Nutritional Adequacies of Student Diet: Suitability of University Refectory Meals for HIV Positive Students

Derek Ochi and Audrey Herring
Department of Humanities
University of Botswana

Abstract
At the time of his research in 1994, Thomson predicted that at least 95% of HIV positive patients would experience malnutrition at some point in the progression of the disease (201: 1994). Over a decade later malnutrition and vitamin deficiencies still threaten the majority of HIV positive individuals (Lee: 2002, Shvitz and Knox: 2001, Gillespie and Kadiyla: 2005). Consuming a balanced diet and adequate nutritional intake is crucial in order to maintain a healthy immune system and fend off opportunistic infections. This project explores dietary patterns, perceptions of healthy eating and nutritional content of refectory foods to determine whether the nutritional needs of University of Botswana students specifically those HIV positive, are being met. Surveys given to 125 students years 1-4 were used to assess number of meals students eat on campus, their opinion on dietary recommendations, and the variety of foods being consumed. A daily food log was also kept for the length of 1 week to record food items and average serving sizes typically provided by Moghul and Curry Pot. We found that the majority of students lack dietary variety. As a result students are most likely not receiving adequate nutrients essential for building and maintaining a healthy immune system. In order to better suit the needs of students and HIV positive individuals, the university refectories need to provide a wider selection of food items and in particular more fruits and vegetables.

Introduction
Maintaining a balanced diet is vital for HIV positive individuals as they are increasingly prone to vitamin deficiencies. Consequently, these deficiencies have significant repercussions on the immune system and can result in longer-lasting and more severe infections (Gillespie and Kadiyla: 2005). For example deficiencies in Vitamins B6, B12, and A known to cause impairments in immunologic response and process (Coody: 91: 1994) and increase the risk of contracting sexually transmitted infections including HIV (Gillespie and Kadiyla: 2005). In order to avoid vitamin deficiencies and maintain a healthy immune system, it is recommended an individual consume a wide variety of foods with high nutritional content containing essential vitamins (Gwyther and Marston: 2003, Vaghefi and Castellon-Vogel: 2004) (see figure to the right).

Basic guidelines include seeking plenty of fruits and vegetables to provide high amounts of vitamins and minerals, as well as dairy products (96-98: 2003). Avoid fat and alcohol which can damage the liver and disrupt absorption of other nutrients (98: 2003). Consuming ample amounts of protein helps produce with immune system (T and B cells) and is the ‘building blocks of the body’ (98: 2003).

Overall nutritional management and adequate micronutrient intake is pertinent to fighting malnutrition and maintaining a healthy immune system (Vaghefi and Castellon-Vogel: 5-9), ultimately decreasing the likely hood of transmitting and contracting disease. Yet there have been no studies to determine whether the nutritional needs of students are met by campus food options, especially those HIV positive. This study was conducted to determine whether HIV positive students receive adequate recommended nutrients from meals provided on campus at the University of Botswana.

Methods
Information for this project was gathered by conducting a survey which was completed by 195 students on UB campus ranging from years 1-4. Three classes were targeted as well as randomly selected students from Curry Pot and Moghul refectories. The survey included basic questions regarding the number of meals students eat on campus, what they believe are the recommended daily servings of food categories, what they believe is the relevance between nutrition and HIV (scale 1-10), as well as a 48hr assessment of what foods students were consuming. An observation journal was also kept for the length of 4 weeks in which researchers recorded notable observations surrounding eating patterns of students and food options in Moghul and Curry Pot. Additionally, a food log was kept for one week to record food options as well as serving sizes of the main meal items in both Moghul and Curry Pot refectories.

Results

- 27% of respondents reported no fruit intake over the last 48 hours
- 93% consumed less than 10 servings of fruit over the last 48 hours
- When asked how many servings of fruit a person should consume in a day the median response was 4, however students reported consuming a median of 2 over the last 48 hours. P value 1.5 x10^-7
- 11% of respondents reported no vegetable intake over the last 48 hours
- 81% consumed less than 10 servings of vegetables over the last 48 hours
- When asked how many servings a person should consume median response was 4, yet students reported consuming a median of 5 p value 3.78 x10^-5
- 86% of students eat at refectories at least once a week

Conclusions
Evidence from collected surveys and observations reveal that students are not receiving adequate nutrition from meals provided in Moghul and Curry Pot refectories due to lack of variety. The diet they choose to eat but more importantly the diet that is provided to them has limited vitamins and nutrients and could be an added threat to HIV positive students. Because of possible micronutrient deficiencies already present due to HIV, the lack of vitamins and other nutrients in campus meals cannot maintain a healthy immune system and therefore may contribute to further progression of the disease and increase susceptibility to other opportunistic infections. This report emphasizes the need and importance of proper management for food intake and diet, especially for an HIV positive individual. More importantly what is found in the study can be used as reference and support for positive changes to be made to campus meals.

Fruits, vegetables, other micronutrient rich foods and overall variation would be a first step and positive change for the UB community.