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A comparative study on dietary practices, morbidity patterns and nutrition status of HIV/AIDS infected and non-infected pre-school children in Kibera slum, Kenya

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ABSTRACT

Objectives: The impact of HIV and associated opportunistic infections compounded by inappropriate dietary practices among children leads to under nutrition and micronutrient deficiencies associated with high morbidity and mortality rates. This study determined the dietary practices, morbidity patterns and nutrition status of HIV/AIDS infected and non-infected pre-school children in Kibera slums.

Methodology and results: A comparative descriptive design was used to conduct a study in May 2005 among 64 HIV/AIDS infected and 64 non-infected pre-school children in Kibera slum. Data was obtained a researcher administered questionnaire and focus group discussion guides. Results indicated that the average number of meals consumed per day was 3.4. The consumption of cereals, vegetables, fruits and animal products were irregular. Except for fat, intake of macronutrients and micronutrients were inadequate. The main illnesses were malaria, cold, cough and pneumonia which manifested as fever, diarrhea, vomiting and loss of appetite. A total of 44, 33 and 52% of the infected children were stunted, wasted and underweight as compared to 22, 21 and 17%, respectively, for the non-infected group. .The education level of the caregiver, amount of kilocalories taken, and number of meals taken per day, household size and morbidity patterns of the children significantly affected the nutrition status. The children's poor nutrition status was due to poor dietary practices. This was compounded by the effect of the manifestations of various infections like diarrhea, vomiting, fever and loss of appetite which deteriorated the nutrition status. There was no significant difference between the number of meals per day ($p = 0.061$), amount of kilocalories taken per day ($p = 0.093$) for the two groups. However, there was a significance difference in the number of sick ($p = 0.048$), wasted ($p = 0.043$), stunted ($p = 0.035$) and underweight ($p = 0.028$) children for the two groups. The significant difference in morbidity patterns and nutrition status was due to opportunistic infections which increases nutrient needs. The infected children were frequently ill with the manifestations of the infections lasting longer.

Conclusions and application of the findings: The study recommends the use of nutrient dense products to provide more nutrients as needed, educating caregivers on nutritional management of HIV patients and initiating income generating activities to improve food security in the study areas.

Key words: HIV/AIDS, pre-school children, dietary practices, morbidity patterns, nutrition status, slum

INTRODUCTION

It is estimated that 38 million persons are living with HIV/AIDS in the world and 74.4% of them are in Africa (UNAIDS, 2004). In Kenya, the prevalence of HIV/AIDS is 7.4% and over 100,000 children below the age of five years are estimated to be infected with the disease. A third of all deaths among children in Kenya are due to HIV/AIDS (NASCOP, 2005) mainly acquired through mother to child transmission (MTCT) (Menya, 1999). In Africa, 3 to 4 out of every 10 infants born to a HIV infected woman acquire HIV infection (NASCOP, 2002 $_a$).

HIV/AIDS is a condition of compromised body immunity, which is associated with opportunistic infections (NASCOP, 2002$_b$). This leads to increased need for more nutritious food, reduced intake of nutrients due to anorexia, altered metabolism and poor utilization of nutrients in the body. Most of the HIV infected children are orphans (Rajabium, 2001). The care giving practices are compromised either due to the parent being sick or inability to meet the increased need for food and medication amidst poverty (GOK and UNICEF, 2000). Slum areas lack adequate and nutritious foods, adequate clean water and health care services. They are also associated with poor sanitation, congestion and poverty (Joinet, 1992).

The opportunistic infections associated with HIV/AIDS, compounded with inappropriate dietary practices, poor health practices, inappropriate care and poverty lead to high prevalence of protein energy malnutrition (PEM) and micronutrient deficiencies, high morbidity and mortality rates (ACC/SCN, 1998). Moreover, poor housing, poor sanitation and congestion in slum areas aggravate the problem.

There exists scarce information for development of guidelines to address the problem of PEM among the HIV/AIDS infected pre-school children. Such information on dietary practices and health related risks among HIV/AIDS infected pre-school children is needed so as to develop more appropriate coping strategies. The aim of this study was to determine and compare the dietary practices, morbidity patterns and the nutrition status of HIV/AIDS infected and non-infected pre-school children in Kenya.

METHODOLOGY

Study area: A comparative descriptive design was used to conduct a study at Kibera slum in Nairobi, Kenya. Kibera is the largest slum in East Africa and located in Langata Division, Nairobi Province, Kenya. It has a cosmopolitan population of 100,000 people. The occupation of the population is mainly small business or causal employments in the industries within Nairobi. Among the slums in Nairobi, it has the highest number of orphans (GOK, 1998). Kibera slum has been associated with lack of adequate nutritious foods, clean water and health care facilities. Moreover, the area is associated with poor sanitation, poverty and congestion

Study population: The study sample comprised 64 HIV/AIDS infected and 64 non-infected pre-school children aged between 24-59 months. Purposive sampling method was used to select households with HIV/AIDS tested pre-school children, from eight out ten randomly selected villages in Kibera slum in Nairobi where activities on HIV are concentrated. A questionnaire and focus group discussion guides were used to collect data. A 24-hour recall and food frequency were used to estimate the amount of nutrients consumed. Data collected from the 24-hour recall was analyzed using Nutri-survey software to establish the total amount of selected nutrients consumed per day. The amounts of nutrients consumed per day were then compared to the recommended dietary allowances to establish whether there was adequate consumption (Sehmi, 1993).

Data from food frequency was analyzed for regularity of intake. Consumption of these foods more than 4 times a week was considered regular and less than 3 times a week was considered irregular. The anthropometric data were transformed to nutrition indices (Z-scores values) by use of the Epi-Info (2000) computer software to compute wasting, stunting and underweight values.

Data analyses: Data were analyzed using Statistical Package for Social Science (SPSS) at 95% level of confidence. Pearson Product Moment correlation coefficient was used to determine the relationship between morbidity patterns and the nutrition status of the pre-school children for non-categorical variables

namely; number of meals consumed per day, amount of kilocalories consumed, income and number of wasted, stunted and underweight children. Chi-square was used to establish the relationship between the nutrition status and some selected categorical variables like type of illness, sex, level of education and HIV status. Simple and multiple regressions were used to determine how the various dietary practices and morbidity patterns predict the nutrition status. *t*-test for independent samples was used to test for any significant difference on dietary practices, morbidity patterns and nutrition status between the HIV/AIDS infected and non-infected pre-school children.

RESULTS AND DISCUSSION

Social-economic and demographic characteristics*:* The average household size (5.6) in Kibera was higher than the national figure, which stands at 4.3 (GOK, 2003). This study revealed that about a third of pre-school children in the area were orphans. Most of the caregivers (>48%) had attained primary education but only a few had attained above secondary school level of education. It was noted that most of the caregivers (>39%) were engaged in small business with only a few being, casual workers or employees in civil service or private sector. All the caregivers were women with the majority (>60%) being married. Only 4.7 and 7.8% of the care givers of the infected and non infected children respectively who were working or in business earned regular income. Majority of the care givers 45% and 43% from infected and non infected households, respectively, did not earn regular income and thus depended on external help from relatives or organizations. However, for the households that earned income, 50% was used on medication. The amount of money allocated for food purchase was 20-25% of the income.

Dietary practices: The dietary practices of pre-school children in Kibera are poor as shown by consumption of three or less meals per day by over 55% of the pre-school children (Figure 1). This is short of the five to six meals recommended per day (FANTA, 2001) and was attributed to lack of snacks between the major meals.

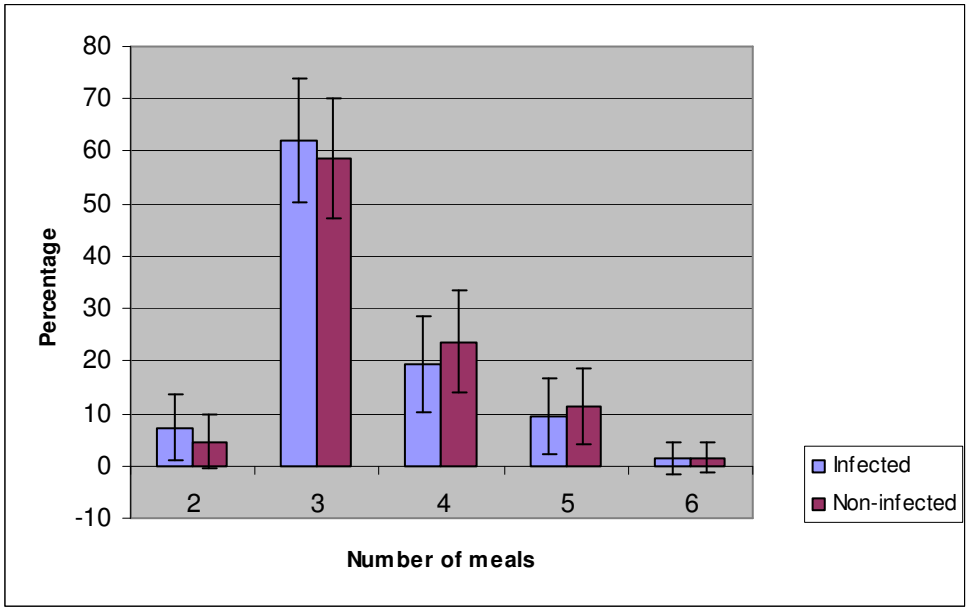

Figure 1: Number of meals taken per day by HIV/AIDS infected and non-infected pre-school children living in Kibera slum, Kenya. (n=64 for each group).

The amount of kilocalories recommended per day for children between 24 and 47 months old is >1300 while for those between 48 - 59 months is >1800 (Piwoz and Prebe, 2000). In the present study, majority of the children (over 55%) did not consume adequate kilocalories (Figure 2). Thus, adequate energy was not consumed to cater for basal metabolic rate, activity and losses through infections' symptom such as fever. Inadequate consumption of kilocalories results to use of body reserves to meet the deficit leading to weight loss.

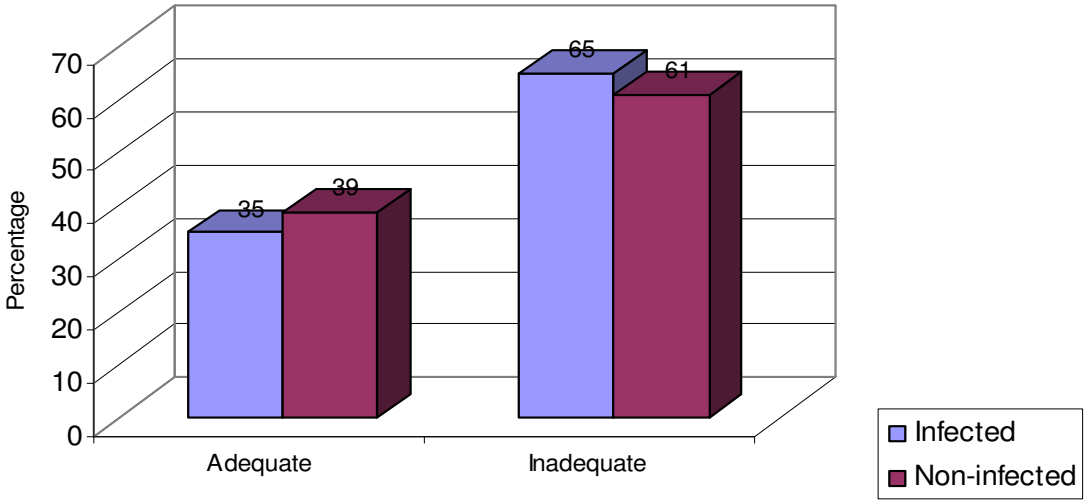

Figure 2: Consumption of kilocalories among HIV/AIDS infected and non-infected children living in Kibera slums, Kenya (n=64)

Consumption of proteins was inadequate for >95% of the children. Moreover, most of the children (over 50%) did not consume adequate micronutrients, i.e. vitamins A, C, B_2, B_6, and B_{12}, calcium, zinc, selenium, magnesium and iron. Only fats were consumed in adequate amounts as recommended (Piwoz and Prebe, 2000). This was due to availability of cheap unpackaged and unlabeled solid fats among the vendors. Inadequate intake of nutrients was largely due to low consumption of cereals, vegetables, fruits and nuts by majority of the children.

There was no significant difference ($p>0.05$) between the dietary practices (number of meals per day, amount of kilocalories and other nutrients consumed per day and frequency of consumption of foods) for the HIV/AIDS infected and non-infected pre-school children.

Nutrition status of pre-school children: The nutrition status of both the HIV/AIDS infected and non-infected pre-school children was poor. This was due to inadequate food consumption as a result of the poor economic status. The proportion of HIV/AIDS infected pre-school children that was stunted, wasted and underweight was 44, 33 and 52% respectively. Among the HIV/AIDS non-infected group, the stunted, wasted and underweight children were 21.98, 21.8 and 17.2%, respectively (Figure 3).

The national figures for the levels of stunting, wasting and underweight are 31.0, 6.0, and 4.0%, respectively (GOK, 2003). This study's results show that there was a significant difference ($p<0.05$) between the national and the study figures for underweight, wasting and stunting (study figures being higher than the national figures for non-infected group). This is as a result of poverty, poor sanitation and poor living conditions in Kibera slum that are not common in other parts of Kenya. Inability to purchase adequate meals coupled with numerous infections contributed to poor nutrition status.

There was a significant difference ($p<0.05$) between the nutrition status for the HIV/AIDS infected and non-infected pre-school children. The HIV/AIDS infected children had a poorer nutrition status as compared to non-infected pre-school children. This was due to the fact that the HIV/AIDS infected children suffered from more illness, which persisted for a longer time thus aggravating the condition than for the non-infected pre-school children. Diseases increases nutrients needs while compromising nutrient intake and at the same time they lead to nutrient losses through diarrhea and vomiting.

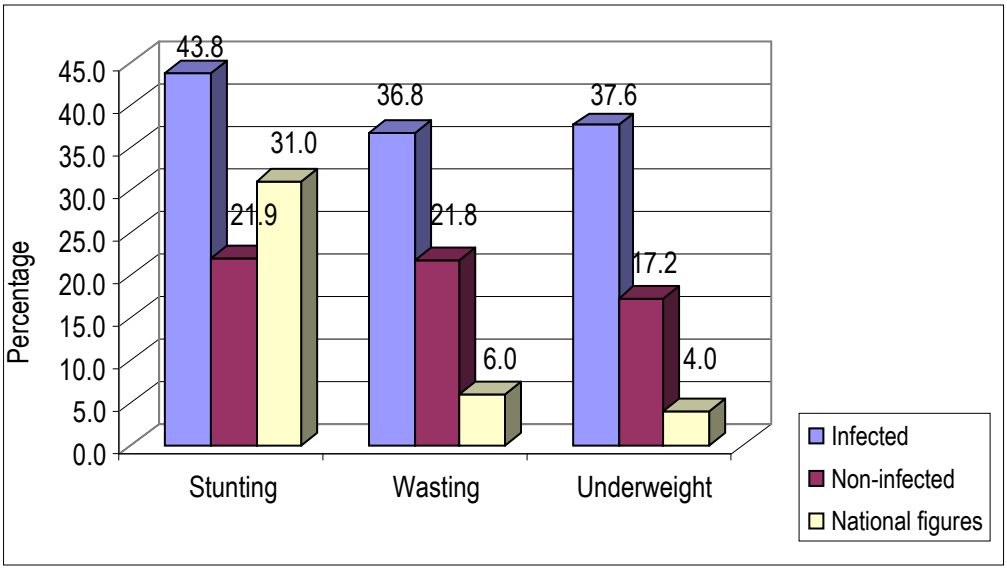

Figure 3: Nutrition status (Global Acute Malnutrition) of pre-school children infected or not infected with HIV/AIDS in Kibera slum in Nairobi, Kenya.

Morbidity patterns: The study noted that there were more HIV/AIDS infected children (69%) who had been sick than non-infected children (53%) in the previous two weeks prior to the survey (Figure 4). They suffered from common illnesses such as cough, cold and pneumonia.

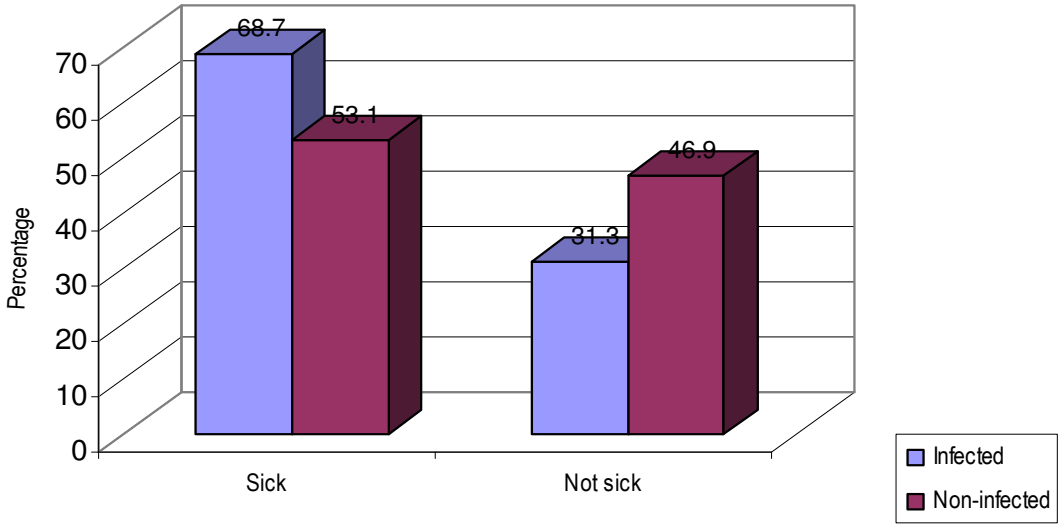

Figure 4: Presence of illness among pre-school children infected or not infected with HIV/AIDS in Kibera slums, Kenya.

There was a significant difference ($p<0.05$) between the number of sick children among the HIV/AIDS infected and non-infected pre-school children. This could have been due to reduced immunity in the body of the infected group as a result of HIV/AIDS. Cough persisted for an average of 5 days for the HIV/AIDS infected and 2 days for the non-infected pre-school children. For those who had malaria, it persisted for an average of 7 days for the HIV/AIDS infected and 4 days for the non-infected pre-school children. Cold persisted for an average of 6 days for the HIV/AIDS infected and 5 days for the non-infected pre-school children while

diarrhea persisted for an average of 4 days for the HIV/AIDS infected and 2 days for the non-infected pre-school children. The various diseases persisted for 2-7 days and generally longer for the HIV/AIDS infected group (average of 7 days). These illnesses manifested themselves as fever, loss of appetite, diarrhea and vomiting (Figure 5). Except for diarrhea, these symptoms were more among the HIV/AIDS infected than for the non-infected pre-school children. Diarrhea was common for all the children due to the poor hygienic and sanitary conditions in the slum

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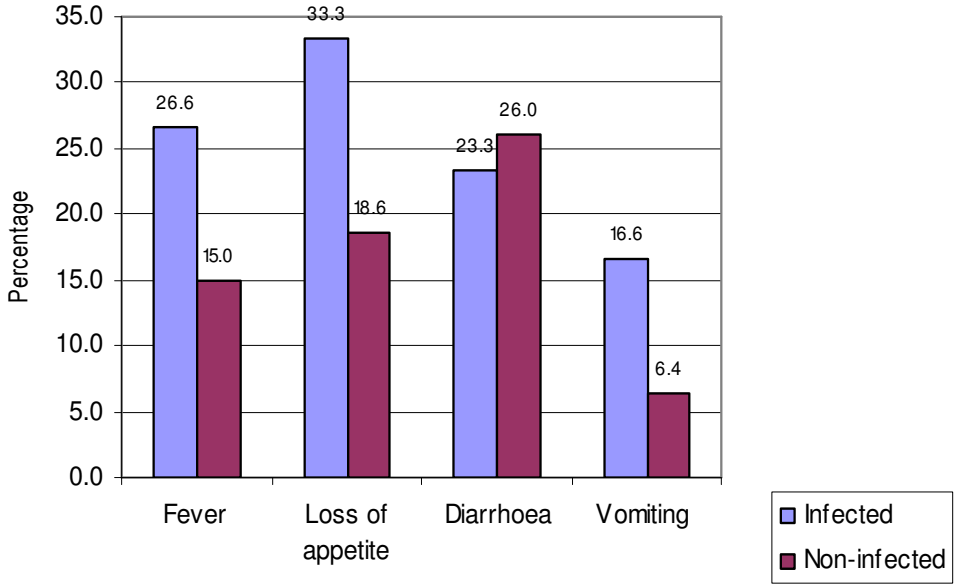

Figure 5: Symptoms with nutrition implication in pre-school children infected or not infected with HIV/AIDS in Kibera slums, Kenya.

CONCLUSION AND RECOMMENDATIONS

It can be concluded that the children in Kibera had poor nutrition status as depicted by the high levels of under nutrition. This was mainly due to the consumption of fewer meals per day, inadequate consumption of kilocalories and other nutrients. This was compounded by the effect of the various infections with nutrition implication noted among the children. The nutrition status of the HIV/AIDS infected was poorer than for the non-infected due to the effect of the opportunistic infections found to be more and persisted longer than for the non-infected group.

The nutrition status was poorer than the national figures mainly due to the low economic status of the populations in Kibera. This is as revealed by the low or no income noted among the majority of the households. The household size was high and would have contributed to the sharing of the little available food among many members leading to inadequate food intake and consequently to poor nutrition status. The nutrition status of orphans was poor but there was no significant difference between the nutrition status of the infected and non-infected orphans.

The pre-school children were found to suffer from illness, which manifested with symptoms such as diarrhea, fever, vomiting and loss of appetite. This was mainly due to reduced immunity, as a result of HIV/AIDS. Moreover, the intake of micronutrients that enhance immunity was inadequate due to irregular consumption of vegetables and fruits.

The study recommends the use of nutrient dense food products to address the increased nutrient requirements. In addition, the caregivers need more information on dietary management of HIV. The households with infected children need facilitation to come up with income generating activities to help improve their economic status and access to more and better food.

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