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Social services utilization and need among a community sample of persons living with HIV in the rural south

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HIV prevalence has increased faster in the southern USA than in other areas, and persons living with HIV (PLWHIV) in the south are often rural, impoverished, or otherwise under-resourced. Studies of urban PLWHIV and those receiving medical care suggest that use of social services can enhance quality of life and some medical outcomes, but little is known about patterns of social service utilization and need among rural southern PLWHIV. The AIDS Alabama needs assessment survey, conducted in 2007, sampled a diverse community cohort of 476 adult PLWHIV representative of the HIV-positive population in Alabama (66% male, 76% Black, and 26% less than high school education). We developed service utilization/need (SUN) scores for each of 14 social services, and used regression models to determine demographic predictors of those most likely to need each service. We then conducted an exploratory factor analysis to determine whether certain services clustered together for the sample. Case management, assistance obtaining medical care, and financial assistance were most commonly used or needed by respondents. Black respondents were more likely to have higher SUN scores for alcohol treatment and for assistance with employment, housing, food, financial, and pharmacy needs; respondents without spousal or partner relationships had higher SUN scores for substance use treatment. Female respondents were more likely to have higher SUN scores for childcare assistance. Black respondents and unemployed respondents were more likely to have SUN scores in the highest quartile of the overall score distribution. Factor analysis yielded three main factors: basic needs, substance use treatment, and legal/medical needs. These data provide important information about rural southern PLWHIV and their needs for ancillary services. They also suggest clusters of service needs that often occur among PLWHIV, which may help case managers and other service providers work proactively to identify important gaps in care.

Keywords: HIV; health services utilization; rural; south; need

Introduction

The prevalence of HIV infection has increased rapidly in the southern USA compared to the other areas of the country (Foster, 2007; Reif, Geonnotti, & Whetten, 2006) and southern states are among those with the highest AIDS-related death rates in the country (Reif, Geonnotti, et al., 2006; Whetten & Reif, 2006). For example, in 2006, Alabama had an age-adjusted HIV mortality rate of 4.2 per 100,000 persons, compared to 4.0 per 100,000 persons in the USA (Heron et al., 2009). Several issues in the south have been considered as possible contributors to the increased incidence of HIV and AIDS in the region, including high rates of sexually transmitted infections (STIs), racial disparities, the conservative culture of the south, poverty, and lack of access to health insurance and health care (Krawczyk, Funkhouser, Kilby, & Vermund, 2006; Luciano, 2002).

These factors create barriers to treatment for persons living with HIV (PLWHIV), but the majority of this research has been conducted in major urban areas and these findings are not always applicable to the southern population (Krawczyk et al., 2006). For example, the HIV Cost and Service Utilization Study (HCSUS) estimates that 46% of PLWHIV in the USA have an annual household income of less than US$10,000, that 63% are unemployed and 20% have no health insurance (McKinney & Marconi, 2002). These estimates are relatively consistent with observations of clinical cohorts of PLWHIV, but may underestimate the significant needs for social services among PLWHIV in certain areas of the country, including the rural south, where the proportion of uninsured adults often approaches or exceeds 25%.

A lack of economic and social resources compromises a person's ability to access health care services, and research supports the finding that many southern PLWHIV are disproportionally underresourced and thus require considerably more assistance for everyday activities and basic services, such as housing assistance, emergency provisions, support groups,

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mental health-related counseling, legal assistance, and financial assistance (Reif, Geonnotti, et al., 2006; Reif, Whetten, Lowe, & Ostermann, 2006; Whetten & Reif, 2006). Reif and colleagues studied infectious disease clinics throughout the south, and found that 84.5% of the patients with HIV who were served by these clinics needed at least one support service, with 47% reporting that at least one need was not met (Reif, Whetten, et al., 2006).

Given that, in urban samples of PLWHIV, lack of access to social services is not only related to general quality of life (Chin, Botsko, Behar, & Finkelstein, 2009), but is also closely tied to medical adherence, access to medical treatment, and health outcomes (Messeri, Abramson, Aidala, Lee, & Lee, 2002; Reif, Whetten, et al., 2006), it is crucial to understand more about the social service needs of people living with HIV/AIDS in the south. Since a sizable proportion of southern PLWHIV is not engaged with a medical care provider (McKinney & Marconi, 2002), surveys of social service needs that are limited to samples of HIV-positive patients or only urban PLWHIV may provide an incomplete picture of the experience of PLWHIV in rural or southern communities.

Community-based surveys may provide a more comprehensive description of the patterns of social service utilization and need in this population. One particularly valuable approach to reaching this community is through AIDS Service Organizations (ASOs) which are staffed by individuals who are well known and trusted by the community of PLWHIV, and provide social services that are otherwise limited or unavailable (Tolle, 2009). Understanding the patterns of service needs and utilization among these community populations may be helpful to providers and case managers in working proactively with their clients.

AIDS Alabama is an ASO located in Birmingham, Alabama that has been funded since 1988 by HRSA, CDC, HUD, state, local, and private resources. It serves a catchment area that includes approximately 16,000 PLWHIV, and coordinates with other ASOs throughout the state. To understand the priority needs of its client population, AIDS Alabama conducted statewide surveys of PLWHIV in 1999, 2003, and 2007.

We examined the 2007 AIDS Alabama Needs Assessment Survey data to explore patterns of service utilization and needs, expecting that a high proportion of respondents would report utilization of or need for services across multiple domains, and that several services would "cluster" together.

Methods

Participants

AIDS Alabama and partner agencies recruited PLWHIV to be as representative as possible of the adult PLWHIV population, in terms of geographical distribution and racial and gender balance; participants were recruited from most Alabama counties. However, in some instances, certain counties remained underrepresented in the sample due to a low known HIV-positive population. Attempts were made to include individuals who both were and were not well-connected to health care, by working through ASOs, case managers, and other HIV-positive individuals, who were able to identify and refer sporadic users of ASO services and those not receiving medical care.

Measures

This survey was created specifically to assess the needs and concerns of the adult PLWHIV population for the use of AIDS Alabama staff in program planning, and as such was not originally developed for research purposes. It was jointly developed by AIDS Alabama and Columbia University School of Public Health faculty in 1999. The survey content was slightly edited by consultants at the University of Alabama at Birmingham for 2003 and again for 2007 but similar collection methods were used in all survey administrations. In addition to standardized measures on aspects of living with HIV, the interview covered demographics; basic needs such as food, transportation, and housing; and a wide range of other ancillary services. A total of 14 basic and ancillary service needs were included: financial, legal, pharmaceutical, employment, and housing assistance; substance use, mental health, and alcohol treatment; medical services, transportation, dental care, case management, food, and childcare. Respondents were asked to indicate whether they had received services or had needed assistance in the past 6 months in each of these areas.

Procedures

Survey questionnaires were administered by trained interviewers who were HIV-positive Alabamians. Interviewers traveled to meet and conduct the survey at a convenient location for the participant, usually at an ASO or HIV clinic office or meeting room where privacy could be assured. All information collected was confidential, assigned a unique identification number, and free of identifying personal information. Some interviews were video- or audio-taped with the

participant's written permission. Each recording was securely stored without personal information. The interview took approximately one hour to administer. Participants did receive US$15 compensation for their time, travel, and effort.

Results

Data analysis approach

The 2007 survey was administered to 525 community-dwelling individuals. A total of 29 individuals who identified with a racial/ethnic group other than Black or White or had missing data for racial/ethnic group and 20 individuals who identified themselves as transgender or had missing gender data were excluded for comparison purposes, which resulted in 476 individuals included in subsequent analyses. Descriptive analyses were completed to obtain the characteristics of this sample.

Binary service utilization/need (SUN) variables were created for each of the services included in the survey. If the respondent indicated either that s/he was receiving services of a specific type *or* had needed that service then a value of 1 was assigned to the service/utilization variable; if the respondent indicated that they had not received the service *and* had not needed it, then a value of 0 was assigned. This combined SUN variable approach reflected the overall demand for each service by including those who have already gained access to the service as well as those who needed the service but were not able to obtain it.

Descriptive univariate analyses were completed to determine the number and percentage of respondents who reported using or needing each service, and demographic characteristics were compared for those who had an individual SUN variable score and those who had missing data for that variable. No significant differences were noted for any of these comparative analyses. Subsequently, multivariate linear regression analyses described the characteristics of individuals most likely to need or use each service. Logistic regression models included each SUN as the outcome variable. Predictor variables in each model included: race, gender, age, relationship status, education, having children in the home, and employment status.

Next, values for the individual SUN variables were summed to create an overall SUN score for each respondent. A total of 367 respondents had complete data for each of the SUN variables and thus a calculated overall SUN score. Descriptive univariate analyses were completed to characterize the pattern of overall SUN scores; again, demographic characteristics were compared for those with and without an overall score. No substantial differences between groups were identified. Multivariate linear regression analyses described the characteristics of individuals who were evidenced the highest and lowest SUN scores (defined as those respondents in the highest and lowest quartiles of overall SUN scores, respectively). The outcome variable was the overall SUN score and predictor variables were included as described above.

Then SUN variables were subjected to an exploratory factor analysis using squared multiple correlations as prior communality estimates. The principal factor method was used to extract the factors. We used both oblique and orthogonal rotation of factors; because the results were essentially identical, the orthogonal rotation results are reported. A three-factor solution was hypothesized; factor selection was based on eigenvalues (≥ 1.0), scree plot, and interpretability were considered in confirming factors. Items were considered to load on a factor if the rotated factor loading was greater than or equal to 0.35 on one factor and less than 0.35 on other factors.

Demographics of the sample

The characteristics of the analysis sample are summarized in Table 1. The majority of survey respondents were black males between the ages of 40 and 64 years. The average age was 42.5 years (standard deviation (SD), 9.84). The youngest was 18 years and the oldest 76 years of age. A majority were single or never married. Approximately, one in four respondents had children in the home, one in three had some college education, and one in four reported having less than a high school diploma. Just fewer than 70% reported being employed either full or part time.

Frequency of service utilization/need (SUN)

Services used or needed by the survey respondents are summarized in Table 2. The most commonly used or needed services included case management, medical assistance, and financial counseling. The least needed or used services were childcare, legal assistance, alcohol treatment, and employment assistance. Approximately, half of the respondents indicated that they either needed or were receiving mental health services, transportation assistance, and housing assistance.

Demographic group associations with service utilization/need (SUN)

Table 3 summarizes findings regarding the demographic subgroups most likely to report using or needing services, by type of service. Regression

Table 1. Demographic characteristics of analysis sample, AIDS Alabama 2007 analysis sample ($n = 476$).

Characteristic	*n*	%
Gender		
Male	314	66.0
Female	162	34.0
Racial/ethnic group		
White	112	23.5
Black	364	76.5
Age		
18–39 years	165	34.8
40 years and older	309	65.1
Education		
Less than high diploma	121	26.3
High school diploma or higher	339	73.7
Children in home	116	25.4
Relationship		
Living with life partner or spouse	83	17.5
Not living with partner (widowed, married but separated, divorced, never married)	391	94.0
Employed	139	69.8
Income		
Less than US$800 a month	334	70.2
US$800 a month or more	142	29.8
Unemployed and receiving SSI, SSDI or disability income	206	60.6

analyses indicated no significant differences among groups in their likelihood of needing or using medical or legal assistance. Black respondents were more likely to be users of alcohol treatment, employment, financial, food, housing, and pharmacy assistance than were their white counterparts. Individuals not living with a partner or a spouse were more likely to be using or need substance use treatment services than respondents in partnered relationships. Women were more likely than men to be users of childcare assistance, as were individuals with children in the home, compared to individuals without children in the home. Furthermore, compared to respondents who were employed, respondents who were not working were more likely to be users of a number of services, including: case management, mental

Table 2. Types of services needed and/or used by survey respondents, AIDS Alabama 2007 ($n = 476$).

Services needed or used	*n*	%
Alcohol treatment	107	23.2
Case management	426	93.8
Child care	21	4.5
Dental care	302	64.9
Drug treatment	164	34.9
Employment	115	24.5
Financial counseling	389	83.1
Food	338	71.9
Housing	272	58.0
Legal assistance	74	16.3
Medical assistance	428	90.3
Pharmacy assistance	310	71.6
Mental health counseling	242	52.0
Transportation	262	55.3

Table 3. Results of regression analyses to identify high-risk groups by assistance type, AIDS Alabama 2007.

	Risk group						
	Adjusted odds ratio[a]						
	95% confidence interval						
	p-Value						
Assistance type	Black	Female	Older age	Less education	Children in home	Not partnered	Not working
Alcohol treatment	**1.9**	1.4	1.1	0.7	0.6	1.9	0.7
	1.0, 3.5	0.9, 2.4	0.6, 1.8	0.4, 1.2	0.3, 1.1	0.09, 3.9	0.4, 1.2
	0.0499	0.1558	0.8141	0.1697	0.1046	0.0953	0.2091
Case management	1.6	1.2	0.9	1.2	1.7	0.8	**4.2**
	0.7, 3.9	0.5, 3.2	0.4, 2.2	0.5, 2.9	0.5, 5.6	0.3, 2.6	**1.8, 9.8**
	0.2794	0.6506	0.8585	0.6232	0.3695	0.7717	**0.0008**
Child care	0.9	**4.1**	0.5	1.6	**4.6**	1.4	2.2
	0.2, 3.6	**1.4, 12.4**	0.2, 1.4	0.6, 4.5	**1.5, 13.6**	0.4, 5.1	0.7, 7.5
	0.9187	**0.0125**	0.1840	0.3921	**0.0068**	0.6519	0.1747
Dental care	1.6	1.2	1.0	0.7	1.0	1.0	**1.7**
	1.0, 2.5	0.7, 1.9	0.6, 1.6	0.5, 1.1	0.6, 1.7	0.6, 1.8	**1.1, 2.7**
	0.0656	0.4837	0.9842	0.1531	0.8830	0.9504	**0.0177**
Drug treatment	1.0	1.0	0.9	0.9	0.7	**2.4**	1.0
	0.6, 1.5	0.7, 1.6	0.6, 1.4	0.6, 1.3	0.4, 1.3	**1.3, 4.6**	0.6, 1.5
	0.8910	0.8778	0.6595	0.5538	0.2650	**0.0053**	0.8734
Employment	**2.7**	0.9	0.7	1.5	1.1	1.2	1.0
	1.4, 5.4	0.5, 1.5	0.5, 1.2	0.9, 2.4	0.6, 1.8	0.6, 2.3	0.6, 1.8
	0.0043	0.6671	0.2379	0.1425	0.6534	0.5648	0.8624
Financial counseling	**3.2**	1.5	1.0	0.9	1.0	1.2	**11.9**
	1.7, 6.2	0.8, 3.0	0.6, 1.9	0.5, 1.7	0.5, 2.2	0.6, 2.4	**6.4, 22.2**
	0.0003	0.2446	0.9131	0.8470	0.9477	0.6737	**<0.0001**
Food assistance	**3.1**	0.8	1.2	1.2	0.9	0.9	**2.0**
	1.9, 5.1	0.5, 1.3	0.7, 1.9	0.8, 2.0	0.5, 1.5	0.5, 1.7	**1.3, 3.2**
	<0.0001	0.3266	0.5172	0.3487	0.5844	0.8153	**0.0036**
Housing assistance	1.6	1.5	0.8	1.1	1.2	1.1	**2.2**
	1.0, 2.5	1.0, 2.3	0.5, 1.3	0.7, 1.6	0.7, 1.9	0.7, 1.9	**1.4, 3.4**
	0.0643	0.0758	0.3419	0.7698	0.5057	0.7107	**0.0004**
Legal assistance	1.2	0.7	1.5	0.9	1.1	1.3	1.4
	0.6, 2.2	0.4, 1.4	0.8, 2.8	0.5, 1.6	0.6, 2.2	0.6, 2.8	0.7, 2.7
	0.6797	0.3373	0.1816	0.6998	0.7343	0.4881	0.2892
Medical assistance	1.3	0.9	1.7	1.4	1.8	1.0	1.1
	0.6, 2.6	0.5, 1.9	0.9, 3.3	0.8, 2.7	0.7, 4.3	0.4, 2.3	0.5, 2.2
	0.5383	0.8133	0.1184	0.2784	0.1962	0.9510	0.8088
Pharmacy assistance	**1.8**	0.8	0.8	0.9	0.8	0.7	1.3
	1.1, 3.0	0.5, 1.3	0.5, 1.3	0.6, 1.5	0.5, 1.4	0.4, 1.3	0.8, 2.2
	0.0187	0.4399	0.3169	0.8139	0.5036	0.2791	0.2303
Mental health counseling	0.6	1.3	0.9	1.2	1.3	0.9	**1.6**
	0.4, 1.0	0.8, 1.9	0.6, 1.4	0.8, 1.8	0.8, 2.1	0.5, 1.5	**1.1, 2.5**
	0.0738	0.2941	0.7388	0.3265	0.3320	0.5849	**0.0252**
Transportation assistance	1.2	1.3	0.9	1.1	1.1	1.4	**4.2**
	0.7, 1.9	0.8, 2.0	0.6, 1.4	0.7, 1.6	0.7, 1.8	0.8, 2.4	**2.7, 6.7**
	0.5649	0.3320	0.5363	0.7811	0.7552	0.2563	**<0.0001**

[a]Adjusted for all other variables in the table.
Note: Statistically significant values ($p \leq 0.05$) are indicated in bold text.

health, and dental services; and, financial, food, housing, and transportation assistance.

Given a possible range of 0–14 services being used or needed, the maximum number of services for an individual respondent was 13 and the minimum was 1. No respondents indicated that they did not use or need any services. The mean number of services received or needed was 7.5 (SD, 2.46), and the median was 8.0. The highest quartile of users reported 9 or more services and the lowest quartile reported 6 or fewer. Black respondents were more than twice as likely to be in the highest quartile of the sample in terms of numbers of services used or needed (OR, 2.3; 95% CI, 1.2–4.3) than white respondents. Respondents who were not employed were 2.5 times as likely to have high numbers of services used or needed than unemployed respondents (OR, 0.4; 95% CI, 0.2–0.7).

Factor analysis of service utilization/need (SUN) patterns

The results of the exploratory factor analysis are presented in Table 4, showing three distinct factors: *Basic needs* – case management, dental, employment, financial, food, housing, and transportation assistance; *Substance abuse* – drug and alcohol treatment; and *Legal/Medical care* – legal and medical services. Employment assistance showed some association with all factors but loaded onto basic needs. Mental health services loaded with both substance abuse and legal/medical care. Child care assistance did not load strongly on any factor but was most closely associated with basic needs. All other items were distinctly associated with a single factor.

Discussion

The results of this analysis affirm prior findings that many PLWHIV require extensive support services beyond medical care. Although HIV-specific medical care, pharmacy support, and case management are among the highest priority needs, other services are very important to the health of this population and tend to cluster together in predictable patterns.

A large proportion of our sample reported use or need for basic needs services, including housing, meals, and transportation. This need illustrates the circumstances of PLWHIV who are severely resource-limited. Importantly, there is a strong link between access to these services and engagement in medical care as well as adherence to antiretroviral medications (Messeri et al., 2002). Thus, provision of basic services is a crucial aspect of care for social well-being and improvement of medical outcomes.

An important portion of our sample required mental health, alcohol, or substance abuse treatment. The link between mental health, substance use, and clinical progression of HIV disease is also well-established (Hoang et al., 2009). Thus, provision of these services should not be considered an adjunct to medical care but a necessary component of care for those who need these services. Community agencies, ASOs, physicians, and clinics must coordinate so that needs for basic services and mental health are routinely assessed in clients, even if not engaged in medical care. This can be challenging in environments where there are multiple agencies and organizations serving the HIV-affected community. In rural areas, where resources may be more widely scattered and the number of PLWHIV may be relatively

Table 4. Rotated factor loadings of the individual services used or needed scores.

	Factor loadings		
Service	Basic needs Eigenvalue = 2.53	Substance abuse treatment Eigenvalue = 1.59	Medical/legal services Eigenvalue = 1.09
Financial assistance	**0.68**	–0.01	0.0
Food assistance	**0.64**	0.08	0.14
Housing assistance	**0.59**	0.02	0.21
Transportation assistance	**0.58**	–0.01	0.21
Dental services	**0.46**	0.15	–0.07
Case management	**0.44**	0.09	–0.14
Employment assistance	**0.37**	0.24	0.29
Alcohol treatment	0.03	**0.82**	–0.08
Drug treatment	0.03	**0.82**	0.10
Legal services	0.09	0.23	**0.67**
Medical services	–0.01	–0.31	**0.65**
Child care services	0.26	–0.10	0.0
Mental health counseling	0.06	0.40	0.39

Note: Statistically significant values ($p \leq 0.05$) are indicated in bold text.

smaller, the coordination challenges may be even more extensive. Primary care and community clinic nurses, social workers, case managers, and physicians, may facilitate coordination by proactively identifying resources in these major areas of need and routinely assessing HIV-positive clients' needs in these domains.

This project is among the first to examine patterns of service utilization and need among a rural, southern community sample of PLWHIV, an increasing proportion of the HIV epidemic. As such, the findings contribute to the growing evidence regarding the importance of social services, especially because previous studies have been largely limited to urban samples or clinical populations. Because a significant proportion of PLWHIV is not engaged in clinical care and rural PLWHIV may be particularly likely to lack access to professional services such as expert medical and legal care (Krawczyk et al., 2006; Reif, Whetten, et al., 2006), understanding the patterns of need and utilization of social services in rural, underserved communities is important.

The clustering of services in predictable groupings may provide guidance for case managers, social workers, and others who are the primary support for rural PLWHIV who are not in care. Even though clients may be focusing on a single service to meet an immediate, specific need, case managers, and social workers can explore the client's need for additional services in the various domains to assure comprehensive, coordinated support services. For example, clients who present requesting food assistance may require additional basic needs that would go undiscovered without more in-depth assessment.

Limitations of the study and suggestions for future investigation

The sample described in this paper was comprised of adult PLWHIV in Alabama and thus do not adequately document the needs of PLWHIV under the age of 18. Needs assessment surveys that are specific to the concerns of children and adolescents with HIV may identify very different patterns of social service utilization and need. Although the survey's sponsoring agency created a sampling strategy that specifically attempted to ensure that the sample would be representative of the entire adult PLWHIV population in the state, some generalizability questions remain. The study sample included slightly more African-Americans and slightly more women compared to state surveillance reports of the HIV-positive population in the state and in the southern region overall (The Kaiser Family Foundation, 2010). However, since rates of HIV are increasing rapidly in African-Americans and women in the south (US DHHS, CDC, NCHSTP, & APIDS, 2002), this overestimation may provide insight into patterns of service utilization and demand in the area among the subgroups that are disproportionately affected by HIV at this time in the epidemic.

This analysis was intended to document the patterns of and overall demand for social services among PLWHIV in Alabama, as represented by the combination of those survey participants who reported receiving services and those who reported needing services. This is a crucial first step in assisting service providers in clustering their services and in predicting which of their clients will likely require specific services. However, additional research should be conducted to further support agency leaders and policy-makers in determining next steps in the provision of care. For example, this investigation was not adequately powered to determine what differences, if any, exist among those who have received services and those who need the service but have not received it. Future studies of larger samples should examine the extent to which the population of those who report a need for a specific service fall into one of three categories: (1) those who need the service and cannot obtain it because the service is not available in the community; (2) those who need the service and cannot obtain it because the service does exist but they experience problems of access (e.g., transportation, funding); or (3) those who need the service and could get it, because the service is available and accessible. Each of these possibilities has distinctly different implications for community intervention and action.

Similarly, although this investigation was limited to an examination of cross-sectional data, there is some evidence that provision of some of these social services is associated with subsequent engagement in medical care (Lo, MacGovern, & Bradford, 2002). Additional research should examine the efficacy of social service provision as an intervention to increase engagement in medical care and adherence to medical recommendations.

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