

# Diet behavior of children with cancer

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ABSTRACT

**Background:** Children with cancer are vulnerable to many risk factors and health related difficulties that are associated with cancer treatment. One of those difficulties is related to oral health problems which directly affect the child's eating habits and preferences, and in turn the child's overall health and the prognosis process success.

**Objective(s):** To evaluate the diet behaviours of children with cancer.

**Methods:** Descriptive study designs are used to conduct the study. The study period started from 1 January to 31 May 2023 at the Baquba Oncology center in Diyala. A total of (120) patients were selected from the Cancer Center in Baquba, Diyala Governorate, and 10 samples were excluded for the experimental study. The total number of samples participating in the study became 110 participants. The data collected through a developed questionnaire consist of three sections involving: Demographic data and clinical information section, parents' awareness about oral health of children with cancer, and the Oral Health Scale (A-OHAT). A self-report strategy was adopted to collect data from the participants. The data of the present study were analysed through the use of the Statistical Package of Social Sciences (SPSS) version (26).

**Results:** The findings illustrate that children are with average age of 8.9 years  $\pm$  2.5 years in which 55.5% of them are seen with age group of "6 years-less than 10 years" and 44.5% are seen with age group of "10 years and more". The gender refers that 54.5% of children are males and remaining are females. Also, the results indicate that children with cancer associated with moderate difficulties regarding feeding behaviours in which 50.9% of them associated with moderate level and 49.1% associated with mild level of difficulties ( $M \pm SD = 40.73 \pm 2.361$ ).

**Conclusion:** Most of the children with cancer are under 10 years, males, and at their school age. Only 2% of the children reported diabetes mellitus history. Children with cancer are associated with moderate difficulties regarding feeding behaviours.

**Recommendations:** Encourage parents to be careful about their children's eating habits and eating styles. Establishment of health educational programs to enhance and promote the oral health among children with cancer in Iraq.

**Key words:** Diet behavior, Children, Cancer

## INTRODUCTION

Cancer can affect individuals of any age and can spread to any organ or tissue in the body. It begins with a change in the genetic makeup of a single cell, which then multiplies into a mass, which then spreads to other regions of the body and, if untreated, causes damage and ultimately death. Cancer prevention efforts directed at children should center on encouraging behaviors that will protect the child from contracting cancers that can be prevented when they are an adult [1,2]

A correct diagnosis is essential to treat children with cancer because each cancer requires a specific treatment regimen that may include surgery, radiotherapy, and chemotherapy. Early diagnosis consists of three components; First, awareness of symptoms by families and primary care providers; accurate and timely clinical evaluation, diagnosis, and staging (determining the extent to which a cancer has spread); and access to prompt treatment [3].

The development of healthy eating behaviors in toddlers is often of concern to parents because many toddlers show certain difficulties with eating such as picky eating behaviors and/or neophobia. Parents influence toddlers' food intake through the foods they make available as well as through the way they interact with their toddlers [4].

Previous reviews have suggested a relationship between particular parental feeding strategies and children's energy intake, diet quality and body weight. Other practices parents use was found to be positively associated with child eating behaviors. For example, a positive association was found between parental modeling of healthy eating behaviors and child fruit and vegetable intake, and more covert control was found to be associated with less unhealthy snack intake and more fruit and vegetable intake in children [5].

Parents can use a wide range of potential practices or strategies to control their child's food intake and eating behavior. It is important to identify which practices and strategies contribute positively to establishing healthy eating habits in children and which practices should be discouraged. It has been recommended to expand the focus from well-studied restrictive practices to include more positive practices such as modeling healthy eating and providing healthy food in the home, when examining the relationship between parental feeding strategies and child food intake [6]. Thus, the aim of this study is to evaluate the diet behaviors of children with cancer.

## METHODOLOGY

### Design

Descriptive study designs are used to conduct the study. The

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study period started from 1 January to 31 May 2023 at the Baquba Oncology center in Diyala.

### Sample of the study

A total of (120) patients were selected from the Cancer Center in Baquba, Diyala Governorate, and 10 samples were excluded for the experimental study. The total number of samples participating in the study became 110 participants.

### Site and settings

The study was conducted in the departments of the Oncology Center in Baqubah District, Diyala Governorate, which consists of a pediatric consultant who receives all new undiagnosed cases, and the cases that it received previously, meaning previously diagnosed cases. As well as from the rapid glaucoma family, i.e. the rapid chemotherapy unit that does not need a long time, as well as the chemotherapy halls that provide services for giving chemotherapy to patients, which lasts from minutes to several days, sometimes weeks, in addition to a room for diagnostic bone marrow aspiration and spinal fluid withdrawal for diagnostic purposes and glaucoma chemotherapy in the spinal fluid, file room, clinical examination, room for withdrawing analyzes for the patient and providing other nursing services.

### Ethical Considerations

The researcher obtained approval from all parents verbally before the data collection.

### Data Collection

The data collected through a developed questionnaire consist of three sections involving: Demographic data and clinical information section, parents' awareness about oral health of children with cancer, and the Oral Health Scale (A-OHAT). A self-report strategy was adopted to collect data from the participants.

### Data Analysis

The data of the present study were analyzed through the use of the Statistical Package of Social Sciences (SPSS) version (26).

## RESULTS

Table 1 shows that children are with average age of 8.9 years ± 2.5 years in which 55.5% of them are seen with age group of “6-less than 10 years” and 44.5% are seen with age group of “10 years and more”. The gender refers that 54.5% of children are males and remaining are females.

List	Characteristics	f	%	
1	Age (Years) M ± SD= 8.9 ± 2.5	6 – less than 10	61	55.5
		10 and more	49	44.5
		Total	110	100
2	Gender	Male	60	54.5
		Female	50	45.5
		Total	110	100

f: Frequency, %: Percentage, M: Mean, SD: Standard deviation.

List	Characteristics	f	%	
1	Age at diagnosis (years) M ± SD= 6.5 ± 6.7	Less than 1	4	3.6
		1 – less than 4	24	21.8
		4 – less than 7	39	35.5
		7 – less than 10	30	27.3
		11 – less than 13	13	11.8
		Total	110	100
2	Type of cancer	Hematology	90	81.8
		Solid cancer	20	18.2
		Total	110	100
3	Type of treatment	For hematology	56	50.9
		For solid cancer	54	49.1
		Total	110	100
4	Interval between treatment cycle	Weekly	1	0.9
		Monthly	10	9.1
		Other	99	90
		Total	110	100
5	Using NG tube reasons	None	110	100
		Dysphagia	0	0
		Sore mouth	0	0
		Total	110	100
6	Eating with gingivitis and sores	No	110	100
		Yes	0	0
		Total	110	100
7	Eating habits	Abnormal	16	14.5
		Normal	94	85.5
		Total	110	100

f: Frequency, %: Percentage, M: Mean, SD: Standard deviation

Table 2 shows that average age at diagnosis for children refers to 6.5 years ± 6.7 years, in which the highest percentage seen with age of “4-less than 7 years” at diagnosis of cancer among 35.5% of children.

Table 3 shows that 18 presents the feeding behaviors among children with cancer; the findings indicate that children associated with mild to moderate behavioural patterns in which the mean scores indicate mild among items 1, 2, 5, 7, 10, 12, 16, 17, 18, and 19 while indicate moderate among items 3, 4, 6, 8, 9, 11, 12, 13, 14, 15, and 20.

This Table 4 indicates that children with cancer associated with moderate difficulties regarding feeding behaviors in which 50.9% of them associated with moderate level and 49.1% associated with mild level of difficulties (M ± SD= 40.73 ± 2.361).

### DISCUSSION

The results indicate that more than half of the children belonging to the school age group (6-10) age group. In contrast, less than two fifths of the sample falls into the “10 years and more” age group (Table 4).

According to the researchers’ opinion the observed age distribution is consistent with developmental trends in childhood, where the

majority of children experience significant physical, cognitive, social, and emotional changes during the early years. Additionally, children in the younger age group may require more parental supervision and assistance, leading to higher rates of healthcare utilization.

The findings of the current study are in agreement with that of Fleming in 2015 who stated that the mean age of children with cancer was about 7 years old. While in another study conducted in the United Arab Emirates the researcher’s revealed that about one third of the children were about 3 years old. A study conducted in Baghdad, Iraq found that about half of the children are under 5 years. While another study found that more than half of the children are under 8 years.

Regarding gender distribution, the study found that 54.5% of the children in the sample were males, while the remaining were females, (Table 4). However, it is important to note that the difference between males and females in the current study is relatively small and may not have significant clinical implications [7].

In the same context a study conducted in Australia found that most of the children were males about 60%, while two-fifth of them were females about 40% [8]. This result is close to that was revealed in the current study. Also, another study took place in the United Arab Emirates the researcher’s discovered that

**Tab 3.** Assessment of feeding behaviours among children with cancer (N=110)

List	Behaviors	Never f (%)	Sometimes f (%)	Always f (%)	M	Assess.
1	He eats fruit	2(1.8)	107(97.3)	1(.9)	1.99	Mild
2	He has problems chewing food	2(1.8)	96(87.3)	2(1.8)	2	Mild
3	He eats meat	2(1.8)	96(87.3)	12(10.9)	2.09	Moderate
4	He eats fish	2(1.8)	85(77.3)	23(20.9)	2.19	Moderate
5	It takes more than 20 minutes to finish the meal	20(18.2)	87(79.1)	3(2.7)	1.85	Mild
6	He drinks milk	4(3.6)	73(66.4)	33(30)	2.26	Moderate
7	Come promptly at mealtime	6(5.5)	99(90)	5(4.5)	1.99	Mild
8	He eats unwanted snacks	4(3.6)	74(76.3)	32(29.1)	2.25	Moderate
9	He will not eat or eat at mealtime	4(3.6)	96(87.3)	10(9.1)	2.05	Moderate
10	He only eats ground, filtered or soft food	43(39.1)	65(59.1)	2(1.8)	1.63	Mild
11	Leaves from the table during a meal	6(5.5)	93(84.5)	11(10)	2.05	Moderate
12	He lets the food sit in his mouth and does not swallow it	10(9.1)	97(88.2)	3(2.7)	1.94	Mild
13	He eats vegetables	4(3.6)	94(85.5)	12(10.9)	2.07	Moderate
14	He eats starches (for example, potatoes and pasta).	2(1.8)	65(59.1)	43(39.1)	2.37	Moderate
15	He suffers from poor appetite	4(3.6)	84(76.4)	22(20)	2.16	Moderate
16	He spits out food	30(27.3)	76(69.1)	4(3.6)	1.76	Mild
17	He delays eating by talking	16(14.5)	90(81.8)	4(3.6)	1.89	Mild
18	He would rather drink than eat	11(10)	96(87.3)	3(2.7)	1.93	Mild
19	He refuses to eat meals, but asks for food immediately after eating	8(7.3)	97(88.2)	5(4.5)	1.97	Mild
20	He tries to negotiate what he will and won't eat	18(16.4)	52(47.3)	40(36.4)	2.2	Moderate

M: Mean, Assess: Assessment. Normal= 1 – 1.5, Mild= 1.6 – 2, Moderate= 2.1 – 2.5, Severe= 2.6 – 3

**Tab. 4.** Assessment of feeding behaviours among children with cancer

Behaviors	f	%	M	SD	Evaluation
Normal	0	0	40.73	2.361	Moderate difficulties
Mild difficulties	54	49.1			
Moderate difficulties	56	50.9			
Severe difficulties	0	0			
Total	110	100			

f: Frequency, %: Percentage. M: Mean for total score, SD: Standard Deviation for total score. Normal= 20–30, Mild= 30.1–40, Moderate= 40.1–50, Severe= 50.1–60.

about one quarter of the children were females [9,10]. Another study conducted in Iraq by Samaher and colleagues depicts that the males were more than females [11-13]. While according to Asmahan and Khatam about 60% of the patients were males [14].

The outcome illustrates that average age at diagnosis for children is about 6 years, in which the highest percentage seen with age of "4-less than 7 years" at diagnosis of cancer among one third of children. The types of cancer among children reported "hematology cancer" among most children and "solid cancer" among less than one fifth of them.

The treatment type that children receive indicates 50% for hematology cancers and the other 50% for solid cancers. The parents of children with cancer reported that the interval between treatments is unspecified in which 90% reported "others" than week and month [15].

Regarding using nasogastric tube, all of children haven't used NG tube as reported by 100% of parents. And all parents (100%) reported that their children cannot eat with gingivitis and sores. Regarding eating habits of children with cancer, more of children show normal eating behaviors as reported by 85.5% of their parents.

According to the researcher these findings have important implications for healthcare professionals who are involved in the treatment and management of pediatric cancer patients, as they highlight the need for early diagnosis and prompt intervention, as well as the importance of addressing the specific nutritional needs of these children during treatment. Further research is needed to explore the reasons behind the unspecified interval between treatments and to identify effective interventions to improve the eating habits and nutritional status of children with cancer.

In contrast with the findings of the present study, a cross-sectional study was conducted in Australia found that the children mean age at diagnosis was 3.4 years and the mean age at the time of their parent's study participation was 7 years.

Additionally, the same study which mentioned above, found that a large proportion of the children with cancer were consuming above their estimated energy requirement.

The results of the study suggest that children with cancer exhibit mild to moderate feeding Behavior's difficulties. Moreover, the study found that half of the children exhibited moderate feeding difficulties, while the other half exhibited mild difficulties.

With regard to the researchers' opinion the feeding difficulties observed among children with cancer can be attributed to several factors related to cancer treatment, such as chemotherapy, radiation therapy, and surgery. These treatments can lead to a range of physical and psychological side effects, including changes in appetite, nausea, vomiting, mouth sores, and fatigue, which can make it difficult for children to eat and maintain a healthy diet.

A study finding conducted in Netherland agree with that of the present study, as the parent-reports revealed that almost a quarter of the children experienced eating behaviours disorder, and about 50% experienced problems related to diminished intake and 8.6% related to excessive intake. The prevalence of feeding Behavior's disorders related to parents' Behavior's was about one-fifth. In children <8 years' prevalence of eating and feeding disorders was significantly higher: 31% and 36% for child and parent behavior's respectively [15]. Younger age, poor pre-illness eating behavior, increase in symptoms and a demanding feeding style were associated with more eating problems. Excessive eating resulted in higher energy intake; however, no association was found between eating problems and nutritional status. Food refusal resulted in more parental distress [16-18].

## CONCLUSION

Most of the children with cancer are under 10 years, males, and at their school age. Only 2% of the children reported diabetes mellitus history. Children with cancer are associated with moderate difficulties regarding feeding behaviors.

## RECOMMENDATIONS

Encourage parents to be careful about their children's eating habits and feeding styles. Establishment of health educational programs to enhance and promote the oral health among children with cancer in Iraq.

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