Mothers' Knowledge About The Nutrition of Their Children with Leukemia

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Abstract

Nutrition disorders affect the health status of the children with leukemia. Children more susceptible for infection, make children not response well to treatment, and increase side effects. **Aim of the study**: This study aimed to assess the mothers' knowledge about the nutrition of the children with leukemia. **Subjects and method:** A descriptive exploratory research design was used to perform this study. The study subjects included a convenience sample of 100 mothers with their children suffering from leukemia attending the Unit of Pediatric Oncology Department (POD) at South Egypt Cancer Institute- Assuit University. Data were collected by utilizing two tools; **Tool (1):-** Children and parents' profile, **Tool (2):** Question sheet to assess the mothers' knowledge regarding nutrition of children with leukemia. **Results:** The highest percentage of the studied mothers had poor knowledge about nutrition for their children suffering from leukemia. The majority of them had unsatisfactory knowledge about the disease itself. **Conclusion:** Mothers had poor knowledge about nutrition and leukemia treatment. **Recommendations:** Workshop training programs for nurses on how to help caregivers to cope appropriately with their children to reduce the emergence of nutrition problems.

Key words: Knowledge, Mothers, Children & leukemia.

Introduction

Leukemia is a group of blood cancers that affects bone marrow and results in uncontrolled accumulation of abnormal (malignant) blood cells. The accumulation of malignant cells interferes with the body's production of normal blood cells and can result in severe anemia, decreased ability to fight infections and a predisposition of bleeding. Leukemia accounts for about one third of childhood cancer **(Sanzhar, 2007& Zupanec & Tomlinson, 2010).**

The prevalence of Leukemia in young children is 1 to 3%. Incidence of acute lymphocytic Leukemia (ALL) is 3 out 4 of Leukemia among children and teens. Chronic Leukemias are rare in children. Most of these are chronic myelogenous Leukemia (CML), which tends to occur more in teens than in younger children. **(Lozano, 2012).**

Leukemia include acute or chronic, lymphocytic or myelogenous. In many cases, the cause of Leukemia is unknown. However, leukemia may result from a variety of etiologies such as changes in the DNA inside normal bone marrow cells can cause them to become leukemia. Human DNA is packaged in 23 pairs of chromosomes. In a translocation, DNA from one chromosome breaks off and becomes attached to a different chromosome **(Aplan & Khan, 2011).**

The role of mothers is to provide good nutrition to their children with leukemia; but because of lack of knowledge about nutrition requirements for their children, mothers needs a good counseling to improve their knowledge about food and disease **(Nelson, et al., 2011 & Collins, et al., 2008).**

Children with cancer need protein, carbohydrates, fat, water, vitamins, and minerals. A dietitian can help to understand child's specific needs and develop an eating plan. Child's baseline nutritional status (Is he overweight? underweight?), diagnosis, treatment plan, age, activity levels, and current medicines are all used to make a nutrition plan. There are many ways to help the child get the needed nutrients. The most common are: By mouth, feeding tube, and by vein (**Elliott et al., 2014).**

Leukemia treatment side effects may include change in taste and smell, appetite changes, constipation, diarrhea, mouth pain, throat pain, mouth sores, difficult swallowing, nausea and vomiting, dry mouth or thick saliva, unwanted weight gain and fatigue **(Esper & Harb, 2011).**

Three key considerations exist for assessment of nutrition of the children with leukemia. First, assessment should be holistic, incorporating health history and physical examination and the consequences for the individual and those within his immediate environment. Second, one should consider the impact of the nutrition disorders in the context of other medical, environmental, and personal factors. Finally, assessments should be valid and reliable providing credible outcome data **(Hockenberry & Wilson, 2015).**

Plans of care should include individualized nutrition strategies so that the caregiving staff, health care providers, families, and significant others know the most effective way to enhance nutrition of children with leukemia **(Hockenberry & Wilson, 2015).**

Significance of the study

There are many Egyptian studies that revealed that acute leukemia is the most common in young children. Children with nutrition disorders have a poor response to treatment, poor health status and poor social interact, all of which can hinder their ability to fight infection and may lead them to become sicker. So, they often experience nausea and vomiting which can affect their health status. This study was conducted to identify the mothers' knowledge about the nutrition. Children with leukemia tend to avoid complicating malnutrition. Mothers should give good kinds of food for their children contains all nutrition requirements, but mothers need for nutrition counseling. Mothers were taken as a sample to this study because the children with leukemia need for a good nutrition to improve their healthy.

Aim of the Study

This study aimed to assess mothers' knowledge about the nutrition of their children with leukemia.

Study Questions:-

- What is the level of the mothers' knowledge about the nutrition of their children with leukemia?
- Is there a relationship between the study mothers' characteristics and their knowledge about the nutrition of their children with leukemia?

Subjects & Methods

Research Design

A descriptive exploratory research design was utilized to conduct this study.

Setting

Data was collected from the pediatric oncology department (POD) at South Egypt Cancer Institute-Assuit University.

Sample

A convenient sample of 100 mothers, 100 children suffering from Leukemia were included in the study, and admitted to the pediatric oncology department (POD) at South Egypt Cancer Institute-Assuit University. The study was carried out throughout a six month period from the beginning of January, 2015 to the end of June, 2015.

Tools

Tool (1): Children and parents' profile structured questionnaire:

It was divided into two parts

Part I: Children socio-demographic characteristics- To obtain data related to the studied children (the children's age, sex, and birth order): and the studied characteristics of the children parents that included (mother's age, residence, mothers' education, mothers' working condition, number of children in the family, the family size).

Part II:- Children' history related to the disease (previous hospitalization, duration of hospital stay, stage of disease, response to treatment, type of treatment, side effects of chemotherapy, and side effects of radiotherapy).

Tool (2): A structured Questionnaire Sheet:

This tool was utilized to assess the mothers' knowledge regarding the nutrition of their children with leukemia: It consisted of 14 questions of different forms (i.e. closed end, multiple choice, and opened questions). Scoring system of the second tool was two marks for each correct answer, one mark for incorrect answer, and zero for wrong answers.

Method of Data Collection

- Validity of the first tool was estimated by 5 experts in the pediatric field and its result was V=0, 92 %.
- Internal consistency was measured by alpha Cranach's test for (tools I, II) and its result was r=0.8.
- A pilot study was covered 10 % of the studied sample, it was conducted on first ten children of the study sample to test clarity of the questionnaire, estimate the length of time needed to collect data and modification were done to fill the questionnaire and applicability of the tool.
- This study was carried out through a period of six months from (January 2015 to June 2015), every day/week, a number of patients rang from2 to 3 every day; all tools were filled through interviewing each child or their parents individually. The purpose of the study was explained to every child or their parents prior to answering the question. The average time taken for completing each questionnaire was around 45 minutes or more depending on the response of the child and his parents to a question.
- An official request was obtained from Dean of the Faculty of Nursing, Assuit University to the head of the South Egypt Cancer Institute. This letter was included a brief explanation of purpose of the study.

Ethical considerations

An informed consent was taken from the child's parents. Clarification of the nature and aim of the study was done at the beginning of the interview with

each child's parents with an emphasis that the study yields no harm to the studied children. Confidentiality and anonymity was being assured. Study subject has the right to refuse to participate and or withdraw from the study without any rational at any time.

Statistical analysis

Data obtained from the study tools was analyzed, categorized and then coded. Data entry and statistical analysis were done using the compatible personal computer through the SPSS Statistical Package 20.0 for Windows. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, mean and standard deviations for quantitative variables. Qualitative variables were compared using Chi-square and ANOVA tests. Spearman correlation coefficient test was used to test correlation between variables. Statistical significance was considered at P. value <0.05.

Results

Table (1): Socio-demographic characteristics of the studied children and their parents.

Item	No=(100)	%
Mother's age		
< 20 years	2	2.0
20 -< 29	36	36.0
29 -< 40	46	46.0
≥40 years	16	16.0
Mean± SD	32.7±9.1	
Residence		
Urban	24	24.0
Rural	76	76.0
Mother's education		
Illiterate	26	26.0
Read or write	18	18.0
Primary education	7	7.0
preparatory education	12	12.0
Secondary or equivalent education	29	29.0
University education	8	8.0
Mother's working condition		
Working	13	13.0
House wife	87	87.0
Number of children in family		
1-	33	33.0
3-	50	50.0
≥ 5	17	17.0
Family size		
< 4 members	41	41.0
4 - 6 members	39	39.0
≥7 members	20	20.0
Children's age		
2 - years	63	63.0
8 - years	19	19.0
10 - years	14	14.0
14 years	4	4.0
Mean± SD	7.2±5.3	
Sex		
Male	65	65.0
Female	35	35.0

Item	No=(100)	%
Birth order		
First	21	21.0
2nd	39	39.0
3rd	23	23.0
4th	11	11.0
5th	2	2.0
6th or more	4	4.0

Table (2): Percentage of the distribution of the previous history of leukemia in the studied children.

Item	No.	%
Previous family history		
Yes	77	77.0
No	23	23.0
If yes what is it?		
Leukemia	94	94.0
Legs and neck tumor	1	1.0
Testicular tumor	1	1.0
Swelling in the glands	1	1.0
Tumor in the lymph node	1	1.0
Tumor in the kidney or liver	1	1.0
Brain tumor	1	1.0
Previous Hospitalization		
Yes	86	86.0
No	14	14.0
Duration of Hospital stay:		
1 - days	36	36.0
7 - days	31	31.0
15 days	13	13.0
one month or more	20	20.0
Stage of disease:		
Early	68	68.0
Late	32	32.0
The child's response to treatment:		
Good	50	50.0
Medium	32	32.0
Bad	18	18.0
Medication used		
Chemotherapy	91	91.0
Radioactive chemical	9	9.0
Side effects for chemotherapy that happen to the child		
Vomiting	87	87.0
Fitness	23	23.0
Inflammation of the mouth	63	63.0
Headache and sense of dizzy	35	35.0
Diarrhea	50	50.0
Lethargy and lack of awareness	42	42.0
Inflammation of the skin	21	21.0
Lack in the kidney function	6	6.0

Item	No.	%
Appearance of the skin patches	22	22.0
Failure in the skin function	5	5.0
Hair loss	83	83.0
Pounding nails	22	22.0
The effect on the heart	10	10.0
Inflammation of the blood vessels	23	23.0
Feeling pains when administering I.V medication	50	50.0
The side effects of radiotherapy that happen to a child		
Nausea and vomiting	6	6.0
Hair loss	9	9.0
Loss of appetite	9	9.0
Diarrhea	6	6.0
Mouth ulcers	2	2.0

Table (3): Mother's knowledge about leukemia (correct and incorrect answer).

Item	No.	%	No.	%
Definition of leukemia	34	34.0	66	66.0
Causes of leukemia	14	14.0	86	86.0
Symptoms of leukemia	27	27.0	73	73.0
Types of leukemia	19	19.0	81	81.0
Complications of leukemia	23	23.0	77	77.0
Treatment of leukemia	58	58.0	42	42.0
Nursing care for children with leukemia	51	51.0	49	49.0

Table(4): Mother's knowledge regarding nutrition used during child's illness.

Item	No.	%
Mother knowledge about nutrition		
Know	65	65.0
Don’t know	31	31.0
Another answer	4	4.0
Child's diet was based mainly on		
Protein	34	34.0
Starches	25	25.0
Vitamins	35	35.0
Fat	10	10.0
A well-balanced diet	52	52.0
Nutrition intake by		
Oral	95	95.0
Intravenous	5	5.0
Food intake:		
When needed	96	96.0
With schedule	4	4.0
Does the child take food during diarrhea or vomiting?		
Yes	23	23.0
No	77	77.0
Previous hospitalization because of malnutrition?		
Yes	12	12.0
No	88	88.0

Item	No.	%
Does the child allergy to a particular food?		
Present	4	4.0
Absent	96	96.0
Type of food that causes allergy		
Milk	1	1.0
Eggs and fish	1	1.0
Eggs and chocolate	1	1.0
Cheese	1	1.0
Duration of allergy		
1 - 2days	3	3.0
3-<6 days	1	1.0
Does the child reduce food?		
Yes	4	4.0
No	96	96.0

Table (5): Total score of studied mother's knowledge regarding leukemia who were attending South Egypt Cancer Institute. at Assuit University, no=100.

knowledge level	No.(100)	%
Satisfactory	27	27.0
Unsatisfactory	73	73.0

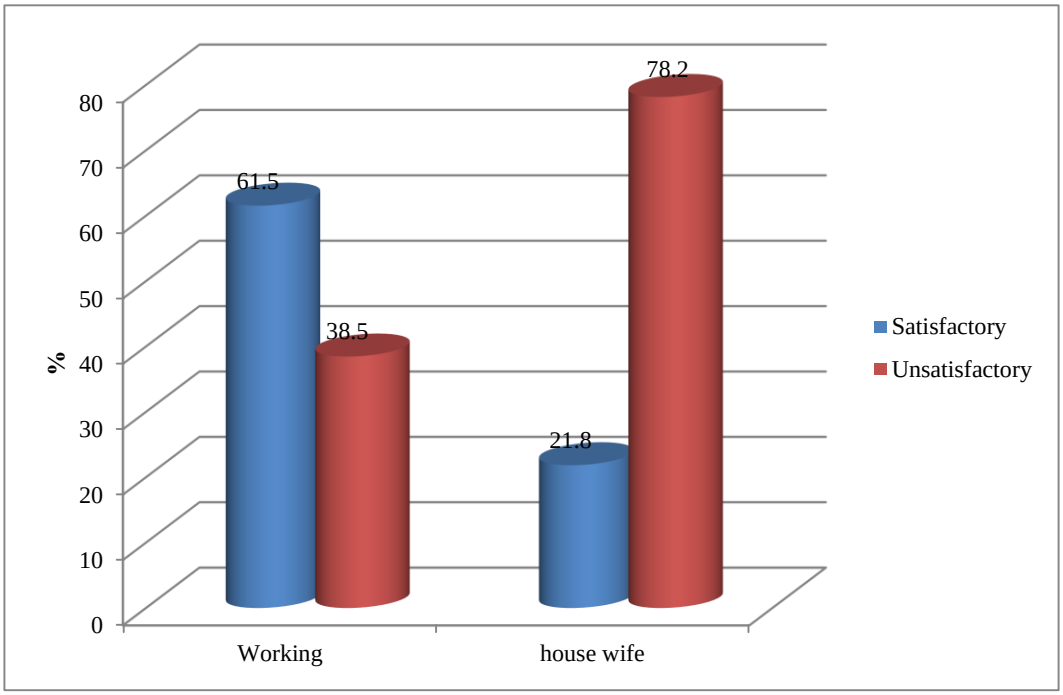

Figure (1): Distribution of the studied mothers according to their working condition who were attending South Egypt Cancer Institute. at Assuit University, no=100.

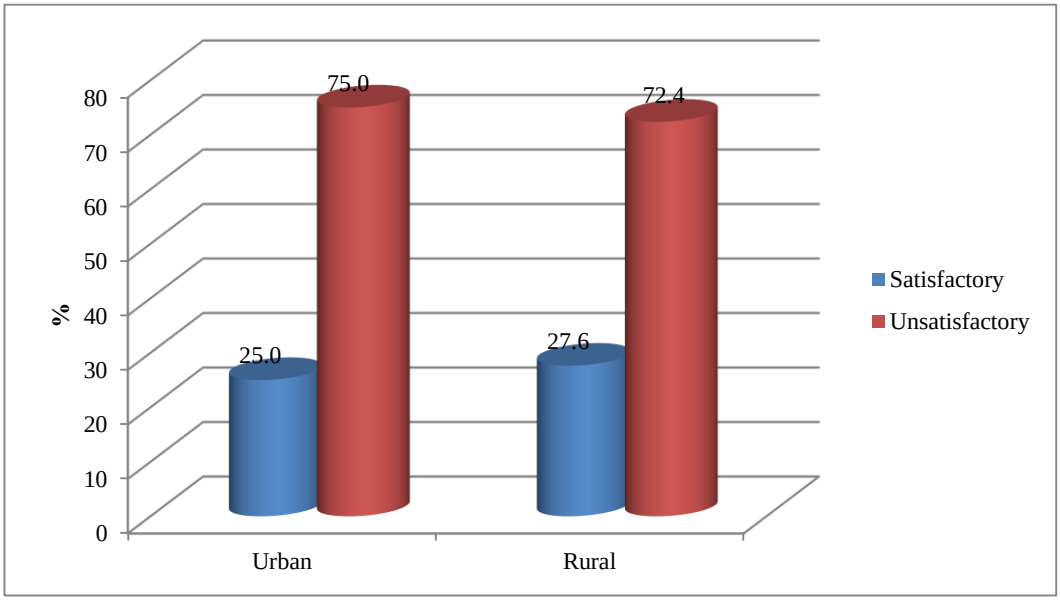

Figure (2): Distribution of the studied mothers according to their residence who were attending South Egypt Cancer Institute. at Assuit University, no=100.

Table (6): Relation between mothers' total knowledge score and their socio-demographic characteristics (No=100).

Socio- demography	Mothers' knowledge about leukemia				P. value
	Satisfactory		Unsatisfactory		
	No.	%	No.	%	
Mother's age					0.027*
< 20 years	0	0.0	2	100.0	
20-<29 years	5	13.9	31	86.1	
29-<40 years	19	41.3	27	58.7	
≥ 40 years	3	18.8	13	81.3	
Residence					0.800
Urban	6	25.0	18	75.0	
Rural	21	27.6	55	72.4	
Mother's education					0.002**
Illiterate	6	23.1	20	76.9	
Read or write	2	11.1	16	88.9	
Primary education	1	14.3	6	85.7	
preparatory education	2	16.7	10	83.3	
Secondary or equivalent education	9	31.0	20	69.0	
University education	7	87.5	1	12.5	
Mother's working condition					0.003**
Working	8	61.5	5	38.5	
House wife	19	21.8	68	78.2	

** Statistically significant difference (p≤0.05)*
***Highly Statistically significant difference (p≤0.01)*

Table (7): Relation between mother's knowledge about nutrition and socio-demographic characteristics (No=100).

Socio-demography	Mother's knowledge about nutrition for the child				P. value
	Satisfactory		Unsatisfactory		
	No.	%	No.	%	
Mother's age					
<20 years	0	0.0	2	100.0	0.323
20 -< 29	13	36.1	23	63.9	
29 - <40	21	45.7	25	54.3	
≥ 40	9	56.3	7	43.8	
Residence					
Urban	9	37.5	15	62.5	0.532
Rural	34	44.7	42	55.3	
Mother's education					
Illiterate	11	42.3	15	57.7	0.966
Read or write	8	44.4	10	55.6	
Primary education	3	42.9	4	57.1	
preparatory education	6	50.0	6	50.0	
Secondary or equivalent education	12	41.4	17	58.6	
University education	3	37.5	5	62.5	
Mother's working condition					
Working	5	38.5	8	61.5	0.723
House wife	38	43.7	49	56.3	
Number of children in family					
1-2	11	33.3	22	66.7	0.345
3-4	23	46.0	27	54.0	
≥5	9	52.9	8	47.1	
Family size					
<4	18	43.9	23	56.1	0.690
4- 6	15	38.5	24	61.5	
≥ 7	10	50.0	10	50.0	

** Statistically significant difference (p≤ 0.05)*
***Highly Statistically significant difference (p≤0.01)*

Table (1): Showed socio-demographic characteristics of the studied children and their parents. Nearly half of the studied mothers (46.0 %) were aged between 29 - <40 years old, with mean + SD of age (32.7±9.1). More than three quarters of the studied mothers (76.0%) were from rural areas. The highest percentage of the studied mothers (29.0%) had a secondary or equivalent education. The majority of the studied mothers (87.0 %) were housewives. Exactly half of the studied mothers had a 3-4 children in their families. The highest percentage of the studied children were aged between 2- <8 years old, with mean + SD of age (7.2±5.3) years. More than three fifths (65.0%) of the studied children were males. The highest percentage of them (39.0%) was the second in their family order.

Table (2): Showed the percentage of distribution of the previous history of leukemia in the studied children. The highest percentage of children (77.0 %) had a previous family history of certain tumors and the majority of the affected family members had leukemia. More than one quarter of the studied children (36.0%) where previously hospitalized for 1 - < 7 days. The highest percentages of children (68.0%) were in the early stage of disease. Exactly half of children (50%) responsed to treatment. The majority of children (91.0%) had been treated with chemotherapy. The most common side effect of chemotherapy was vomiting in the majority of children (87.0 %). Exactly half of children experienced pain when administered medicines intravenously. The side effects of radiotherapy were hair loss and loss of appetite was (9.0%) for both of them.

Table (3): Illustrated mother's knowledge about leukemia. The highest percentage of mother (66.0 %) had an incorrect knowledge about definition of leukemia. The majority of the studied mothers

(86.0%) had an incorrect knowledge about causes of leukemia. Nearly three quarters of them (73.0 %) had a correct knowledge about symptoms of leukemia. The majority of the studied mothers (81.0 %) had an incorrect knowledge about types of leukemia. More than three quarters of them (77.0 %) had an incorrect knowledge about leukemia complication. More than half of them (58.0%) had a correct knowledge about treatment of leukemia. More than half of them (51.0) had a correct knowledge about nursing care for children with leukemia.

Table (4): Showed mother's knowledge regarding nutrition used during child illness. As seen from table (4), more than half of the studied mother (65.0 %) had a satisfactory knowledge about good nutrition necessary for their children. More than half of the studied mothers (52.0%) had given their children a well-balanced diet. The majority of the studied mothers (95.0%) had given food per mouth. Ninety six percent had given food when the children needed. Seventy seven percent of these children had not taken food during diarrhea or vomiting. The majority of children (88%) had not admitted to hospital because of malnutrition. Only 4% of these children have allergy to a particular food. Regarding duration of allergy (1%) of these children had a continuous allergy from (3≤ 6) days. The highest percentages of the studied mothers (96%) had not reduced food that caused allergy for their children.

Table (5): Showed that total score of studied mother's knowledge regarding leukemia. Near to three quarter of the studied mothers (73.0%) had an unsatisfactory knowledge about leukemia.

Figure (1): Showed that more than three quarter were house wife (78.2%) had unsatisfactory knowledge about leukemia. More than half of the studied mothers were working (61.5) had satisfactory knowledge about leukemia.

Figure (2): Showed that more than one quarter of the studied mothers were from rural area (27.6%) had a satisfactory knowledge about leukemia, Exactly three quarters of mothers were from urban area (75.0%) had an unsatisfactory knowledge about leukemia.

Table (6): As seen from table (6), a significant relation ($p < 0.05$) was found between mother's age and their knowledge about leukemia. All mothers who aged less than 20 years had an unsatisfactory knowledge about leukemia. A high statistically significant relation ($p < 0.01$) was found between mother's education and mother's knowledge about leukemia. The highest percentage of mothers who read and write had an unsatisfactory knowledge about leukemia. A highly statistically significant relation ($p < 0.01$) was found between mother's working condition and mother's knowledge about leukemia. The highest percentage of those who don't work had an unsatisfactory knowledge about leukemia

Table (7): Illustrated the relation between mother's knowledge about nutrition and socio-demographic characteristics. Results revealed that there were no statistically significant differences ($P > 0.05$) between the mothers according to their knowledge about nutrition regarding their socio-demographic data.

Discussion

Leukemias are the most common malignant neoplasms in childhood, accounting for about 31% of all malignancies that occur in children <15 years of age. Acute leukemia is the most common in young children. Leukemia imposes a significant burden not only on health but also leads to lower productivity and reduces participation in family life. It affects every aspect of children and parents' life. Children with nutrition disorders had poor responded to treatment, the roles of mothers to had given their children a good nutrition, but. Mothers needed for counseling about nutrition **(Garcia ,et al., 2012).**

According to the studied Mothers' age, the highest percentage of the studied mothers was aged between29-<40 years with mean ± SD of age (32.7±9.1). This due to the fast that is mother of young age had an unsatisfactory knowledge about nutrition and leukemia treatment, mother needs for good counseling. This result was in a disagreement with **Geetha,** (**2015)** who revealed that more than half of the caregivers aged from 35 to less than 45 years with mean ± SD of age (9.2 ± 2.1).

Regarding residence of the studied families, this study showed that more than three quarters of the studied mothers were from rural area, while less than of them were from urban area. It may be explaining by rural environment can pose significant health risks for children with leukemia including radiation and chemicals. Moreover, living near power lines or nuclear power plants are located in rural more than urban areas. This finding was in an agreement with **Al-Jauissy, (2010)** who conducted a study on Jordanian caregivers and found that most of the caregivers were from rural areas.

Regarding the educational level of the mothers, the present study found that more than one quarter of the studied mothers have a secondary or an equivalent education. In my opinion illiteracy mothers usually found difficulty to understand the nature of disease and to apply a new management strategy of treatment. Education greatly strengthens the women to perform their vital roles in caring of their children and creating a healthy. These results were consistent with that done by **Oliveir, et al., (2011)** who investigated the effects of food habits on leukemia in pre-school& school age children, that nearly half of

children's mothers have a secondary school education.

According to mothers' working condition the vast majority of the studied mothers were housewives this due to unemployed mothers makes them not interesting in increasing their knowledge and living traditional day activity without novation. And employed mothers interact with educated people that having knowledge and experience this increases their knowledge and experience. This result disagreed with **Geetha, (2015)** who revealed that about one third of the caregivers were house wives.

Regarding number of children in the family, exactly half of the studied mothers had (3-4) children, this result nearly agreed with **Gaugler, (2007)** who showed that exactly half of the studied mothers had (1-3) children in the family.

According to the family size, the present study noted that more than one third have (4 -6) members. From the researcher's point of view, mothers from big family size haven't enough time to ask and read about leukemia. This agreed with **Lim, et al., (2014)** who noted that more than one third of the families have (3-6) members. With increasing number of children in the family, their parents become psychologically affected and they may blame themselves for their child's illness and these will be reflected on the child.

Results of the study indicated that males are predominant, and children less than eight years old are more affected. From the researcher's point of view, gender difference was the genetic factors play a major role in occurring of leukemia. This results was found in many studies one of them don by **El-sawy, et al., (2013), & Geetha, (2015)** who found that males children less than eight years old groups are affected more.

Concerning children's birth order, the present study cleared that highest percentage of leukemia children was among those in the 2nd birth order group. Because most of the leukemic children in this group were males, they were particularly important to their parents, so they gained more attention and protection than any other siblings. The reason may be due to lack of age and experience of new mothers so that mothers didn't have sufficient experience when deal with the second child. This result disagreed with the results of **Abrahao, et al., (2015)** which showed that the highest percentage of children with leukemia were the youngest in their families.

According to stage of disease, results indicated that the highest percentage of the studied children with leukemia were in the early stage of disease. This finding was supported by **Meyer & Basch, (2015)** who found that early detection and treatment of disease in children was important to the health of children.

In the present study, the majority of children were treated by chemotherapy. This result agreed with **Baggot, et al., (2011)** who revealed that treatment of children with leukemia was more successful than treatment of adult patients with cancer. In general, childhood cancers respond better to chemotherapy because these cancers tend to be fast-growing and chemotherapy affects cells that grow quickly. Moreover, children are better able to physically recover from higher doses of chemotherapy side compared with an adult.

Regarding the effects for chemotherapy and radiotherapy, the majority of the studied children had vomiting, and loss of appetite. The nurse must inform the children and their parents about these side effects and how to reduce them. This was done in the present study by either verbal, written or demonstration information. This finding was supported by **Evans, et al., (2013)** who showed that children who had been treated of leukemia had causes of vomiting, bad taste of food and smell. Chemotherapy with accompanying nausea often causes a loss of appetite and weight loss.

Regarding mothers' knowledge level of leukemia, the majority of them had an unsatisfactory knowledge about definition, classification, causes, manifestation, and complication of leukemia. In my opinion this related to illiteracy of mothers and unemployed mothers make them not interesting in increasing their knowledge by reading books, magazine, searching in net sites. Or may due to mothers were not known the meaning of leukemia . This result was in agreement with **Hassan, et al., (2011)** who revealed that the majority of caregivers had a deficient knowledge regarding causes, symptoms, complication and treatment of the leukemia and the majority of caregivers had a poor knowledge regarding complications and side effects of chemotherapy.

Regarding the type of diet that the children were taken during a week, we noticed that more than half of our studied sample stated that they sometimes were taken a different diet during a week. The studied mothers gave their children a balanced diet orally, without schedule, mothers didn't give their children feeding during diarrhea and vomiting. This result was consistent with **Bahy-Eldin, (2007)** who stated that the highest percentage of mothers gave their children adequate nutrition orally, without schedule. Nutrition requirements depend upon metabolic needs. Child's diet should contain a sufficient amount of fluids, calories, proteins, fats, carbohydrates, vitamins, and minerals.

In the present study there was a significant relation between mothers' knowledge about leukemia and their socio-demographic data: There were a highly statistically significant relation between residences, mothers' education, mothers 'working condition, and

their knowledge. It was found that rural mothers showed a significantly higher rate of correct knowledge than urban mothers. This may be due to the fact that all of the rural mothers who were included in the present study were educated and working. The highest percentage of mothers with correct knowledge about leukemia was among those with university education, while the highest percentage of mothers with incorrect knowledge was among the read or write group. It was found that the highest percentage of mothers with correct knowledge about leukemia was among the working mothers, while the highest percentage of house wives had an unsatisfactory knowledge. In my opinion this related to illiteracy mothers usually found difficulty to understand the nature of disease and to apply a new management strategies of treatment .Education greatly strengthens the women to perform their vital roles in caring of their children and creating healthy and unemployed mothers makes them not interesting in increasing their knowledge and living traditional day activity without novation.

The present study revealed that there were no statistically significant differences (P> 0.05) between mother's knowledge about nutrition and socio-demographic data.

Conclusion

The present study revealed that nutrition disorders negatively affect the health status of the affected leukemic children. It affected every aspect of children and parents' life. Near to three quarters of the studied mothers had a poor knowledge about nutrition of their children with leukemia.

Recommendation

Based upon findings of the current study, an educational program for parents of children suffering from leukemia should be done. This program will include counseling skills about importance of nutrition and treatment of leukemia. Mothers needs booklet containing information about nutrition for their children. Mothers can choose food containing all nutrition requirements for children. Moreover, children should be closely monitored during feeding.

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