Title

Psychosocial Factors Associated with Food Insufficiency Among People Living with HIV/AIDS (PLWH) Initiating ART in Ethiopia

Journal

AIDS and Behavior, 23(11)

ISSN

1090-7165

Authors

DiLorenzo, Madeline A
Parcesepe, Angela
Tymejczyk, Olga
et al.

Publication Date

2019-11-01

DOI

10.1007/s10461-019-02505-9

Peer reviewed

HHS Public Access

Author manuscript

AIDS Behav. Author manuscript; available in PMC 2022 May 21.

Published in final edited form as:

AIDS Behav. 2019 November ; 23(11): 3052–3057. doi:10.1007/s10461-019-02505-9.

Psychosocial Factors Associated with Food Insufficiency Among People Living with HIV/AIDS (PLWH) Initiating ART in Ethiopia

Madeline A. DiLorenzo[1], **Angela Parcesepe**[2], **Olga Tymejczyk**[1,3], **Susie Hoffman**[4,5], **Batya Elul**[5], **Sheri D. Weiser**[6], **Robert H. Remien**[4], **Sarah Gorrell Kulkarni**[1], **Tsigereda Gadisa**[7], **Zenebe Melaku**[7], **Denis Nash**[1,3]

[1]Institute for Implementation Science in Population Health, City University of New York, 55 West 125th Street, New York, NY 10027, USA

[2]Department of Maternal and Child Health, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

[3]Graduate School of Public Health and Health Policy, City University of New York, New York, NY, USA

[4]HIV Center for Clinical and Behavioral Studies, Columbia University and New York State Psychiatric Institute, New York, NY, USA

[5]Department of Epidemiology, Columbia University, New York, NY, USA

[6]Division of HIV, Infectious Diseases and Global Medicine, Department of Medicine, University of California San Francisco, San Francisco, California, USA

[7]International Center for AIDS Care and Treatment Program (ICAP), Columbia University, Addis Ababa, Ethiopia

Abstract

Food insufficiency is associated with suboptimal HIV treatment outcomes. Less is known about psychosocial correlates of food insufficiency among PLWH. This sample includes 1176 adults initiating antiretroviral therapy at HIV clinics in Ethiopia. Logistic regression modeled the association of psychological distress, social support, and HIV-related stigma with food insufficiency. Among respondents, 21.4% reported frequent food insufficiency. Psychological distress [adjusted odds ratio (aOR) 2.61 (95% CI 1.79, 3.82)], low social support [aOR 2.20 (95% CI 1.57, 3.09)] and enacted stigma [aOR 1.69 (95% CI 1.26, 2.25)] were independently associated with food insufficiency. Food insufficiency interventions should address its accompanying psychosocial context.

✉Madeline A. DiLorenzo, madeline.dilorenzo@bmc.org.

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval The study was approved by the Institutional Review Boards of the Oromia Regional Health Bureau, Columbia University Medical Center and the City University of New York. All procedures performed in this study were in accordance with the ethical standards of the Institutional Review Boards of these institutions and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Keywords

Food insufficiency; HIV; ART; Psychological distress; Social support; Stigma

Introduction

Food insecurity, “the limited or uncertain availability of nutritionally adequate, safe foods, or the inability to procure food in socially acceptable ways,” is a significant problem in Sub-Saharan Africa [1]. In Ethiopia specifically, it has been estimated that 35% of the population is food insecure [2]. Food insecurity is more prevalent among people living with HIV/AIDS (PLWH) than the general population and has been associated with worse HIV outcomes, including lower CD4 counts, sub-optimal adherence to antiretroviral therapy (ART), and increased HIV viral load [3, 4].

Food insecurity is associated with poor mental health among PLWH, particularly among those with low levels of social support [5]. Qualitative research with PLWH suggests that HIV-related stigma may contribute to the risk of food insecurity through employment discrimination and social distancing of family, friends, and community members [6].

Food insufficiency, one component of food insecurity, is defined as having an inadequate amount of food and has been associated with moderate or severe food insecurity. Previous estimates of food insufficiency among PLWH in sub-Saharan Africa have varied. A study of pregnant women living with HIV in Uganda found that 7% reported severe food insufficiency and 41% reported moderate food insufficiency within the past 4 weeks [3].

Food insufficiency has been associated with a number of psychosocial factors, including low social support, stigma, and mental health among general populations. Less is known about psychosocial correlates of food insufficiency among PLWH, particularly in sub-Saharan Africa. A greater understanding of the psychosocial context in which food insufficiency occurs among PLWH is critical to developing effective interventions and strategies to prevent or reduce food insufficiency and its consequences among PLWH and may contribute to more effective identification of those at risk of suboptimal HIV treatment outcomes.

The objective of this analysis is to characterize psychosocial correlates of food insufficiency among PLWH initiating ART in Ethiopia. More specifically, this analysis investigates the extent to which psychological distress, low social support, and HIV-related stigma are associated with food insufficiency among PLWH initiating ART in Ethiopia.

Methods

Study Setting

This analysis is based on the multi-level determinants of late ART initiation (LSTART) study, a prospective cohort study of patients initiating ART at HIV clinics in the Oromia region of Ethiopia conducted from June 2012 through April 2013 to examine the correlates of late ART initiation [7]. Participants were recruited from six public-sector HIV clinics that received support from the International Center for AIDS Care and Treatment Program

(ICAP) at Columbia University through funding from the President's Emergency Plan for AIDS Relief (PEPFAR). Individuals were eligible for enrolment if they were: at least 18 years of age, initiated ART between June 2012 and April 2013, and spoke Amharic or Oromiffa. Eligible individuals were referred by providers to the study staff. Study staff administered a structured questionnaire with questions related to psychosocial factors and HIV care. Interviews were conducted within 2 weeks of ART initiation. Informed consent was obtained from all individual participants included in the study. Among the eligible patients referred to the study, 95% consented and completed the interview.

Measures

Past-year Food Insufficiency—Past-year food insufficiency was assessed by asking participants how often their households had trouble satisfying food needs in the past year. Response options included: "never," "seldom," "sometimes," "often," or "always." In this analysis, participants responding "never," "seldom," and "sometimes," were categorized as having experienced no or infrequent food insufficiency in the past year. Responses of "often," or "always," were categorized as having experienced frequent food insufficiency in the past year.

Psychological Distress—Psychological distress was assessed with the Kessler Psychological Distress Scale (K10), which has been previously validated in Ethiopia. The K10 is a 10-item questionnaire designed to assess psychological distress by asking about anxiety and depressive symptoms in the past 4 weeks. Scores between 10 and 19 were coded as no or low psychological distress, scores between 20 and 29 were categorized as mild or moderate psychological distress, and scores between 30 and 50 were categorized as high psychological distress.

Social Support—Social support was assessed with nine questions using a scale developed by Wortman et al. for the coping and change study, a psychosocial supplement to the Chicago site of the Multicenter AIDS Cohort Study. These questions concerned whether the participant has someone to: (1) talk to if upset or depressed, (2) talk to about an important problem, (3) take care of him/her if he/she had to stay in bed for several weeks, (4) borrow money from, help him/her get to the doctor, or to provide him/her with other small immediate help, (5) borrow money from for a medical emergency, (6) give him/her information or guidance, (7) ask for advice, (8) take care of his/her children if she got sick, and (9) accompany him/her to the clinic if needed [8]. Social support scores ranged from 1 (definitely not) to 5 (definitely). Scores were summed and grouped into quartiles.

Enacted HIV-Related Stigma—Enacted stigma in the past 3 months was measured with nine items selected from the HIV/AIDS Stigma Instrument (HASI-P) subscales (verbal abuse, fear of contagion, and social isolation). Items inquired about how often the participant had experienced rejection due to their HIV status (e.g., *You were told that you have no future, You were told that God is punishing you, Someone stopped being your friend*), with response options ranging from never (4) to most of the time (1) (Cronbach's $\alpha = 0.99$) [9]. Because the reported frequency of occurrence of all items was low, the summary measure

was coded as any recent enacted HIV-related stigma versus no recent enacted HIV-related stigma.

Sociodemographic Variables—Sociodemographic variables included sex, age, education, relationship status (defined as having a spouse or partner at the time of study enrollment), urban/rural residence, employment status, number of children and religion, and time between HIV diagnosis and enrollment in care.

Statistical Methods

Univariate analyses were conducted to assess the prevalence of food insufficiency, psychological distress, HIV-related stigma, and social support. Bivariate analyses of the relationship between food insufficiency and social support, enacted stigma, and psychological distress were conducted using Pearson Chi squared tests. A multivariable logistic regression model was used to examine the association of past-year frequent food insufficiency with psychological distress, enacted stigma, and social support. Adjusted analyses controlled for sex, education, relationship status, and urban versus rural living environment. Analyses accounted for clustering by health facility using the cluster command in STATA.

Ethical Considerations

The study was approved by the Institutional Review Boards of the Oromia Regional Health Bureau, Columbia University Medical Center, and the City University of New York. Written, informed consent for the interview and extraction of medical record data was obtained from each patient prior to study enrolment.

Results

Characteristics of Study Population

Of the 1176 participants assessed, approximately one-third (31.7%) of the population was between 18 and 29 years of age. The majority (61.2%) of the sample was female and reported having ever attended school (68.2%). Most (78.0%) lived in an urban environment and were in a relationship (57.1%).

Psychological Distress, HIV-Related Enacted Stigma, and Social Support

The majority (59.2%) of the sample screened positive for moderate or high psychological distress. Approximately one-sixth (16.3%) of the sample reported having experienced any recent HIV-related enacted stigma. Among the nine variables that comprised social support, two thirds (66.7%) of participants reported that they had someone who would accompany them to clinic if they needed assistance. Approximately one third (31.1%) reported they had someone from whom they could borrow money, get help getting to the doctor, or rely on for other small immediate help.

Food Insufficiency

Frequent food insufficiency (i.e., food insufficiency often or always) in the past year was reported by 21.4% of the study population. One percent of the population reported

always experiencing food insufficiency and 20.4% reported having often experienced food insufficiency in the past year.

Demographic Characteristics—Sex, education, relationship status, and living environment (urban/rural) were associated with having experienced frequent food insufficiency in the past year. Frequent food insufficiency was more commonly reported among women than men (23.8% vs. 17.8%, $p = 0.015$) and among individuals who had never attended school compared to individuals who had ever attended school (28.1% vs. 18.4%, $p < 0.001$). Individuals not in a relationship were more likely to report frequent food insufficiency in the past year compared to those in a relationship (28.4% vs. 16.2%, respectively, $p < 0.001$). Frequent food insufficiency was also more commonly reported among individuals living in an urban as compared to a rural environment (23.0% vs. 15.4%, respectively, $p = 0.008$). Food insufficiency was not significantly associated with age, religion, number of children, total household size, time between diagnosis and enrollment in HIV care, or employment status.

Psychosocial Characteristics—In bivariate Chi squared analyses, greater psychological distress, lower social support, and having experienced enacted HIV-related stigma were significantly associated with having experienced frequent food insufficiency in the past year. Among participants who reported no or low psychological distress, 11.7% reported frequent food insufficiency. However, the prevalence of frequent food insufficiency was 23.1% for those experiencing moderate levels of psychological distress and 33.2% for those experiencing high levels of psychological distress ($p < 0.001$). Greater social support was inversely related to prevalence of frequent food insufficiency. Among those in the top quartile of social support, 14.4% reported frequent food insufficiency, compared to 35.7% in the lowest quartile of social support ($p < 0.001$). Finally, having experienced recent enacted HIV-related stigma was significantly associated with reporting frequent food insufficiency in the past year (31.4% vs. 19.6%, $p < 0.001$).

Multivariable Regression Analyses

As seen in Table 1, in adjusted regression analyses, individuals who reported moderate or high levels of psychological distress had greater odds of reporting frequent food insufficiency in the past year compared to those with no or low levels of psychological distress [adjusted odds ratio (aOR) 2.61, (95% confidence interval (CI) 1.79, 3.82)]. Low social support [aOR 2.20 (95% CI 1.57, 3.09)] and having experienced enacted HIV-related stigma [aOR 1.69 (95% CI 1.26, 2.25)] were also associated with greater odds of frequent food insufficiency in the past year.

Discussion

Just over one fifth of the study population reported having experienced food insufficiency often or always in the past year. Previous estimates of food insufficiency among PLWH in sub-Saharan Africa have varied. Caution is warranted when making direct comparisons of the prevalence of food insufficiency across studies due to differences in measurement of food insufficiency, populations studied, and geographic settings.

Psychological distress was associated with recent food insufficiency in bivariate and multivariable models. These findings are consistent with research with PLWH in Uganda which found that food insecurity was associated with significantly worse mental health [10]. The directionality of the relationship between food insufficiency and psychological distress remains unclear. It is possible that stress and anxiety related to food insufficiency lead to greater psychological distress among PLWH. Evidence from high-income settings provides preliminary support for such a pathway. For example, a prospective cohort study of individuals co-infected with HIV and Hepatitis C in the United States found that moderate and severe food insecurity were significant risk factors for subsequent depressive symptoms [11].

It is also possible that psychological distress increases one's risk of subsequent food insufficiency. For example, psychological distress may act as a barrier to accessing existing nutritional support services [1]. Furthermore, depression may impede access to care, subsequently worsening patients' disease course and making them less likely to initiate ART in a timely manner, which could also contribute to worsening food insufficiency. Longitudinal studies are needed to assess the directionality of the relationship between food insufficiency and psychological distress.

Interventions that simultaneously address food insufficiency and mental health should be developed, implemented, and evaluated with PLWH in low-resource settings. While limited, evidence suggests that interventions that focus on food insecurity alone may be insufficient to improve the mental health of PLWH. An impact evaluation of a food assistance program with PLWH in Uganda found that while the intervention was associated with reduced food insecurity, it was not significantly associated with reduced anxiety related to food insecurity or with improved mental health-related quality of life [12]. The effectiveness of interventions that address both food insufficiency and mental health warrant investigation. Individuals who report food insufficiency should be screened for psychological distress and referred for further evaluation and intervention to address any mental health problems present.

Consistent with other studies, this study found that low levels of social support were associated with increased odds of food insufficiency. Food procurement is often a social process, and those without a strong social network may have a more difficult time accessing adequate supplies of food. Other studies have also shown that social support can buffer the impact of food insecurity on depression, and have suggested that interventions simultaneously targeting improving access to food and increasing social support may have synergistic benefits on both mental health and HIV outcomes on PLHIV in low-resource settings [5].

Having experienced enacted HIV-related stigma was also associated with food insufficiency, even adjusted for psychological distress and social support. This is consistent with previous research in sub-Saharan Africa that has suggested a relationship between HIV-related stigma and food insecurity [13]. It is possible that experiences of enacted HIV-related stigma serve to discourage individuals from participating in programs that are or could be seen to be associated with HIV, including nutrition supplementation or other interventions to prevent or

reduce food insufficiency among PLWH. Additional research on the relationship between HIV-related stigma and food insufficiency, including the context in which HIV-related stigma and food insufficiency may be related, is warranted.

This study has limitations worth noting. Since it took place in the Oromia region of Ethiopia, findings may not be generalizable to PLWH in other regions of Ethiopia or of sub-Saharan Africa. Furthermore, all participants were initiating ART at the time of data collection. The relationship between psychosocial factors and food insufficiency may differ at other points in the HIV care cascade. For example, we may have underestimated the true prevalence of frequent food insufficiency among PLWH in our study population since people who experience frequent food insufficiency may be less likely to survive until ART initiation. With regard to the associations discussed, because the data are cross-sectional, their temporal order cannot be assessed. Further, while this analysis investigated the relationship between some components of socioeconomic status (i.e., education, employment status) and food insufficiency, other dimensions of socioeconomic status (i.e., income, housing stability), were not measured. It is possible that unmeasured components of socioeconomic status confound the relationship between food insufficiency and the psychosocial factors examined.

Food insufficiency was commonly reported and significantly associated with psychological distress, low social support, and having experienced enacted HIV-related stigma among PLWH in Ethiopia. Future studies should seek to develop and evaluate interventions to simultaneously address food insufficiency and accompanying psychosocial needs. For example, combined interventions that simultaneously address food insufficiency and mental health among PLWH should be developed and evaluated. Nutritional supplementation programs should consider incorporating mental health screening and referral for treatment into their programming. Longitudinal studies are needed to gain additional understanding of the temporal relationships and potential causal mechanisms linking psychosocial factors and food insufficiency among PLWH in low-resource settings. Furthermore, given that food insufficiency has been associated with sub-optimal HIV treatment outcomes, future research should examine to what extent psychological distress, low social support, and enacted stigma mediate or moderate the relationship between food insecurity and HIV treatment outcomes. Such information could be used to better identify those at risk for suboptimal HIV treatment outcomes and inform interventions to better support these patients.

Acknowledgements

The authors gratefully acknowledge the study participants and clinic and research staff who collected the data.

Funding

The project was supported by a research grant from the US National Institute of Mental Health (R01MH089831). Dr. Parcesepe was also supported by Award Number T32 MH019139 (Principal Investigator, Theodorus Sandfort, PhD) from the National Institute of Mental Health. All the clinics included in this study received support from ICAP at Columbia University through funding from the President's Emergency Plan for AIDS Relief.

References

1. Tesfaye M, Kaestel P, Olsen MF, et al. Food insecurity, mental health and quality of life among people living with HIV commencing antiretroviral treatment in Ethiopia: a cross-sectional study. Health Qual Life Outcomes. 2016;14:37. [PubMed: 26940394]
2. Ethiopian Health Nutrition Research Institute (EHNRI). Nutrition baseline survey report for the national nutrition program of Ethiopia. Addis Ababa: EHNRI; 2009.
3. Koss CA, Natureeba P, Nyafwono D, et al. Brief report: food insufficiency is associated with lack of sustained viral suppression among HIV-infected pregnant and breastfeeding ugandan women. JAIDS. 2016;71(3):310–5. [PubMed: 26397935]
4. Aibibula W, Cox J, Hamelin A, Mamiya H, Klein MB, Brassard P. Food insecurity and low CD4 count among HIV-infected people: a systematic review and meta-analysis. AIDS Care. 2016;28(12):1577–85. [PubMed: 27306865]
5. Tsai AC, Bangsberg DR, Frongillo EA, et al. Food insecurity, depression and the modifying role of social support among people living with HIV/AIDS in rural Uganda. Soc Sci Med. 2012;74(12):2012–9. [PubMed: 22513248]
6. Tomori C, Kennedy CE, Brahmbhatt H, et al. Barriers and facilitators of retention in HIV care and treatment services in Iringa, Tanzania: the importance of socioeconomic and sociocultural factors. AIDS Care. 2014;26(7):907–13. [PubMed: 24279762]
7. Nash D, Tymejczyk O, Gadisa T, et al. Factors associated with initiation of antiretroviral therapy in the advanced stages of HIV infection in six Ethiopian HIV clinics, 2012 to 2013. J Int AIDS Soc. 2016;19:20637. [PubMed: 27113335]
8. Rovira D, Schwefel R, Leidl J, Drummond MF. Economic aspects of AIDS and HIV infection. Berlin: Springer; 1990.
9. Holzemer WL, Uys LR, Chirwa ML, et al. Validation of the HIV/AIDS stigma Instrument—PLWA (HASI-P). AIDS Care. 2007;19(8):1002–12. [PubMed: 17851997]
10. Palermo T, Rawat R, Weiser SD, Kadiyala S. Food access and diet quality are associated with quality of life outcomes among HIV-infected individuals in Uganda. PLoS ONE. 2013;8(4):e62353. [PubMed: 23638049]
11. Aibibula W, Cox J, Hamelin A, et al. Impact of food insecurity on depressive symptoms among HIV—HCV co-infected people. AIDS Behav. 2017;21(12):3464–72. [PubMed: 29076031]
12. Maluccio JA, Palermo T, Kadiyala S, Rawat R. Improving health-related quality of life among people living with HIV: results from an impact evaluation of a food assistance program in Uganda. PLoS ONE. 2015;10(8):e0135879. [PubMed: 26313908]
13. Tsai AC, Bangsberg DR, Emenyonu N, Senkungu JK, Martin JN, Weiser SD. The social context of food insecurity among persons living with HIV/AIDS in rural Uganda. Soc Sci Med. 2011;73(12):1717–24. [PubMed: 22019367]

Table 1

Bivariate and multivariable associations between past-year frequent food insufficiency and psychosocial characteristics among individuals initiating ART in Oromia, Ethiopia

	Frequent food insufficiency, n (%)	No or infrequent food insufficiency, n (%)	Frequent food insufficiency bivariate OR (95% CI)	Frequent food insufficiency multivariable OR (95% CI)*
Psychological distress				
Low/none	56 (11.7)	422 (88.3)	1.00	1.00
Moderate or high	195 (28.1)	498 (71.9)	2.95 (1.91, 4.57)	2.61 (1.79, 3.82)
Social support				
High (top 25%)	41 (14.4)	243 (85.6)	1.00	1.00
Medium–high	49 (16.8)	242 (83.2)	1.20 (0.81, 1.79)	1.21 (0.87, 1.69)
Medium–low	56 (18.4)	248 (81.6)	1.34 (1.01, 1.78)	1.18 (0.81, 1.73)
Low (bottom 25%)	106 (35.7)	191 (64.3)	3.29 (2.45, 4.41)	2.20 (1.57, 3.09)
Enacted HIV-related stigma				
No	192 (19.6)	788 (80.4)	1.00	1.00
Yes	60 (31.4)	131 (68.6)	1.88 (1.26, 2.82)	1.69 (1.26, 2.25)

*Multivariable model includes all psychosocial characteristics assessed (i.e., psychological distress, social support, and enacted HIV-related stigma) and is adjusted for sex, education level, relationship status, living environment, and study site

AIDS Behav. Author manuscript; available in PMC 2022 May 21.