



Does integrating AIDS treatment with food assistance affect labor supply? Evidence from Zambia

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ABSTRACT

In low income settings, food assistance is increasingly becoming part of AIDS treatment and care programs with the aim of improving adherence to AIDS treatment, enhancing household food security and strengthening economic wellbeing. Yet, evidence of its economic impact is sparse. This paper uses primary data to examine the short term impact of a food assistance program on labor supply as measured by the hours worked, labor market participation rates and transitions to employment within HIV/AIDS affected households in Zambia. We find that food assistance is generally a labor supply disincentive to HIV-infected patients receiving treatment as it reduced their hours worked by up to 54%, transitions to employment by up to 70% and also reduced the labor market participation rates of male patients by 72%. Among non-infected adult family members, there were no significant effects on labor market participation. However, propensity score estimates show that food assistance generally increased the intensity of work by males regardless of the length of AIDS treatment, but for females there was a disincentive effect that disappeared when the patient had spent a longer time on AIDS treatment and was therefore healthier and less likely to be cared for. These findings suggest that food assistance can inadvertently reduce the labor supply of HIV-infected individuals, but this is compensated for by the increased labor supply among other family members.

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1. Introduction

In resource constrained settings, food insecurity and undernutrition undermine the effectiveness of HIV/AIDS treatment and impedes the recovery of households from HIV/AIDS's detrimental effects on household welfare. Studies have already shown that effective AIDS treatment or antiretroviral therapy (ART) improves the health of individuals and child nutritional status, increases the labor supply of HIV-infected adults and their household members and also has positive spillover effects such as increasing the demand for HIV testing and improving the mental health, subjective mortality risk and labor supply of the HIV-negative population (Wilson, 2016; Lucas and Wilson, 2013; Baranov et al., 2015; Habyarimana et al., 2010; Larson et al., 2008; Thirumurthy et al., 2008; Coetzee, 2008; Wools-Kaloustian et al., 2006; Koenig et al., 2004; Coetzee et al., 2004). Food insecurity and undernutrition are threats to the ART outcomes for the infected individuals as they are associated with an increase in morbidity and mortality,

poor adherence and tolerability to ART and physical and labor inactivity (Weiser et al., 2012; Weiser et al., 2011; De Pee and Semba, 2010; Johannessen et al., 2008). In addition, HIV/AIDS affected households are usually food insecure, which adversely affects the nutrition and health of both the HIV-infected individuals and non-infected household members (Bukusuba et al., 2007). In the wider population, widespread food insecurity can lead to increased risky sexual behaviors which undermine the prevention of HIV (Miller et al., 2011; Agnarson et al., 2007).

There is a negative bidirectional relationship between food insecurity/undernutrition and HIV/AIDS which intensifies the adverse health and economic effects experienced by households (World Health Organization, 2005; Ivers et al., 2009). Hence, the provision of ART alone may not be adequate in alleviating the consequences of HIV/AIDS and there have been calls for a more comprehensive response (Agnarson et al., 2007; United Nations, 2006; World Health Organization, 2005). Consequently, an increasing number of HIV/AIDS interventions now integrate ART

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with food assistance with the goals of improving the efficacy of ART, increasing food and nutrition security and enhancing the welfare of infected individuals and their families by acting as a safety net (Aberman et al., 2014). Food assistance programs may improve the efficacy of ART by increasing adherence, preventing side effects, improving nutrition and health, and raising the odds of survival (Rawat et al., 2010). The programs may restore or enhance welfare by alleviating food insecurity, poverty and labor inactivity within these households (Tirivayi and Groot, 2011). As mentioned earlier, food insecurity and undernutrition can reduce the physical activity and labor supply of HIV-infected individuals and therefore prevent any positive labor responses to ART within the household (which have been found in studies by Habyarimana et al., 2010; Larson et al., 2008, Thirumurthy et al., 2008). It is therefore important to know whether food assistance programs provided to food insecure HIV/AIDS affected households alleviate this constraint on labor supply.

However, most of the empirical studies examining programs integrating ART with food assistance have mainly focused on clinical health outcomes. Rawat et al. (2014) find that a food assistance program in Uganda increased weight measures but had no impact on immune response. Ivers et al. (2010) find that food assistance increased body mass index and attendance of monthly clinic visits in Haiti. Two studies from Zambia found that food assistance increased adherence to ART but did not affect weight and other clinical health biomarkers (Tirivayi et al., 2012; Cantrell et al., 2008). Rawat et al. (2010) also find that food assistance increased weight and reduced disease progression among untreated individuals but had no impact on individuals on ART. A few studies have also assessed the impacts of these integrated programs on food security outcomes. Rawat et al. (2014) and Ivers et al. (2010) find that food assistance increased household food security in Uganda and Haiti, respectively. Tirivayi and Groot (2016) find that food assistance improves household dietary diversity and food consumption expenditures in Zambia. Studies that have assessed the impact of food assistance on labor supply focus on programs targeting the broader vulnerable population and they generally do not find negative effects on labor supply (Barrett and Maxwell, 2005; Abdulai et al., 2005; Dayton-Johnson and Hoddinott, 2004). Our study differs from these empirical studies as it focuses on HIV/AIDS affected households, which are a unique segment of the population. To our knowledge there is no published research on the labor supply responses to programs integrating food assistance with ART in HIV-affected households. Our study aims to fill this knowledge gap.

There are several possible mechanisms through which food assistance (or food transfers) can influence labor supply within the HIV/AIDS affected household. First, neo-classical economic models predict that unearned income such as food transfers could produce an income effect and therefore increase the consumption of leisure (if it is a normal good) which in turn reduces the labor supply of household members (Skoufias et al., 2013). Second, regular and predictable food transfers can increase certainty and security in household consumption, thereby encouraging productive investments that require an increase in labor market participation (Barrientos, 2012). Third, food transfers can improve calorie intake and nutrition, which would enhance body cell functioning and contribute to health, and could ultimately increase the labor supply and earnings of patients and other household members (Thomas and Frankenberg, 2002).

Finally, food transfers can affect intrahousehold decision making, resulting in varied impacts on household members (Ardington et al., 2009; Barrientos, 2012). Their intrahousehold responses to food transfers in HIV/AIDS affected households could diverge from what is experienced in the general population. In these households, labor supply decisions and their consequences

may depend on the context of HIV-infected individuals, particularly their health status and role in decision making. On one hand, the rise in income and the direct receipt of food could improve a patient's health and reduce the care burden on other household members, thereby increasing their labor supply (Thirumurthy et al., 2008). The alleviation of care and credit constraints could also enable households to finance labor migration for other household members (Ardington et al., 2009). On the other hand, the initial health status of the HIV-infected individual may affect work decisions (Thirumurthy et al., 2008). The receipt of food transfers could understandably make an infected individual in poor health choose to work less. Yet, the reduction in the labor supply of a vulnerable member such as the HIV-infected individual could be compensated for by changes in the labor supply of other household members (Barrientos, 2012). This may particularly be relevant in households where HIV-infected individuals are prime aged adults or household heads that may: substantially contribute to household earnings, have greater bargaining power and strongly influence decision making. Bertrand et al. (2003) find that individuals with greater bargaining power reduced their labor supply in the aftermath of income transfers. Hence, it is conceivable that the withdrawal of an HIV-infected adult individual from the labor market could result in an income loss that is larger than the in-kind income and would therefore need to be compensated for or offset by the increased labor supply of the other healthy members.

This paper examines the impact of integrating ART with food assistance on labor supply. We examine a food assistance program that was implemented by the World Food Programme in 2009, in Lusaka the capital of Zambia. The program had two goals. First, it aimed to improve adherence to ART. Second, the program also aimed to improve household welfare by enhancing food security, income relief and participation in economic activities. In the context of the second goal, our study therefore seeks to answer several questions Does adding food transfers to standard ART programs in food insecure households incentivize or discourage adult labor supply? Does the impact of food assistance vary by gender and between treated HIV-infected individuals (patients) and non-infected adults (non-patients) within the household? Does the duration of ART mediate the (dis)incentive effect of food assistance? Answering these questions would increase our understanding of the intrahousehold labor responses to food assistance within HIV/AIDS affected households and whether food assistance ultimately enhances the economic wellbeing and livelihoods of HIV/AIDS affected households.

We use data collected from food insecure HIV/AIDS affected households during an evaluation of the food assistance program in 2009. The data cover 944 adult individuals from 199 households that received food assistance and 179 households that did not. All households had a patient receiving ART. We answer our research questions by estimating the effects of food assistance on the labor force participation rates, hours of work and transitions into employment and determining whether the effect of the food assistance on labor supply and transitions varies by length of ART for the patient. We primarily employ difference in differences, propensity score matching and OLS techniques. In all analysis, we compare the gender specific labor supply responses of the patients and other adults in the same household.

2. Program description

Our study assesses the impact of a food assistance program implemented by the World Food Programme (WFP) to food insecure HIV infected adult individuals on ART and their households in Lusaka, the capital of Zambia. The program was meant to operate for 6 to 12 months and eventually lasted for 12 months.

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