

## ASSESSMENT OF NUTRITIONAL STATUS OF CHILDREN LIVING WITH HIV/AIDS

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### ABSTRACT

*HIV is responsible for the malfunctioning of the immune system in the body. It stops the body's immune system from functioning properly. HIV infections contribute to significant morbidity and mortality in Nigeria. This study was conducted among HIV/AIDS children attending the Institute of Human Virology, Nigeria (IHVN) clinic of Obafemi Awolowo Hospital Complex, Ile-Ife in 2015. A questionnaire form which contains questions on patient's demographic data and anthropometric measurement was used to assess their nutritional status. Weight and height were used to calculate BMI. Data was analyzed using the inferential statistic of the Statistical Package for Social Science (SPSS). Results shows that, majority of the respondents: were female (58.1%), age group between 7-9 years (34.9%), Christians (60.53%), monogamy (66.7%), second born (39.5%), eat three times a day (67.5%), eat fruit every day (62.2%), wasted (69.8%), stunted growth (62.7%) and underweight (69.8%). The majority of the children eat three meals per day but it was not having impact on their growth. This may be as a result of not consuming the food that has adequate nutrient or balanced diet. It was observed that majority of children living with HIV/AIDS have poor growth and weight loss that leads to undernutrition. This may likely to accelerate disease progression, increase morbidity and reduce survival. It can be concluded that the children living with HIV/AIDS needs to eat a balanced diet and strictly adhere to the nutritionist's recommendation.*

**Key words:** HIV/AIDS, children, questionnaire, anthropometric measurement

### INTRODUCTION

The identification of HIV happened in the early 1980s and the deadly disease belongs to a group of virus called RETROVIRUS. HIV is responsible for the malfunctioning of the immune system in the body and stops the body's immune system from functioning properly. It does this by getting inside cells (called CD4 or T-cells) in the body's immune system (Grinspoon et al., 1996). The people living with HIV were estimated to be 33.2 million worldwide; 2.5 million were children under 15 years of age (UNAIDS/WHO, 2007). In 2007, 420,000 children were estimated to be infected with HIV mostly from mother-to-child transmission (UNAIDS/WHO, 2007). HIV is the leading cause of mortality among women of reproductive age worldwide, and also major contributor to maternal, infant and child morbidity and mortality. When there is no treatment, one third of children living with HIV die before they reach one year of age and over 50% die by the second year of life (Newell et al., 2004). Also in 2008, it was estimated that 1.4 million pregnant women living with HIV in low- and middle-income countries

which gave birth, 91% of them reside in Sub-Saharan Africa (UNAIDS, 2009). It was estimated that 330,000 children were newly infected with HIV in Sub-Saharan Africa (UNAIDS, 2010). Without intervention, there is a 30%-45% risk transmission of HIV from mother to child during pregnancy, labour and delivery (Federal Ministry of Health, 2010). Also, in the absence of intervention 25-40% of infants born to HIV-positive mothers will become infected and with current interventions; this risk can be reduced to less than 5% (Adeyiet al., 2006). Onakewhor and Abiodun (2005) reported that transmission of HIV in children has become a critical health problem undermining the positive impact of child survival strategies in the African continent. Children living with HIV who have no symptoms need to consume ten percent more calories than other children of their age and sex. Children that have symptoms, or recovering from infections, need to consume 20-30% more calories than other children (Shanbhaget al., 2005). The Institute for Human Virology Nigeria (IHV-Nigeria) was established in 2004 as an affiliate of the Institute of Human Virology, University of Maryland School of Medicine and

incorporated in March 2004 as a fully Nigerian indigenous non-governmental organization with a majority Nigerian Board of Directors. The story of IHV-Nigeria's inception started with Dr. William Blattner and Dr. Alash'le Abimiku, both working at the National Institutes of Health, conducted early studies to track the emerging HIV epidemic in Nigeria. There is currently no cure for HIV/AIDS. Adequate nutritional food intake and treatment can slow the cause of the disease and some infected people can live a relatively long life and healthy life. Therefore, there is need to assess the nutritional status of children living with HIV/AIDS, a case study of the Institute of Human Virology, Obafemi Awolowo Teaching Hospital, Ile-Ife, Nigeria.

## MATERIALS AND METHODS

### Sample Location

This study was carried out within May- July 2015 in the Institute of Human Virology, Nigeria (IHVN) clinic of Obafemi Awolowo University Teaching Hospital complex, Ile-Ife, Osun State, Nigeria.

### Population of the Study

The population of the study comprises of children living with HIV/AIDS attending the IHVN clinic of Obafemi Awolowo Teaching Hospital Complex, Ile-Ife.

### Research Instrument

In this study, a form was designed to elicit data from the children living with HIV/AIDS attending the IHVN clinic of OAUTHC. The form was divided into two sections. Section one was focused on the demographic data while section two focused on the nutritional status of children attending the IHVN clinic of OAUTHC. Hundred respondents' parent or guardians were given the questionnaire in order to obtain the view and opinion of individual responses. Questions were written in simple language that every respondent were able to understand and when necessary it was translated into the local language for the respondent to understand.

### Administration of Instrument

Anthropometric measurement was used to assess the nutritional status and with a design data for Weight measurement- shoes and heavy cloth was removed from the children body before measuring the weight. Height Measurement- the children was placed on stadiometer to get their accurate height. Mid-upper arm circumference-tape rule was used to measure their mid-upper arm. Body mass index was calculated for each child study using the formula:  $BMI = \text{weight in kilogram and height in metre}$ . Head circumference- tape rule was used to

measure their head.

## Data Analysis

The data collected was analysed using the Statistical Package for Social Science (SPSS) version 16.

## RESULTS AND DISCUSSION

### Demographic data of respondents

Table 1 shows the demographic data of the children involved in the research. The socio-demographic variables were reported with frequency distributions in percentages. These variables include the age of the child, sex, religion, family type, their position in the family and the parent occupation of both the mothers and fathers. It was observed that the female had higher proportion of frequency 25 and percentage of 58.1% while the male had frequency of 18 and percentage of 41.9%. It was shown from the age interval that frequency and percentage of the children 1-3 years, 4-6years and 7-9years are 13 and 30.2%, 9 and 2.9%, 15 and 34.9% respectively while children of age group 10-12 had the lowest frequency and percentage of 6 and 14.0%. It was observed that respondents who were Christians had the highest frequency and percentage with (26, 60.53%) followed by Islam with (17, 39.5%) and other religion with (0, 0.0%). In the type of family, it shows that monogamy had the higher frequency and percentage proportion with (28, 66.7 %) while the polygamy had (14, 33.3 %). Concerning the position of the children in their family, the highest frequency and percentage (17, 39.5%) were from second born followed by the first born with frequency and percentage of 14 and 32.6%. While the third born (10, 23.3%) and other born with (2, 4.6%) in a descending order. It was observed from the findings that half of the children mothers' occupation were civil servant (26, 60.5%), trading (13 30.2%), farmer (4, 9.3%) and no other occupation (0, 0.0%) in a descending order. Also, observed from the findings that civil servant were most predominant occupation among the fathers' with highest frequency and percentage of (20, 46.5%), trader (18, 41.9%), farmer (5, 11.6%) and no other occupation (0, 0.0%). According to Kikafunda (1998), poor nutrition mainly affects children between the age of one and twelve years. This was reflected in the results the respondents were between the age one and twelve. It has revealed that poor complimentary feeding patterns, low food access and poor health care of children may be as a result of diversion of income to the health care of their HIV-positive parent (Ssewanyana, 2003). The maternal survival and HIV status are strong predictors of infant and child survival (Nakiyingiet *al.*, 2003). According to

Owen *et al* (2009) the nutritional status of children living with HIV/AIDS affected the household might be impacted through reduced household agricultural, low income and economic productivity, leading to household food insecurity including food insufficiency and this may in turn lead to childhood malnutrition (stunting, wasting, under nutrition). It has been identified that worsening poverty is one of the impacts of HIV/AIDS on children (Owen *et al.*, 2009). Bunn (2009) and Nalwoga *et al* (2010) reported that children living with HIV are more likely to suffer malnutrition. It is necessary to continually update our knowledge about the family and household circumstances in which children live according to Setel (1999).

### Nutritional status of the respondents

The results on Table 2 revealed number of time the children eat per day. From the table, two-third (2/3) percentage of the children eat three times a day with frequency and percentage of 29 and 67.5%, almost one-third (1/3) percent of the children eat more than three times a day with (13, 30.2%), followed by (1, 2.3%) children that eat twice a day while none of the children eat once a day with (0, 0.0%) respectively Table 2 shows whether children eat fruits and vegetable every day, it was observed from the table that majority of the children eat fruit and vegetable every day with (27, 62.8%) while (16, 37.2%) of children do not eat fruits and vegetable every day. Table 3 shows weight for age of the respondents, the underweight/wasted have the highest frequency and percentage proportion with frequency of 30 and percentage of 69.8% which is twice or double the frequency and percentage of children with normal weight for age of frequency and percentage of 13 and 37.2%. Also, it was shown from Table 3 height to age of the respondents, the stunted growth children are almost double the population of children with normal growth, the stunted growth had highest frequency and percentage of 27 and 62.7% while children with normal growth had frequency and percentage of 16 and 37.2%. Weight for age of the respondents, the underweight/wasted have the highest frequency and percentage proportion with frequency of 30 and percentage of 69.8% which is twice or double the frequency and percentage of children with normal weight for age of frequency and percentage of 13 and 37.2%. Height to age of the respondents, the stunted growth children are almost double the population of children with normal growth, the stunted growth has highest frequency and percentage of 27 and 62.7% while children with normal growth has frequency and percentage of 16 and 37.2%. The weight to height of the respondents, the wasted have the highest frequency and

percentage proportion with frequency of 25 and percentage of 58.1% which is more than the frequency and percentage of children with normal weight for height with frequency of 18 and percentage of 41.9%. Table 4 shows the Z-score, the minimum weight of male child was 9.4kg while the maximum weight of male child was 40kg, also the minimum weight of female child was 8.4kg while the maximum weight of female child was 56.5kg. Furthermore the minimum height of male child was 69cm while the maximum height for male is 155cm, also the minimum height of female child is 71cm while the maximum height of female is 164cm. Table 5 shows the nutritional status of the respondents. Our finding shows the classification in this order, i.e. Obese and Overweight < Normal Body weight < Underweight. It was observed that none of the children were neither obese nor overweight, while Children with normal body weight had frequency and percentage of 13 and 30.2% and the underweight children had the highest frequency and percentage of 30 and 69.8%. In this result, a total of 69.8% are underweight, 62.7% are stunted which agreed with the findings of Callenset *al* (2009) that weight loss and under nutrition are common in children living with HIV/AIDS and are likely to accelerate disease progression, increase morbidity and reduce survival. In children with HIV/AIDS, growth impairment often occurs before opportunistic infections or other symptoms are present. Majority of the children feed three times in a day and this does not have effect on their growth which can be as a result of not taking balance diet or, HIV infection itself may result in poor growth and weight loss which agreed with the findings of Arpadiet *al* (2002). Which gave the important relationship between HIV, nutrition, and growth of children living with HIV/AIDS, nutritional assessment and support should be an integral part of the care plan of an HIV infected children (WHO, 2006). Severe wasting is common among HIV infection children that agreed with the findings of WHO (2003). In children expressing growth failure more targeted support may be necessary. During period of severe malnutrition, energy requirement may increase by 50-100% in order to recover weight according to the findings of Irlamet *al* (2010). Initiation of antiretroviral therapy is indicated in HIV infected children, adequate nutrition which is best achieved through consumption of a balanced healthy diet, is vital for health and survival for all individuals regardless of HIV status. Children deserve special attention because of nutritional requirements necessary for growth and development, and because of their dependency on adults for adequate care. Nutritional assessment and support should be integrated into the

routine care of HIV-infected children. Dietary interventions should consider issues of food security, food quantity and food quality, as well as absorption and digestion of nutrients according to Irlamet *al* (2010).

## CONCLUSION

Based on the result finding, the conclusion could be drawn that majority of the children has three square

meal per day but it is not having impact on their growth, this can be as a result of not consuming the food that have adequate proportion of nutrient balance (balance diet) or the HIV/AIDS infection itself may result in poor growth and weight loss. It was discovered that under nutrition are common in children living with HIV/AIDS and are likely to accelerate disease progression, increase morbidity and reduce survival.

**Table 1: Demographic Data of Respondents**

<b>Respondents</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Gender of the Children</b>		
Male	18	41.9
Female	25	58.1
Total	43	100.0
<b>Age interval of the Children</b>		
1-3	13	30.2
4-6	09	20.9
7-9	15	34.9
10-12	06	14.0
Total	43	100.0
<b>Religion of the Children</b>		
Christianity	26	60.5
Islam	17	39.5
Others	00	00.0
Total	43	100.0
<b>Family type of the Children</b>		
Monogamy	28	66.7
Polygamy	15	33.3
Total	43	100.0
<b>Children's Position Family</b>		
First Born	14	32.6
Second Born	17	39.6
Third Born	10	23.3
Others	02	04.5
Total	43	100.0
<b>Mother's Occupation of Respondents</b>		
Civil Servant	26	60.5
Trader	13	30.2
Farmer	04	09.3
Others	00	00.0
Total	43	100.0
<b>Father's Occupation of Respondents</b>		
Civil Servant	20	46.5
Trader	18	41.9
Farmer	05	11.6
Others	00	00.0
Total	43	100.0

**Table 2: Feeding pattern of respondents**

<b>Respondents</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Eating numbers per day		
Once	0	0.0
Twice	1	2.3
Thrice	29	67.5
More than thrice	13	30.2
Total	43	100.0
Meal Skipped		
Breakfast	0	0
Lunch	0	0
Dinner	1	2.3
Total	1	2.3
Eating Fruits and Vegetables		
Yes	27	62.8
No	16	37.2
Total	43	100.0

**Table 3: Anthropometric measurements of respondents**

<b>Respondents</b>	<b>Frequency</b>	<b>Percentage</b>
Weight for Age		
Underweight	30	69.8
Normal	13	37.2
Total	43	100.0
Height for Age		
Stunted	27	62.8
Normal	16	37.2
Total	43	100.0
Weight for Height		
Wasted	25	58.1
Normal	18	41.9
Total	43	100.0

**Table 4: Z-score weight, height and BMI for HIV positive children**

<b>Z-score</b>	<b>Min</b>	<b>Max</b>	<b>Mean±SD</b>
Weight (kg)			
Male	9.4	40.0	19.1±7.2
Female	8.4	56.5	21.2±10.6
Height (cm)			
Male	69	155	106±20
Female	71	164	109±24
BMI			
Male	14	20.7	16.6±1.3
Female	14	23.1	16.9±1.8

**Table 5: Nutritional status of respondents**

Nutritional Status	Frequency	Percentage
Obese	0	0.0
Overweight	0	0.0
Normal	13	30.2
Underweight	30	69.8
Total	43	100.0

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