DOI: https://doi.org/10.53350/pjmhs22163520

ORIGINAL ARTICLE

Effectiveness of An Educational Program on Caregivers' knowledge about Nutritional Status of Children with Leukemia at Hematology Center in Medical City

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ABSTRACT

Background: One of the disorders for which cancer research and therapy are expected to bring positive results is a childhood acute leukemia[1]. Childhood cancer is a prominent cause of child mortality in affluent nations and a well-known contributor to malnutrition and death in underdeveloped countries, particularly those with poor socioeconomic level[2].

Objectives: The study aims to assess caregivers' knowledge about nutritional status of children with leukemia and construct educational program according to the assessment needs of caregivers about nutritional status

Research Methodology: Quantitative research "quasi-Experimental Study one group" carried out from the period of 9th of February 2021 to the 20th April of 2022. The validity of the instruments was achieved through a panel of (10) experts. The questionnaire is composed of two parts, each of which is divided into many sections. The first part deals with demographic information about caregivers, while the second part is separated into two categories, (first section contain 14 multiple choice questions and second section contain 6 true and falls question). The data in this study were analyzed using the Statistical Package for Social Science (SPSS) version 26

Results: The current study's findings indicated that the group of (25) caregivers participants' age group between (25-34) years represents (50%) and the mothers level of educational in the results of the presents study displayed that the percentage of those with university education accounts (1/4) of the total study sample and their number represents was (7) mothers. The family socio-economic status level in the result of the present study indicate that half of samples come from the middle levels. The present study result reveals the caregiver's age with their knowledge pass the first section of the question and represent (15.4%) of the sample study, while the second section of the knowledge question represent (23.1) of sample study at age (25-34)years.

Recommendation: Education program for caregiver's with child leukemia to improve their knowledge and attitudes. Working on the establishment of compulsory courses for caregiver's who have children with leukemia in collaboration with the Ministry of Health and the centers of treating the child with cancer. Encouraging caregiver's to learn about nutrition statues, if not financially at least let it be morally.

Keyword: Leukemia, Nutrition, caregivers, Educational, Knowledge.

INTRODUCTION

Leukemia is about one third of childhood cancer and its type of malignant blood disease that affects stem cell and results in uncontrolled cumulation of malignant types of cells blood. The accumulation of cancer cells interferes with the body's product of normal blood cells and can result in severe decrease red blood cell causing anemia, decreased ability to fight disease and a predisposition of bleeding[3]. There are deferent types and stages of leukemia include acute or chronic, lymphocytic or myelogenous, the cause of Leukemia is still unknown. However, leukemia may result from assortment of etiologies such as changes in the DNA inside normal bone marrow cells can reason them to become leukemia[4]. Protein, carbs, fat, water, vitamins, and minerals are required for children with malignant. A nutritionist may assist in determining a children individual nutritional requirements and developing a diet plan. A nutrition strategy is developed a child overweight or underweight depending on his nutritional status at the start age, exercise levels, and existing medicines are all factors to consider when determining a diagnosis and treatment strategy. There are a variety of approaches that may be used to assist the youngster in obtaining the nutrients he or she requires. The most common: By mouth, through a nasogastric tube, and through a vein[5]. Information support is one of the pillars of the cancer supportive care framework[6]. Mother's play leading role to provide nutrition to their children who suffers with leukemia but because the lack of information about nutrition requirements for their kids, mothers needs a good counseling services to improve their knowledge about nutrition and disease[7].

METHODOLOGY

A non-probability (Purposive) for the current investigation, a sample has been chosen. The sample is made from of (25) caregivers companied their children with the newly diagnoses of leukemic children selected from pediatric ward in hematology center at medical city conducted as one group study, they were participant as a sample of the study and exposed to an interventional program lectures, from the period of 9th of February 2021 to the 20th April of 2022, according to the early study's findings, the majority of caregivers have insufficient dietary expertise. In order to assess their requirements, and as a result of that evaluation, an interventional program is designed to meet those needs.

RESULTS

Table 1: Distribution of socio-demographic characteristics for Caregivers'

No.	Variables	Groups	F	%
1	Age of Caregivers (years)	15-24	2	8.0
		25-34	13	52.0
		35-44	9	36.0
		More than 45	1	4.0
		Total	25	100%
2	Education level of Caregivers'	Primary	5	20.0
		Middle school	4	16.0
		High School	6	24.0
		Institute	3	12.0
		College	7	28.0
		Total	25	100%
3	Family Type	Nuclear	10	40.0
		Extended	15	60.0
		Total	25	100%
4	Family (Socio-Economic Status level)	Low levels	3	12.0
		Middle levels	12	48.0
		High levels	10	40.0
		Total	25	100.0

Table (1) shows that is highest percentage of the study sample which represented by (52%) caregiver's age groups from (25-34) years old, (28%) of the study sample were graduates from

(college), then followed by (24%) graduates from the high school, were (60%) in extended family, while (40%) in nuclear family types is (48%) come from family middle level of socio-economic status.

Table 2: Distribution caregiver's age group and their demographic characteristics with their knowledge of pretest and post-test.

Age group /years	Frequency	Pass first sections of pretest and post-test (knowledge of question)		Pass second sections of pretest and post-test (knowledge of question)	
15-24	2 (8)	0	2 (100)	0	1(50)
25-34	13 (52)	2(15.4)	13(100)	3(23.1)	6(46.2)
35-44	9 (36)	1(11.1)	9 (100)	1(11.1)	4(44.4)
More than 45	1 (4)	1(100)	1(100)	1(100)	0
Total	25 (100%)	4(16%)	25 (100%)	5(20%)	11 (44)

The table (2) shows that the age group between (25-34) years that passed in the first section and second section in both pretest and post-test in addition to that the age group between (35-44) years is shows passed in first and second question for pre and pot-test.

Table 3: Distribution of caregiver's according to the Level of Education with their knowledge pretest and post-test result.

Level of education graduation	Frequency	Pass first section of pretest and post-test (knowledge of question)		Pass second section of pretest and post-test (knowledge of question)	
Primary school	5 (20)	1 (20)	5 (100)	0	1 (20)
Middle school	4 (16)	0	4 (100)	1(25)	3 (75)
High School g	6 (24)	0	6 (100)	0	2 (33.3)
Institute	3 (12)	0	3 (100)	0	0
College	7 (28)	3 (42.9)	7 (100)	4(57.1)	5 (71.4)
Total	25 (100)	4 (16)	25 (100)	5 (20)	11 (44)

The table (3) shows that the only college of educational level is passed in first and second section for both pre and post-test.

Table 4: Distribution of caregiver's according to Socio-economic levels with their knowledge of pretest and post-test result.

Economic state	Frequency	Pass first section of pretest and posttest (knowledge of question)		Pass Second sections of pretest and post-test (knowledge of question)	
Low levels	3 (12%)	1(33.3)	3 (100)	0	1 (33.3)
Middle levels	12 (48%)	0	12 (100)	1(8.3)	4 (33.3)
High levels	10 (40%)	3 (30)	10 (100)	4 (40)	6 (60)
Total	25 (100)	4 (16)	25 (100)	5 (20)	11 (44)

The table (4) show that the all socio-economic levels there is a change in the first and second section in both pre and pot-test.

Table 5: Association between the pretest and post-test of caregiver's knowledge for section one and section two according to the socio-economic.

Knowledge	N	Mean	SD	P value
Pretest section one	25	37.77	1.4	0.001
Post-test section one	25	84.9	1.5	
Pretest section two	25	43.1	1.9	0.02
Post-test section two	25	52.8	1.1	

The table (5) presents the statistical association between the pretest and post-test for section one and section two at P. value ≤ 0.05 level.

The table shows high significant relationships for pretest and post-test in section one (knowledge of question**)**, in additional to that, the section two (knowledge of question)**,** is a high significant.

Table 6: Association between the pretest and post-test caregiver's knowledge for section one (knowledge of question), according to their Age group.

Age group/years	No.	Pretest (mean± SD)	Post-test (mean± SD)	P value
15-24	2	24.8±1.5	60±5.1	0.2
25-34	13	39.8±1.4	90.1±1.4	0.001
35-44	9	34.7±1.2	82±1.4	0.001
≥ 45	1	63	92	--

The table (6) presents the statistical relationships between the pretest and post-test at P. value ≤ 0.05 level.

The table shows that a high significant relationships in age group (25-34) and (35-44) accounted at 0.001 in section one.

The table (7) presents the statistical relationships between the pretest and post-test at P. value ≤ 0.05 level.

The table shows that is no significant relationships between age group in pretest and post-test excepted (15-24) accounted at 0.005 in section two.

Table 7: Association between the pretest and post-test caregiver's knowledge for section two (knowledge of question), according to the Age group.

Age group	No.	Pretest (mean± SD)	Post-test (mean± SD)	P value
15-24	2	24.9 ±1.1	56±1.1	0.005
25-34	13	44.6 ±2.2	54.4±1.2	0.1
35-44	9	40.5±1.4	48.3±1.3	0.2
More than 45	1	83	64	---

Table 8: Association between the pretest and post-test caregiver's knowledge for section one (knowledge of question), according to the level of education.

Level of education	no	Pretest (mean± SD)	Post-test (mean± SD)	P value
Primary	5	36.9 ±1.2	89.4±0.8	0.002
Middle school	4	30.1±1.5	86.9±2.2	0.001
High School	6	30.7±0.9	76.9±1.4	0.001
Institute	3	42.6±7.1	78.1±1.6	0.03
College	7	46.6±1.7	90.2±1.5	0.001

The table (8) presents the statistical relationships between the pretest and post-test at P. value ≤ 0.05 level.

The table shows that is a significant relationships between all of levels of educations in pretest and post-test for section one.

The table (9) presents the statistical relationships between the pretest and post-test for section one and section two at P. value ≤ 0.05 level.

The table shows that is un significant relationships between all levels of educations in pretest and post-test for section two.

Table 9: Association between the pretest and post-test caregiver's knowledge for section two (knowledge of question), according to the level of education.

Level of education	no	Pretest (mean± SD)	Post-test (mean± SD)	P value
Primary	5	29.8±1.3	48.3±1.1	0.08
Middle school	4	41.5±1.5	60.3±0.8	0.1
High School	6	35.9±1.2	50.9±1.2	0.09
Institute	3	35.9±1.2	50.9±1.3	0.4
College	7	64±1.4	57.5±1.2	0.3

Table 1: Association between pretest and post-test caregiver's knowledge for section one (knowledge of question), according to economic state

Economic state	No	Pretest (mean± SD)	Post-test (mean± SD)	P value
Low levels	3	37.8±1.6	85.2±0.7	0.01
Middle	12	32.5±1.1	80.4±1.7	0.001
High	10	44±1.5	90.1±1.3	0.001

The table (4-10) presents the statistical relationships between the pretest and post-test for section one and section two at P. value ≤ 0.05 level.

The table shows that is highly significant relationships between socio-economic state for all levels in pretest and post-test for section one.

Table 11: Association between pretest and post-test caregiver's knowledge for section two (knowledge of question), according to economic state.

Economic state	No	Pretest (mean± SD)	Post-test (mean± SD)	P value
Low levels	3	22.1±0.9	53.6±0.9	0.001
Middle levels	12	35.9±1.5	49.6±1.2	0.01
High levels	10	58.1±1.6	56.3±1.1	0.7

The table (11) presents the statistical relationships between the pretest and post-test for section one and section two at P. value ≤ 0.05 level.

The table shows that is highly significant relationships between socio-economic state for lowest and middle levels in pretest and post-test for section two.

DISSOCIATION OF THE STUDY

Table (1) shows that the current study's findings indicated that the group of (25) caregivers participants' age group between (25-34) years represents (50%) which reflects the normality of marriage rates in the Iraqi society due to traditions and because the families help their daughters to finished their study and then get married of most of the sample from urban area . This finding is similar to a study conducted in Assuit University, Egypt in (2017) about Assessment of caregivers Knowledge about the Nutrition Status of Leukemic Children the study reported that the range of mothers age group represents (29 -≤ 40) years for their sample which consists of (46) caregivers accoun (50%) of their study sample. Moreover result of the present study disagree with the study conducted in the Erbil, Iraq by Hasan, Hussein, & Al-Ani (2011), about the "Evaluation of home care management for moms with leukemic children was carried out in Erbil" which mentioned that the mothers of their sample age group is between (36-40) years.The mothers level of educational in the results of the presents study displayed that the percentage of those with university education accounts (1/4) of the total study sample and their number represents was (7) mothers, this result not consistent with the study of Fouad & Hassan (2016), in University of Ain Shams, Egypt study revealed the Impact of Health Education Program upon Caregivers (Mothers) of Leukemia Children that education level of the caregivers were (1/3) of the (60) mothers in the sample of the study. In relation to the type of family the results of this poll, the extended family is adequately represented (2/3) of the total study sample, this result is might be reflects the nature of Iraqi society and it is possible for the economic situation some of the family is not able to be in a separate house after marriage due to the economic burden.Moreover, family socio-economic status level in the result of the present study indicate that half of samples come from the middle levels which is might be express the socio-economic family in Iraq, this result disagree with the study conducted by Community Health Nursing Department in University of Ain Shams, Egypt related to the Impact of Health Education Program upon Caregivers (Mothers) of Leukemia Children they reported that most of the study sample account (80%) of family with low socio-economic status levels, table (1).The present study result in table (2) reveals the caregiver's age with their knowledge pass the first section of the question and represent (15.4%) of the sample study, while the second section of the knowledge question represent (23.1) of sample study at age (25-34)years. It constituted half of the study sample and this agree to the study that conducted in Erbil city in north of Iraq (2010), entitled "Evaluation of Home Care Management for Caregivers of Leukemic Adolescent Patients in Erbil" (80%) have deficit knowledge regarding the importance of nutrients, this result indicated Iraqi society does not care about health and nutritional culture due to various reasons, including personal, social or economic ones, and may be government policies not paying attention to this aspect of people's lives too.The caregiver's level of education with their knowledge in pretest result of the present study shows that the sample pass the first section of question knowledge and pass the second section of question knowledge half of study sample who graduated from college reflects that their advances level of education in the study's sample becomes influential factor in terms of knowledge regarding many topics related to their daily life. Result it is disagree with the study held in the Universidade Federal do Mato Grosso, Brazil, 2011, entitled " Caring for pediatric With malignant: A Study of the obstacle and Quality of Life of Caregivers" their finding despite most caregivers' low education level, no correlation was found between that variable and quality of life or burden. While the post-test shows that the level of caregivers education with their knowledge of post-test respond a quarter of the sample answer questions correctly were the sample of college graduates level and this result indiction that the academic study of present study sample influences the person's culture in general and to the treatment of cancer-stricken youngsters and how they are understanding their children nourishment and this study result is agree with the study held in the Ankara Turkey 2014, "The effects of mother' nutritional knowledge on attitudes and behaviors of children about nutrition" Their finding reported imply that a mother's educational standing has an impact on her children's eating habits. Mothers with a greater degree of education had more favorable attitudes on healthy eating. Water, rice, bread, vegetables, fruits, meat, fish, poultry, egg, and milk products are preferred by children of high-educated moms over children of middle- or low-educated mothers, Table (3).Caregiver's socio-economic levels with their knowledge of pretest study result reported that half of the study sample with middle levels is effected on caring of the child with leukemia or another disease because the financial situation affects the meeting of the daily needs of cancer patients in particular. And this present study result agree with the study held in the India, 2019, entitled "Effect of socio-economic status & proximity of patient residence to hospital on survival in childhood acute lymphoblastic leukemia" who reported that the socioeconomic status has been shown to have a detrimental influence on outcomes in children with acute leukemia. Socioeconomic status is defined by a complex combination of factors such as family income, breadwinners' employment, socio-cultural background, and educational achievement in both high- and low-income countries status.The result of present study of caregiver's socio-economic situation with their knowledge of post-test affected appear obvious that children with cancer and their eating habit and the table (4-4) shows the result is agree with the study conducted in Indonesia, 2006, entitled "Influence of Socioeconomic Status on Childhood Acute

Lymphoblastic Leukemia Treatment in Indonesia" which supported the present study result that the impact of the economic situation has a significant impact on health care providers for children with leukemia, as it plays a role in care in terms of providing care that needs a good economic income.The association between the pretest and post-test of caregiver's knowledge for both question of section one and section two indicated that the socio-economic is highly significant and affects the quality of care for children with leukemia this study is agree with the paper that held in Indonesia, 2012, entitled "Socio-economic Status Plays Important Roles in Childhood Cancer Treatment Outcome in Indonesia" their results summarized that the economic impact is clear on health care providers for children with leukemia and also mentioned despite having health insurance, any parents who lost their employment as a result of their child's illness, as well as long-term therapy expenditures paired with a reduction in wages resulting in financial hardship for the majority of households, according to medical data during interviews with caretaker they learned that, despite the availability of health insurance, cancer treatment has a significant socio-economic impact, with any parents becoming unemployed as a result of their child's illness, long-term treatment expenditures, along with decreasing salaries, have put most families in a financial bind, table (4-5).The association between the pretest and post-test caregiver's knowledge for section one to their age group shows a high significant relationships at P. value ≤ 0.05 level table (4-6) and the outcome is agree with the research conducted in the Cameroon, 2020, entitled "Impact of Nutrition Education on the Nutrition Capacity of Caregivers and Nutrition Outcomes of Indigenous Mbororo Children in the West Region of Cameroon: Protocol for a Cluster Randomized Controlled Trial" that reported the age group of caregivers are significant for the educational programs.The association between the pretest and post-test caregiver's knowledge for section two according to the age group clearly indicated that The educational lectures is critical for increasing health-care personnel' understanding, especially for the age groups ranging from 15 to 24 years old, because these ages may have one or two children, which makes them take care of the child with leukemia more than others the results is the totally agree with the paper that represent in the Universiti Kebangsaan Malaysia, 2021, entitled "Development and Evaluation of Video-Based Educational Materials for Nutritional Management of Cancer in Children among Healthcare Professionals and Caregivers" their findings indicate significant of educational program that affected on caregivers with the information they need Parents assist their children throughout cancer treatment, minimizing the risk of malnutrition and improving the quality of life of the patient After reading the pamphlet, caregivers reported a considerable increase in knowledge, attitude, and practice, table (4-7).The association between the pretest and post-test caregiver's knowledge for section one according to the level of education is revealed a significant effects of care providing for children with leukemia the result of the present study similar to the study that is carried out in the Nam Dinh city, Viet Nam, 2019, entitled "Practices of Primary Caregivers about Caring Children with Leukemia at National Institute of Hematology and Blood Transfusion" which reported that some factors related to practices of primary caregivers for children having acute leukemia. Primary caregivers with educational levels were lower, those had unsatisfactory practices about caring for children accounting for the highest percentage, 20.9%. There was a relationship between the education level and the practices of primary caregivers. The difference was statistically significant at a p0.05 significance level (table, 4-8).The association between the pretest and post-test caregiver's knowledge for section two according to the level of education it reflect the difference between pretest and post-test where the present results clear that the development and benefit from the educational program that finding in the same line with study that was done in Egypt, 2019, entitled "Educational Program for Mothers regarding their Children Suffering from Lymphoma" their result reported that mothers practices for their children with lymphoma about feeding the child (diet) , and giving prescribed medication doses others at home, results revealed a highly statistical significant (P<0.001) improvement in mothers' practices at post-program compared to pre-program. More than three quarter of mothers have practice incorrectly in pre-program, while after the program improved to (84.9 %, 91.5%) of the mothers were done practice correctly respectively in post- program, (table 4-9).The association between pretest and post-test caregiver's knowledge for section one according to the economic state the result shows that the values increased between pretest and post-test because of the educational program and the caregiver's knowledge improving the nutritional information and how the mothers dealings with the children leukemic the result is the similar with the study held in the de San Luis Potosí, México, 2016, entitled "Acute lymphoblastic leukemia in children: North American Nursing Diagnosis Association (NANDA). Nursing Interventions Classification-Nursing Outcomes Classification (NIC-NOC) care-givers intervention" their findings reported the application of learning principles is the most significant learning is most useful when it is based on the receivers' actual needs and when it responds to a caregiver-identified need., (table 4-10).The table (4-11) showed the association between pretest and post-test caregiver's knowledge for section two with the economic state which revealed highly significant relationships for lowest and middle levels in pretest and post-test for section two and that the educational program had more effects of an increasing of the knowledge or the caregiver's information through educational group program.

CONCLUSION

According to the findings of the present study, the study concludes the overall knowledge of participant caregivers was poor related to nutrition status for the children with leukemia, the vast majority of the participants' caregivers had neutral attitude toward nutrition status for the children with leukemia, the socio-demographic characteristics of caregiver's have effect on their knowledge toward nutrition status for the children with leukemia with the exception of the socio-economic status and level of education of the family that has direct effect on caregiver's knowledge, the caregiver's that know friend/relative who have the children with leukemia, or had previous knowledge about the nutrition statue have an effect on caregiver's 'knowledge and attitudes toward nutrition status for the children with leukemia. The caregiver's 'knowledge have a direct effect on their attitudes regarding nutrition status for the children with leukemia. And throughout the results of the present study, the research hypothesis is accepted.

Recommendations: Based on the findings of the current investigation, the following suggestions have been made. Education program for caregiver's with child leukemia to improve their knowledge and attitudes, working on the establishment of compulsory courses for caregiver's who have children with leukemia in collaboration with the Ministry of Health and the centers of treating the child with cancer, encouraging caregiver's to learn about nutrition statues, if not financially at least let it be morally. And encouraging the conduct of research about the nutritional status for family who have the children with cancer and making a handbook on nutrition information for children with leukemia.

Ethical consideration: According to St. Louis (2018), one of the primary considerations in any research involving humans as subjects is ensuring that their rights are respected. The procedures' safety, informed consent, secrecy, and lack of excessive pressure to engage are among them. Before verbally agreeing to participate in the study, the participants were fully informed about the current inquiry and its goals. In addition, the confidentiality of the information acquired from caregivers was taken into consideration. As a result, after examining the research program protocol, the ethical committee at the nursing college approved the study.

REFERENCES

1. Kampen, K. R. (2012). The discovery and early understanding of leukemia. Leukemia research, 36(1), 6-13.
2. Chukwu, B.F., Ezenwosu, O.U., Ukoha, O.M., Ikefuna, A.N. &Emodi, I.J. (2016) Nutritional Status of Children with Cancer at the University of Nigeria Teaching Hospital, Ituku/Ozalla, Enugu, Nigeria. Journal of Cancer Prevention & Current Research, 5(4), 00167. doi:10.15406/jcpcr.2016.05.00167.
3. Sanzhar, A. (2007). Effects of individualized prescriptive exercise program on selected fitness parameters and fatigue of acute leukemia patients undergoing treatment (Doctoral dissertation, The University of North Carolina at Chapel Hill).
4. Kahl, G. (2021). Low grade gliomas treated at the University of Cape Town Academic Hospital complex: 2001-2017 (Master's thesis, Faculty of Health Sciences).
5. Elliott, L., Molseed, L. L., & McCallum, P. D. (2006). The clinical guide to oncology nutrition. American Dietetic Associati.
6. Gaertner, J., Wolf, J., Hallek, M., Glossmann, J. P., & Voltz, R. (2011). Standardizing integration of palliative care into comprehensive cancer therapy—a disease specific approach. Supportive Care in Cancer, 19(7), 1037-1043.
7. Rawdkuen, S. (2020). Properties of Moringa oleifera leaf protein from alkaline− acid extraction. Food and Applied Bioscience Journal, 8(1), 43-67.Yang, L. (2020). The role of ErbB2 and its splice variant in lung tumour progression.