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Caregiver Role Overload and Network Support among Low-Income, African-American Caregivers of Persons Living with HIV/AIDS: A Latent Profile and Structural Equation Modeling Analysis

Mary M. Mitchell¹ and Amy Knowlton²

¹US Army Public Health Command, Aberdeen Proving Ground – Edgewood Arsenal, MD

²Department of Health, Behavior, and Society, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Abstract

Research indicates the important role that informal caregivers play in improving the health and well-being of disadvantaged persons living with HIV/AIDS (PLHAs) in the United States. However, additional research is needed to understand how to reduce caregiver role overload that has the potential for distress and cessation of informal care. We used latent profile analysis and structural equation modeling (SEM) to examine the relationships among role overload, level of perceived support by network members, caregiver demographic characteristics, and social network members' characteristics among a sample of 215 predominantly low-income, African-American informal caregivers. SEM results indicated that caregiver role overload was associated with being in the less supported group, younger age, and limited physical functioning. Interventions are needed to address the support needs of the majority of HIV caregivers, particularly physically impaired female caregivers, to improve their ability to care for themselves and reduce their potential for distress and cessation of care.

Keywords

HIV/AIDS; caregivers; role overload; social network; social support

INTRODUCTION

AIDS mortality has steadily decreased over the course of the epidemic in the United States, due in large part to advances in HIV treatments.^{1–2} Indeed, highly active antiretroviral therapy (HAART) has increased HIV survival rates as well as HIV-related disability and the need for informal HIV care from family or friends.³ Informal care, often defined as instrumental or emotional support to the chronically ill, has been found to be predictive of better HAART outcomes among drug users, a population vulnerable to failed HAART and disparities in HIV morbidity and mortality.⁴

Research indicates the important role that informal caregivers play in improving the health and well-being of the chronically ill, including persons living with HIV/AIDS (PLHAs).⁵ HIV/AIDS continues to disproportionately affect African Americans, who comprise 47% of those living with HIV.⁶ African Americans are more likely than other racial/ethnic groups to provide informal care including to PLHAs.⁷⁻⁸ In addition, African Americans may be at particularly high risk for poorer physical and mental health outcomes due to a host of social and economic factors.⁹

Informal caregivers often experience a multitude of stressors and psychological distress associated not only with providing caregiving duties, but also with myriad other hardships of daily life.^{5, 10} Pearlin and colleagues¹¹ found that among AIDS caregivers, there was a process that they called stress proliferation, whereby the initial demands of caregiving led to secondary stressors such as an increase in role overload or caregiver burden. Specifically, the caregiving role itself may not be especially stressful, but the role can precipitate secondary stress effects, such as lack of time and energy to engage in other valued social roles.

Role Overload

Caregiver role overload refers to the subjective experience of caregiving stress (e.g., the extent of the caregiving-related fatigue felt by caregivers),¹² and has been found to be a strong covariate of depression, which is associated with cessation of informal caregiving.^{11, 13-14} Caregiving has been found to be highly stressful by impeding caregivers' other social roles, and straining, for example, their work life, parenting, and opportunities for socializing.¹⁵ For example, in low resource contexts, informal caregiving can also pose substantial economic strains due to lost wages from caregiving interfering with their wage earning, and from ill care recipients' disability restricting their job opportunities.¹⁶⁻¹⁸ Caregivers may also experience risks to social, physical, and mental health with these sustained demands often escalating over the course of the care recipients' illness.^{5, 11}

Among African Americans, caregiving role overload may be particularly problematic. For example, African-American caregivers, compared to their White counterparts, tend to perform more labor-intensive caregiving duties, such as bathing.⁷ Turner and colleagues⁷ concluded that since African Americans in their study tended to be lower-income, these caregivers may not have had the financial resources to pay for outside help with the more strenuous personal care tasks as often as their White counterparts.

Social support

Perceived social support is defined as feeling loved and cared for, esteemed and valued, and being part of a social network that can provide aid in times of need that help one to cope with difficulties in life.¹⁹⁻²⁰ This support, which may be provided by friends, family members, and significant others, can provide informational, instrumental, and emotional aid.²¹ In sum, social support can effectively reduce distress during times of stress.²²

Numerous studies suggest that social support can buffer the effects of stress on psychological distress.¹⁵ Social support has been considered as both a direct effect on psychological maladjustment and as a mediator between stressful life experiences and psychological health.^{12,22} Specifically, Pearlin and colleagues²³ conceptualize social support

as a factor that prevents the escalation of secondary stressors, such as role overload, among caregivers. Studies with HIV caregivers have found mixed results regarding the effects of social support offered by family members on the stresses associated with caregiving. For example, Wight and colleagues²⁴ found that among HIV-positive caregivers, those with greater family support reported less financial worry but more role overload.

Aims of current study

In the current study, we examined the relationships between demographic characteristics, social network variables, level of perceived social support, and role overload. Specifically, we hypothesized that in a direct effects model, caregivers reporting less perceived social support would report greater levels of role overload, as suggested by results from previous studies.²⁵ Based on extant literature, we also proposed that female gender⁵, older age^{5,13}, less education²⁶, lower income^{5,14,26}, drug use¹⁴, having HIV/AIDS^{10,14,25}, not being married²⁵, depression^{5,13}, and greater physical disability^{13,14}, would be associated with greater overload. Based on prior research which has suggested that enhanced quality of social support such as that provided by close ties²⁷ and support from females²⁸ is associated with better health outcomes, we hypothesized that the proportion of family members and females in one's social network would also be associated with less role overload.

Next, we hypothesized that social support would mediate the relationships between demographic and social network characteristics and role overload. Finally, we explored moderation effects of perceived social support in the relationships between the demographic and social network variables on role overload.

METHODS

Participants

The Action, Resources, and Knowledge (ARK) study (2002–2005) recruited dyads of community sampled HIV-positive individuals (index participants) and their informal primary caregivers (supporters) to examine the role of informal caregivers and social support networks in HIV medical adherence and health outcomes.⁴ ARK study index participants' eligibility included HIV seropositive status, over age 18 and Baltimore residency. Index participants were recruited by street outreach; advertisement at health and social service agencies (e.g., homeless shelters, drug treatment clinics, needle exchange), and by referral of control condition participants of the Intervention for Seropositive Injectors- Research and Evaluation (INSPIRE) study, upon study completion. Twenty percent of the ARK sample had participated in the INSPIRE study, a prevention intervention for heterosexual HIV seropositive injection drug users.²⁹ While 216 informal caregivers were nominated by PLHAs as their primary supporter, the current analyses use data from 215 caregivers who had complete data on their demographic characteristics.

Procedures

Surveys were administered face-to-face by trained interviewers using a computer assisted personal interviewing (CAPI) approach and took approximately one hour and fifteen minutes. All participants signed informed consent forms prior to interview, were interviewed

individually in private rooms, and were financially compensated \$20 for their time. Approval was obtained from the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

Measures

Caregiver Overload—The primary outcome measure, caregiver role overload, comprised four ordinal items adapted from a measure by Pearlin and colleagues.^[12] The items asked caregivers the extent to which they agree or disagree on a 4-point response scale that in the prior few weeks they were “exhausted when going to bed at night,” “had more things to do than [they] could handle,” “hasn’t had enough time for him or herself,” and “has never been able to finish what needed to be done.” Answer choices included 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, and 4 = Strongly Agree. Therefore, higher scores indicated greater overload. The Cronbach’s alpha for the role overload scale was .81.

Perceived Ability of Network Members to Provide Social Support—Five items were used as indicator variables in a latent profile analysis to describe the degree of caregivers’ perceived social support by network members, from each of five types of support. Network name generating questions helped the caregivers create lists of individuals who they could go to for emotional support, physical assistance, material aid, social participation, and health advice in the prior 6 months. Each facet of social support was measured by one item in the questionnaire. For example, to measure emotional support, respondents were asked, “If you wanted to talk to someone about things that are very personal and private or if a situation came up where you needed some advice, is there anybody you could talk to? Please give me the names of people who you would talk to about things that are very personal and private?” Another example item that measured physical assistance was worded, “Is there anybody who would give up some of their time and energy to help you (things like going with you someplace you needed to go, helping you do some work around the house, going to the store for you, and things like that)? For each caregiver, the number of persons nominated for each type of support was summed and divided by the total number of persons in the network to yield a percentage of network members who could provide each of the five types of social support.

Network Members’ Characteristics—Based on the individuals named by each caregiver and the demographic characteristics of these network members, two additional summary variables were created to indicate the percentage of members who were female and the percentage who were kin. Kin, which included nuclear and extended family members, was defined by role relations other than partner (spouse, boy/girlfriend), friend, professional, or coworker or associate.

Depressive Symptoms—Caregivers’ self-reported depressive symptoms was assessed using the 20-item Community Epidemiology Study—Depression (CES-D).³⁰ The range of scores for the current sample of caregivers was 0–55 with a possible maximum score of 60. The Cronbach’s alpha was .91. A cut-off score of 16 was used to indicate high level of depressive symptoms and risk for depression, a dichotomy that has been used in several other studies with similar populations.^{31–33}

Physical Functioning (IADLS)—We used 6 self-report measures of caregivers' physical functioning adapted from the instrumental activities of daily living (IADL) scale.³⁴ Examples of scale items included, "How much does your health affect your ability to..., bend, lift or squat; walk uphill or climb a few flights of stairs; eat, dress, bath, or use the toilet." Each item was measured on a three-point scale with 0 = "Not at all," 1 = "A bit," and 2 = "A lot." The scale items were summed, with possible scores ranging from 0 to 12, with higher scores indicating greater impairment. The Cronbach's alpha for the scale was .81.

Demographic Characteristics—Caregivers responded to questions on gender, age, education, income, marital status, HIV/AIDS status, and drug use. Age was retained as continuous, while education was dichotomized into less than high school vs. completed high school or more, based on the variable's distribution. Income was measured in the questionnaire with regards to the respondents' monthly earnings, with five categories in \$500 increments. Marital status was dichotomized into 0 = single, separated, widowed, or divorced versus 1 = married or living together as married. Caregivers were asked if they had injected speedball, cocaine, or heroin; sniffed cocaine or heroin; smoked crack; or ingested street methadone or hallucinogens in the past six months. Respondents who answered yes to any of these drug use questions were coded 1 = yes, while those who answered no to all of the items were coded 0 = no.

Analytic plan

As part of our preliminary analyses, we generated univariate statistics in SPSS 17.0 to describe the sample characteristics and bivariate statistics to examine the associations between predictors and outcome variables. We also ran exploratory and confirmatory factor analyses in Mplus 5.2³⁵ with maximum likelihood robust estimation for the overload latent variable to ensure its unidimensionality and adequate fit of its measurement model. The exploratory factor analysis indicated that the overload scale items loaded on a single dimension with an eigenvalue of 2.82, indicating that these four items explained 70.5% of the total variance. In addition, the factor determinancy was .94. The fit indices for the confirmatory factor analysis indicated good model fit with the CFI = 1.00, RMSEA = .01,³⁶ and $\chi^2 = 2.04$, $df = 2$, $p = .36$.

Next, we conducted a latent profile analysis (LPA) to determine the number of distinct classes of caregivers based on perceptions of the number of network members who could provide each of the five types of social support (i.e., emotional support, physical assistance, material aid, social participation, and health advice). LPA, which uses continuous indicator variables, is a derivative of latent class analysis, which uses binary or categorical indicators.³⁷ LPA is a person-centered analysis, rather than a variable-centered analysis. This distinction is important because it enables researchers to make conclusions regarding characteristics of sample members, rather than on a variable or factor of interest. Also, LPA has the advantage of using statistically optimal thresholds rather than using a priori cut-off values. In the current analyses, individuals within each class are similar to each other based on their measures of social support, but differ from members of other classes.³⁷ The degree of separation between the classes is represented by the entropy score. Three indicators of model fit were calculated for each model including the Akaike information criterion (AIC),

sample size adjusted Bayesian information criterion (aBIC)³⁸ and the Lo-Mendell-Rubin adjusted likelihood ratio test (LMR).³⁹ Models with lower AICs and aBICs suggest better fitting models.⁴⁰ Significant LMR tests indicate that the model with k classes fits significantly better than the model with $k-1$ classes.³⁹ Per published recommendations, final decisions regarding choice of model were based on statistical information and substantive theory.⁴¹

Subsequently, to predict role overload, we tested the direct effects of social support class membership, along with demographic characteristics of caregivers and their network members in a structural equation model in Mplus.^{42–43} Structural equation modeling (SEM) was used since it reduces Type I error by conducting a single analysis, while multiple regression would require researchers to test numerous models, each of which has its own Type I error. Also, since SEM uses continuous factors, which by definition lack measurement error, relationships between variables are more accurate.⁴² We used the weighted least squares mean and variance adjusted (WLSMV) estimator for this SEM analysis. In the structural equation model, we used the probabilities generated by Mplus in the LPA to assign individuals to their most likely class, which is a method shown to be satisfactory when the entropy score is above .80.⁴⁴ In this model, we also tested the mediation effects of demographic and network characteristics through social support class on role overload.

Finally, we ran a separate structural equation model that tested the moderation effect of social support class membership in the associations between the demographic and network variables and role overload. Specifically, we ran one SEM model that generated regression coefficients separately for sample respondents in the first second classes.

RESULTS

In the sample of caregivers who were predominantly African American (i.e., 92.6% African American, 3.7% White, and 3.7% other or mixed) and low-income (i.e., 71.6% of the sample earned \$1,000 or less per month), more than half were female (56.9%), had completed at least a high school education (60.6%), and were not married or living as married (66.2%) (Table 1). Over two-fifths (43.5%) were HIV seropositive, almost a quarter (23.1%) had used drugs in the past 6 months, and approximately a third (36.6%) had a high level of depressive symptoms. Caregivers indicated that 42.8% of their network members were female and nearly half were kin (49.1%). The overall sample means indicated that between 40.4% and 45.2% of the network members were nominated as being perceived as supportive emotionally, financially, instrumentally, or socially, while only about a third (31.6%) were perceived as a source of health advice. Means on the four individual overload items ranged from 2.4 to 2.6, which has been considered in the moderate range.⁴⁵

Bivariate correlations were generated between the predictors and outcome variables (Table 1). Unadjusted odds ratios indicate that membership in the less supported class (i.e., class # 2), was predicted by female gender (Odds Ratio [OR] = 2.56, 95% Confidence Interval [CI] = 1.35, 4.76, $p < .01$) and HIV+ serostatus (OR = 2.76, CI = 1.46, 5.23, $p < .01$), while membership in the more supported class (i.e., class # 1), was predicted by greater depression

(OR = .39, CI = .20, .76, $p < .01$) and having more females in one's social network (OR = .99, CI = .96, .99, $p < .001$). Greater overload correlated significantly with being female ($r = .20$, $p < .01$), younger age ($r = -.01$, $p < .05$), having higher scores on IADLS ($r = .05$, $p < .001$), greater depression ($r = .25$, $p < .01$), and membership in the less supported class ($r = .30$, $p < .01$).

Next, we studied the fit indices and class proportions for the 1-, 2-, and 3-class models (Table 13). Although the AIC, aBIC, and LMR tests indicated that the 3-class model was optimal, the third class was deemed too small at 2.34% of the sample to provide statistically stable and substantively meaningful results. Therefore, we concluded that the 2-class model would be used in the remaining analyses. The class variable was binary with class # 1 being the more supported group or presumably lower risk group for reporting role overload and class # 2 being the proposed higher risk and less supported group. Therefore, the class variable was coded 1 for the first group and 2 for the second group, such that positive associations between class and overload would mean that respondents in the second class would have greater role overload scores.

The 2-class model in the latent profile analysis (Figure 1) indicated that the first group, which comprised approximately 25% of the sample, reported that they perceived that 54% to 71% of their network members could provide each of the types of social support. In contrast, the second group, comprised of 75% of the sample, reported that they perceived that only 24% to 37% of their network members could provide each type of social support.

The groups also differed in terms of demographic characteristics such that females comprised 39.6% of the first class compared to 62.6% of the second class. Also, 62.3% of the members in the first class were HIV positive, while only 37.4% of the members in the second class had a seropositive status.

Subsequently, we entered class membership as a measured variable into a structural equation model that examined the relationships between role overload, social support class membership, and demographic characteristics of the caregivers and their support networks (Figure 2). The model achieved excellent model fit with a CFI = 1.00³⁶ and $\chi^2 = 19.96$, $df = 22$, $p = .59$. In terms of class membership, females had 1.75 times greater odds of being in the less supported group or class # 2 (AOR = 1.75, $\beta = .23$, $p < .05$). Those who were HIV seropositive had twice the odds of being in the more supported group (i.e., class # 1) (AOR = 2.05, $\beta = -.29$, $p < .01$). In addition, having more females (AOR = 1.02, $\beta = -.39$, $p < .001$) and more kin members (AOR = 1.01, $\beta = -.39$, $p < .05$) in one's network were associated with greater odds of being in the more supported group or the first class. We found that the latent factor, role overload, was associated with three of the predictors, such that older caregivers reported less overload ($\beta = -.24$, $p < .01$), while those with more physical impairment ($\beta = .30$, $p < .001$), and those in the second or less supported class ($\beta = .29$, $p < .01$) reported more overload.

Finally, we explored differences in relationships between role overload and demographic and network characteristics between caregivers in the less supported class compared to the more supported class (Table 3). We found that in the less supported group, older caregivers

reported less role overload ($\beta = -.23, p < .01$), while those with greater physical impairment experienced more overload ($\beta = .38, p < .001$). Among members in the more supported class, those who had used illicit drugs in the past 6 months reported less role overload ($\beta = -.25, p < .01$), while those with a greater percentage of females in their networks experienced more overload ($\beta = .26, p < .05$).

DISCUSSION

Findings revealed that the latent class analysis categorized the vast majority of the sample (75%) into class # 2 or the group with the lower level of social support. Compared to the first class, individuals in this class had 30%–40% fewer network members upon whom they perceived they could rely for social support. The preponderance of caregivers in this worse-off group suggests support for previous findings that caregiving is associated with decreased social support.⁴⁶ This lack of perceived support by the majority of the sample is consistent with previous research that found that more than 70% of caregivers reported moderate amounts of loneliness and many reported few formal or informal support services.⁴⁶

Our first hypothesis, that less perceived support by a caregiver's social network would be associated with more role overload was supported since we found that membership in the less supported class (i.e., the second group) was positively associated with higher overload scores. Our results are consistent with findings from Turner & Catania's study of caregivers of PLHAs, which found that increased instrumental support was associated with decreased subjective burden.⁵ However, it is important to note that while there was a significant difference in overload scores between members of each social support class, the overall mean of all sample members on overload was moderately high since the means of the four items were slightly skewed toward the "agree" end of the scale.

Age and physical functioning were also associated with overload in both the bivariate and multivariate analyses. It was surprising that older caregivers perceived less overload. Perhaps older individuals were more experienced at handling the stresses of added responsibilities. As proposed by Turner & Catania, older caregivers may have had more time and experience to develop more effective coping skills.⁵ Among those with greater difficulties in physical functioning and performing daily activities, there was a greater sense of role overload. Caregiving tasks could have increased stress levels among these individuals, which subsequently led to perceptions of greater role overload. Previous studies have produced similar findings, having discovered significant associations between physical illness and greater depression in the caregiver, which was also associated with caregiver burden.¹⁴

In our study, having more female and kin members in one's network was associated with membership in the more supported class, while being female was associated with membership in the less supported group. It is possible that gender expectations exist whereby it is considered normative behavior for older women to take on the caregiver role.⁷ For example, Turner & Catania note that caregivers of people with a variety of debilitating illnesses have traditionally been older women.⁵ Also, it is possible that these women take on increasing responsibility over time, which could lead to a reduction of individuals within their social networks outside of the PLHA, a theme commonly found in previous

research.^{16,46} This finding suggests that female caregivers in particular are at greater risk for losing their social network ties, which has been associated with a host of psychological problems.²⁶ Women who care for PLHAs may be a particularly high-risk population who would benefit greatly from interventions to enhance their social network ties.

The current study built upon extant research by examining demographic characteristics of one's social network and found that having more females and kin in one's network was associated with membership in the more supported class. It is possible that ties with females and kin represent closer relationships. In this population where people tend to live in households with their extended family members, kin may be in greater proximity and therefore, more accessible for immediate support. Future research should address this seemingly paradoxical finding that while females tended to be in the less supported group, having more females in one's social network was associated with membership in the more supported group. In addition, future research should explore if having more females in one's social network is equally beneficial for males and females, or if there is an interaction between gender and proportion of females in one's social network such that for females, having more women in their support network mitigates their gender risk.

Exploring the relationships between overload and demographic and network characteristics between members of each social support class further refined our understanding of these complex relationships. The results of these moderation analyses indicate that similar variables (i.e., age and IADS) were significant in both the overall sample and among individuals in the second, less supported class. This is perhaps due to three-quarters of the sample being in this class, which would give them more influence over the main effects analysis than those caregivers in the smaller, more supported group.

However, the analysis within the more supported class can add to our understanding of this smaller subsample of caregivers. Within this group, we found that drug use was associated with less overload while having more females in one's social network was associated with more overload. It is possible that caregivers who used drugs performed fewer duties for their care recipients due to decreased functioning associated with drug use, or that the chemical properties of the drugs reduced respondents' anxiety associated with caregiving. Further refinement of the drug use variable, such as type of drug as well as frequency and amount of drug could help to elucidate this relationship. To explain the relationship between having more females in one's network and experiencing greater overload, additional research is needed to explore this association. In sum, these separate analyses for caregivers in the two classes enabled us to discern relationships between demographic and network characteristics with role overload, particularly among individuals in the smaller, more supported class. Most importantly, conducting these separate analyses enabled us to examine nuances among those in the smaller class that were masked in the main effects analyses in the structural equation model.

One limitation of this study is that only the proportion of network members who were perceived to be able to provide social support was measured. It is possible that the quality of that support, rather than the simple dichotomy of the presence versus absence of support, could be more important in explaining variance in role overload. This point is especially

important given a continued debate in the social support literature between the number of supportive others vs. the quality of obtained support.⁴⁷ Also, latent profile analysis, which is a data-driven technique, was used to categorize the respondents into the two groups. While this method is better statistically compared to using specified cut-off values, it is not theory-driven in determining the threshold. Another limitation is that the data are cross-sectional, which limits conclusions regarding the direction of causation. For example, it is possible that caregivers who experience more role overload subsequently pull away from their social network members, shrinking their social world to focus exclusively on the PLHA.¹⁷ Future studies should seek to follow the changes in reported overload over the course of the caregiving relationship, especially considering that disease progression can increasingly strain the caregiver/PLHA relationship. Also, measurements of disease severity, in terms of symptoms and complications experienced by PLHA and their seropositive caregivers could be important predictors of caregivers' perceived role overload.

Another limitation of this research is the large number of predictors that may have led to multicollinearity problems. For example, our multivariate results indicated that HIV+ status increased one's odds of being in the more supported class while the bivariate results indicate that HIV+ status was associated with membership in the less supported class. It is possible that a strong association between HIV status and percentage of kin in one's social network changed the sign on the coefficient for HIV status in the multivariate model.

Despite the noted limitations, this study highlights the importance of studying perceptions of one's social network. This study also supports the conclusion that HIV can have a ripple effect, whereby the disease not only affects afflicted individuals, but their caregivers as well, in addition to the caregivers' social network members.⁵ Since the study sample was primarily African American, these analyses also sought to further explore variables that impact role overload among African American caregivers who have been reported to be a disadvantaged racial/ethnic group in terms of HIV/AIDS caregiving burden.^[7] While the current study uses structural equation modeling to further elucidate the multifaceted relationships between role overload, perceived social support, individual demographic characteristics, and network factors, continued research is needed in this area to better serve the needs of caregivers, who are integral members of complex social networks.

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Figure 1.
Probability of Caregivers Perceiving that their Network Members could provide Five Types of Social Support.

Figure 2.

Association between caregiver overload and social support class membership, demographic factors, and network characteristics.†

† Bolded path coefficients significant at $p < .05$.

IADLS = Instrumental Activities of Daily Living Scale

Fit Indices: CFI = 1.00, $\chi^2 = 19.96$, $df = 22$, $p = .59$.

Table 1

Demographic Characteristics of the Informal Caregivers of Persons Living with HIV/AIDS and Associations with Overload and Social Support Class Membership Outcomes (ARK study, Baltimore, MD; N = 215¹).

Characteristics	Mean (SD)	%	Simple Regression Coefficient where Overload is Outcome	Unadjusted Odds Ratio with 95% CI for association with Class Membership in less supported class #2
Gender (Female)		43.1	.24**	2.56**[1.35, 4.76]
Age	45.4(10.1)		-.01*	.99[.96, 1.02]
Education				
Completed high school or more		60.6	-.01	.65[.35, 1.22]
Personal Income			.05	.99[.75, 1.30]
Up to \$499		26.0		
\$500–\$999		45.6		
\$1000–\$1499		14.4		
\$1500–\$1999		6.5		
\$2000+		7.4		
Marital Status				
Married or living as married		33.8	.05	1.13[.54, 2.16]
HIV seropositive		43.5	.10	2.76**[1.46, 5.23]
Drug use, current (yes) [‡]		23.1	-.20	1.11[.54, 2.29]
Physical functioning (IADL limitations) [‡]	3.8(3.4)		.05***	1.04[.94, 1.14]
High Depressive Symptoms				
Scored above the median cutoff of 16		36.6	.25**	.39**[.20, .76]
Percentage of females in network	42.8(20.7)		.00	.99***[.96, .99]
Percentage of kin in network	49.1(24.9)		.00	.86[.69, 1.08]
Percentage of network members who could provide:				
Emotional support	41.6(22.4)			
Physical assistance	41.2(23.6)			
Material aid	40.4(23.7)			
Social participation	45.2(24.7)			
Health advice	31.6(22.7)			
Social Support Class (Class 2: Less supported group vs. Class 1: More supported group)		75.5	.30**	
Overload (4-item factor)				
Exhausted when going to bed	2.6(1.0)			
More things to do than could handle	2.4(.9)			
Hasn't had enough time for him or herself	2.5(.8)			
Never been able to finish what needed to be done	2.5(.8)			

¹N=215, due to 1 respondent missing data on income.

[‡]Drug use – coded yes if used any illicit drugs in previous 6 months;

[‡]IADLS = Instrumental Activities of Daily Living Scale; Range of 0–12;

Table 2Correlations between independent variables (N = 215)^a.

	I	II	III	IV	V	VI	VII	VIII	IX	X
I Female										
II Age	-.09									
III Education	.03	-.05								
IV Income	-.03	.04	.14*							
V Married	.01	-.15	.02	.14*						
VI HIV+	-.27*	-.03	-.17	.00	.04					
VII Drug use	-.10	-.02	-.05	-.23**	.03	.05				
VIII IADLS	.11	.21**	-.02	-.25**	-.05	.20**	.06			
IX Depression	.10	.01	-.10	-.13*	-.04	-.03	.20**	.30**		
X Network Females	.10	.17*	-.08	-.08	-.03	-.02	.08	.02	.03	
XI Network Kin	.24	-.12	-.08	-.14*	.04	-.29**	.08	.00	-.06	.00

^a Pearson correlations used for continuous variables; Point biserial correlations used for dichotomous variables.

Table 3

Fit indices for latent class models.

Class	aBIC	AIC	Parameters	LMR	Entropy	Class Proportions
1	-55.80	-57.87	10	NA	NA	100%
2	-433.66	-436.97	16	.0001	.91	24.99% 75.01%
3	-505.23	-509.77	22	.01	.93	70.23% 27.43% 2.34%

Note: aBIC = Sample Size Adjusted Bayesian Information Criterion; AIC = Akaike Information Criterion; LMR = Vuong-Lo-Mendell-Rubin Likelihood Ratio test for k vs. k-1 classes (p-value shown).

Table 4

Associations between overload and caregiver characteristics across the two latent classes (N=215)^a.

Variables	R ²	B	SE B	B/SE B	β
Class 1 (more supported 25% of sample) .29					
Female		.96	.71	1.35	.19
Age		-.04	.05	-.78	-.16
Education		.51	.74	.70	.12
HIV +		.28	.72	.39	-.03
IADLS		.08	.13	.63	.13
Depressive symptoms		.29	.81	.36	.04
Income		.79	.39	2.04	.25
Drug use		-1.36	.51	-2.66	-.25**
Married		.53	.58	.91	.06
% Female		.03	.01	2.71	.26*
% Kin		.00	.01	.13	-.05
Class 2 (less supported 75% of sample) .26					
Female		.71	.45	1.59	.12
Age		-.07	.02	-3.08	-.23**
Education		-.48	.46	-1.03	-.09
HIV +		.40	.46	.87	.11
IADLS		.32	.07	4.65	.38***
Depressive symptoms		.70	.44	1.58	.13
Income		.27	.20	1.36	.14
Drug use		-.65	.50	-1.30	-.11
Married		-.17	.43	-.40	-.02
% Female		.00	.01	-.26	-.02
% Kin		-.01	.01	-1.15	-.08

^a N=215, due to 1 respondent missing data on income.

* $p < .05$;

** $p < .01$;

Fit indices: Akaike Information Criterion (AIC) = 1475.20; Sample Size Adjusted Bayesian Information Criterion (aBIC) = 1485.50; Free Parameters = 51.

 $p < .001$;