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ORIGINAL ARTICLE

IMPACT OF NUTRITIONAL INTERVENTION ON NUTRITIONAL STATUS AND FATIGUE OF CHILDREN WITH LEUKEMIA

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Abstract:

The objectives of the study were to determine the nutritional status along with level of fatigue, among children with leukemia, before and after nutritional intervention and to evaluate the impact of nutritional intervention on nutritional status and level of fatigue, among children with leukemia. The theoretical framework for the study was based on Betty Neuman's system model. A quasi experimental one group pretest post test design was adopted for the study. The data collection techniques used in the study was self reports and observation. The tools used were structured interview schedule to assess subject characteristics and the nutritional status, modified PedsQL multidimensional fatigue scale for assessing level of fatigue and the nutritional education plan. The study was conducted in the leukemia ward of Institute of Maternal and Child Health, Kozhikode. The sample consisted of 32 children with leukemia in the age group of 2-12 years admitted in leukemia ward of IMCH, Kozhikode selected through non probability purposive sampling technique. Nutritional intervention consisting of teaching based on identified nutritional needs and deficits of children with leukemia, provision of nutritional counseling to their caregivers on recommended daily requirements of energy and nutrients and preparation of a diet plan and implementing it through caregivers was done for six weeks for each sample. Post tests were done after three weeks and after six weeks of nutritional intervention. The data collected were tabulated and analyzed using descriptive and inferential statistics. The study revealed that nutritional status of 12.5% of samples was poor and that of 78.1% were average before starting intervention. After six weeks of intervention nutritional status was in good category for 31.3% and in very good category for 59.4% of samples. The change in nutritional status was found significant. In the same way the level of fatigue of children with leukemia after nutritional intervention was significantly lower than the level of fatigue before nutritional intervention. From these results it is clear that nutritional intervention is effective in improving nutritional status and reducing fatigue of children with leukemia. The study has several implications for nurses in their practice, education, administration and research. Nutritional intervention can be adopted as an effective strategy for maintaining the nutritional status and thereby improving the quality of life of children with leukemia.

KEYWORDS:

children with Leukemia, nutritional intervention, level of fatigue.

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INTRODUCTION

Leukemia, the cancer of blood forming tissues is the most common type of cancer and it accounts for about 30 % of all malignancies that occur in children less than fifteen years of age all over the world [1]. Study in acute and chronic leukemias with 242 cases in a decade (1975-1984) by D'Costa, Siddiqui, Pradhan and Gupte [2] showed that the incidence of childhood leukemia was 26.45 % in Indian population. The treatment of leukemia with chemotherapy can impose many problems that may adversely affect the nutritional status of children. Chemotherapy and radiotherapy seems to be an important nutritional risk factor due to their numerous side effects like loss of appetite (anorexia), mucositis, sore mouth or throat, dental and gum problems, changes in taste or smell, nausea, vomiting, diarrhea, constipation, fatigue, depression contributing disability to eat, all leading to decrease of food intake, nutrient loss causing weight loss and malnutrition. Nutrition intervention may decrease toxicity and improve survival in the oncology population. Along with the problem of malnutrition, cancer and chemotherapy related fatigue is another distressing problem for children with leukemia. As therapies for leukemia become more aggressive, there is an increase in the symptoms of fatigue which can affect the future doses of therapy. Although most cancer patients report that fatigue is a major obstacle to maintain normal daily activities and quality of life, it is seldom assessed and treated in clinical practice [3].

STATEMENT OF THE PROBLEM

Impact of nutritional intervention on nutritional status and fatigue of children with leukemia admitted in Institute of Maternal and Child Health, Kozhikode.

OBJECTIVES OF THE STUDY

1.Determine the nutritional status along with level of fatigue, among children with leukemia, before and after nutritional intervention.
2.Evaluate the impact of nutritional intervention on nutritional status and level of fatigue, among children with leukemia.

Theoretical Frame Work

Betty Neuman's system model

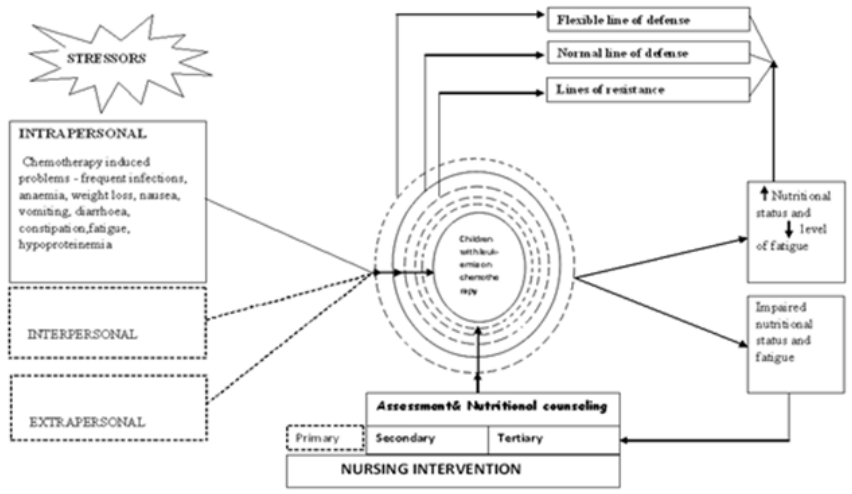

Figure 1 Theoretical framework based on Betty Neumans system model

HYPOTHESES

H_{01}: There is no difference in the nutritional status of children with leukemia after nutritional intervention as measured by nutritional status assessment record.
H_{02}: There is no difference in the level of fatigue of children with leukemia after nutritional intervention as

measured by modified PedsQL multidimensional fatigue scale.

II. METHADOLOGY

The research approach used was quasi – experimental with one group pretest – post test design. The study was conducted at Leukemia unit, Institute of Maternal and Child Health, Kozhikode. 32 children with leukemia in the age group of 2-12 years under treatment of leukemia unit, I.M.C.H, Kozhikode were selected as sample using non probability purposive sampling

Tools and Techniques

Tool I- Structured interview schedule consisting of two sections

Section A - Comprising sociopersonal data and clinical data

Section B - Nutritional assessment record consisting of intake record, clinical signs of malnutrition, anthropometric measurements of height, weight and mid arm circumference and blood values of haemoglobin and serum albumin

Tool II – Modified PedsQL multidimensional fatigue scale which has 5 items each under 3 headings- general fatigue, sleep rest fatigue and cognitive fatigue.

Tool III : Nutrition education plan

For content validity tools were submitted to 12 experts and reliability was checked using Chronbachs' alpha method. Pilot study was conducted among 5 children with leukemia for two months.

DATA COLLECTION PROCESS

The socio - personal data including 13 items were collected using semi structured interview schedule. Assessment of nutritional status was done based on data obtained from intake record consisting of three days dietary recall and assessment of degree of nutritional risk, clinical signs of malnutrition, anthropometric values of height, weight, mid arm circumference along with blood values of haemoglobin and serum albumin. To assess the level of fatigue of children the PedsQL multidimensional fatigue scale was administered to parents of the subjects and the data about general fatigue, sleep rest fatigue and cognitive fatigue were obtained. Series of nutritional education and counseling sessions on dietary management during chemotherapy were conducted in the leukemia ward. The highlighted areas include recommended daily requirements of energy and nutrients in different age groups, various food groups to be included in daily diet and the sources of important nutrients. Emphases were given to the importance of dietary interventions during chemotherapy, the ways to prevent infections, methods to tackle the side effects of chemotherapy affecting nutritional status and multiple dietary options that are rich in important nutrients. Booklets prepared by the investigator on 'dietary management during chemotherapy' were kept in the ward for further reference of the care givers. The first and second post tests were conducted after the third and sixth weeks of the nutritional intervention.

Analysis and Interpretation

The data collected from 32 children with leukemia were tabulated, analyzed and interpreted using descriptive and inferential statistics with the help of SPSS Package and was described under five sections.

Section I - Characteristics of children with leukemia.

Table 1 Distribution of Children With Leukemia Based on Socio personal Data (N=32)

Characteristics	Frequency	Percentage
Age in years		
2 - 4	10	31.2
4 - 6	10	31.2
6 - 8	5	15.7
8 - 10	4	12.5
10 - 12	3	9.4
Sex		
Male	19	59.4
Female	13	40.6
Religion		
Hindu	16	50
Christian	1	3.1
Islam	15	46.9
1st	14	43.8
2nd	13	40.6
>2	5	15.6
Monthly income		
>2000 Rs	4	12.5
1000-1999 Rs	3	9.4
750-999 Rs	4	12.5
500-749 Rs	6	18.7
< 500 Rs	15	46.9
Place of residence		
Urban	9	28.1
Rural	23	71.9
Education of mother		
Primary	1	3.1
Upper primary	3	9.4
High school	21	65.6
College	7	21.9
Primary	1	3.1
Upper primary	8	25
High school	18	56.3
College	5	15.6
Occupation of father		
Job	2	6.3
Business	5	15.6
Coolie	21	65.5
Farmer	2	6.3
Other	2	6.3
Awareness of mother about care of child		
Aware	7	21.9
Not aware	25	78.1

This section deals with the socio-personal data of the subjects based on age, sex, religion, order of birth, income, place of residence, education of parents, occupation of father and with the clinical data of the child including the treatment course, duration of illness and whether blood or blood products received during the study period. The socio-personal data are presented in the following table.

Table 2 shows that out of 32 samples 31.2 % were aged between 2 and 4, another 31.2 % were aged between 4 and 6. Among these 59.4 % were males and half of them were Hindu (50 %) and 71.9 % resides in rural area. Of the total 43.8 % of samples were the first born child and 40.6 % were second born. Around half of them (46.9 %) were from family of income less than 500 rupees and; 65.6 % of mothers and 56.3 % of fathers were educated up to high school level. Only 21.9 % of the mothers had proper awareness about the nutritional support of the child.

Table 2 Distribution of Subjects Based on Duration of Illness N=32)

Characteristic	Frequency	Percentage
Duration of illness		
Up to 1 year	22	68.8
1-2 yr	5	15.6
2-3 yr	1	3.1
>3 yr	4	12.5

Section II - Nutritional status of children with leukemia on chemotherapy before and after nutritional intervention

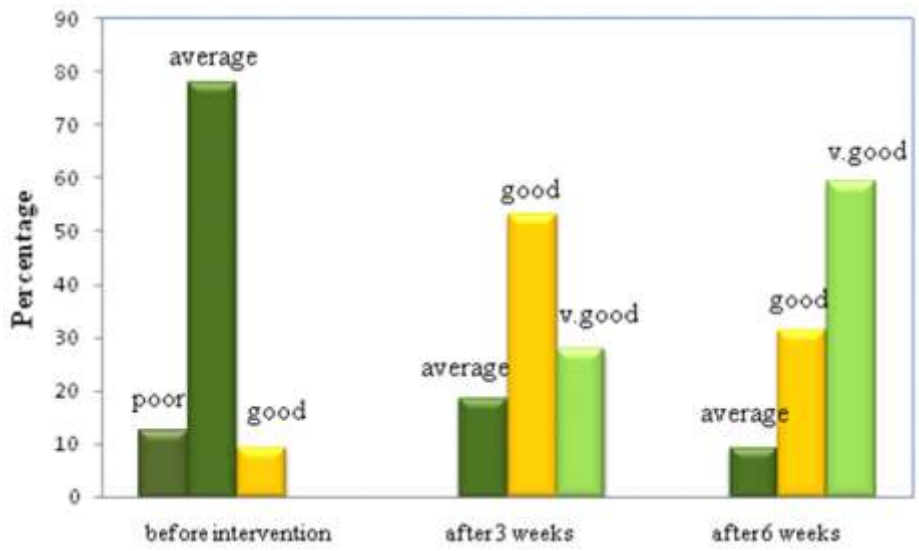

Figure 2 Nutritional status of children- before, after three weeks and after six weeks of nutritional intervention

Section III - Level of fatigue of children with leukemia on chemotherapy before and after nutritional intervention

Table 3 Level of Fatigue of Children with Leukemia; before, after Three Weeks and After six Weeks of Nutritional Intervention (N=32)

Level of Fatigue	Scores	Before intervention		After 3 weeks of intervention		After 6 week of intervention	
		F	%	F	%	F	%
No fatigue	<5	0	0	3	9.4	14	43.7
Mild fatigue	6 - 15	11	34.4	29	90.6	18	56.3
Moderate fatigue	16 - 30	21	65.6	0	0	0	0
Severe fatigue	31 -45	0	0	0	0	0	0

Section IV - Impact of nutritional intervention on nutritional status of children with leukemia. The null hypothesis was tested using paired test.

Table 4 Significance of Difference in the Mean Scores of Nutritional Status of Children with Leukemia Before and After Three Weeks of Nutritional Intervention (N=32)

	Pretest		Post test 2		't' value	'p' value
	Mean	SD	Mean	SD		
Intake record	11	2.8	17.9	2.3	-17.7	0.0*
Clinical signs	5.4	0.8	5.8	0.5	-3.9	0.0*
Anthropometric measurements	12.5	3.1	13.9	3.2	-6.4	0.0*
Blood values	2.5	1.0	3.6	0.9	-7.3	0.0*
Total	30.9	5.2	41.2	5.0	-20.7	0.0*

*significant(p <0.05)

Table 5 Significance of Difference in the Mean Scores of Nutritional Status of Children With Leukemia Before and After six Weeks of Intervention (N=32)

	Pretest		Post test 2		't' value	'p' value
	Mean	SD	Mean	SD		
Intake record	11	2.8	19.3	1.3	-20.5	0.0*
Clinical signs	5.4	0.8	6.1	0.5	-6.9	0.0*
Anthropometric measurements	12.5	3.1	15.3	3.1	-9.7	0.0*
Blood values	2.5	1.0	4.4	0.9	-11.3	0.0*
Total	30.9	5.2	45.1	4.1	-26.7	0.0*

*significant(p <0.05)

` The above tables show that the nutritional status of children with leukemia after the nutritional intervention is significantly higher than the nutritional status before the nutritional intervention. Hence H01 is rejected and it is concluded that the nutritional intervention has a significant impact on the nutritional status of children with leukemia.

Section V - Impact of nutritional intervention on level of fatigue of children with leukemia .

Table 6 Significance of Difference in the Mean Scores of Fatigue of Children with Leukemia Before and After Three Weeks of Intervention (N=32)

	Pretest		Post test 1		't' value	'p' value
	Mean	SD	Mean	SD		
General fatigue	6.2	2.5	2.9	1.2	9.8	0.0*
Sleep rest fatigue	9.5	2.2	4.9	1.6	11.0	0.0*
Cognitive fatigue	0.9	0.8	0.6	0.7	3.3	0.002*
Total	16.6	4.4	8.4	2.5	13.2	0.0*

*significant(p <0.05)

Table 7 Significance of Difference in the Mean Scores of Fatigue of Children with Leukemia Before and After six Weeks of Intervention (N=32)

	Pre test		Post test 2		*'t'* value	*'p'* value
	Mean	SD	Mean	SD		
General fatigue	6.2	2.5	2.1	0.9	11.8	0.0*
Sleep rest fatigue	9.5	2.2	3.8	1.6	15.2	0.0*
Cognitive fatigue	0.9	0.9	0.3	0.5	6.4	0.0*
Total	16.6	4.4	6.2	2.3	17.1	0.0*

*significant($p < 0.05$)

From the above tables it is clear that the level of fatigue of children with leukemia after nutritional intervention is significantly higher than the level of fatigue before nutritional intervention. Hence H02 is rejected and concluded that the nutritional intervention has a significant impact on level of fatigue of children with leukemia.

III. RESULTS AND DISCUSSION

Among the subjects, 31.2 % were between two and four years of age and 60 % were males. Most (78 %) of the mothers had no proper awareness about the nutritional support of children during chemotherapy. Among the study subjects 69 % were diagnosed within one year. Nutritional status of 13 % of subjects was poor and that of 78 % was average before starting intervention. After three weeks of intervention, nutritional status of 53 % was improved to good category and 28 % to very good category. After six weeks of intervention, nutritional status was in a good category for 31 % and in very good category for 59 % of samples. Most (66 %) of the subjects had moderate fatigue and 34 % had mild fatigue at the time of commencement of intervention. It was found that after six weeks of nutritional intervention 44 % reported no fatigue and the rest 56 % were in mild fatigue category. The nutritional status of children with leukemia after nutritional intervention was significantly higher than the nutritional status before nutritional intervention ($t(31) = -26.7$, $p < 0.05$). The level of fatigue of children with leukemia after nutritional intervention is significantly lower than the level of fatigue before nutritional intervention ($t(31) = 17.1$, $p < 0.05$).

The study results of Reily et al. [4] who assessed the status of protein energy under nutrition in patients with acute lymphoblastic leukemia supported the findings of the investigator. He reported that prevalence of under nutrition exceeded expected frequencies in boys (7.6 %) and girls (6.7 %) which indicated that under nutrition is relatively common in patients with newly diagnosed acute lymphoblastic leukemia. The study results of Schiavetti et al. [5] also supported the findings of the investigator. In their investigation on the prevalence of nutritional status disorders in a sample of paediatric oncology patients in Rome, they reported that 26.3 % of study subjects on chemotherapy had underweight based on body weight and body mass index. They recommended that in paediatric oncology, nutritional assessment is required to provide nutritional strategies in patients on therapy whose underweight status is impressive.

In the present study for assessing the nutritional status of children intake record of three consecutive days were computed before starting nutritional intervention. From this the investigator found out that the mean value for intake record (11) based on consumption of energy and protein was lower than the recommended. This result is supported by the results of Skolin et al. [6] who conducted a study to determine energy and nutrient intake and nutritional status of 11 children between two to fifteen years during chemotherapy for seven months after the introduction of new mealtime routines. Prospective dietary recording for 21 consecutive days during their first induction therapy was done and it showed that the average daily oral energy intake during days spent at the hospital was 63 % of recommended dietary intake.

In the present study level of fatigue of children with leukemia was assessed using modified PedsQL multidimensional fatigue scale and the investigator found out that among the 32 subjects, 65.6 % had moderate fatigue and 34.4% had mild fatigue at the time of starting intervention. This result is in concordance with the results of Gregory et al. [7] who conducted a survey of 379 patients, and concluded that 70-90 % of patients on therapy suffer from fatigue. Among them 50 % have fatigue that affects their routines on a daily basis and 66 % of cancer patients state problems related to fatigue are more common than those associated with pain.

IV. CONCLUSION

Nutritional status of most of the children with leukemia is average on the basis of intake record, clinical signs of malnutrition, anthropometric measurements and blood values. Most of the mothers were unaware about the importance of nutritional support during chemotherapy. The nutritional status of children with leukemia after nutritional intervention was significantly higher than the nutritional status before nutritional intervention ($p<0.05$). Hence nutritional intervention is effective in improving nutritional status of children with leukemia on chemotherapy. Most of the children with leukemia on chemotherapy suffer from mild to moderate fatigue, based on categorization of fatigue using Modified PedsQL Multidimensional fatigue scale. The level of fatigue of children with leukemia after nutritional intervention is significantly lower than the level of fatigue before nutritional intervention ($p < 0.05$). Hence nutritional intervention is effective in reducing the fatigue of children with leukemia on chemotherapy.

V. NURSING IMPLICATIONS

Nurse can utilize the individualized nutritional education programme proposed by the investigator to maintain nutritional status and there by improve the quality of life of patients on chemotherapy. This knowledge can be effectively utilized by the nursing staff in educating the care-givers. Appropriate weightage should be given for nutritional management in the curriculum and the nurse educator must devote enough time to prepare the students to perform this in the management of different diseases. The booklet on nutrition for children with leukemia on chemotherapy and the audiovisual aids prepared by the investigator can be utilized by the students and staff nurses to learn on the nutritional support to be given to children with leukemia. The administrators can utilize the booklet and the audio-visual aids prepared by the investigator as a guideline in providing nutritional management for children with leukemia on chemotherapy. Along with this the administrators can utilize this knowledge in giving orientation training for staff nurses newly appointed to the leukemia ward. The outcomes of the present study will contribute to future researches in the topic. Research in this area should be promoted by providing expert guidance and materials.

REFERENCES

1.Martin, B., Kingsley, B., Holmes, A. (2006), Risk Factors for Acute Leukemia in Children,Cancer, 78, 1092-77. Retrieved from htpp://www.interscience.wiley.com
2.D'Costa G.G., Siddiqui, H.M., Pradhan, R.M. & Gupte, S.S., (1989). Pattern of leukemias : a ten-year incidence study of 242 cases. Journal of Postgraduate Medicine, 35 (4), 191-195. Retrieved from htpp://www.mdconsult.com
3.Portenoy, R. K., & Miaskowski, C. (1998). Assessment and management of cancer-related fatigue. Principles and practice of supportive oncology. Philadelphia: Lippincott-Raven Publishers. pp 109-118.
4.Reilly, J. J., Weir, J., McColl, J. H., & Gibson, B. E. (1999). Prevalence of protein-energy malnutrition at diagnosis in children with acute lymphoblastic leukemia. Journal of Pediatric Gastroenterology and Nutrition, 29 (2), 194-197. Retrieved from htpp://www.interscience.wiley.com
5.Schiavetti, A., Fornari, C., Bonci, E., Clerico, A., & Guidi, R. (2002). Nutritional status in childhood malignancies. Nutr Cancer, 44(2), 153-155. Retrieved from htpp://www.mdconsult.com
6.Skolin, I., Hernell, O., & Wahlin, B.Y. (2003). Energy and nutrient intake and nutritional status of children with malignant disease during chemotherapy after the introduction of new mealtime routines. Scandinavian Journal of CaringSciences,15(1),82–91. Retrieved from htpp://www.interscience.wiley.com
7.Gregory, A., Breitbart, W., David, C., Groopman, E. J., Sandra, J., Loretta, M., Nicholas. J. (1999).Impact of cancer-related fatigue on the lives of patients: new findings from the fatigue coalition. The Oncologist, 5 (5), 353 - 360. Retrieved from http://theoncologist.alphamedpress.org

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