



Title: Nutritional Support for Children Living with HIV

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Introduction

HIV/AIDS and under nutrition affect immune function, with lack of essential micronutrients leading to nutritionally acquired immune-dysfunction syndrome and this influences immune defences increase susceptibility to various opportunistic infection and diseases, etc. ART alone may not be sufficient to revive an already compromised nutritional status and they need a well balanced food to maintain or improve the nutritional status along with ART. Despite current global efforts to increase ART coverage, HIV-infected children remain nutritionally challenged due to socio-economic, disease, and other specific health-related factors(1) In developing countries like India, Malnutrition are known to be associated with low socio economic factors (orphan hood, food insecurity, poor dietary patterns, low maternal education, etc.,) of children

Objectives

- *To assess the nutritional status of HIV - Infected children*
- *To study about the importance of balanced diet in HIV Infected children*

Methods

In Snehacare home, we are having 100 children living with HIV Infected, all children were enjoying good health, excellent medical care, Nutritionally balanced diet, Psycho social support, good education, etc

Holistic approach for HIV-infected children

Residential facility with family involvement, Healthcare, Education, Vocational training

Team approach: Director, Administrative staff

Medical team - In-house resident doctor, pediatrician, dentist

Staff nurses, nutritionist & medico-social workers, Teachers,

Care-givers, Cooks,, Security staff

Duration of Study - January 2011 to December 2011

- Prospective database (Epi Info software)
- Statistical analysis by using SPSS version 17.0, Descriptive statistics, Non Parametric test (Kruskal Wallis test, Wilcoxon signed test) t-test, chi square *Nutrition Assessment details obtained from care giver, medical records, clinical examination, Anthropometric measurements (Height, weight BMI), biochemical (Hb, CD4, etc.). Average of seven days diet recall was taken and converted into nutrients and compare with Recommended dietary Allowance (Indian Guidelines NIN, ICMR)*

Balanced Diet (Sneha care Home)

Time	Food Items
Bed Morning	Milk
Breakfast	Cereal, Pulses mixed with vegetables
Mid - Morning	Poushtik. Fruits
Lunch	Cereals, Pulses, Non Veg, Vegetables/ Leafy vegetables
Tea Time	Tea, High protein Snacks / fruit
Dinner	Cereal, Pulses, Vegetables

Results and Discussion

In Sneha - care home, we are having 100 children with HIV - Infected, out of these 56% were males, 44 % were female. Average age is 10 yrs, age groups were 4 - 6 years (8 %), 7 - 9 years (47 %), and 10 - 12 years (50 %). According to WHO HIV staging, 37 % T1, 17 % T2, 35 %, 8 % S2, 3 % S3.

ART Status

54% were taking ART and 46 % are non ART

Common Medical Condition (Jan 2011 - Dec 2011)

Medical Conditions	Percentage	Medical Conditions	Percentage
Skin Infection	19 %	Chicken pox	4 %
Parotitis	15 %	PTB	3 %
Herpes	12 %	Pneumonia	2 %
Lymphadenitis	8 %	LRTI	2 %
Drug Induced Anaemia	8 %	Lipodystrophy	2 %
Oral thrush	5 %	Mumps	2 %
Conjunctivitis	5 %	Chronic lung disease	1 %

Anthropometry (Jan 2011 - Dec 2011)

Time period	HAZ (Height for Age)	WAZ)Weight for Age)	BMI (Weight for height)
Visit 1	-3.05 (+/- 1.03) Severe Stunting	-2.67 (+/- 0.9) - Moderate Under nutrition	- 1.22(+/- 1.06) - Mild wasting
Visit 2	-2.5 (+/- 1.03) Mild to Moderate Stunting p value 0.00	-2.3 (+/- 0.9) - Normal Nutrition p value 0.00	- 1.21 (+/- 0.9) - Mild wasting p value 0.9

Height for Age

Stunting is more evident in this population, long duration of malnutrition exist, before admitting in Snehacare Home, but this Height for age shows that, all the children ' s height is improving from severe stunting to mild to moderate stunting and it is found to be significant. It shows that Nutritionally balanced food plays a vital role.

Weight for age

Under nutrition is reducing from moderate to mild level of under nutrition, because all the children weight is improving and it is found to be significant.

Weight for Height indicates wasting and this is considered to be a good index of nutritional *status*, *here it shows that* even though the body weight of the children is improving, but mild wasting remains the same in visit 1 and visit 2, because of the presence of mild to moderate range of stunting. This maintenance of mild wasting since last one year is found to be good and there is no major changes, because all our children were getting good nutrition support. And this mild wasting may be a part of their disease condition.

CD4

CD4	ART	Non ART	P value
Visit 1	1022.3 (611, 1421)	757 (463.5, 1060.5)	0.03
Visit 2	945.5 (750.3, 1267.3)	707 (503.5, 973)	0.05

Hb

	ART	Non ART	P value
Visit 1	10.5 (+/- 2.1)	10.6 (+/- 1.3)	0.7
Visit 2	10.8 (=/- 1.3)	10.5 (+/- 1)	0.3

Dietary Intake - Net and % RDA (Age and gender stratified)

Overall both the Macro and Micronutrients were found to be good when compared to recommend Dietary Allowance (RDA, National guidelines ICMR, NIN).

Comparison of Nutrient Intake between age group of children(NIN, ICMR, National Guideline ' s)

Nutrients	Visit 1 (4 - 6 yrs)	Visit 2 (4 - 6 yrs)	Visit 1 (7 - 9 yrs)	Visit 2 (7 - 9 yrs)	Visit 1 (10 - 12 Boys)	Visit 2 (10 - 12 Boys)	Visit 1 (10 - 12 Girls)	Visit 2 (10 - 12 Girls)
Kilocalories	94 %	118 %	107 %	113 %	95 %	100 %	104 %	109 %
Protein	198 %	266 %	185 %	205 5	151 %	174 %	150 %	172 %
B1	109 %	152 %	115 %	156 %	96 %	131 %	106%	145 %
B2	123 %	159 %	112 %	141 %	95 %	131 %	103 %	128 %
B3	92 %	172 %	117 %	112 %	107 %	110 %	124 %	127 %
B 6	95 %	115 %	80 %	92 %	84 %	105 %	84 %	105 %
B 9	162 %	277 %	159 %	257 %	175 %	257 %	175 %	257 %
B12	238 %	918 %	246 5	826 %	291 %	840 %	291 %	840 %
Vit A(RE)	124 %	218 %	94 %	130 %	108 %	139 %	108 %	139 %
Vit C	160 %	495 %	215 %	520 %	234 %	601 %	234 %	501 %
Calcium	86 %	104 %	95 %	116 %	79 %	95 %	79 %	95 %
Iron	70 %	99 %	71 %	90 %	62 %	80 %	48 %	62 %
Magnesium	373 5	505 %	397 %	463 %	377 %	441 5	282 %	331 %
Zinc	79 5	138 %	97 %	156 5	99 %	170 %	99 %	170 %

Conclusion

HIV/AIDS is more likely to be associated with an increased burden of child underweight and wasting even under ART. Wasting was associated with diarrhoea, lower feeding frequency, and low household socio-economic position. Stunting was associated with advanced HIV clinical stage, food insecurity, and household hunger. Interventions should aim at promoting adequate feeding frequency preventing and treating diarrhoea, the use of supplementary feeding, and early and adequate treatment of opportunistic infections(2)

Some studies shows that nutritional support with ready to use therapeutic food may be more effective when provided to adults / children at earlier stages of malnutrition, because adequate nutrition is necessary to treat malnourished HIV patients and maximize the benefit of ART(3)

- High prevalence of malnutrition in HIV infected children (at the time of joining Sneha Care Home)
- Both growth and nutritional status improved over time in all the children at SCH
- Good nutritional support improves health status in children irrespective of ART

Our study highlights good nutrition support improves their overall nutritional status of children irrespective of ART. These findings underscore the need to improve their health through good nutritional counseling and micronutrient supplements. Early and aggressive nutritional intervention is required if long term outcomes are to be improved. Micronutrient supplementation plays a major role in disease condition of these population

Reference:

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3. Nutrition outcomes of HIV - Infected malnourished adults treated with ready to use therapeutic food in sub - Saharan Africa: a longitudinal study, Laurence Ahoua, Chantal Umutomi, Helena Huerga, January 2011, Int AIDS Soc. 2011; 14: 2.

Acknowledge

Father Mathew, Director, Father Vince, Father Tomy (Administrator)

Dr. Anita Shet(Paed),Dr. Chitra Dinakar, Dr. Sajal Singh (RMO), Dr. Preethi Harrison, Medical Officer,

Ms. Sini John (Staff Nurse) ,Mr.Sijil (), Mr. Manoj, Ms. Clara, Sister Mini

All teaching Staff in Snehacare / All Out Reach workers in Snehacare