical well-being) (**Burks et al., 2021**).

The concept of health-related quality of life (HRQOL) and its determinants have evolved since the 1980s to encompass aspects of overall quality of life that can be clearly shown to affect health either physical or mental. On the individual level, HRQOL includes physical and mental health perceptions (energy level, mood) and correlates including health risks and conditions, functional status, social support, and socioeconomic status (**Christiansen et al., 2019**).

Assessment of quality of life can provide benefits for health professionals to be able to inform the changes that occur due to cancer, and can help health professionals make decisions related to actions to be taken next (**Utami et al., 2020**). The construct of HRQOL enables health agencies to legitimately address broader areas of healthy public policy around a common theme in collaboration with a wider circle of health partners, including social service agencies, community planners, and business groups (**Islam et al., 2023**).

Children with cancer often suffer many physical effects as a result of the disease and its treatment. The nurse must be diligent when assessing for these effects and should involve the parents as a reliable source for reporting the child's physical symptoms (**Lalithabai, et al, 2024**).

Initiating health teachings, provide information on how to promote a positive body image. Teach about topics for developing self-concept and self-esteem, such as accepting that healthy bodies come in a wide range of shapes and sizes. Fashion magazines and social media portray an ideal body that is unrealistic and unhealthy for most people, therefore, should avoid them if make feel bad, keep a list of things like about body and refer to it when feeling down. Then, provide with practice in accepting positive comments about appearance and coach responses as needed (**Molassiotis et al., 2021**).

**Significance of the study**

Cancer is generally synonymous with death. Receiving such a diagnosis plunges children and families into a state of disarray and disruption. Side effect of chemotherapy lead to many body disfigurement change in body and in quality of life

**Aim :**

The current study aimed to evaluate the effect of educational program on quality of life among children receiving chemotherapy.

**Hypothesis :**

The quality of life scores of the studied children receiving will be improved after implementation of the educational program.

**Subject and Methods****A. Research Design**

A quasi experimental design (pre-posttest) was used to conduct this study.

**B. Study Setting:**

- 1- The study was conducted at University children Hospital in both in patient and follow up clinics of hematology oncology unite at zagazig University hospital.
- 2- Internal medicine hospital (oncology unite ) at Zagazig University Hospital.

**C. Subjects:**

A purposive sample of 58 children were included in the present study aged 10-18 years who receiving chemotherapy either for treatment or follow up.

**Sample size calculation:**

**Preliminary study was done**, and revealed that Mean  $\pm$ SD of quality of life in adolescent receiving chemotherapy at pre intervention phase was (72.86 $\pm$ 11.45), improved post intervention program to be(79.42 $\pm$  9.22) , confidence level is 95% two side with power of study 90% , added 10% of drop out. Sample size calculated using Open Epi, is 58 child.

**Tools of data collection:**

Two tools were used in collecting necessary data for the current study as follows:

**Tool I: A structured Interview Questionnaire (Appendix I).** A Structured interview questionnaire was developed by the researcher through reviewing related literature. It consisted of three main parts:

**Part A: Characteristics of studied children** such as child's age, gender, birth order ,number of sibling, children level of education and attendance to school .

**Part B: Characteristics of parents**

This part included family data include questions about mother / father age , education and occupation, marital status .

**Part C: medical history**

This part include type of cancer, pre diagnostic symptoms of cancer, age at the disease diagnoses, treatment methods, type of chemotherapy as well as time of chemotherapeutic dose in addition short and long term side effect of chemotherapy .

**Tool I1: Pediatric Cancer Quality of Life Inventory-32 (PCQL-32)/ (Varni et al 1997)** Quality of life Pediatric Cancer PCQL-32 only Patient Self-Report was used in the current study .It was used to assess health related quality of life (HQoL) of Pediatric patients between age 8-16 years and above. It consists of 32 items, distributed across five subscale as follows disease and treatment related symptoms/ problems (9items) physical functioning (5items), psychological functioning (6items),social functioning (5 items),and cognitive functioning (7 items). Scoring 0 if it is never\_a problem , 1 if it is sometimes a problem, 2 if it is often a problem

, and 3 if it is always a problem. The scores of the items for each area and for the total scale were summed-up and the total divided by the number of the items, giving a mean score.

#### **Content Validity and Reliability**

The tool were developed after a comprehensive thorough review of the related literature and then submitted to a jury consists of (3) experts of in the field of pediatrics and pediatric Nursing .The recommended modifications were done and the final form was ready to use.

The study tools were tested for consistency and reliability by using Cronbach's Alpha :Total quality of life score: 0.904.

#### **Field work:**

This study was completed within 10 months to collect the necessary data. After receiving the official permission, the pilot testing of the study tools was conducted and analyzed.

Each child was individually interviewed after explaining the aim of the study to all children and are informed consent was taken from their guardian before collecting any data. The researcher started data collection for 4 days per week (Saturday, Sunday, Monday and Tuesday). From 9:00 a.m. to 12:00 a.m. On Sunday and Tuesday when the children were undergoing chemotherapy session, the average number of children /day in these days was 2-3 children. The time consumed to answer study tools ranged from 15-20 minutes.

#### **Pilot study:**

A pilot study was carried out on 6 children receiving chemotherapy to ensure applicability, feasibility, practicability of the tools, as well as to estimate the time required for filling the sheet with the collected data. No modification was done to the interview questionnaire sheet, and the pilot study was included from the study sample.

#### **Administrative and Ethical Consideration:**

Ethical approval was obtained from the ethical committee at the faculty of Nursing, Zagazig University before starting the study .

An official permission was obtained for data collection by submission of an official letter issued from the director of the faculty of Nursing, Zagazig University to the director of Zagazig University Hospitals, who referred the researcher to the director of oncology unit to explain the aim of the study and the nature of tools used for data collection. This was done by using proper channels of communications prior to pilot study.

An informed consent was taken from the children's guardians of the purpose, Participants was reassured about the confidentiality of any obtained information which used for research purpose only.

#### **STATISTICAL ANALYSIS**

All data were collected, tabulated and statistically analyzed using IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.. Quantitative data were expressed as the mean  $\pm$  SD & median (range), and qualitative data were expressed as number & (percentage). Paired test was used to compare between paired of normally distributed variables. Wilcoxon sign rank test was used to compare between paired of non-normally distributed variables. Percent of categorical variables were compared using Chi square test or Fisher Exact test when appropriate. Marginal Homogeneity Test was used to compare between paired ordinal data . All tests were two sided. p-value < 0.05 was considered statistically significant, p-value  $\geq$  0.05 was considered statistically insignificant. % of improvement = (after value - before value) / before value) \* 100 Reliability of studied tools.

#### **Results:**

**Table (1): Frequency and Percentage Distribution of Demographic Characteristics of Children receiving chemotherapy(n.58):**

<i>Variables</i>	<i>n.</i>	<i>%</i>
<i>Children age group</i>	12.2 $\pm$ 1.91	

<b>Mean <math>\pm</math>SD</b>	12(8-15)	
<b>Median(range)</b>		
<b>10&lt;12years</b>	22	37.9
<b><math>\geq</math>12years</b>	36	62.1
<b>Gender</b>		
<b>Male</b>	31	53.4
<b>Female</b>	27	46.6
<b>Residence</b>		
<b>Rural</b>	34	58.6
<b>Urban</b>	24	41.4
<b>Child birth order</b>		
<b>Only child</b>	4	6.9
<b>First</b>	4	6.9
<b>Second</b>	36	62.1
<b>Third</b>	14	24.1
<b>Childs Level of Education</b>		
<b>Primary</b>	35	60.3
<b>preparatory</b>	18	31.0
<b>Secondary education</b>	5	8.6
<b>practicing Hobbies or sports activities</b>		
<b>Yes</b>	37	63.8
<b>No</b>	21	36.2
<b>If the answer was yes what is the Types of sports</b>		
<b>Draw</b>	19	32.8
<b>Football</b>	15	25.9
<b>Karate</b>	2	3.4
<b>Hand craft</b>	1	1.7

**Table (1)** shows the demographic characteristics of studied cancer children, it was found that 62.1 %of studied children above 12 years with mean of age  $12.2\pm 1.91$  year. In addition 53.4% of them were male .Concern residence it was found that 58.6%of studied children lives in rural area. The same table also revealed that 60.3%of studied children at primary level of education. It found also that 63.8% had practicing hobbies and sports activities as well as 32.8% had draw.

**Table (2): Medical history of the studied children:**

<b>Variables</b>	<b>n.</b>	<b>%</b>
<b>Positive Family history of cancer</b>	7	12.1%
<b>Age of disease Onset</b>		
<b>Mean <math>\pm</math>SD</b>	10.41 $\pm$ 2.32	
<b>Median(range)</b>	10(5-14)	

<b>&lt;10 years</b>	19	32.8
<b>≥10 years</b>	39	67.2
<b>Duration disease (year)</b>		
<b>Mean ±SD</b>	1.87±1.66	
<b>Median(range)</b>	1(3 months-7 years)	
<b>&lt;1year</b>	7	12.1
<b>≥1year</b>	51	87.9
<b>Treatment types</b>		
<b>Chemotherapy</b>	58	100.0
<b>surgical treatment</b>	1	1.7
<b>Types of Chemotherapy</b>		
<b>Methotrexate</b>	43	74.1
<b>methotrexate and corticosteroid</b>	7	12.1
<b>corticosteroid and vitamin B12</b>	8	13.8
<b>Frequency chemotherapy dose</b>		
<b>once a week</b>	44	75.9
<b>more than one</b>	14	24.1

**Table (2)** clarifies medical history of the studied children of disease. It was found that mean age of disease onset was 10.41±2.32% years as well as 12.1%of studied children had a positive family history of cancer. Regarding duration of the disease it was found that 87.9%of children had disease more than 1 year .The same table also showed that 100% of studied children had chemotherapy and 74.1% of them had methotrexate.

**Table (3) Frequency and Percentage Distribution of Side effect of chemotherapy:**

<b>Variables</b>	<b>n.</b>	<b>%</b>
<b>side effect immediate after dose intake)</b>		
<b>Exhaustion</b>	42	72.4%
<b>Vomiting</b>	41	70.7%
<b>Nausea</b>	38	65.5%
<b>Body pain</b>	42	72.4%
<b>Mouth ulceration</b>	44	75.9%
<b>Hair loss</b>	51	87.9%
<b>Bleeding</b>	40	69.0%
<b>Low blood cell count</b>	42	72.4%
<b>easy bruising</b>	38	65.5%
<b>Constipation</b>	36	62.1%
<b>recurrent infection</b>	40	69.0%
<b>Effect of chemotherapy of Organs</b>		
<b>Lung problem</b>	15	25.9%
<b>Cardiac complications</b>	25	43.1%
<b>Renal problem</b>	27	46.6%
<b>Chemotherapy related neuropathy</b>	6	10.3%
<b>Others</b>	12	20.7%

Frequency and percentage distribution of side effect of chemotherapy: illustrated in **table (3)**. It was revealed from the table that 87.9% 75.9%,72.4% and 72.4%of studied children had hair loss ,mouth ulceration and low blood count as well as exhausted as immediate side effect after chemotherapy respectively .

Regarding effect of chemotherapy on organs it was found that 46.6% of studied cancer children had renal problems. Concerning long term complications it was found that 77.6% of studied cancer children had psychological problems.

**Table (4): Effect of Educational program on quality of life among Children Receiving Chemotherapy:**

<b>QOL dimensions</b>	<b>Study phase</b>				<b>mp-value</b>
	<b>Before intervention</b>		<b>After intervention</b>		
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>	
quality of life symptom level					

Bad	33	56.9	11	19.0	0.0001
Fair	23	39.7	28	48.2	
Good	2	3.4	19	32.8	
quality of life physical level					
Bad	31	53.4	8	13.8	0.0001
Fair	24	41.4	33	56.9	
Good	3	5.2	17	29.3	
quality of life psychological level					
Bad	24	41.4	7	12.0	0.0001
Fair	31	53.4	15	25.9	
Good	3	5.2	36	62.1	
quality of life social level					
Bad	15	25.9	7	12.0	0.0001
Fair	39	67.2	24	41.4	
Good	4	6.9	27	46.6	
QOL cognitive level					
Bad	26	44.8	9	15.5	0.0001
Fair	29	50.0	29	50.0	
Good	3	5.2	20	34.5	
Total quality of life level					
Bad	28	48.2	6	10.3	0.0001
Fair	27	46.6	31	53.4	
Good	3	5.2	21	36.3	

p>0.05: no significant,\* p<0.05: significant, M:Marginal homogeneity test

**Table (4)** present effect of educational program on quality of life among children receiving chemotherapy before & after Intervention. It was found that 56.9% of studied cancer children had bad quality of life symptom level before the educational program and this percentage decreased to 19.0% after implementation of the educational program the difference was statistically significance ( p =0.0001).

Regarding quality of life physical level it was found that 41.4 % of studied cancer children perceived fair level and this percentage increased to 56.9% after implementation of the educational program the difference was statistically significance ( p = 0.0001).

**Table (5): Percentage improvement in total quality of life and its dimensions after implementation of educational program :**

Quality of life score and its dimensions	Study phase		Improve ment percent	paired t	p-value
	Before intervention	After intervention			



	No.	%	No.	%	No.	%			No.		No.		No.					
Children age group																		
<12 years	11	50.0	9	40.9	2	9.1	22	1.316	0.518	2	9.1	12	54.5	8	36.4	22	0.062	0.969
≥12 years	17	47.2	18	50.0	1	2.8	36			4	11.1	19	52.8	13	36.1	36		
Sex																		
Male	11	35.5	18	58.1	2	6.5	31	4.36	0.11	1	3.2	16	51.6	14	45.2	31	4.78	0.09
Female	17	63.0	9	33.3	1	3.7	27			5	18.5	15	55.6	7	25.9	27		
Residence																		
Rural	18	52.9	16	47.1	0	.0	34	4.63	0.099	4	11.8	16	47.1	14	41.2	34	1.35	0.51
Urban	10	41.7	11	45.8	3	12.5	24			2	8.3	15	62.5	7	29.2	24		
Family number																		
≤4 person	3	33.3	6	66.7	0	.0	9	1.97	0.37	0	.0	3	33.3	6	66.7	9	4.63	0.098
>4 person	25	51.0	21	42.9	3	6.1	49			6	12.2	28	57.1	15	30.6	49		
Child Order																		
Alone	2	50.0	2	50.0	0	.0	4			0	.0	0	.0	4	100.0	4	8.88	0.18
First	1	25.0	3	75.0	0	.0	4	2.28	0.89	1	25.0	2	50.0	1	25.0	4		
Second	17	47.2	17	47.2	2	5.6	36			3	8.3	21	58.3	12	33.3	36		
Third	8	57.1	5	35.7	1	7.1	14			2	14.3	8	57.1	4	28.6	14		
Education level																		
Primary	17	48.6	16	45.7	2	5.7	35			4	11.4	22	62.9	9	25.7	35	8.54	0.07
Preparatory	10	55.6	7	38.9	1	5.6	18	2.74	0.602	2	11.1	5	27.8	11	61.1	18		
Secondary/ diploma	1	20.0	4	80.0	0	.0	5			0	.0	4	80.0	1	20.0	5		

χ<sup>2</sup> Chi square test , \*significant p<0.05, no-significant p>0.05

**Table(6)** illustrat relation between quality of life level among children receiving chemotherapy and personal characters of cancer children before intervention program . It was found that there was statistically asignfcant relation btween quality of life level of studied cancer children reciving chemotherapy before the program with p value (p=0.009) ,(p=0.02)and (p=0.0001) respectively.This table also showed that there was no statistically significant relation between quality of life among cancer children and personal charactrs of children after the educational program (p>0.05).

**Table (7 ): Relation Between cancer parameters and quality of life Among Children Receiving Chemotherapy befor and after the educational program (n = 58):**

Variables	quality of life of children before intervention						Total number	χ <sup>2</sup>	P	quality of life of children after intervention						Total number	χ <sup>2</sup>	P
	bad n.28		fair n.27		Good n.3					Bad n.6		fair n.31		Good n.21				
	No.	%	No.	%	No.	%			No.	%	No.	%	No.	%				
Age of onset of disease																		
<10 years	9	47.4	8	42.1	2	10.5	19	2.93	0.57	2	10.5	10	52.6	7	36.8	19	9.12	0.06

≥10 years	19	48.7	19	48.7	1	2.6	39			4	10.3	21	53.8	14	35.9	39		
Duration of disease										1	14.3	6	35.7	0	0	7	4.553	0.103
<1year	5	71.4	2	28.6	0	.0	7	1.85	0.397	5	9.8	25	49.0	21	41.2	51		
≥1year	23	45.1	25	49.0	3	5.9	51			1	14.3	6	35.7	0	0	7	4.553	0.103
Practice Sport or Hobby																		
Yes	16	43.2	18	48.6	3	8.1	37	2.34	0.31	3	8.1	18	48.6	16	43.2	37	2.332	0.31
No	12	57.1	9	42.9	0	.0	21			3	14.3	13	61.9	5	23.8	21		
chemotherapy	28	48.2	27	46.6	3	5.2	58			5	10.3	31	53.4	21	36.2	58		
Surgical Treatment not found surgical treatment																		
Types of Chemotherapy																		
methotrexate	19	44.2	22	51.2	2	4.7	43	2.83	0.59	4	9.3	23	53.5	16	37.2	43		
methotrexate and corticosteroid	4	57.1	3	42.9	0	.0	7			1	14.3	1	14.3	5	71.4	7	9.24	0.06
corticosteroid and vitamin B12	5	62.5	2	25.0	1	12.5	8			1	12.5	7	37.5	0	0	3		
Frequency of chemotherapy																		
once a week	21	47.7	20	45.5	3	6.8	44	1.013	0.603	2	4.5	23	52.3	19	43.2	44	3.42	0.02*
more than one	7	50.0	7	50.0	0	.0	14			4	28.6	3	57.1	2	14.3	14		
Transient side effect	28	48.2	27	46.6	3	5.2	58			5	10.3	31	53.4	21	36.2	58		
long-term complication																		
Yes	22	46.8	23	48.9	2	4.3	47	2.95	0.57	5	10.6	26	55.3	16	34.0	47	5.86	0.21
No	6	54.5	4	36.4	1	9.1	11			1	9.1	5	45.5	5	45.5	11		
Troubles due to diseases																		
One problem	12	46.2	11	42.3	3	11.5	26	6.03	0.197	4	15.4	17	65.4	5	19.2	26	15.001	0.005*
Two problem	10	62.5	6	37.5	0	.0	16			0	0	4	25.0	12	75.0	16		
Three problem	6	37.5	10	62.5	0	.0	16			2	12.5	10	62.5	4	25.0	16		

χ<sup>2</sup> Chi square test , \*significant p<0.05, no-significant p>0.05

Relation between cancer parameters and quality of life among children receiving chemotherapy was indicated in **Table (7 )** It was found that there was no statistically significant relation between cancer parameters and quality of life among cancer children receiving chemotherapy (p>0.05). The same also showed that there was statistically significant relation between quality of life level among children receiving chemotherapy after the educational program and frequency of chemotherapy as well as troubles due to disease with p value (p=0.02) and (p=0.005).

### Discussion

Concerning the effect of educational program on quality of life of the studied cancer children receiving chemotherapy. The current study showed that more than half of the studied cancer children had bad quality of life symptom level before the educational program and this percentage decreased to less than one fifth after implementation of the educational program. Poor quality of life symptoms among cancer children receiving chemotherapy may be due to treatment impact on children physical, psychological, and social well-being.

Regarding quality of life physical level, the current study found that slightly more than two fifth of the studied cancer children perceived fair level and this percentage increased to more than half after implementation of the educational program.

This result may be due to the intense effect of treatment takes on children bodies such as side effect of chemotherapy, weakened immune system and pain and discomfort. This result was in agreement with **Chung et al., (2022)** who conducted a study entitled " Relationships among resilience, depressive symptoms, self-esteem, and quality of life in children with cancer" and found that less than half of the children with cancer had fair level of Quality of Life (QoL) physical dimension. This finding is consistent with **Mohammed & Hatab, (2022)** in their study entitled " Quality of Life of Children age from (8-less than 13) years with Acute Lymphocytic Leukemia Undergoing Chemotherapy" and found that most of the studied children had moderate

level regarding Quality of life (Qol) physical symptoms dimension. Also, this result agreed with **Ahmed et al., (2020)** who conducted a study entitled " Assessment of Parental Caring for Children with Cancer on Their Quality of Life" and stated that less than half of the studied children had bad level regard quality of life symptoms dimension.

According to total quality of life level in children receiving chemotherapy, the current study founded that less than half of the studied cancer children had bad level of total quality of life before the program and this percent decreased to only one tenth after the program. The total Quality of Life QoL among cancer children undergoing chemotherapy is often poor due to the treatment's impact on various aspect of their lives: physical, psychological, social and even spiritual. This result was in the same line with **El-Latif et al., (2021)** who conducted a study entitled " Impact of Counseling on Quality of Life and Treatment Adherence for Acute Lymphoblastic Leukemia Children" and founded that there was a significate improvement of total quality of life among cancer children post counseling and the bad Quality of Life QoL decreased to nearly one tenth post counseling. Also, this finding agreed with **Jankowska-Polańska et al., (2020)**, who conducted a study entitled " Quality of life in children with acute lymphoblastic leukemia" and founded that more than third of the studied children had bad level of total Qol.

Regarding the effect of intervention program on quality of life total score, and its dimensions. The current study showed that there was an improvement in all domains with improvement percentage for Quality of Life (**QOL**) symptom score, **Quality of Life (QOL)** physical score, Quality of Life (**QOL**) psychological score, Quality of Life (**QOL**) social score, Quality of Life (**QOL**) cognitive score and **total Quality of Life (QoL)** score respectively after implementation of the program. This result may be due to the educational program's positive impact on children physical, psychological and social wellbeing. This result supported by **El-Latif et al., (2021)** who found that a statistically significant improvement of all Qol dimensions and total Qol among the studied cancer children post counseling as well as **Ibrahim et al., (2024)** who conducted a study entitled " Impact of a comprehensive rehabilitation palliative care program on the quality of life of patients with terminal cancer and their informal caregivers" and stated that a significant improvements were observed in various Quality of Life Qol domains post-intervention compared to pre-intervention scores among the studied cancer patients.

As concerning relation between quality of life among children receiving chemotherapy and personal characters of both children and their parents, the current study found that there was a statistically significant relation between quality of life level of studied cancer children receiving chemotherapy before the program and father education, father work as well as mother work with p value ( $p=0.009$ ), ( $p=0.02$ ) and ( $p=0.0001$ ) respectively. This result may be due to the social, economic, and psychological factors that influence the support provided to the child during treatment. This finding was agreed with **Saleh et al., (2023)** who conducted a study entitled " Evaluation of health-related quality of life and its domains in pediatric patients with cancer" and illustrated that there was a statistically significant relation among the total level of quality of life among studied pediatric patients with cancer and their father education as well as work. On the other hand this finding was contradicted with **Ali et al., (2023)** who conducted a study entitled "Assessment of Health- related Quality of Life of Children and Young Adolescents with Cancer" and stated that there was no statistically relation between Health- related Quality of Life of Children with cancer and their father education.

As regarding the relation between cancer parameters and quality of life level among children receiving chemotherapy and cancer parameters, the existing study illustrated that there was a statistically significant relation between quality of life level among studied cancer children receiving chemotherapy after intervention and frequency of chemotherapy as well as troubles due to disease with p value ( $p=0.02$ ) and ( $p=0.005$ ). This result may be due to the side effects of the treatment on the body and the side effects it causes. This finding was agreed with **Amal et al., (2020)** who conducted a study entitled " Quality of Life in Pediatric Cancer Patients" and found a significant relation between total level of Quality of Life Qol among the studied pediatric cancer patients and duration of chemotherapy treatment.

**Conclusion:**

Children having cancer had low total healthy related Quality of life score (QoL). The implementation of the educational program lead to significant improvements in children receiving chemotherapy Quality of life (QOL).

Recommends:

- 1-Dissemination of this educational program to other pediatric oncology hospitals in Egypt.
- 2-Conduct follow up assessment to evaluate whether the improvement in QoL are sustained over time.
- 3-Collabrate with health care providers to intergate the edducational program as standerd part of cancer care protocols.

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