

# Prevalence of Wasting, Thinness, Stunting and Under-weight among Paediatric AIDS Patients in a Tertiary Centre

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## Abstract

**Introduction:** Malnutrition is a common occurrence in HIV-positive children. Its presence reflects the level of care the child receives as well as affects the outcome of their infection. The objective of this study was to determine the prevalence of various forms of malnutrition among HIV-positive children. This was a Hospital based Cross-sectional study in HIV-positive children receiving care in FETHA.

**Material and Methods:** using the WHO reference standards, we determined the prevalence of wasting, thinness, stunting and underweight in HIV-positive children receiving care in FETHA. Height and weight measurements of 89 HIV-positive children aged 0-18 year old were taken. Socioeconomic stratification was done by Olusanya's criteria. **Results:** The prevalence of wasting, thinness, stunting and underweight in HIV-positive children were 31(34.8%), 22(24.7%), 30(33.7%), and 33(37.1%) respectively. Age group and socioeconomic status were significantly associated with the various forms of malnutrition while gender and clinical stage of disease were not. **Conclusion:** There is still a high prevalence of acute and chronic malnutrition amongst paediatric-AIDS patients which is significantly more amongst adolescents and the lower socioeconomic class.

**Key words:** HIV-Positive, Prevalence, Stunting, Thinness, Underweight, Wasting.

## Introduction

Anthropometric indices obtained for a population reflects the health and welfare of individuals within that population<sup>1</sup>. It is a predictor of health outcomes as well as reflects the socio-economic profile of the population of study<sup>1</sup>. Malnutrition is a prominent finding in HIV-infected children. It is usually associated with conditions such as oropharyngeal candidiasis, and diarrhoea, which result in reduced food intake, and nutrient loss, respectively<sup>2</sup>. Increased cytokine production by the replicating virus may also result in increased metabolic rate which can add to the occurrence of malnutrition<sup>2</sup>. Malnutrition is a risk indicator for increased mortality in paediatrics HIV/AIDS patients and improving the nutritional status of patients with HIV infection will improve their survival<sup>1,2</sup>.

There has been neither description of anthropometric indices nor prevalence of malnutrition amongst HIV positive children in Abakaliki. Therefore the authors set out to describe the anthropometric characteristics of the children with HIV infection as seen at Federal Teaching Hospital Abakaliki (FETHA) as well as to assess the influence of age, gender, socioeconomic class and clinical staging on various types of malnutrition.

## Material and Methods

This was a cross-sectional study of HIV-positive children aged 0-18 years enrolled for care in the HIV/AIDS clinic of the infectious disease unit in paediatrics department of FETHA between February and July 2014. Patients who had other chronic diseases such as sickle cell anaemia were excluded.

Their socio-demographic data was obtained and participants were stratified into upper, middle, and lower socioeconomic classes using Olusanya's criteria<sup>3</sup>. Diagnosis of HIV infection was done by the detection of proviral HIV-DNA by PCR in those < 18 months or by serology using Determine rapid test (Alere Medical Co. Ltd Japan) in participants 18 months and above. Participants were categorised into the various WHO Clinical stages and the duration of HAART treatment was obtained.

Weights were measured using a Seca baby scale for toddlers and the standing weighing balance for older children to the nearest 0.1kg. Standing heights were measured for children older than 24 months and supine length for younger children, with an appropriate Seca height gauge.

Socioeconomic status was determined using mother's highest education and father's occupation. Participants were subsequently classified into upper, middle and lower socioeconomic classes.

Ethical approval was obtained from Health Research and Ethics Committee of FETHA. The subjects' data were safely stored and the confidentiality of information obtained was maintained.

Data analysis was done using the statistical package for social sciences (SPSS) version 20.0. Chi-squared test (Fisher's exact test, if indicated) was used for test of significance. Significant levels were set with  $p < 0.05$ .

## Results

Out of 89 cases seen (mean age  $7.1 \pm 4.1$  range 2-16 years), Pre-schoolers comprised 40 (44.9%) of participants, school aged children and adolescents consist of 29 (32.6%) and 20 (22.5%) respectively. Majority were of the lower socioeconomic class 52 (58.4%), while 32 (36.0%) and 5 (5.6%) belonged to the middle and the upper socioeconomic class respectively. Sixteen (18.0%) were in clinical stage 1 while 34 (38.2%), 29 (32.6%), and 10 (11.2%) were in stages 2, 3 and 4 respectively. Thirty one (34.8%) participants were wasted (weight-for-age  $< -2Z$ -Score), 22 (24.7%) were thin (weight-for-height  $< -2Z$ -Score), 30 (33.7%) were stunted (height-for-age  $< -2Z$ -Score) while 33 (37.1%) were underweight (BMI-for-age  $< -2Z$ -Score). There was a statistically significant association between the various forms of malnutrition and age group (Table 2). A greater proportion of malnutrition occurred among adolescent participants. Table 3 shows the association of various forms of malnutrition with socioeconomic class which was statistically significant. There was no significant association between malnutrition and gender ( $p = 0.6, 0.23, 0.29, 0.08$  respectively for wasting, thinness, stunting, and under-weight) and with duration of HAART Therapy ( $p = 0.62, 0.43, 0.39, 0.28$  respectively for wasting, thinness, stunting, and under-weight). There was also no significant association between WHO Clinical stages and the various types of malnutrition ( $p = 0.5, 0.13, 0.21, 0.09$  respectively for wasting, thinness, stunting, and underweight).

**Table 1:** Sociodemographic characteristics and WHO clinical staging of participants.

Variable	Response	Frequency (%)
Gender	Male	54 (60.7)
	Female	35 (39.3)
Socioeconomic class	Lower	52 (58.4)
	Middle	32 (36.0)
	Upper	5 (5.6)
WHO Clinical staging	Stage 1	16 (18.0)
	Stage 2	34 (38.2)
	Stage 3	29 (32.6)
	Stage 4	10 (11.2)

**Table 2:** Association of various forms of malnutrition with age group of participants.

Age group	Wasting Frequency (%)	Thinness Frequency (%)	Stunting Frequency (%)	Underweight Frequency (%)
Preschool age	12(38.7)	10(45.5)	8(26.7)	10(30.3)
School age	8(25.8)	2(9.1)	10(33.3)	10(30.3)
Adolescents	11(35.5)	10(45.5)	12(40.0)	13(39.4)
Total	31(100.0)	22(100.0)	30(100.0)	33(100.0)
Fishers exact	4.440	13.295	11.433	9.158
p-value	0.116	0.003	0.011	0.041

**Table 3:** Association of various forms of malnutrition with socioeconomic status of participants.

SEC	Wasting Frequency (%)	Thinness Frequency (%)	Stunting Frequency (%)	Underweight Frequency (%)
Upper	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Middle	8(25.8)	5(22.7)	7(23.3)	10(30.3)
Lower	23(74.2)	17(77.3)	23(76.7)	23(69.7)
Total	31(100.0)	22(100)	30(100)	33(100.0)
Fishers exact	5.629	7.293	14.223	13.827
p-value	0.048	0.043	0.002	0.003

## Discussion

Current study has shown high prevalence of acute and chronic malnutrition among HIV infected paediatric patients which is a cause for concern. The finding is remarkably higher than the prevalence of malnutrition in non-HIV hospitalised patients in an earlier study done in the same institution<sup>4</sup>. The figures are however similar to earlier African reports<sup>5,6,7</sup> where prevalence varied between 14% and 37% for various forms of malnutrition in HIV children. It is however lower than reports from India<sup>8,9</sup> which reported prevalence of malnutrition among HIV patients ranging between 12% to 72% for acute malnutrition and chronic malnutrition respectively. This difference may be attributable to the long duration of HAART treatment of participants in current study while the Indian studies made no mention of duration of HAART therapy for their participants. Majority of the participants in this study were in the stage 1 and 2 clinical stage of HIV, a good finding supporting the success of Provider initiated testing and counselling (PITC) and therefore early detection of HIV with prompt enrolment into care. However 43.85% were still found in clinical stages 3 and 4. The implication being that some children still presented at the advanced stages of the disease with associated poor prognosis. There is therefore still need to evolve methods of early identification and proper management of HIV infected children to prevent clinical deterioration.

There was a significant association between age group and malnutrition with the adolescent age group

most affected followed closely by the preschool age. These periods are characterised by increased growth and hence increased nutritional requirement which is hampered by the HIV infection. HIV infected patients therefore require more nutritional support especially during the preschool age and in adolescence with commencement of puberty to ensure appropriate growth. It is remarkable that acute and chronic malnutrition was predominant among the lower socioeconomic class with complete absence amongst those of the upper socioeconomic class. It is believed that a combination of ignorance, non-availability of funds for provision of appropriate feeds as well as increased concomitant infections are attributable to this. It therefore reinforces the need for poverty alleviation and improved family support of Paediatric AIDS patients to improve their survival as well as quality of life. No significant association was found between duration of HART therapy as well as WHO Clinical stage with malnutrition suggesting that malnutrition is an underlying factor in Paediatrics AIDS patients irrespective of their clinical stage. Moreover, malnutrition may be a reflection of their socio-demographic circumstance and the level of care received from home.

## Conclusion

There is still a high prevalence of acute and chronic malnutrition amongst Paediatric-HIV patients which is significantly more amongst adolescents and the lower socioeconomic class.

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