Assessing the Nutritional Health Outcomes of African American Women with HIV and Substance Abuse Disorders Using a Socioecological Approach

Meena Mahadevan¹ and John Ruzsilla¹

Abstract
It is well established that poor nutritional status leaves HIV-positive substance abusers especially vulnerable to an increased risk of opportunistic infections and other illnesses. Socioecological frameworks have been useful for identifying multiple influences on health risks, leading to the development and evaluation of promising community-based interventions for diseases such as cancer and diabetes. This article presents a conceptual model, based on the socioecological approach, to examine the mechanisms and pathways by which the various contextual factors unique to HIV-positive African American women with substance abuse disorders intersect to impact their nutritional health outcomes. The mediating effects of the interpersonal, environmental, and psychological factors on the direct links between disease symptomology, demographic and socioeconomic variables, and nutritional health are emphasized. The long-term goal is to provide the empirical foundation necessary to design targeted interventions that meet the unique personal, social, and familial needs of this population with multiple vulnerabilities.

Keywords
nutrition, African American, women, substance abuse, HIV

Introduction
The toll of HIV/AIDS and substance abuse on women of color in the United States is a public health problem of epidemic proportions. In 2009, for example, African American women made up only 14% of the U.S. population but accounted for 66% of all new HIV cases among women, and substance-abuse-related risk behaviors accounted for 47.6% of HIV transmission in this population (Centers for Disease Control and Prevention, 2010). While significant gains have been made in the science of HIV acquisition, transmission, and prevention, AIDS remains a leading cause of death among African American women ages 18 to 44. What is needed is translational research on factors influencing this population’s responsivity to treatment once an HIV diagnosis is made. Malnutrition is one such factor, all too frequent among HIV-positive substance abusers, that exacerbates an already compromised immune system and mitigates the effectiveness of antiretroviral medications, ultimately decreasing the chances of survival (Campa et al., 2005).

Emerging evidence from intervention science suggests that health promotion programs with strategies to change dietary behaviors at the individual level alone are less likely to succeed in improving nutritional outcomes unless they also consider the social, cultural, and environmental context in which the behaviors occur and are reinforced (Kumanyika & Morrissink, 2006). A repertoire of contextual factors has been shown to play a role in influencing the eating behaviors of African American women (Hargreaves, Schlundt, & Buchowski, 2002). Without an understanding of the nature and pathways by which these forces interact to impact health behaviors, public policies and programs aimed at reducing disparities within this population group are unlikely to yield desired effects (Campbell & Quintiliani, 2006).

In recent years, there has been an impressive program of research on identifying disease risks and promoting health among marginalized populations through innovative interventions based on theoretical frameworks incorporating multiple levels of influence that impact health behaviors (Cargill & Fenton, 2009; Plescia, Herrick, & Chavis, 2008; Robinson, 2008). According to the syndemic theory for example, substance abuse, violence, AIDS, and psychological symptoms can be conceptualized as a “syndemic of interconnected and inseparable influences” that, when placed within a disadvantaged socioecological context, interact to disproportionately increase the burden of disease in some
groups (Singer, 1996, 2010). Ultimately, this may exacerbate their dependency issues, and jeopardize their disease prognosis and health outcomes (Romero-Daza, Weeks, & Singer, 2003). The syndemic framework has been especially useful to understand Hispanic women’s experiences with substance abuse, intimate partner violence, and risk for HIV. For instance, Latinas who reported using illicit drugs on a regular basis were more likely to have an abusive partner also abusing alcohol or drugs, and practicing other high-risk behaviors. These women may have been particularly reluctant to leave their abusive partners, perhaps due to limited personal resources and lack of self-esteem, thereby subjecting themselves to continued violence and psychological trauma. The researchers of this study further speculate that the increased likelihood of drug abuse among them may have been a coping mechanism as well, possibly to deal with the stress of living with an abusive partner under these conditions. Ultimately, the synergistic influences of substance abuse, violence, and trauma, combined with insufficient resources and lack of self-esteem may have placed some of these women at a greater risk for depressive symptoms, HIV, and other infectious diseases than women with either of these conditions singly (Gonzalez-Guarda, Vasquez, Urrutia, Villarruel, & Peragallo, 2011; Meyer, Springer, & Altice, 2011).

Impoverished African American women with HIV and drug and alcohol dependency may represent an especially high-risk group for poor nutritional outcomes due to a multitude of contextual factors including increased risk for chronic illnesses due to disparities in health care, racial discrimination, and limited resources (Adimora, Schoenbach, & Doherty, 2006). While these risks are well established, few researchers however, have attempted to explore the mechanisms and pathways by which the aforementioned influences interact to impact the dietary behaviors and nutritional health outcomes of this group. There is a need for research and interventions that place the women’s health outcomes in a broad ecological context, and address the underlying and competing influences of various factors on their health behaviors in an integrated manner.

The socioecological model has been recognized as a systematic and coordinated approach for understanding and reducing disease risks, particularly among underserved and vulnerable population groups (Gregson, 2001; Oetzel, Ting-Toomey, & Rinderle, 2006). The model assumes that while individuals can develop the requisite willingness to sustain strict treatment requirements in a challenging context, they are more likely to do so within a comprehensive network that considers their individual as well as their interpersonal, environmental, and psychological needs (Smith & Christakis, 2008). By considering the dynamic and cumulative interplay between these needs, research using this framework can help “generate new hypotheses rather than simply reinterpreting factors identified by one approach (e.g., biological) in terms of another (e.g., social)” (Krieger, 1991, 1994, 2001). Identifying nutritional risks, and planning an intervention for African American women with HIV and substance abuse disorders around the constructs of the socioecological model may be critical to improving health outcomes among them because linking their dietary behaviors with the women’s unique life experiences can help health professionals to deal with the specific obstacles to dietary change in this population more effectively. There appears to be a science knowledge gap, however, in the testing and application of such a framework to understanding the barriers to good nutrition in this population.

The purpose of this article is to address this gap, and propose a conceptual model, based on the socioecological paradigm, which can be used to more effectively guide the nature and direction of future research and intervention efforts seeking to reduce the prevalence of malnutrition among HIV-positive African American women substance abuse problems (Figure 1). Our aim is to emphasize that substance abuse and HIV symptomology, low socioeconomic status, inadequate knowledge, lack of social support, insufficient neighborhood resources, and psychological distress from racial discrimination, stigma, and marginalization are all distinct yet intrinsically linked factors that must be considered together to understand how the conglomerate of these stressors may decrease the ability of African American women to meet essential dietary requirements. The data generated from research using this methodology can inform the development of interventions that meet the nutritional needs of this population by accommodating their sociocultural context and daily life experiences.

Illustrated in Figure 1 are the direct and mediating pathways modeling the key levels and factors we perceive as having a significant impact on the ability of African American women with HIV, and drug and alcohol dependency to meet their daily food and nutrient requirements. Level 1 represents the direct influences of individual factors including HIV and substance abuse symptomology, and demographic and socioeconomic variables such as gender, race/ethnicity, poverty, income level, education, employment, and household composition. At Level 2, the model assumes that the influence of the individual factors on nutritional health is mediated by interpersonal factors defined by social and cultural norms, and social support for healthy eating, and by environmental factors defined as food availability, and access to educational programs and services. Level 3 represents psychological factors defined as psychological distress from stigma, depression, anxiety, and a lowered sense of self-efficacy. The model assumes that the influence of interpersonal and environmental factors on nutritional outcomes in this population is partially mediated by psychological factors. Finally, Level 4 represents nutritional health outcomes defined by food choices (purchasing, preparing), food and nutrient intakes, and body mass index (BMI; an indicator of wasting).

In the sections below, we review the available theoretical and empirical evidence that provide support for the inclusion
of each factor represented in the model. To identify all published and peer-reviewed articles, we searched for publications in the databases Ebsco Academic Premier, Lexis Nexis Academic, PubMed, ProQuest Central, and Google Scholar, using relevant search terms. The suitability of the publication for inclusion in the review for the article was based on reading the abstract and, when necessary, portions of the publication. In addition to the search engines used to locate relevant publications, some studies were identified through personal contacts with the authors or through the reference/bibliography sections of previously identified publications.

**Individual Factors**

**HIV and Substance Abuse Symptomology**

It is well established that HIV infection is associated with observable nutritional alterations that occur across all stages of the disease (Fields-Gardner & Fergusson, 2004). Symptoms such as anorexia, nausea, malabsorption, and diarrhea are common manifestations of the infection, and thought to be associated with abnormalities of gastrointestinal function (Shevitz & Knox, 2001). Malabsorptive disorders, which can occur even in the absence of anorexia or diarrhea, lead to weight loss by decreasing the individual’s ability to increase calorie intake sufficiently enough to overcome intestinal losses (Knox, Spiegelman, Skinner, & Gorbach, 2000). Thus, any one or a combination of the above symptoms can dramatically reduce food intake and nutrient absorption, ultimately leading to poor nutritional health, wasting, and involuntary weight loss among HIV-positive persons (Carbonnel et al., 1997).

While the nutritional deficits that manifest in HIV-positive individuals may be a direct consequence of the viral infection, they may also be secondary to antiretroviral therapy. For example, because foods that are high in calories, fat, and protein interfere with the absorption of some medications, patients are often advised to take the medication without food or with only a very light low-fat snack. In addition, some medications can cause side effects such as nausea, vomiting, anorexia, and diarrhea making food intake difficult (Mangili, Murman, Zampini, Wanke, & Mayer, 2006). The resultant malnutrition, ranging from anemias and low serum levels of nutrients to protein-energy deficiencies, can lead to immune function decline predisposing the body further to infections, increased viral loads, and other conditions associated with loss of immune function (Fawzi, Msamanga, Spiegelman, & Hunter, 2005).

Addictive drugs of abuse can also produce significant nutritional alterations independent of HIV. As a group, drug users report lower intakes of multiple nutrients such as vitamin A, iron, thiamine, ascorbic acid, and calcium; exhibit varying degrees of weight loss and wasting; and present with increased clinical signs of protein-energy deficiency than their non-drug-using counterparts (Forrester, 2006). Malnutrition ultimately leaves substance abusers vulnerable

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**Figure 1.** Socioecological conceptual model depicting factors influencing nutritional health outcomes in African American HIV-positive substance abusing women.
to an increased risk of opportunistic infections such as tuberculosis, hepatitis, sexually transmitted infections, and HIV/AIDS (Jason, Davis, Ferrari, & Bishop, 2001). Alcohol and illicit drug use is associated with behavioral correlates of malnutrition based on lack of appetite, irregular and infrequent meal patterns, cravings for sweets and carbohydrate-rich foods, replacement of foods that are rich in proteins and other nutrients with empty calorie beverages and other low nutrient-dense foods, and consumption of less than the recommended number of servings of fruits and vegetables (Suter, 2004). Many illicit drug users are impoverished and socially marginalized (Ahern, Stuber, & Galea, 2007). The cause of malnutrition may be a direct result of the drug or even because addicts may fail to prioritize food over their drug addiction, especially given the limited resources (Galea & Vlahov, 2002).

The specific types of drugs abused differ in their impact on food intake behaviors and body composition as well. For example, cocaine users ate significantly fewer complete/balanced meals per day than did noncocaine users (Castro & Nacht, 2000). While wasting and lower BMI were observed in all subjects, men who used cocaine singly or in combination with heroin presented a lower BMI compared to strict heroin or methadone users (Forrester, Tucker, & Gorbach, 2005). Studies show that nondietary factors can also affect the weight patterns and nutrient requirements of drug abusers. For example, cocaine is known to increase fidgeting, restlessness, and repetitive activity (termed stereotypy) in rodents and humans. This resulted in an increase in the energy requirements and could explain the observed lower BMI of cocaine users compared with other drug users (Walker et al., 2001).

Studies show that while drug abuse and HIV can independently result in malnutrition, the synergistic influences of drug abuse and HIV are manifold, leaving the individual in a severe state of immunonutritional deficiency, and ultimately decreasing their survival rates (Miguez, SornPostner, Morales, Rodriguez, & Burbano, 2003). In addition to a relatively poor dietary intake due to drug-induced anorexia, the incidence of anemias, lower albumin levels, body fat depletion, wasting, and lower BMI occurred more frequently in drug abusers with HIV (Hendricks & Gorbach, 2009). The plasma levels of several micronutrients such as vitamin B12, zinc, and selenium were found to be lower in HIV-positive injection drug users (Taylor et al., 2000). The specific nutritional deficiencies resulting from substance abuse can, in turn, impact rates of drug absorption, protein binding, and drug clearance metabolism, thereby contributing to treatment failure and increasing the risk for mortality in HIV-positive individuals (Khalsa, Genser, Coates, & Francis, 2003). Injection drug use is reported to increase lipid peroxidation and other indicators of oxidative stress, which, combined with antioxidant deficiencies, can stimulate HIV progression and weaken immune defenses (Taylor et al., 2000). Body composition data show similar patterns. HIV-positive Hispanic men who were drug abusers had a lower BMI than HIV-positive men who were not drug abusers (Forrester et al., 2005). Despite adequate and comparable self-reported energy intakes, HIV-positive women with intravenous drug-abuse disorders presented lower body weight and fat mass than women who did not report drug abuse (Forrester et al., 2000).

These data suggest that the physical and metabolic effects that occur in response to HIV and substance abuse can make individuals with both these conditions especially vulnerable to weight loss, wasting, and a poor nutritional status. Therefore, an understanding of how the symptomatic barriers posed by these conditions together impact dietary behaviors is critical to the development of targeted interventions aimed at enhancing the ability of HIV-positive substance abusers to withstand the severity of the diseases (Haddad & Gillespie, 2001).

Demographic and Socioeconomic Variables
Although all individuals with HIV and substance abuse problems are at risk for malnutrition, the type and severity may vary depending on the demographic and socioeconomic characteristics of the population group. For instance, while women live longer than men, the poor dietary patterns and nutritional deficits, even those experienced in early years, are found to have irreversible consequences, leaving women more susceptible to disease and disability than men throughout the life cycle (Leveille, Resnick, & Balfour, 2000). Compared with adolescent males, adolescent females in the United States have diets lower in specific micronutrients such as iron, folate, zinc, and calcium, which may increase risks for poor outcomes later in life (Stang, Story, Harnack, & Neumark-Sztainer, 2000). The physiological changes that manifest during pregnancy and lactation also place an increased demand for nutrients, putting women at a higher risk for developing cardiovascular disease and osteoporosis in later years (Rooney, Schauberger, & Charles, 2002).

Studies show that the risks for opportunistic infections (e.g., bacterial pneumonia, tuberculosis) and nutritional deficits due to associated symptoms such as diarrhea, dehydration, and appetite loss are higher in women with HIV compared with men (Hader, Smith, Moore, & Holmberg, 2001). Despite similar immune function and comparable dietary intakes, women were found to have significantly lower plasma levels of vitamins A and E, selenium, retinol binding protein, and prealbumin (Jones et al., 2005). The wasting and weight-loss patterns seen in HIV and substance abuse are sex specific as well. Although men were in their normal range for anthropometric measurements such as BMI, mid-arm circumference, and triceps skin folds, most women presented slightly lower than normal values. The women had also lost more body fat and less lean body mass than their male counterparts (Swanson, 2000). Ethnographic studies examining the food habits of drug users suggest that low-income ethnic minority female drug
users may be especially vulnerable to the nutritional deficits associated with substance abuse. Puerto Rican female out-of-treatment drug users were more likely to be food insecure and experience greater deficiencies in both the quality and quantity of their diets compared with their non-drug-using counterparts. The reported frequency of consumption of vegetables was significantly lower, whereas that of sweets and dessert-type foods was higher among the drug users. The drug-using women also consumed significantly fewer meals; there was a general disinterest in eating and lack of appetite in this group (Himmelgreen et al., 1998).

Qualitative interviews revealed that while inadequate food intake may have been the direct result of drug-induced physiological and psychological factors, poverty, homelessness, disparities in access to health care, difficulty using soup kitchens and shelters, and lack of culturally relevant interventions may have further prevented some of these women from accessing and consuming a healthy diet. These findings emphasize the need for nutrition interventions to be incorporated into street health outreach programs, particularly those serving ethnic minority women (Romero-Daza, Himmelgreen, Perez-Escamilla, Segura-Millan, & Singer, 1999).

The prevalence of HIV/AIDS is estimated to be higher among African American women, with a majority acquiring the disease through injection drug use or heterosexual contact (McNair & Prather, 2004). Studies show that a disadvantaged socioeconomic condition and disparities in access to health care may disproportionately contribute to poor health outcomes among this group. A comparison of household income and composition data across ethnicities revealed that African American families have historically relied more heavily on women’s earnings, and the proportion of female-headed households is highest among this population group (Williams & Collins, 2001). Such data not only provide important information on the flow of economic resources into a household but also give an indication of the food and health care purchasing power of its members. Compared with Caucasian women, African American women were more likely to experience economic hardships and report being unable to meet essential food and health-related expenses (Belle & Doucet, 2003). Economically disadvantaged African American women are shown to have poor-quality diets at nearly all life stages, thus increasing their risk for obesity and related chronic diseases such as cardiovascular disease, hypertension, diabetes, and some cancers (Hargreaves et al., 2002). As a group, they were also less likely to be insured, more likely to receive care in less than optimal organizational settings (such as the emergency room), and more likely to experience lack of continuity in the health care received (Fiscella, Franks, Doescher, & Saver, 2002).

The implication of these findings is that the unique biological factors that affect a woman’s health, coupled with developmental histories marked with poor nutrition and living in disadvantaged socioeconomic circumstances, may leave African American women especially vulnerable to the nutritional deficits experienced in HIV and substance abuse. Therefore, research that focuses on delineating the relationships between disease severity and personal and socioeconomic contexts is needed to enhance our understanding of how issues of infection transmission rates, wasting, and malnutrition may become even larger concerns for this group.

### Interpersonal Factors

#### Social and Cultural Norms

Of all the factors, social and cultural norms have been shown to be the most significant predictors and modifiers influencing food-related behaviors (Kittler & Sucher, 2004). Within a specific group, it is not unusual to find individuals making choices about food that have little to do with nourishment or guidelines and everything to do with how they identify with each other, and the culture-specific norms and meanings associated with a food. In the context of the African American culture, the distinct foods and culinary techniques that make up the “soul food” cuisine consist of a variety of green leafy vegetables including collard, mustard, cress, pokeweed, and dandelion greens; grains such as rice, grits, and cornbread; legumes such as black-eyed peas; meats; fruits; and other starchy vegetables such as sweet or white potatoes, turnips, and beets (Whitehead, 1992). Based in part on certain health beliefs and traditions that have evolved from a long history of slavery, persecution, and segregation, these foods have an inherent culture-defining aspect in that they may provide an identity by representing the hardships and oppression that African Americans have historically faced in the United States (Henderson, 2007).

Post slavery, however, the cuisine evolved to include certain preparation and consumption norms that mitigated its nutritional benefits. For example, meats are often breaded and fried, whole milk and buttermilk are preferred over low-fat versions in traditional dishes such as biscuits, cornbread, and batter for fried chicken, and breakfast often includes foods high in saturated fat such as egg yolks, breakfast meats, and cheese (Opie, 2008). Studies show that, over time, such norms can also result in food myths and misconceptions that interfere with healthier food preparation and consumption practices. Individuals may be reluctant to change their dietary behaviors as prevention against chronic diseases when they see such behaviors as violating their cultural norms and beliefs, and the right to “enjoy” traditional food (Airhihenbuwa & Liburd, 2006). For example, misperceptions such as “eating chicken with the skin is ‘wholesome’ eating,” “age entitles people to eat whatever they chose,” “it is ‘OK’ for [women, African Americans] to be heavier than [other groups],” and so on have been shown to possibly contribute to the reluctance of some members of this group to change their dietary habits (James, 2004).

While little research has been conducted to identify the food norms and preferences of individuals with HIV and
substance abuse problems, there is evidence to indicate that among homeless drug users, there may be similar associations between the extent to which these individuals identify with their lifestyle, and their willingness to make a dietary change. Living on the streets and hustling for money to satisfy drug cravings set a social standard that supported obtaining food from dumpsters, or by means of begging or theft. Satisfying drug-induced cravings may be more important than seeking shelter or food and health services (Eikenberry & Smith, 2006).

Evidently, networks comprising norms that endorse risk behaviors and devalue health, or networks in which misconceptions about the relationship between specific foods and disease are the norm, can present significant barriers to dietary compliance, particularly among African American HIV-positive substance abusers. Adopting healthier food behaviors may entail possibly giving up the norms affiliated with their cultural traditions or lifestyle, thereby making them less likely to adhere to health education messages (Quimby & Friedman, 2003).

**Social Support for Healthy Eating**

The relationship between social support and food behaviors is well established. Studies examining the influence of the structure of social relationships have found that a person’s current eating patterns were more likely to be influenced by other individuals within his or her immediate social network, and with the individuals that the person was more closely connected to (Pachucki, Jacques, & Christakis, 2011). An emerging body of evidence suggests that the presence of strong social networks can result in behavior changes that are pivotal to decreasing negative health outcomes in HIV-positive populations as well. Among a group of individuals with HIV/AIDS living in rural sub-Saharan Africa, food insecurity was not only worsened by physical factors such as HIV-related illness leading to job loss and asset depletion, but also by social determinants. Lower levels of social support and greater levels of internalized HIV-related stigma were found to be key factors in preventing these individuals from accessing instrumental help to secure food, ultimately leading to reduced adherence to HIV antiretroviral therapy among them (Tsai et al., 2011). The findings have important programming and policy implications for the care of HIV-positive substance abusers in other resource-limited settings, including for marginalized HIV-positive street drug users in the United States.

Researchers have speculated that supportive social relationships, strong family ties, an extended family system, religious involvement and participation, and cultural pride may mitigate some of the negative effects of exposure to social and economic adversity and positively affect treatment effectiveness, especially among HIV-positive individuals (Moore, Vosvick, & Amey, 2006). For individuals in alcohol recovery, social support has been shown to have an effect on treatment acceptance and in providing kinship systems that support post-detoxification functioning (Peirce, Frone, Russell, Cooper, & Mudar, 2000). For African American women in particular, who have historically faced harsh social and economic conditions, extended family, and religious involvement and participation in the community may help provide supportive social relationships, tangible economic resources, comfort in times of trouble, and motivation for engaging in healthy behaviors (Chatters, Taylor, Lincoln, & Schroepfer, 2002). However, researchers caution that both the positive as well as the negative aspects of these potential resources should be assessed. For instance, family occasions that center around food, family members who do not support healthy food choices, and churches and other community-based organizations that give prominence to social events with large arrays of unhealthy foods may contribute to poor diets that increase disease risk (Campbell et al., 2007).

In our preliminary work with African American women with HIV and substance abuse dependency, most women discussed the lack of familial and social support as key barriers to improving their health. There appeared to be a greater sense of social isolation, stigma, and marginalization among some women, particularly those who had reported being homeless for the last 6 months. Nearly all of them acknowledged being ostracized and having no or minimal contact with friends, family, or health care staff such as caseworkers and primary care providers. The lack of social support experienced may have reinforced some of the reported negative food behaviors in this group, especially their lack of motivation to seek help and change their dietary habits (Mahadevan & Fisher, 2010).

The literature reviewed in this section lends support to the suggestion that the decreased size and diversity of social networks, and the social and cultural ties and norms within these networks may act as limiting factors to improved health (Adimora & Schoenbach, 2005; Latkin, Forman, Knowlton, & Sherman, 2003). An understanding of how these interpersonal influences may link demographic and socioeconomic factors to a group’s food choices and dietary health is important for public health policies seeking to reduce the prevalence of malnutrition in them. Unfortunately, the extent to which these factors mediate the effects of poverty, gender, ethnicity, HIV, and illicit drug-use symptomology on the food habits and nutritional health outcomes of African American women have not been empirically examined.

**Environmental Factors**

**Food Availability**

Public health researchers have long concluded that the health benefits for a specific population will largely depend on their immediate environment (Diez-Roux, 2001). A neighborhood with easy access to affordable and healthy
food and lifestyle options has been shown to provide greater opportunities for nutritionally vulnerable populations to make healthier choices. For each additional supermarket in the neighborhood, a 32% increase in fruit and vegetable intake has been reported among some of its low-income African American residents (Morland, Wing, & Diez-Roux, 2002). Unfortunately, studies examining census data to document associations of neighborhood racial and socioeconomic characteristics with food availability have shown that irrespective of household income, African Americans are more likely to live in neighborhoods that are characterized by disparities in basic resources, with fewer supermarkets, and a greater number of convenience stores and delis instead. Such facilities typically have limited inventories, and do not stock large amounts of perishable and other high-quality food options (Franco et al., 2009).

The neighborhoods in which most disadvantaged ethnic minority groups live are also characterized by a disproportionate number of fast food restaurants (Powell, Chaloupka, & Bao, 2007). With fast food chains targeting these groups in their advertising campaigns, and locating their stores in their neighborhoods, the role of fast food as a contributor to unhealthy diets in this population has increased. For home-less individuals, lack of personal resources combined with fewer healthy food alternatives in their neighborhoods may leave them at the mercy of fast food restaurants or convenience stores and delis with limited inventories. Procuring stale food from dumpsters, or by means of begging or stealing may then become more convenient alternatives (Eikenberry & Smith, 2006).

These findings imply that reducing nutritional complications associated with HIV, substance abuse, and other disadvantageous demographic and socioeconomic conditions among African American women may not succeed unless efforts are also made to examine the extent to which limitations in neighborhood food availability help reinforce poor food behaviors in them.

Access to Educational Programs and Services

In addition to limited healthy food options, individuals living in impoverished neighborhoods may experience other environmental obstacles to maintaining optimum health, including inadequacies in access and utilization of information sources emphasizing nutritional risk awareness and knowledge (Williams & Jackson, 2005). Public entitlements such as soup kitchens, shelters, food pantries, and community centers frequently report providing some form of nutrition intervention in addition to free food services (Richards & Smith, 2006). However, lack of basic resources necessary for negotiating the complicated social service structures can produce significant barriers to obtaining such entitlements and services for which economically disadvantaged populations are typically eligible (Enser & Cooper, 2004).

Our previous research with HIV-positive African American women with substance abuse disorders revealed several such barriers. Most women expressed a keen interest in attending educational programs and sessions, and learning about various topics related to food, nutrition, and health, but reported difficulty accessing these entitlements due to lack of transportation means and child care options. They also cited limited hours of operation at the facilities as one of the main obstacles to obtaining information. Interestingly, most women did not consider the educational materials or advice currently available at the health clinics and harm reduction centers as relevant to their cultural backgrounds or their lifestyles. Nutritional pamphlets handed out by the health care providers in soup kitchens and other facilities were dismissed because of their perceived racial bias. They pointedly described the materials as ignoring African American culture or as being dramatically out of touch with the realities of their lives, appearance, and lifestyles (Mahadevan & Fisher, 2010).

As evidenced above, optimum nutrition and dietary health is a demanding and complex challenge for these women that may be influenced by multiple factors including neighborhood resources. Tragically, however, along with the absence of empirical data on the correlates of nutritional problems is the paucity of studies on the specific role of quality food options and culturally sensitive interventions on combating health compromising nutritional deficiencies in this population. The extent to which overall disparities in food availability and access to information resources mediate the effects of drug abuse and HIV symptomology, and demographic and socioeconomic factors on the nutritional health outcomes of HIV-positive African American women with substance abuse problems remains unexamined.

Psychological Factors

Psychological Distress

The relationship between nutrition, substance abuse, HIV/AIDS, and mental health is clearly defined. Individuals with HIV/AIDS and drug-abuse dependency are known to experience a range of psychological symptoms among which are depression, anxiety, persistent sadness or hopelessness, agitation, nervousness, and irritability (Burnam et al., 2001). These symptoms often undermine their commitment to adhere to a treatment regimen, and reduce their willingness to comply with prescribed dietary changes (Sherman, 2000). HIV interventions that emphasize a balanced diet consisting of adequate energy, proteins, and micronutrients such as vitamins A, C, E, and selenium, have been shown to improve an individual’s strength, endurance, and ability to tolerate and respond to therapy, all of which can result in improved self-esteem and a better quality of life (Kacanek et al., 2010; Nerad et al., 2003).

Depending on the type of drug used, drug users are known to choose foods that are mostly sweet or high in fat, possibly in an effort to eliminate cravings and to reduce anxiety and depression (Simansky, 2005). While such foods
can bring forth calmness and improve mood, they can also lead to severe nutritional deficits over time, further increasing their risks to nutritional complications (Jackson, Knight, & Rafferty, 2010). Studies show that rehabilitation programs that address the underlying psychological problems precipitating the reliance on such foods, and encouraging nutrient-dense dietary choices instead, can enable their clients to function at a higher level socially, mentally, and cognitively during the period of treatment (Frencha, McGarvey, Chitwood, & McCoy, 2000).

Despite changing norms, the subtle expressions of institutional discrimination and racism have also been found to play a critical role in shaping the higher incidence of health complications among African Americans in particular (Peters & Massey, 1983; Romero, 2000; Shorter-Gooden, 2004). Racial/ethnic disparities in access to food and information resources, and experiences with poorly staffed or inadequate neighborhood health services, combined with a legacy of distrust in physicians born of historic abuses during slavery through the Tuskegee study and beyond can be significant barriers to accessing and complying with nutritional advice from health care providers (Whetten et al., 2006). Distrust in nutritional advice can also diminish an individual’s sense of self-efficacy in contemplating even minor changes to diet and lifestyle (Armstrong et al., 2008; Baum, Garofalo, & Yali, 1999). Compared with men, low-income African American women reported greater levels of physiological and psychological stress as they are confronted with “triple oppression associated with discriminations based on race, sex, and class” (Hooks, 1993; Williams & Williams-Morris, 2000). This in turn resulted in several exaggerated and negative coping mechanisms, including the tendency to engage in high-risk behaviors, and the reluctance to seek help and treatment (Murry et al., 2003).

In conclusion, the research reviewed in this section indicates that low-income African American women with HIV infection and substance abuse may experience considerable psychological stress due to a multitude of contextual factors, including stereotyping, stigma, and social marginalization. Yet there is a significant gap in empirical knowledge illuminating the relationship between discrimination, neighborhood disadvantage, and psychological distress on nutritional outcomes in this population. The proposed socioecological model in this article includes this often overlooked but critical component of urban poor African American life experience. Interventions that directly address the psychological issues leading to recidivistic behaviors, and focus on increasing their resolve to seek help and remain in treatment may be more effective in ensuring positive nutritional outcomes in this group.

Implications for Research, Policy, and Practice

There is a substantial body of evidence indicating that antiretroviral therapy that incorporates strategies to prevent and treat nutritional complications specific to HIV and substance abuse offers many benefits, including a reduction in morbidity, shortening of hospital stays, and a subsequent improvement in the quality of life (Fawzi et al., 2004; Fields-Gardner & Ayoob, 2000; Virmani, Binienda, Ali, & Gaetani, 2006). A rapid screening for nutritional risks at the onset of a detoxification program helps maximize a pharmacological intervention and physical stabilization (Fleming, 2002), while encouraging individuals to consume adequate in calories, protein, and essential micronutrients has been shown to advance the recovery process (Hendricks, Mwamburi, Newby, & Wanke, 2008).

Despite the evidence on the pivotal role of nutrition in maximizing treatment efficacy for HIV-positive substance abusers, AIDS continues to be the leading cause of death for African American women (Centers for Disease Control and Prevention, 2010). The data reviewed in this article suggest that while HIV and substance abuse can independently contribute to poor health, their synergistic influence, along with a multitude of contextual factors that are unique to the lives of African American women, may impact their food behaviors to a significantly greater extent, ultimately leading to widespread nutritional abnormalities and compromising their responsivity to treatment. To better understand and address the risks to healthy nutritional outcomes among the women, we must develop a greater understanding of the mechanisms and pathways by which various stressors from multiple domains may independently and conjointly influence their ability to make healthy food choices.

The participants studied thus far in drug-abuse and HIV research, however, are not a homogeneous group. Some studies have included drug users who are HIV positive, whereas others have excluded those with HIV or failed to document HIV status altogether. While some studies have focused on male participants, others have failed to account for differences between ethnic groups. African American women may be particularly underrepresented in HIV-related and substance-abuse-related health and intervention research as we found little published data that have focused solely on them. Translational research examining the ways in which disease severity, demographic and socioeconomic variables, social network influences, neighborhood resources, and psychological factors intersect to impact the nutritional health outcomes of HIV-positive African American women with drug and alcohol problems is needed.

Drawing on available evidence from the literature, we have proposed a model that places the life experiences of these women within a socioecological framework, and helps demonstrate the complexity of the various factors that may contribute to their increased vulnerability to associated health and nutritional problems. We describe how the influence of individual factors such as demographic and socioeconomic variables (e.g., biological vulnerability and limited economic resources for food purchases) and disease symptomology (e.g., fatigue, nausea, and lack of appetite) on the women’s food choices and nutritional health may be
mediated by the characteristics of the environment of the neighborhoods in which they live (e.g., lack of healthy food availability and inadequate access to educational resources), as well as the nature and salience of their interpersonal networks (e.g., rigid cultural and lifestyle food norms, and lack of social support from family and friends). The environmental and interpersonal inadequacies may also have a direct impact on the women’s food choices and nutritional health, while they may contribute to poor psychological health (e.g., depression, anxiety, and a diminished sense of self-efficacy in their ability to sustain a healthy diet due to racial/ethnic disparities in access to health care). These psychological factors in turn may have a direct effect and partially mediate the influence of the environmental and interpersonal network factors on the women’s ability to make healthy food choices and seek treatment for an improved nutritional health status.

Future research that is framed under the organizational structure of this conceptual model can play a critical role in generating critical knowledge about how neighborhood and interpersonal social networks unique to this population mediate the effects of demographic, socioeconomic, and HIV-related and substance-abuse-related influences on nutritional outcomes, as well as delineate the role of psychological factors on dietary health. To accomplish this, studies must involve samples that reflect the national profile and cultural food traditions of urban poor African American women living with HIV and substance abuse. The ultimate public health goal of such research opportunities is to identify specific features of their daily living context that if integrated into existing and future HIV and substance abuse treatment, and harm reduction programs can positively change food choices and improve nutritional outcomes in this underserved population.

Although most HIV/AIDS-related and substance-abuse-related harm reduction services use traditional treatment approaches by providing nutrition advisement that encourage healthy food choices and behaviors, they are largely based on models that treat men (Gothbaum, 2003). Women face symptoms that are specific to them and need medical and nutrition care that can address them more effectively (Pinkham & Malinowska-Sempuch, 2008). There appears, however, to be a lack of coordinated efforts to facilitate comprehensive ongoing services that address the personal, social, and familial needs of women. Furthermore, the few programs specifically targeting women are not enough to deal with the growing number of Black women infected with HIV/AIDS each year (Gilbert & Wright, 2003). Few programs have addressed the cultural match between available nutrition education materials and African American food traditions, or the extent to which physicians discuss specific nutritional requirements for HIV seropositive women with drug or alcohol addictions (Friedman, Cooper, & Osborne, 2009). All of this presents a major public health challenge for preventing and remediating malnutrition, especially among African American women with HIV and drug-use disorders.

The proposed conceptual model in this article informs the development of an innovative treatment approach by emphasizing the need to consider the various ways in which cultural and street norms and preferences, historical marginalization and racism, disease severity, individual needs, disparities in the access of neighborhood resources, and psychological distress might intersect to affect an individual’s ability to engage in healthy food behaviors. For example, an optimal case management model might be one that includes educational components that not only are culturally competent but also strengthen and facilitate a patient’s existing social networks, and promote behaviors that encourage relying on their friends, family, and caseworkers for support (Icard, Bourjolly, & Siddiqui, 2003). Regardless of the medium, a dynamic care plan with components that focus on personal control and self-esteem can help provide an avenue by which they regain control over their bodies and achieve nutritional rehabilitation (Zule, Flannery, Wechsberg, & Lam, 2002).

Service facilities consisting of support staff that are more vigilant to their clients’ low food and nutrient intakes, attend to their needs, and attempt to enhance their nutrition education experience by understanding and correcting diet-disease misconceptions may be critical to the success of public health policies seeking to remove institutional barriers and build on assets to reduce the prevalence of malnutrition in this population (Cheung & Hwang, 2004). However, the interventions described above require resources and access to trained practitioners that may be unavailable to poor African American women with HIV who are abusing illicit drugs. Therefore, efforts should be made to implement economic and zoning policies that ensure that healthy foods and treatment services are available and affordable in the neighborhoods in which they live.

Public health costs associated with the consequences of inadequate postdiagnosis HIV nutritional care is increasing and exacerbated by depletion of state and local financial resources. In 2008, combined federal and state funding on HIV totaled approximately US$19 billion (Office of the Budget, 2008). These figures underscore the importance of priority setting in resource allocation for identifying and developing culturally appropriate HIV prevention strategies directed to urban poor substance abusing African American women that consider the human and economic costs of inadequate food choices on health and mortality rates following a diagnosis of HIV. Research using the methodology proposed in this article can make a broad impact on epidemiological and intervention science by

anchoring a culturally and contextually sensitive socioecological model of social network influences into food choices and nutritional health studies pertaining to African American women with HIV and substance abuse disorders;

generating data guided by the socioecological framework that captures specific components within
demographic, disease severity, social network, and psychological factors that influence HIV-relevant dietary behaviors and nutritional health of this population;

enhancing understanding of pathways through which neighborhood and interpersonal network factors influence food choices, dietary intake, and physiological indicators of positive and negative nutrition outcomes that facilitate or mitigate HIV treatment effectiveness; and

generating data that inform the development of effective public policy by incorporating neighborhood and interpersonal network influences into a harm reduction philosophy that can best reduce the problem of malnutrition in HIV-positive African American women with drug and alcohol dependency.

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**Bios**

**Meena Mahadevan, PhD** is a faculty nutritionist at Montclair State University, Montclair, NJ, USA. Her research focus is on examining factors influencing the dietary behaviors of ethnic minority and HIV-positive drug-using populations using a socioecological approach. She earned her MHE in foods and nutrition from the University of Georgia, and her PhD in nutritional sciences from the Pennsylvania State University. She teaches several undergraduate and graduate level courses in advanced nutritional sciences.

**John Ruzsilla** recently obtained his master of science in nutrition and food science from Montclair State University, Montclair, NJ, USA. He has worked on several research projects during the course of his academic training. His long-term career goals are in the area of food science.