Professional Agricultural Workers Journal

Volume 2
Number 1 *Professional Agricultural Workers Journal* 4

9-4-2014

Food Insecurity and Psychological Well-Being Among Women Living with HIV/AIDS on Antiretroviral Therapy in the Alabama Black Belt

Andrew A. Zekeri
Tuskegee University, zekeri@mytu.tuskegee.edu

Youssouf Diabate
Tuskegee University, diabate@mytu.tuskegee.edu

FOOD INSECURITY AND PSYCHOLOGICAL WELL-BEING AMONG WOMEN LIVING WITH HIV/AIDS ON ANTIRETROVIRAL THERAPY IN THE ALABAMA BLACK BELT

***Andrew A. Zekeri[1] and Youssouf Diabate[1]**
[1]Tuskegee University, Tuskegee, AL
***Email for lead author: zekeri@mytu.tuskegee.edu**

Abstract

The objective of this research was to estimate the prevalence of food insecurity and determine if food insecurity is associated with psychological well-being among women living with HIV/AIDS. Survey data were collected from 268 women living with HIV/AIDS attending two clinics that provide medical and social support services to HIV-positive patients who live in 23 counties in Southeast Alabama. The results indicated that, using USDA food security scale, 54% of the women were food insecure. Multiple regression analysis results indicated that income, depressive symptoms, race, and participation in SNAP were significant predictors of food insecurity; employment and education were not statistically significant predictors. The overall model was significant at the 5% level reflecting the validity of the model. Based on these results, programs that address food insecurity should be a critical component of HIV/AIDS treatment in the Alabama Black Belt.

Keywords: HIV/AIDS, Food Insecurity, Psychological Well-being, Alabama Black Belt

Introduction

Food insecurity (i.e., uncertain of having, or unable to acquire, enough food because of insufficient money or other resources) and depression are common among people living with HIV/AIDS in Sub Saharan Africa, the United States and Canada (Anema et al., 2011; 2009; Carter, et al., 2011; Normen et al. 2005; Tsai et al., 2011; 2012; Weiser et al., 2012; Weiser et al., 2009a; Weiser et al., 2009b; Wu et al., 2008; Tiyou et al., 2012). Food insecurity is also recognized as a leading public health care challenge in the United States in the 21st Century (Tsai et al., 2012; Weiser et al., 2012; Zekeri, 2013). Yet, little is known about food insecurity among women living with HIV/AIDS in the Alabama Black Belt. Despite the disproportionate impact of HIV infection on racial and ethnic minorities in the Alabama Black Belt already struggling with many social and economic challenges, such as poverty, substance abuse, unequal access to health care, there is no data on how food insecurity impacts HIV-infected individuals in this region. Therefore, as an extension of previous research (Zekeri, 2007; 2010; 2013), the objective of this study was to assess the prevalence of food insecurity and determine if food insecurity is associated with psychological well-being among women living with HIV/AIDS in the Alabama Black Belt. The authors argue that food insecurity and HIV/AIDS are unrecognized health issues in the Black Belt area warranting interventions that address both social problem burdens concurrently.

Methodology

The Study Site

The present study is part of a longitudinal research examining HIV/AIDS and rural health disparities in the Alabama Black Belt Counties, a region disproportionately affected by the HIV/AIDS epidemic. The present study was conducted at several AIDS Outreach Organization Clinics in Alabama. The clinics provide medical and social support services to HIV-positive patients who live in 23 counties in Southeast Alabama. A convenience sample of 268 HIV-positive women who were on antiretroviral therapy (ART) recruited by the clinic staff participated in the study. For confidentiality purposes, only the staff of the clinic and the researchers informed the patients of the opportunity to participate in the study. Prior to obtaining informed consent, the purpose, procedures, risks and benefits of the study were explained. Participants were also advised that each respondent would receive a $15.00 prepaid debit card as an incentive for participating in the study. All study procedures were reviewed and approved by the Tuskegee University Office of Research Compliance prior to the collection of any data. The study focused on women because, although HIV epidemic is disproportionately affecting all racial and ethnic minorities, within these minority populations women are particularly affected.

Food Insecurity

In the survey, food insecurity status was evaluated using the six-item from the 18-item Core Food Security Module (CFSM) designed by the USDA in calculating official food insecurity rates for the United States (Nord and Andrews, 2003; Nord et. al., 2005). The questions were posed in increasing levels of severity by measuring the dimensions of concern about food quantity and food quality over the last 12 months. Examples of the questions include: " I/We worried whether our food would run out before we got money to buy more," "Did you or the other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?" "Were you ever hungry but did not eat because you couldn't afford enough food?" and Did a child in the household ever not eat for a full day because you couldn't afford enough food?" Each question is qualified by the stipulation that the outcomes are due to financial issues. Using the USDA validated cut points, a household with no or one affirmative response to the CFSM, was considered as food secure and a household with two or more affirmative responses was considered as food insecure.

Psychological Well-Being

Variables that have been previously established to have influence on food insecurity were assessed (Heflin et al., 2005; Olson, 2005; Olson et al., 2004; Siefert et al., 2001; Tiyou et al., 2012; Zekeri, 2010; 2013). The psychological well-being measure in this analysis is self-reported symptoms of depression. Depression symptom status of HIV-positive women was assessed through the Center for Epidemiological Studies-Depression scale (CES-D). The CES-D is a well known and widely used self-reporting instrument for assessing depression symptoms in the general population without the bias of an administrator affecting the results (Radloff, 1977). It has been used successfully for many years in the primary care setting. CES-D consists of 20 items that cover affective, psychological, and somatic symptoms.

In addition to the psychological well-being variable, the demographic and personal characteristics of HIV-positive women, known to be associated with food insecurity in previous research (income, age, level of education, use of Supplemental Nutrition Assistance Program,

employment status, and race) were assessed (Heflin et al., 2005; Siefert et al., 2001; Tiyou et al., 2012; Zekeri 2010). Household income (in dollars) was included as a continuous variable. Race was a dummy variable coded 1 for African Americans. Education level was a dummy variable coded 1 for those with less than a high school diploma or General Educational Development Certificate. Receipt of Supplemental Nutrition Assistance Program (SNAP) benefits (formerly known as the Food Stamp Program) was coded as 1 if the respondent received food assistance at the time of interview (Landers, 2007; Ratcliff and McKernan, 2010; Stuff et al., 2004; Vozoris and Tarasuk, 2003). Employment status (employed full-time = 1). The estimated model is stated as:

$$FIN = \beta_0 + \beta_1 INC + \beta_2 DSY + \beta_3 EPS + \beta_4 RAC + \beta_5 EDU + \beta_6 PSN + \varepsilon$$

Where
FIN = food insecurity
INC = household income
DSY = depressive symptoms (representing psychological well-being)
EPS = employment status
RAC = race
EDU = education
PSN = participate in SNAP
β = coefficient
ε = error term

Statistical Analysis

The analysis employed a multiple linear regression method to predict food insecurity. SPSS for Windows Version 14.0 was used to compute all statistics for this study. Variance Inflation Factor (VIF) scores for all of the independent variables were less than 6.0, suggesting little multicollinearity among the variables.

Results

More than half of (54%) of the women (n = 145) were classified as food insecure (Table 1). The majority (84.3%, n = 226) were African-Americans and 40.7% (n = 109) completed high school. Regarding household income, 49.2% (n = 132) earned less than $10,000. More than half (58.3%, n = 156) were employed, 45.8% (n = 123) had health insurance and 54.1% (n = 145) participated in Supplemental Nutrition Assistance Program. The prevalence of food insecurity among these HIV-positive women was more than three times the national average level of 14.5% in 2012.

The multiple regression analysis results indicated that income (β = -.351), depressive symptoms (β = -.199), race (β = -.165) and participation in SNAP (β = -.141) were significant predictors of food insecurity; employment and education were not statistically significant predictors. Overall, the model explained about 20% of the variation in food insecurity (adjusted R^2 = .195, $p < .05$).

Discussion

Income and psychological well-being have stronger effects than education and employment. These findings are consistent with some previous research in United States urban areas (Heflin et al., 2005; Olson, 2005; Olson et al., 2004; Siefert et al., 2001; Stuff et al., 2004; Weiser et al.,

2009a; 2012; Vozoris and Tarasuk, 2003), in Southwest Ethiopia (Tiyou et al., 2012), and in British Columbia, Canada (Normen et al., 2005). These findings are also similar to that of Normen et al. (2005) who found that among HIV-positive individuals living in British Columbia, Canada, the occurrence of food insecurity was nearly five times higher than in the general Canadian population. Furthermore, the results are similar to findings from Sub Saharan Africa (Tiyou et al., 2012; Tsai et al., 2001; 2012) and San Francisco (Anema et al., 2011; Weiser et al., 2009a; Weiser et al., 2009b).

Table 1. Characteristics of Single Women Living with HIV/AIDS on Antiretroviral Therapy (N=268)

Category [a]	Percent
Race/Ethnicity	
African American	84.3
White	15.7
Educational Attainment	
Did not complete high school	45.3
Completed high school or equivalent	40.7
Completed a college degree	14.0
Income	
Under $10,000	49.2
$10,000 to $20,000	40.7
Employment	
Employed (including part-time)	58.3
Unemployed	31.7
Health Insurance	
Yes	45.8
Participating in Supplementary Nutrition Assistance Program	
Yes	54.1
Food Security	
Food Insecure	54.0

a. Some percentage scores do not sum to 100% because some women did not answer the question.

Table 2. Multiple Regression Equation for Food Insecurity (N=268)

Variables	Beta
Income	-.351*
Depressive symptoms	.199*
Employed Full Time (yes=1)	-.023
Race[a] (African American =1)	.165*
Education	-.085
Participate in SNAP (yes =1)	.141*
Adjusted R^2	.195*

*$p < .05$ level

a. White persons are the reference group

The results provide insights into the precarious situations poor women living with HIV/AIDS in rural areas like the Alabama Black Belt face despite the general prosperity of the United States. Beyond food problems, many of these HIV-positive women struggled with mental health problems. Regarding the association between food insecurity and psychological well-being, it was found that the relationship between food insecurity and psychological well-being is statistically significant. The association remained statistically significant after controlling for the sociodemographic variables. These results are particularly interesting in light of some analyses using data from urban areas that found food insufficient households were more likely to have major depression (Heflin et al., 2005; Siefert et al., 2001).

Another interesting finding is that, contrary to expectations, participation in SNAP that was established to alleviate food insecurity among low income individuals (Landers, 2007) is associated with food insecurity in this sample. This is similar to a recent finding that participation in SNAP was associated with food insecurity (Ratcliffe and McKernan, 2010). It may be that though SNAP participation offers some degree of protection against food insecurity, benefits received may not be adequate to cover household food needs. More research is needed to understand relationships of food insecurity among SNAP participants. Such information will have policy implications for SNAP and SNAP participants in rural America.

Conclusion

The objective of this research was to estimate the prevalence of food insecurity and determine if food insecurity is associated with psychological well-being among women living with HIV/AIDS in the Alabama Black Belt. The results of the study suggest that, using the USDA Food Security Module Scale, more than half of the women living with HIV/AIDS were food insecure. This means that, these women were uncertain of having, or unable to acquire enough food to meet their needs because they had insufficient money or other resources to buy food.

Overall, the findings are consistent with growing evidence that food insecurity is associated with psychological well-being among HIV-infected individuals (Anema et al., 2011; 2009; Carter et

al., 2011; Normen et al., 2005; Tiyou et al., 2012; Tsai et al., 2011; 2012; Weiser et al., 2012; Weiser et al., 2009a; Weiser et al., 2009b; Wu et al., 2008). The only difference is that while the current study used the USDA Food Security Module Scale to measure food insecurity, majority of the previous studies used a single item measure of food insufficiency. The different scales may have effects on the validity or accuracy of the results.

Food insecurity involves physical and psychological consequences. It should be treated as a health issue that should concern not only social scientists but clinicians involved in HIV/AIDS care and support programs. Special attention need to be given to patients that are African Americans who have lower income. Health care providers must be aware of the many comorbid conditions that may affect the delivery of care to minority patients with HIV infection: depression and food insecurity. The impact of these comorbid conditions, such as depression and food insecurity, on the therapeutic relationship, including treatment and adherence, warrants screening for these disorders and treating them when identified.

There are three limitations of the study. The first is the cross-sectional design. It makes it impossible to draw causal inferences from the findings. For example, it might be possible to contend that food insecurity predisposes individuals to poor mental health. The reverse could also be true. Therefore, we cannot say exactly how mental health status changes and whether mental well-being limits the ability of women living with HIV/AIDS to earn a productive income that may prevent food insecurity. However, the relationship found between food insecurity and psychological factor is likely to be condition specific. Longitudinal data are required to ascertain the true nature of the relationships found in this sample from rural Alabama. Second, the dependent variable was based on self-reported conditions. Research examining these relationships in relation to objective measures of depression and food insecurity is needed to confirm our findings. It is hoped that the results will encourage additional research using the USDA Food Security Model Scale to examine how social factors can lead to personal well-being. Finally, a convenience sample of women living with HIV/AIDS was recruited and enrolled in the study, limiting the generalizability of results.

Acknowledgments

The authors are grateful for helpful comments offered by PAWJ editor and two anonymous PAWJ reviewers. The authors also thank the study participants who made this study possible by sharing their experiences and giving access to their lives. The project was supported by a grant from the Southern Rural Development Center in partnership with the Economic Research Service, United States Department of Agriculture. The Opinions and conclusions expressed herein are solely those of the authors and should not be construed as representing the opinions or policy of the Southern Rural Development Center or any agency of the Federal Government.

References

Anema, A., S.D. Weiser, K. Fernandes, E. Ding, E. Brandson, and A. Palmer. (2011). "High Prevalence of Food Insecurity among HIV-infected Individuals Receiving HAART in a Resource-Rich Setting." *AIDS Care* 23 (2): 221-230.

Anema, A., N. Vogenthaler, E. Frongillo, S. Kadiyala, and S. Weiser. (2009). "Food Insecurity and HIV/AIDS: Current Knowledge, Gaps, and Research Priorities." *Current HIV/AIDS Reports* 6 (4): 224-231.

Carter, K., K. Kruse, T. Blakely, and S. Collins. (2011). "The Association of Food Insecurity with Psychological Distress in New Zealand and any Gender Differences." *Social Science and* Medicine 72 (9): 1463-1471.

Heflin, C.M., Siefert K., and D.R.Williams. (2005). "Food Insufficiency and Women's Mental Health: Findings from a 3-year Panel of Welfare Recipients." *Social Science and Medicine* (61): 1971-1982.

Landers, P.S. (2007). "The Food Stamp Program: History, Nutrition Education, and Impact." *Journal of American Diet Association* 107: 1945-1951.

Normen L., K. Chan, and P. Braitstein (2005). "Food Insecurity and Hunger are Prevalent among HIV-Positive Individuals in British Columbia, Canada." *Journal of Nutrition* 135 (4): 820-825.

Nord, M., M. Andrews, and S. Carlson. (2005). "Household Food Security in the United States, 2004." http://www.ers.usda.gov/publications/err11/ [Retrieved April 30, 2006].

Nord, M., and M. Andrews. (2003). "Putting Food on the Table: Household Food Security in the United States." *Amber Waves* 23-29.

Olson, C. (2005). "Food Insecurity in Women: A Recipe for Unhealthy Trade offs." *Top Clinical Nutrition* 20 (40): 321-328.

Olson, C. M., K. Anderson, E. Kiss, F. Lawrence, and S. Selling. (2004). "Factors protecting against and Contributing to Food Insecurity among Rural Families." *Family Economics and Nutrition Review* 16 (1): 12-20.

Radloff, L.S. (1977). "The CES-D Scale: A Self-Report Depression Scale for Research in the General Population." *Applied Psychological Measurement* 1: 385-401.

Ratcliffe C., and S. McKernan (2010). *How Much Does SNAP Reduce Food Insecurity*? Washington, DC: Urban Institute.

Siefert, K., C.M. Heflin, M. Corcoran, and D.R. Williams. (2001). "Food Insufficiency and the Physical and Mental Health of Low-Income Women." *Women and Health* 32: 159-177.

Stuff, J E., P. Casey, K. Szeto, J. Gossett, J.M. Robbins, P. Simpson, C. Connell, and M. Bogle. (2004). "Household Food Insecurity is Associated with Adult Health Status." *Journal of Nutrition* 134: 2330-2335.

Tiyou, A., T. Belachew, F. Alemseged, and S. Bladgilign (2012). "Food Insecurity and Associated Factors among HIV-Infected Individuals Receiving Highly Active Antiretroviral Therapy in Jimma Zone Southwest Ethiopia." *Nutrition Journal* 11: 51.

Tsai, A.C., D. Bangsberg, E. Frongillo, P.W. Hunt, C. Muzoora, J. Martin, and S. Weiser (2012). "Food Insecurity, Depression and the Modifying role of Social Support among People Living with HIV/AIDS in Rural Uganda." *Social Science and Medicine* 74: 2012-2019.

Tsai, A.C., D. Bangsberg, N. Emenyonu, J.Senkungu, J. Martin, and S. Weiser (2011). "The Social Context of Food Insecurity among Persons Living with HIV/AIDS in Rural Uganda." *Social Science and Medicine* 73 (12): 1717-1724.

Weiser, S.D., A. Tsai, R. Gupta, E. Frongillo, A. Kawuma, and J. Senkungu (2012). "Food Insecurity is Associated with Morbidity and Patterns of Health Care Utilization Among HIV-Infected Individuals in a Resource-Poor setting." *AIDS* 26 (1): 67-75.

Weiser, S.D., K. Fernandes, E. Brandson, V. Lima, A. Anema, and D. Bangsberg (2009a). "The Association Between Food Insecurity and Mortality Among HIV-Infected Individuals on HAART." *Journal of Acquired Immune Deficiency Syndromes* 52(3): 342-349.

Weiser, S.D., E. Frongillo, K. Ragland, R. Hogg, E. Riley, and D. Bangsberg (2009b). " Food Insecurity is Associated with Incomplete HIV RNA Suppression Among Homeless and Marginally Housed HIV-Infected Individuals in San Francisco." *Journal of General Internal Medicine* 24 (1): 14-20.

Wu, D.Y., M. Munoz, B. Espiritu, J. Zeladita, E. Sanchez, M. Callacna (2008). "Burden of Depression among Impoverished HIV-Positive Women in Peru." *Journal of Acquired Immune Deficiency Syndromes* 48 (4): 500-504.

Vozoris, N.T., and V. Tarasuk. (2003). Household Food Insufficiency is Associated with Poorer Health." *Journal of Nutrition* 133: 120-126.

Zekeri, A.A. (2013). "Educational Attainment and Self-Rated Health Status among Single Mothers in Rural Alabama." *Psychological Reports* 113 (1): 1187-1191.

Zekeri, A.A. (2010). "Household Food Insecurity and Depression among Single Mothers in Rural Alabama" *Journal of Rural Social Sciences* 25: 90-102.

Zekeri, A.A. (2007). "Livelihood Strategies of Food-Insecure poor, Female-Headed Families in Rural Alabama." *Psychological Reports* 101 (4): 101-1036.