

Assessment of the Nutritional Status of Children on Arvs in the Prevention of Mother Transmission (PMTCT) Child Centers in the Ruashi Health Zone in Lubumbashi in Dr Congo

Malonga Kaj Françoise^{1,2}, Mbenga Mayambo Faustin¹, Mundongo Tshamba Henri^{1,2}, Mbutshu Lukuke Hendrick^{1*}

¹School of Public Health, University of Lubumbashi, Democratic Republic of Congo

²Faculty of Medicine, University of Lubumbashi

***Corresponding author**

Mbutshu Lukuke Hendrick, School of Public Health, University of Lubumbashi, Democratic Republic of Congo.

Submitted: 08 May 2021; Accepted: 18 May 2021; Published: 26 May 2021

Citation: Mbutshu Lukuke Hendrick, Malonga Kaj Françoise, Mbenga Mayambo Fausti, Mundongo Tshamba Henri. (2021). Assessment of the Nutritional Status of Children on Arvs in the Prevention of Mother Transmission (PMTCT) Child Centers in the Ruashi Health Zone in Lubumbashi in Dr Congo. *Archives of Infect Diseases & Therapy*, 5(2), 28-32.

Abstract

Introduction: HIV infection causes and promotes enormous nutritional deficits in children. The objective of this work was to analyze the nutritional status of children infected with HIV placed on antiretrovirals in the Ruashi Health Zone in Lubumbashi.

Methods: We carried out a cross-sectional descriptive study which focused on 51 children aged 3 months to 17 years selected in 8 care structures for People Living with HIV AIDS, from January to June 2016. Data was collected by documentary review and the usual descriptive statistics and anthropometric indicators were used.

Result: The prevalence of overall malnutrition was 31.37% (n = 51) including 7.84% moderate malnutrition. The average weight is 19.25 kg with a minimum weight of 4.5 kg and a maximum of 49 kg. The overall prevalence of anemia (hemoglobin <11g / dl) was 9.8%. Wasting affected 3.92% of children and 7.84% were victims of chronic malnutrition. The prevalence of acute malnutrition was 25.48%, of which 3.92% was severe acute malnutrition. Immune deficiency (CD4 <350) in 5.88% of cases, undetectable viral load at 88.37% and treatment compliance at 92.16%

Conclusion: HIV / AIDS affects the state of health of children in Ruashi with 31.37% overall malnutrition and 7.84% stunted growth. Good nutritional and therapeutic support for children is necessary.

Keywords: Nutritional Status, Child, HIV / AIDS Infection, Antiretrovirals, PMTCT

Introduction

The HIV / AIDS epidemic poses an unavoidable challenge for the world as a whole and in Africa in particular. A massive effort is needed to mitigate the damage of HIV / AIDS and nutritional support must be part of the actions to be taken. An evidence-based response is necessary to alleviate the overall burden of malnutrition and reduce the severity and complexity of the mutual impact of HIV / AIDS and AIDS on one another. malnutrition [1].

Eating a healthy and balanced diet is especially important when a person is HIV positive. In general, one diet is sufficient to meet nutritional needs, continuing to drink well is very important even

with side effects from drugs or HIV-related illnesses, but some anti-HIV drugs have particular dietary restrictions [2-3].

Yet few crises have affected human health and threatened social, economic and national progress than HIV / AIDS. This pandemic has a devastating impact on the food security and nutrition of households, families and people as it affects the availability of food and the stability of supplies as well as access to food and its use for good nutrition. It also has serious repercussions on agricultural production and employment, and puts great pressure on health and social services. Families lose their capacity for work and production; the poorer households become, the more difficult

it is for them to obtain food and meet their food needs. Malnutrition is a serious threat to people with HIV / AIDS [4].

Malnutrition in children immunocompromised to HIV / AIDS is one of the major causes of morbidity and malnutrition in children, especially those who are immunocompromised on antiretroviral therapy without dietary supplementation. Each year, more than 200 million children are victims and nearly 7 million die from it (5). Southern Africa has the highest prevalence of malnutrition (37%), followed by East Africa (35%), Central Africa 30% and West Africa 14% [6].

In the Democratic Republic of Congo (DRC), the various studies carried out on the prevalence of protein-energy malnutrition (PEM) in children aged 0 to 5 years have shown that 34% of children are underweight, 45% behind growth and 10% slimming or weight loss [7].

PEM in children immunocompromised to HIV / AIDS is a major cause of morbidity and mortality in children, especially those who are immunocompromised on ART, without nutritional supplementation. Each year, more than 200 million children are victims and nearly 7 million of them die [8].

In recent years, studies of PEM in immunocompromised children on ARV treatment with nutritional supplements and those who do not receive them have shown that in several regions of the world the impact of dietary supplements are of paramount clinical importance for the survival of the patient. immunocompromised children on ARVs [9].

From the above, the following concerns were raised: What is the nutritional status of the child living with HIV on ARVs in the Ruashi health zone? And How is he observing his treatment?

The objective of this work is to assess the nutritional status, biological monitoring and treatment children immunocompromised to HIV / AIDS on ARVs in the Ruashi health zone.

Methods

The research framework for this study is the Ruashi Health Zone, which has 220,374 inhabitants (men, women and old people combined). We carried out a cross-sectional descriptive study which took place over a period of six months, from January to June 2016. The study population consisted of children living with HIV put on ARVs in the PMTCT center of the RUASHI ZS. All children under the age of 18, positive for HIV, put on ARVs, followed in the department and present during the study period were included in

the study; The data were collected by the interview and the documentary review using a questionnaire and a documentary review grid and the data analysis was carried out using Epi –info version7 software. The data processing was done with respect for confidentiality and each patient was assigned an anonymous number. Sociodemographic variables, anthropological variables, biological monitoring variables and variables related to antiretroviral and HIV treatments were analyzed.

Results

On a number of 51 children aged 3 months to 17 years selected in 8 structures for the care of People Living with HIV AIDS, we noted 29.41% of children at HAKIKA General Reference Hospital, followed by Center YAMBALA Health Center with 15.69%, FOYER CHRETIEN Health Center 13.6%, ATLAS Health Center 11.76%; AENAF health center 9.8%; DARCY CLINIC 7.84%; GRACE-LOUIS Health Center 5.88; ORACLE health center 3.92% as well as FAVEUR DE DIEU health center with 1.96%.

Compared to their mothers, the result showed a predominance of the age group between varying between 25 to 34 years with a proportion 43.14% and 33.33% pfor the age group 18 to 24. The result in relation to the level of study was characterized by the domination of the secondary level with 49.02%, the primary and university levels each have 19.61% and the professional level (11.76%). Relative to monthly income, 45.10% of households with monthly income between \$ 150 to \$ 300; 23.53% earn between \$ 301 to \$ 500 per month; 21.57% of households live on more than \$ 500 per month and 9.80% of households live on less than \$ 150 per month.

Compared to malnourished children Living with HIV AIDS: The dominant sex was female with 52.94%; the dominant weight range was between 11-19kg with a proportion of 45.09%. The dominant age group was that of 2 to 5 years with 37.24%, followed by 31.38% for the group of 6 to 10 years. The result showed a slight dominance of children over 102cm tall at 50.98%. We observed 31.37% underweight (overall malnourished) of which 23.53% were mildly underweight and 7.84% moderately underweight. Regarding nutritional status according to WATERLOW; the result obtained presents 11.76% of children suffering from stunted growth and wasting (including 5.88% of stunted growth and chronic malnutrition, 3.92% wasting and 1.96% of children were puny).

In relation to the distribution of children according to acute malnutrition, the result presents us with 25.48% of children suffering from acute malnutrition including 15.69% mild acute malnutrition, 5.88% moderate acute malnutrition and 3.92% severe acute malnutrition).

Table 1: Distribution of children according to biological examinations

| Biological examinations | Previous review | | Last exam | |
|-------------------------|-----------------|------------|-----------|------------|
| | Effective | Percentage | Effective | Percentage |
| Viral load | | | | |
| <1000 copies | 20 | 64.52 | 38 | 88.37 |
| ≥1000 copies | 11 | 35.48 | 5 | 11.63 |
| Total | 31 | 100 | 43 | 100 |
| CD4 | | | | |
| <350 | 5 | 13.16 | 3 | 5.88 |
| 351 –500 | 9 | 23.68 | 8 | 15.69 |
| > 500 | 24 | 63.16 | 40 | 78.43 |
| Total | 38 | 100 | 51 | 100 |
| Hemoglobin | | | | |
| <11 g% | 7 | 17.07 | 5 | 9.80 |
| ≥ 11g% | 34 | 82.93 | 46 | 90.20 |
| Total | 41 | 100 | 51 | 100 |

This table shows us:

An undetectable increase in viral load from 64.52% to 88.37%

A regression of severe immune deficiency from 13.16% to 5.88%

Moderate immune regression from 23.68% to 15.69%

A rise in strong immunity from 63% to 78.43% hence an immunity from 86% to 94.12%

A decrease in anemia from 17.07 to 9.80%

Table 2: Distribution of patients by clinical stage of HIV

| Stadium | Frequency | Percentage |
|--------------|-----------|------------|
| Stage I | 22 | 43.14 |
| Stage II | 11 | 21.57 |
| Stage III | 17 | 33.33 |
| Stage IV | 1 | 1.96 |
| Total | 51 | 100 |

From this table, 43.14% of patients in stage I were noted; followed by 33.33% in stage III and those in stage II at 21.57%

Table 3: Distribution of patients according to treatment regimen

| Treatment scheme | Frequency | Percentage |
|-----------------------|-----------|------------|
| AZT + 3TC + NVP | 24 | 47.06 |
| AZT + 3TC + EFV | 6 | 11.76 |
| ABC + 3TC + LPV / r | 6 | 11.76 |
| ABC + 3TC + NVP | 4 | 7.84 |
| AZT + 3TC + LPV / r | 4 | 7.84 |
| ABC + 3TC + EFV | 4 | 7.84 |
| TDF + 3TC (FTC) + EFV | 2 | 3.92 |
| TDF + 3TC (FTC) + NVP | 1 | 1.96 |
| Total | 51 | 100 |

From this table, it was observed that the most used scheme was AZT + 3TC + NVP with 47.06%; AZT + 3TC + EFV and ABC + 3TC + LPV / r with respectively 11.76% each.

Regarding allergies to the molecules administered, 9.80% of cases of allergies were noted.

Compared to side effects, only 9.8% experienced side effects. While in relation to the level of adherence during antiretroviral therapy (ART), treatment adherence was good in 92.16% of patients and 7.84% manifested non-compliance, of which 75% were non-compliance. caused by missed intake, 25% due to treatment breakage.

Regarding the occurrence of opportunistic infections, we noted nine cases, of which 4 are 44, 44% tuberculosis, 22.22% pneumonia and diarrhea and one case of generalized dermatitis, i.e. 11,11%.

Discussion

Nutritional status

Global malnutrition :

In the work that we have just carried out, we observed the prevalence of global malnutrition at 31.37%, including 7.84% of moderate malnutrition and 23.59 of mild malnutrition. In view of this result, we can say that the nutritional situation of children who are on ARVs and benefiting from therapeutic nutritional support is not as precarious as one might imagine. Our results are similar to that of de Rogerson [10] in the context of HIV in Malawi who in 2004 reported a low prevalence of malnutrition at 40%. This result is contradictory with that of Costa Kazadi M and elaborators [6] who found an overall prevalence of malnutrition that was 60.2% among children living with HIV. This large discrepancy could be explained by the fact that his study was conducted on children with HIV who were naïve to ARVs, not benefiting from no nutritional support. Our research is conducted on children who benefit from nutritional and therapeutic support.

Emaciation or thinnes

For a child with HIV, weight loss is a major problem during the course of the disease. The result of this work shows an emaciation of 5.88%. This prevalence is slightly lower than that of other studies [11], i.e. almost 10%. This difference from our result may be influenced by the sample size of our work. Our result crosses that of Mukalay et al. [12] who showed 3.8% wasting among HIV-negative children in Lubumbashi in 2009.

Chronic malnutrition or stunted growth

Taking into account the TPA parameters, the growth retardation in our work affects 7.84% of children. This value is less than that found by Kimani [13] in South Africa by 18% stunted. Our result seems to match that of Kazadi (6) who found 8.4% growth retardation in children with PVV in 2011.

Acute Malnutrition

Acute malnutrition was represented by 25.48% of children in-

cluding 15.69% of mild acute malnutrition; 5.88% moderate acute malnutrition and 3.82% severe malnutrition)

Biological monitoring

Biological monitoring is one of the parameters that helps us to assess the effectiveness of the treatment. At the end of our research we observed:

Viral load

A decrease in the quantity of the virus in the body, therefore 88.37% (n = 45) of patients with a viral load less than 1000 copies / mm³ of the blood against 11.63% of more than 1000 copies, a viral load which is undetectable, which justifies the effectiveness of ART and its good adherence

Hemoglobin

Hemoglobin level was 90.20% for children with a value ≥ 11 g% versus 9.80% of children with a level < 11 g%. The overall prevalence of anemia was 9.80% (n = 51)

CD4

We observed severe immune deficiency of 5.88% (CD4 < 350 , (n = 51)), previously there was 13.16% immune deficiency; 15.69% of children with CD4 count between 350-499. And 78.16% of children with a rate ≥ 500

The goal of ART is decrease the viral load: the less the viral load, the less there are viruses active in the body and therefore fewer viruses attacking them. This 5.88% deficit is proof that justifies the effectiveness of CD4

Adherence to antiretroviral therapy

Observation level

The good level of compliance rose to 92.16% of cases and poor compliance to 7.84%. Our results differ in the level of compliance found at Sylla et al. [14] with 79.6% good compliance and 20.4% poor compliance in a 3rd level structure in Bamako in Mali and in that found in France by Trocme et al. [15] among adolescents with 72.5% of good compliance. The high level of observation found in our work can be justified by the fact that 50% of HIV-positive mothers were already on ART and by the low rate of side effects of ARVs and the involvement of all family members in the concern of the health of their children.

Level of non-compliance

In our research, we observed the high rate of non-compliance of 75% which was dominated by the missed take and this missed take was mainly caused at 50% by forgetfulness, neglect and non-observance of the appointment. This result joins that of Issa Iliassa [16] in their study on the assessment of ART adherence in children at 76.9%. This rate is similar to those of Trocme [15, 17] with 72.5% and Sylla [14].

Conclusion

Our work focused on the assessment of the nutritional status of

children put on ARVs in PMTCT centers in the RUASHI health zone, the objectives assigned were to assess the nutritional status of the child, the biological monitoring of the child and child adherence to treatment.

We noted 31.37% overall malnutrition including 7.84% mildly underweight. The stunting and wasting was 17.76%; 5.88% of severe acute malnutrition, hemoglobin level <11g / dl was observed in 9.8% of children in the study yard ; an undetectable viral load was 88.37% of patient. The immunodeficiency was 5.88% (n = 51) The good adherence to ART was 92.16% of the patient against 7.84% of non-compliance dominated at 75% by the missed dose (n = 4). This work confirms the idea that HIV infection causes and / or worsens nutritional deficits in children, but good nutritional and therapeutic care is therefore essential to deal with this scourge.

We suggest: Sensitization of the population by intensifying information, education, communication in order to promote the prevention of HIV infection; Modernization of reagent laboratories for performing CD4 counting and viral load; Capacity building of medical personnel in the care of children infected with HIV and in the evaluation of therapeutic adherence.

References

1. Kelem D. (2008). Consultation Régionale sur La Nutrition et le VIH/SIDA dans les Pays Francophones Eléments factuels, enseignements tirés et mesures préconisées. Rapport de consultation. Ouagadougou, Burkina Faso, 17-20. OMS.
2. PAM, VIH/SIDA: les malades ont besoin d'une alimentation équilibrée 2010 <https://news.un.org/story/2010/07/189642-vihsida...>
3. Criton C. (2008). Alimentation des PVVIH: Conseils diététiques pour tenir le coup 27ème conférence internationale sur le VIH/SIDA, Mexico.
4. FAO VIV /Sida et Nutrition : Sécurité alimentaire de ménage et nutrition communautaire, 2012 http://www.fao.org/ag/agn/nutrition/household_fr.stm
5. Mwenyibali U. (2009). Analyse nutritionnelle de personnes séropositives dans la zone de santé d'UVIRA Mémoire présenté et défendu en vue de l'obtention de diplôme de Licencié en Développement Rural ISDR UVIRA.
6. Mwadianvita, CK, Kanyenze, FN, Wembonyama, CW, Mutomb, FMA, Mupoya, K., Nkoy, AMTA, & Mwenze, PK (2014). Nutritional status of children aged 6 to 59 months with HIV but not on ARVs in Lubumbashi. The Pan African medical journal, 19, 7.
7. CAADP, The Pan African Nutrition Initiative, report, accessed September 26, 2013, <http://www.caadp.net/pdf/Pan-African-Nutrition-Initiative-Report>
8. Shaffer, N., Chuachoowong, R., Mock, P. A., Bhadrakom, C., Siriwasin, W., Young, N. L., ... & Bangkok Collaborative Perinatal HIV Transmission Study Group. (1999). Short-course zidovudine for perinatal HIV-1 transmission in Bangkok, Thailand: a randomised controlled trial. The Lancet, 353(9155), 773-780.
9. Ndangurura D. (2008). Impact des suppléments alimentaires chez les enfants de 0-5 ans immunodéprimés au VIH/SIDA, Cas de l'Hôpital Rwinkwavu/Partners In Health. Mémoire de licence, université de Goma/ RD Congo.
10. Rogerson, S. R., Gladstone, M., Callaghan, M., Erhart, L., Rogerson, S. J., Borgstein, E., & Broadhead, R. L. (2004). HIV infection among paediatric in-patients in Blantyre, Malawi. Transactions of the Royal Society of Tropical Medicine and Hygiene, 98(9), 544-552.
11. Guenter, P., Muurahainen, N., Simons, G., Kosok, A., Cohan, G. R., Rudenstein, R., & Turner, J. L. (1993). Relationships among nutritional status, disease progression, and survival in HIV infection. Journal of acquired immune deficiency syndromes, 6(10), 1130-1138.
12. Mukalay, A., Kalenga, PMK, Dramaix Wilmet, M., Hennart, P., Kabyla, BI, & Donnen, P. (2009). Prevalence and determinants of malnutrition in children under 5 in the Bongonga district of Lubumbashi. Annals of African Medicine, 3 (1).
13. Kimani-Murage, E. W., Norris, S. A., Pettifor, J. M., Tollman, S. M., Klipstein-Grobusch, K., Gómez-Olivé, X. F., ... & Kahn, K. (2011). Nutritional status and HIV in rural South African children. BMC pediatrics, 11(1), 1-13.
14. Sylla, M., Dicko-Traoré, F., Oumar, A. A., Traoré, D., Traoré, H., Kone, D., & Keita, M. M. (2008). Évaluation de l'observance du traitement antirétroviral chez les enfants infectés par le VIH à Bamako. Archives de pédiatrie, 15(8), 1356-1357.
15. Trocmé, N., Vaudre, G., Dollfus, C., & Leverger, G. (2002). Observance du traitement antirétroviral de l'adolescent séropositif pour le VIH. Archives de pédiatrie, 9(12), 1241-1247.
16. TOURE, A. (2010). Evaluation of the level of adherence to antiretroviral treatment in children aged 0 to 15 at the NGO walé de Ségou (Doctoral dissertation, Thèse Med, Bamako).
17. Berhane, R., Bagenda, D., Marum, L., Aceng, E., Ndugwa, C., Bosch, R. J., & Olness, K. (1997). Growth failure as a prognostic indicator of mortality in pediatric HIV infection. Pediatrics, 100(1), e7-e7.

Copyright: ©2021 Mbutshu Lukuke Hendrick. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.