Factors associated with HIV affected clients' behavioral practices and health outcomes

By

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Abstract

A three year cohort study in Machakos County captured the behavioural practices of HIV affected clients undergoing treatment at Comprehensive Care Centres in Machakos and Athi-River hospitals. Selection of 131 HIV infected persons was done on first come basis and interviews conducted after signed informed consent.

Thirteen categories of treatment choices were exhibited by HIV infected clients. The HIV treatment using herbs, prayers and tethered Nutrition, ARVs and Septrin, social support and laboratory testing was studied alongside others e.g Micronutrient bioavailability, biodiversity and health outcomes.

Tethered group exhibited a 45% improvement in ARV adherence, and a corresponding 45 % of the HIV infected Clients improving to a viral load of non detectable level. Some 14 of 131(10.7%) were still awaiting their viral load results. There was a (8 of 131) 6.1% using multivitamins formulations to boost their appetite. A group optimizing on the recommended diet biodiversity were 59 of 131 (40.04%) and 9 of 131(6.9%) eating nine+ foods daily.

The basis for micronutrients and functional Biochemical reactions integrated and tethered on dependent factors leads to restoration to normal of biochemical metabolic reactions in the body thus cure for HIV infected person as the ARVs destroy the HIV virus. The Syndemics interplay of external environment, micronutrients, adhered diets and Metabolism as well as tethered targeted epidemiological interventions resulted to a tethering therapy procedure improving the health of HIV infected persons.

This paper presents a paradigm shift for establishment of tethered social and spiritual support as well as counselling, tethered ARV adherence, micronutrient biodiversity and bioavailability and Nutritional supply.

Key words :- ***Tethered, Behavioural, Syndemics, Nutrition,Bioavailability and Biodiversity*****.**

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Introduction / Background

Over 36 Million individuals are currently living with HIV /AIDS, 95% of whom are from developing countries, assuming that each HIV /AIDS case directly influences the lives of four other individuals a total of more than 150,000,000 people are being affected by the disease. [1] [2] [3]

[1] Academy for Education Development, Washington DC, 2004, Food and Nutrition Technical assistance project, HIV/AIDS: A guide for Nutritional Care and Support.

[2] Alison Barker1995, Breast Feeding Retention rates Associated with Post-natal Oral Zinc Supplementation, pages 369-375.

[3] Ann Mills, Fawzia Rasheed and Stephen Tollman, Strengthening Health Systems, WHO and World Bank Project, 2004.Chapter 7, pages

[4] Thus, it is of great importance to address the issues arising from HIV mortality and morbidity, and such information will be useful for planning and development. A high cost is expended in the disease's surveillance, prevention, and control and therefore an endeavor to lower the cost of spending on the same is timely.

On HIV/AIDS Food and Nutrition Security, there are impacts and actions required in planning as was highlighted by Stuart Gillespie in May 2001. It is estimated that Asia will overtake Sub-Saharan Africa in Absolute numbers between 2010 and 2020, and Asia will be the HIV/AIDS epicenter. [5]

Justification

AIDS is caused by a Pathogen called HIV of retroviral Genus. This virus can change from RNA to DNA. It has a Single stranded RNA molecule with a reverse transcriptase enzyme and surface membrane proteins. It is transmitted from human to human by contact with blood or body fluids from infected persons through sexual intercourse (major), blood transfusion, mother to child through placenta, delivery, and breastfeeding, cuts, wounds and sharing of sharp objects. [6]

It is highly infectious and presents itself severely leading to high mortality and morbidity from symptoms of opportunistic infection due to immune-suppression.

AIDS though preventable has no cure but there are Antiretroviral drugs used to reduce viral loads. The risk of HIV and other diseases has drastically worsened due to co-infection with Tuberculosis Bacillus (TB) varying widely with regions. The risk of Tuberculosis among HIV-

[4] Bernet and Rugalema, 2001

[5] Ibid. Bernet and Rugalema, 2001

[6] Vivek Chitnis and Savita Pattwa (2002), Cell Receptor Repertoure, Chapter 26, PCR Testing Methodologies, Page 245-255

infected persons is closely correlated with the number of CD4+ lymphocytes. An estimated rate of active TB among HIV-infected persons was at 6.9 per 100 persons. The development of TB among HIV/ AIDS clients increases the mortality of the HIV Positive clients.[7] [8] [9] [10] [11] It has also been shown that in Sub-Saharan Africa, a significant number of new cases of TB and recurrent cases of TB result from recent transmission attributed to HIV pandemic.[12] In 1994 survey results showed that 40% of registered TB cases were known to have HIV. [13] [14]

Diarrhoea is a common secondary infection among those living with HIV/AIDS. The characteristics of the infection include purging of watery stool. At times the stool is bloody. Diarrhoea can be persistent, may have other symptoms like vomiting or fever. If untreated, the cases suffer dehydration, electrolyte imbalance, acidosis, circulatory collapse or even death.

[7] Lim-Quinzon MC, Benabaye RM, White FM, Dayrit MM.and White ME,Cholera in metropolitan Manila: foodborn transmission via street vendors. Bull WHO 1994; 72 (4): 745-749.

8. Mbakaya et al 2004b Micronutrient Zinc deficiency as a possible co-factor in the transmission and progression of HIV/AIDS in Kenya

[9]Mbakaya et al., 2010c, unexplained co-infection with Malaria, HIV and AIDS *News/Report JAGST VOl.* 13(1)2011.

10. Swaminathan; S, Ramachandran et, al. Risk of development of TB in HIV infected Patients. *International journal of Tuberculosis and Lung Disease* 2000;4 (9): 839

[11] Ibid. Lim-Quinzon MC, Benabaye RM, White FM, Dayrit MM.and White ME

12. Ngare D. K and Mutunga J.N 1999; Prevalence of Malnutrition in Kenya, East African Medical Journal; 76 (7): 376-380.

[13] *labtestsonline.org/understanding/.../cd4/...*

[14] Elliot,A.M; Namambo,K., et al. The sputum smears results of HIV patients in Lusaka.International Journal of Lung and Disease 1993; 74 (3):19.

Diarrhoea is the commonest cause of death in Africa.[15] [16] [17] Diarrhoea is a problem for many people with HIV /AIDS as reported by Food Agricultural Organization in 2005. Diarrhoea is a symptom of infection by bacteria, viral or parasitic enteric agents. Unsafe water contributes to high infant mortality rates. There is lack of a basic infrastructure and women and children are forced to spend more hours daily fetching clean safe water for drinking, washing, and other household chores compared to the more developed countries. Poor and non-poor depend on river water while urban populations use piped water. [18] [19] This leads to exposure to pathogenic organisms that cause opportunistic infections mostly to those living with HIV.

A wide range of food borne diseases affect most developing countries. However, with poor or non-existing reporting systems in most countries, reliable statistics on these diseases are not available. Their magnitude is therefore difficult to estimate.

Yearly over 3 million children die as a result of diarrhea diseases while some 1500 million episodes occur under the age of five. Many more millions die from the combined effects of diarrhea and malnutrition. Even children who are HIV negative but born to HIV-positive mothers

[15] Cardenas V, Saad C, Varona M and Linero M: Waterborne Cholera in Riohacha, Colombia1992.

[16]Clinical Chemistry and immunology

[17] The Holy Bible, Deuteronomy 28:1-22

[18] SO/IEC/17025: 2005(E) cites the General requirements for competency of testing and calibration Laboratories.

[19]Kenya Bureau of Statistics; 1st report on poverty in Kenya .Vol II Poverty and social indicators: July 1998.

have a greater risk of developing recurrent bouts of diarrhea. [20] Contaminated water supplies of food play a major role as source of pathogens. It is estimated that up to 70% of cases of diarrhea diseases may be caused by contaminated food. Both TB and HIV affect the most economic and productive age group of 15-45 years. Thus diarrhea attributed to HIV will also affect this group of people.[21] [22] The most affected age groups (15-45years) are the most economically productive age thus a decline in family income and our country's GDP

Study Design and Methodology

A cohort study was carried out in Machakos County involving a participatory process undertaken by researchers, healthcare staff and patients (HIV affected clients) to capture the behavioural practices of HIV affected clients receiving Comprehensive Care Centres in Machakos and Athi-River hospitals.

The interplay of herbs, prayers, Nutrition, ARV drugs and other healthcare Matrix components for HIV infected clients undergoing treatment was studied. The Bioavailability and Biodiversity exhibited by HIV infected clients while undergoing HIV treatment and management was explored in relation to health outcomes.

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[20] Muindi J. M, Enhancing Protective control measures for reduction of Diarrhoeal Disease in Athi-River, Kenya, MSc Thesis,JKUAT, 2007. 47. Vivek Chitnis and Savita Pattwa (2002), Cell Receptor Repertoure, Chapter 26, PCR Testing Methodologies, Page 245-255.

[21] Dr l. Chebet Dr.Chakaya, Mr. M. Ndolo, and Dr. Tanu, Facts on TB and HIV MOH report

[22] 10. *labtestsonline.org/understanding/.../cd4/...*

Results

A study group consisting of willing 131 HIV infected persons was selected on first come first served basis and interviewed after informed consent was obtained and signed and followed up for three years. There was a 45% improvement in ARV adherence, and a corresponding 45 % of the HIV infected Clients improving to a viral load which is non detectable level. 14 of 131 were still awaiting their viral load reference Laboratory test confirmations. There was a (8 of 131) 6.1% using formulated multivitamins to boost their appetite. Those optimizing on the recommended diet biodiversity were 59 of 131 (40.04%) and 9 of 131(6.9%) eating nine+ food species. There were 13 categories of treatment choice groupings of HIV infected clients. Although a National Food Composition Tables and the Planning of Satisfactory Diets in Kenya exists, it was not well availed and disseminated to nutritionists and is hardly used at the CCCs in Kenya. Swellings were noted in different parts of the body of some few clients creating a need to get a Cancer test and treatment if found positive. Some complications with scurvy like symptoms may have resulted to nutritional and micronutrient deficiency associated disorders. Some cases also suffered ARVs' regimens allergies and toxicities while others forgot to take the ARVs and antibiotics as scheduled introducing antibiotic resistance complications. HIV treatment and Management guidelines are used for effective HIV surveillance at the CCCs.

Discussion

The patients Metabolites levels were not routinely tested though Multivitamins, Micronutrients as well as diets were recommended and in use by some of the clients. For persons suffering from other bacteriological infections, culture and drug sensitivity testing was required during standard laboratory diagnosis.

Majorly, direct fecal-oral route transmission is by ingestion of contaminated water, food or both. For such patients especially those with diarrhea, rehydration therapy was used for restoration of lost fluids and electrolytes while antibiotics were administered to combat bacteriological infections.

Those persons who are infected with HIV experience a compounded challenge especially in counties with Limited access to safe drinking water and Poor sanitation especially in Kenya among other African countries. Poverty and food scarcity compounded with ignorance and poor micronutrient bioavailability intensifies ill health outcomes even when the HIV infected clients adhere to ARVs.

When one is infected with HIV,vthe body starts to experience a drawdown of metabolites since the virus begins to change from RNA to DNA. It has a Single stranded RNA molecule with a reverse transcriptase enzyme and surface membrane proteins which require extra provision of substrates, enzymes, cofactors and specific ionic mediums and energy all tied up to nutritional intake as well as micronutrients supply and availability during Metabolism. While Potassium, sodium, Sulphur, Nitrogen and oxygen are required for energy provision and should be restored to normal balance for the sodium potassium pump to operate well, Calcium and selenium are important for normal bones and nervous transmission. Magnesium is a key component for proper cell membrane formation while Zinc boosts immunity and all these are prevalent in especially seeds of edible fruits e.g water melons, quavers and also in cashew nuts and deep green leafy vegetables. The liver and spleen also do contain B 12 useful for detoxification of the body.

There is thus an information gap among people living with HIV on metabolites and micronutrients' benefits to the body and which foods one can eat so as to avail them in our body

systems. Tethering of the learned and established habits to the new replacement therapies, habits and rewards must be done and explained to tie the recoveries so that they can be restored to gain sobreighty and health.

Even when micronutrients are availed in fortified foods, there is no current information to guide users on when one should know that they are about to exceed body requirement. This calls for consistent monitoring of metabolites levels in the body systems for those using micronutrient fortified foods thus assure safe levels use and avoid toxicity. During metabolism, there is a principal called substrate or product inhibition of a biochemical process. The excess product at times inhibits the forward reaction and thus the reverse takes place reducing the product but raising the level of the substrate. These reactions also depend on the catalytic effect of the enzymes which work together with cofactors. For the utilization of Zn in the body, copper should also be present and therefore this dependency or inhibition can occurs depending on how much of each micronutrient is present.

Some of the micronutrients are not supposed to meet because they complex with each other and precipitate thus causing lack of what was taken into the body thus affecting timing of intake especially for ion containing foods. Fortified foods should also be routinely monitored to guide users on safe combinations that one can take so as to avoid toxicity due to use of excess fortificants. This is clearly explained by the full Biochemical Pathways and somehow natural foods were made in a way that by the time one eats to their full, the levels balance themselves automatically and that is why the HIV infected person should have their biochemical pathways restored before they revert back to health. This is how the tethering assures the HIV infected client to access certain foods only at certain times as well as ARVs and helping them routinely should adhere to treatment and biodiversity and bioavailability so as to retain a restored normal

biochemical balance for wellness. The emotional and spiritual state of the HIV infected client too should be restored to normal otherwise they cannot retain a schedule required for treatment. If they can visualize themselves getting well, then they can develop a goodwill towards the schedule of treatment and recommended biodiversity.

Conclusion

The correlation of syndemics is the basis for micronutrients and functional Biochemical reactions integrated and tethered on dependent factors that lead to restoration of biochemical metabolic reactions in the body thus cure for HIV infected person as the AVVs destroy the HIV virus. This tethering was further explored for the three years resulting to the development of a therapy procedure which improves the health of persons who are infected with HIV. This procedure basically requires a paradigm shift for establishment of tethered social and spiritual support, tethered ARV adherence as well as tethered micronutrient biodiversity and bioavailability and tethered Nutritional supply.

Provision of counselling services coupled with tethering results in treatment of HIV positive patients. The theory used in this treatment is names natural social support theory developed by Muindi Serah while providing counselling services to HIV infected patients in this work over three years. This theory can also simply be known as the Back to Health implementation matrix for HIV infected persons to God be all the glory.

Recommendations

Those undergoing HIV treatment should have their Metabolites and toxins monitored routinely and any use of micronutrients and food fortificants also routinely Monitored. A multisectoral approach should be adopted for HIV diagnosis, treatment and management and should include

Spiritual Ministers, psychologists, Biochemists, Epidemiologists, Caterers, Nutritionists, Health educators, Nurses, clinicians and laboratory personnel as well as community health workers support teams.

Tethering should be emphasized as a tool for improving adherence to Biodiversity[8], bioavailability, social and spiritual support, ARV use as well as optimizing use of discussed HIV infected patients' Laboratory results

This Back to health implementation Matrix for HIV infected persons /Natural Social Support (Muindis'theory) should be further disseminated and adopted for use in Kenyan Comprehensive care centres and beyond. The National Food Composition Tables and the Planning of Satisfactory Diets in Kenya in existence should be reviewed availed and disseminated to nutritionists and used at the CCCs in Kenya.

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Key words*:-, *Tethered, Behavioural, Syndemics, Nutrition,Bioavailability and Biodiversity.

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22. Dr l. Chebet Dr.Chakaya, Mr. M. Ndolo, and Dr. Tanu, Facts on TB and HIV MOH report

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