

Research Article

Use of Informal Support as a Predictor of Home- and Community-Based Services Utilization

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Abstract

Objectives: Home- and community-based services (HCBS) help older adults remain living safely in their homes by delaying or preventing the need for institutionalization. This analysis is guided by the Andersen Behavioral Model of Health Services Use to examine the association between informal support and use of HCBS.

Method: Health and Retirement Study data from 2011 and 2012 are used in the bivariate analyses and multivariate logistic regression models to examine differences in HCBS utilization among extremely vulnerable older adults who have informal caregivers and those who do not.

Results: For extremely vulnerable older adults who report difficulties with any instrumental or basic activities of daily living, use of HCBS is not strongly associated with access to informal caregivers. However, for this same population of extremely vulnerable older adults, those who live alone have roughly 3 times the odds of using any HCBS compared to those who do not live alone.

Discussion: Among already vulnerable older adults, this study revealed that living alone is an important enabling factor of the Andersen Behavioral Model as applied in HCBS research. Further investigation is needed to see if more resources should be allocated to senior centers and local providers to identify vulnerable older adults who live alone and may have unmet needs.

Keywords: Activities of daily living, Living alone, Social support

The majority of older adults prefer to remain in their homes and “age-in-place” allowing them to retain their independence and social ties to the community (Binette & Vasold, 2018; Burbank & Keely, 2014). However, due to physical, mental, or emotional conditions that often develop as people age, not all older adults can remain in their homes without some level of help or assistance. Home- and community-based services (HCBS) are designed to help older adults remain in their homes by providing them with a variety of programs and services to help them meet their daily needs. These services include meal preparation and delivery, transportation to doctor appointments and grocery stores, and general help around the home and are usually

provided by a lead agency within a state such as a county’s department of human services or an Area Agency on Aging (Centers for Medicare & Medicaid Services, 2019).

Yet not everyone who could benefit from HCBS are receiving them. Sonnega, Robinson, and Levy (2017) estimate that in 2011 approximately 3 million people (5.7%) of the population aged 60 and older used traditional HCBS, such as home-delivered meals, transportation services, and chore services. According to the Kaiser Family Foundation’s annual state survey, about 791,000 older adults and adults with physical disabilities are enrolled in a Medicaid Section 1915(c) waiver program (Musumeci, Chidambaram, & O’Malley Watts, 2019). These waiver programs provide a

variety of services such as case management, homemaker, and personal care to help older adults and adults with disabilities remain in their homes and communities. Another program, the Older Americans Act (OAA), funds HCBS such as home-delivered meals, congregate meals, and adult day care for 2.7 million adults aged 60 years and older (Administration for Community Living, 2018a). While some people may receive HCBS through both a Medicaid waiver program as well as through the OAA via their local Area Agency on Aging, this rough total of 3.4 million people using HCBS is less than half of the approximate 7.8 million older adults living in the community who report having 1–2 limitations in activities of daily living (ADLs) (Centers for Medicare & Medicaid Services, 2016). Among the community-living older adults receiving help with any ADL or IADL (instrumental activity of daily living), about one-third get help with two or more ADLs, which is often the level at which individuals may be eligible for institutional care (Kaye, Harrington, & LaPlante, 2010). Given the severity of ADL limitations (e.g., difficulty with eating, bathing, toileting), these community-based older adults are either getting the assistance they need from elsewhere or going without.

Several studies have examined why vulnerable older adults who could potentially benefit from HCBS do not access these services. Some studies found that older adults did not know about available programs, they were reluctant to use programs, programs were too expensive, or programs were not available in their communities (Casado, van Vulpen, & Davis, 2011; Hong, 2006). Other studies found that HCBS were used less by older African Americans and Hispanics than Whites possibly due to lack of awareness of the programs, language barriers, low health literacy, or limited financial resources (Greenwood, Habibi, Smith, & Manthorpe, 2015; Herrera, George, Angel, Markides, & Torres-Gil, 2013; Lehning, Kim, & Dunkle, 2013). Some studies found older adults did not want to be considered burdensome, they did not want to involve outsiders, and/or they did not want to lose control of their lives (Greenwood et al., 2015; Lindquist, Ramirez-Zohfeld, Forcucci, Sunkara, & Camerson, 2018). Further research found that older adults' utilization of HCBS was influenced by whether they lived in the community or in senior housing with services as well as residential transitions between communities and long-term care facilities (Chen & Berkowitz, 2012; Ewen, Washington, Emerson, Carswell, & Smith, 2017).

Another practical reason older adults may not use HCBS is that they have an informal support network comprised of family, friends, neighbors, and informal groups that provide them with unpaid assistance on a daily or weekly basis. It is estimated that in 2010, there were 5.5 million adults over the age of 70 in the United States receiving some sort of informal support from family and friends (Friedman, Shih, Langa, & Hurd, 2015). That estimate is still much less than the 7.8 million older adults living in the community who report having 1–2 limitations in ADLs (Centers for Medicare

& Medicaid Services, 2016), but that could be due to an underestimate of reported caregivers. What is less apparent, however, is whether there is a clear demarcation of people who have informal support networks and therefore do not need HCBS, and those who access HCBS because they do not have a support network. The literature offers support for both possibilities.

The current study expands on the work of Sonnega and colleagues (2017) by further examining the complex role informal caregivers/helpers play in the utilization of HCBS among older adults. While Sonnega and colleagues (2017) analyzed the characteristics of older adults who use traditional HCBS, such as home-delivered meals and transportation services, as compared with older adults who use other HCBS, such as tax preparation services and exercises classes, or no HCBS at all, this paper examines the question of whether having informal support is a mitigating factor to using HCBS among frail older adults who are “extremely vulnerable,” defined as having “fair” or “poor” self-reported health status and living near or below the federal poverty level (FPL; i.e., below 200% FPL). In sum, we are interested in better understanding if vulnerable older adults who use HCBS do so because they lack an informal support network.

Conceptual Framework

This study draws upon the Andersen Behavioral Model of Health Services Use to explain the use of HCBS by older adults (Andersen, 1995, 2008). This model has guided a number of investigations about service use of older adults. In one example, the Andersen Behavioral Model (1995) was used to look at racial and ethnic differences in nursing home and community-based services use among older adults (Wallace, Levy-Storms, Kington, & Andersen, 1998). Also, Robison, Shugrue, Fortinsky, and Gruman (2014) were guided by Andersen Behavioral Model that encompassed individual-level (e.g., gender) and environmental-level factors (e.g., birth cohort) to explore the unique roles of birth cohort and gender on planning for use of long-term services and supports.

The Andersen Behavioral Model can account for previously established factors of service use, such as age, marital status, and health status (Sonnega et al., 2017; Gaeta, 2017), and the model can be used to isolate the role of informal support in service use among older adults. The model suggests that service utilization is a function of (a) predisposition to use services, (b) factors that enable (or impede) use of services, and (c) need for services. Predisposing factors are characteristics of the individual that are preexisting and may influence the individual's behavior related to service use (e.g., sociodemographic characteristics). Enabling factors are resources that may facilitate or be a barrier to using services (e.g., social and economic resources). Need factors include an individual's perceived and objectively measured need for services (e.g.,

health status). The current investigation is guided by the Andersen Behavioral Model (1995, 2008) and uses related key variables in the Health and Retirement Study (HRS) to operationalize predisposing (i.e., age, gender, marital status, race and ethnicity, education), enabling (i.e., living alone, informal support, Medicaid status), and need factors (i.e., number of ADLs and IADLs, number of chronic conditions, cognitive impairment).

Method

Data Source and Analytic File

The HRS is a nationally representative, longitudinal study that tracks the economic, social, and health characteristics of Americans aged 50 years and older. The HRS includes off-year data collections to capture additional data from various subsamples of all HRS respondents as well as experimental modules that are randomly administered to 1/10th of the survey population. Details are provided in [Sonnega and colleagues \(2014\)](#). The HRS is sponsored by the National Institute on Aging and is conducted by the University of Michigan.

This analysis combines two samples from different components of the HRS: (a) HRS 2011 Health Care Mail Survey (HCMS) ($n = 7,649$), and (b) HRS 2012 Core Experimental Module ($n = 2,097$). Each of these samples include questions about our outcome of interest, use of HCBS, as well as important measures as guided by the Andersen Behavioral Model (1995, 2008). Combining these two samples provides the opportunity to analyze comprehensively the use of HCBS among frail older adults living in the community.

The HRS 2011 HCMS includes two questions that capture “senior services” respondents have ever used and/or currently use. These services include Meals on Wheels, other food or nutrition services, transportation services, financial counseling, help with filing taxes, help with Medicare or other health insurance benefits, legal counseling or helpline, elder abuse counseling or helpline, supportive services for caregivers, adult day care/respite care, services for individuals with Alzheimer’s or other dementia, chore services, help finding caregivers, help finding volunteer opportunities, exercise classes, continuing education or recreation classes, use of the local senior center, other social activities, and an “other” category where the person could specify the other service.

The HRS 2012 Core included the experimental module “Utilization of Home-and Community-Based Services, and Life Space” which measured use of HCBS arranged or provided by a senior center or other community organization in the past 2 years. In order to maximize information about the use of HCBS among the 2,097 respondents in the Experimental Module Sample, we merged in one additional question from the HRS 2012 Core on “Use of free or subsidized meals (such as ‘Meals on Wheels’) delivered to the respondent’s home in the past two years.”

Most covariate information was merged with outcome variables from both samples using files created by the RAND Corporation (Health and Retirement Study, 2018; RAND, 2018). Since the HRS 2011 HCMS was administered in an off-year, covariate information from the HRS 2010 Core was used. For respondents who participated in both samples ($n = 745$), we used covariate information from HRS 2012 Core. Our key covariates of interest for this analysis are enabling factors for informal support. We used a continuous measure for number of residents in the household to construct an indicator of living alone (i.e., households with one individual), or otherwise. Given the key informal caregiving role of children for older adults, we used information on proximity to children as an additional measure of access to informal support, with categories for “no children,” “co-resident,” “within 10 miles,” and “more than 10 miles.”

HRS data collection procedures only measure information about helpers for respondents reporting functional limitations. In order to appropriately classify respondents who do not report any functional limitations on helper variables, we constructed a category for “No difficulties with ADLs/IADLs.” The distinction between helper types was constructed using information about the relationship between helper(s) and respondent and whether or not any helper(s) was paid to provide care. Formal care includes paid help and help from an “organization,” “employee of institution,” or “professional.” Informal care includes unpaid help from relatives or others. Lastly, we used continuous measures for hours and days of care from all helper(s) in the past month to construct categories with meaningful cut points for interpretation. Days categories include “no days,” “one day per week or less,” “more than one day per week but not daily,” and “daily.” Hours categories were constructed using common conceptions of part-time and full-time work, including “no hours,” “less than 20 hours of care per week,” “20 to 40 hours of care per week,” and “more than full-time care (40 or more hours of care per week).”

The outcome variable of “Any HCBS” was created over several steps. HRS 2011 HCMS respondents were classified as “yes” for use of any HCBS if they reported *ever* receiving or *currently* receiving senior services of any kind. HRS 2012 Core Experimental Module respondents were classified as “yes” for use of any HCBS if they reported receiving HCBS of any kind in the past 2 years. Respondents who were surveyed in both samples were classified as “yes” for use of any HCBS if they met criteria described above for either sample. Among the 9,001 unique respondents in the merged analytic file, a total of 1,495 respondents (16.6%) reported using any HCBS.

Analytic Sample

Older adults with a range of economic and health backgrounds are included in the HRS. The population of

interest in this analysis was older adults who most closely match those who receive HCBS through the OAA. Research has found that older Americans who benefit from OAA HCBS are often older, less healthy, and have more functional limitations compared with the older population overall (Barrett & Schimmel, 2010). We hypothesized that this group of older adults would benefit most from using HCBS as a means to remain living in the community (Kaye et al., 2010). The selected sample of “extremely vulnerable older adults” ($n = 713$) are defined as respondents who self-reported “fair” or “poor” health status AND live near or below the FPL (i.e., below 200% FPL). This subpopulation includes only those older adults who are most vulnerable based on both health status and poverty.

Analysis

We used weighted, bivariate tests to detect differences between HCBS users and nonusers in terms of predisposing, enabling, and need factors. We used weighted, multivariate regression models to examine the association between informal support and use of HCBS, adjusting for other covariates. Analytic sample sizes for the bivariate and multivariate analyses were less than 713 due to missing data on use of HCBS and/or covariates. All p values were assessed for statistical significance at the .05 significance level. Pearson χ^2 goodness-of-fit tests were used to assess each multivariate regression model for lack of fit. The total number of observations, used to fit the regression model, and p value for the Pearson χ^2 goodness-of-fit test are provided in the column heading for each of the models. Additionally, sensitivity analyses were performed by fitting two alternative specifications for each regression model. We fit a weighted model including all noninstitutionalized respondents in the subpopulation without restricting to individuals aged 60 and older, to examine if similar regression results persisted with a more general sample of respondents including those below the OAA age threshold of interest. We also fit the weighted model using only a subset of traditional OAA services that included nutrition services, transportation services, chore/homemaker services, and case management services, to examine if similar regression results persisted when including only the core services of the OAA. Covariates that continued to be significant in the alternatively specified regression models demonstrated a robust association with use of HCBS.

Results

Bivariate Results

The bivariate analysis tested for differences between “extremely vulnerable” older adults who received any HCBS and older adults who did not receive HCBS. [Supplementary](#)

[Table 1](#) has the total unweighted sample sizes by level of HCBS use. [Supplementary Table 2](#) provides results of the bivariate analysis using the full sample of older adults, for reference and comparison. Overall, results of the bivariate analysis show that HCBS users and nonusers are very different in terms of informal support. Older adults who receive any HCBS are more likely to live alone (56%) when compared to older adults who do not receive HCBS (33%). Additionally, HCBS users are more likely to have helper(s) of any type that assist with performing ADLs/IADLs and receive more total days and hours of informal care from all helpers in the past month when compared to nonusers of HCBS. Distance from nearest child is the only informal care variable that is nonsignificantly different for HCBS users and nonusers. Informed by the bivariate results, the multivariate regression analysis includes measures of informal support for living alone, presence of helper(s), type of helper(s), and amount of informal care but not distance from nearest child.

In addition to differences in terms of informal care, HCBS users and nonusers differed significantly on predisposing, enabling, and need factors. Predisposing factors show that HCBS users are more likely than nonusers to be older, single female, Black non-Hispanic, and not currently working. Enabling factors show that HCBS users are more likely than nonusers to have less financial wealth, live near or below poverty, and be covered by Medicaid. Need factors show that HCBS users are more likely than nonusers to be in fair or poor health, have a cognitive impairment, and report a greater number of functional limitations and chronic conditions. Based on these results, all three dimensions of the Andersen Behavioral Model appear to be meaningfully related to use of HCBS among older adults and are controlled for in the multivariate regression analysis.

Multivariate Regression Results

The multivariate regression analysis examined the association between measures of informal support and use of HCBS among older adults, while controlling for the influence of predisposing, enabling, and need factors. [Table 1](#) provides results for two multivariate logistic regression models. Two models were fit for the “extremely vulnerable” population, one model for all “extremely vulnerable” respondents (i.e., Model 1) and one model for only “extremely vulnerable” respondents with difficulties performing any IADLs or ADLs (i.e., Model 2). We fit Model 2 to only respondents with difficulties performing any IADLs or ADLs, because only this subgroup is asked about presence of any helper(s) and the amount of informal care they receive from any helper(s). HRS respondents who report no difficulties with IADLs or ADLs skip these questions in the HRS Core Questionnaire. [Table 1](#) presents model coefficients expressed as odds ratios with 95% confidence intervals. [Supplementary Table 3](#) provides results of the

Table 1. Multivariate Regression Results Testing for HCBS Use Among Extremely Vulnerable Older Adults

Covariate	Model 1: all respondents (<i>n</i> = 601, <i>p</i> = .203)		Model 2: only respondents who report difficulties performing any IADLs/ADLs (<i>n</i> = 340, <i>p</i> = .922)	
	Odds ratio	95% CI	Odds ratio	95% CI
Enabling factors—informal support				
Live alone	2.218**	1.237–3.975	3.067**	1.403–6.706
Any helper				
No difficulties with ADLs/IADLs (ref—Model 1)	—	—	N/A	N/A
Any difficulties, no helper (ref—Model 2)	1.213	0.625–2.352	—	—
Any difficulties, has helper(s)	2.100*	1.004–4.392	1.867	0.981–3.553
Total help days in past month, 0–155	N/A	N/A	1.002	0.988–1.015
Enabling factors—other				
Medicaid recipient	1.671*	1.102–2.535	1.196	0.697–2.051
Predisposing factors				
Age, in years	1.023	0.997–1.050	1.023	0.989–1.059
Gender and marital status				
Single male (ref)	—	—	—	—
Married male	0.372*	0.159–0.872	0.312	0.082–1.190
Married female	0.722	0.304–1.714	0.43	0.134–1.382
Single female	1.094	0.660–1.814	0.744	0.304–1.817
Race/ethnicity				
White non-Hispanic (ref)	—	—	—	—
Black non-Hispanic	1.61	0.939–2.758	2.21	1.001–4.876
Other non-Hispanic	1.23	0.501–3.019	2.268	0.687–7.482
Hispanic, any race	1.083	0.510–2.298	1.342	0.574–3.137
Education				
High school graduate or above	1.364	0.841–2.212	1.303	0.765–2.222
Currently working	1.208	0.481–3.036	0.85	0.157–4.586
Need factors				
Number of ADLs, 0–6	1.054	0.873–1.273	1.057	0.858–1.302
Number of IADLs, 0–5	0.921	0.720–1.178	0.964	0.752–1.236
Number of Nagi limitations, 0–12	1.027	0.911–1.157	1.003	0.842–1.195
Number of chronic conditions, 0–8	1.035	0.878–1.219	1.165	0.950–1.428
Cognitive impairment	2.173*	1.197–3.945	1.394	0.718–2.704

Note. ADLs = activities of daily living; FPL = federal poverty level; HCBS = home- and community-based services; IADLs = instrumental activities of daily living. **p* < .05. ***p* < .01.

multivariate analysis using the full sample of older adults, for reference and comparison.

Results from the regression analysis provide inconclusive evidence that access to informal support acts as a mitigating factor in utilization of HCBS. Having helper(s) is positively and statistically significantly associated with use of HCBS in Model 1 (odds ratio = 2.100, 95% CI = 1.004–4.392), but not in Model 2 (odds ratio = 1.867, 95% CI = 0.981–3.553). Amount of informal caregiving, as measured by total days of help provided by all helpers in the past month, shows no association with use of HCBS in either model.

There is, however, strong evidence for the positive association between living alone and use of HCBS, after adjusting for the influence of predisposing, enabling, and need factors. This association is statistically significant in all models in the main analysis and all models in the

sensitivity analysis (results not shown). The magnitude of the association is largest among extremely vulnerable older adults who report difficulties with any IADLs or ADLs (Model 2). Within this subpopulation, older adults who live alone have 3 times the odds of using any HCBS compared to older adults who do not live alone, adjusting for other covariates. Overall, evidence for the positive association between living alone and use of HCBS is robust across various subpopulations of older adults.

Discussion

The purpose of this study was to understand if having access to informal support is associated with a lower likelihood of accessing HCBS among frail older adults. Using the Andersen Behavioral Model (1995, 2008) as a guide and with a focus on extremely vulnerable older adults,

results indicated that among older adults who report difficulties with any ADL or IADL, having access to informal support is not significantly associated with utilizing HCBS. While we hypothesized the odds of using HCBS would be higher for older adults who need help with ADLs or IADLs, but do not get help, the data did not strongly support this. Thus, in not finding a relationship between helper and use of HCBS, our findings concur with [Sonnegg and colleagues \(2017\)](#) in that having a helper does not appear to play a mitigating factor in the use of HCBS. What we found instead, was that regardless of having a helper, older adults who lived alone have roughly 3 times the odds of using any HCBS compared to those who do not live alone.

The unexpected finding that older adults who live alone are more likely to use HCBS came through in all of our bivariate and multivariate analyses. Given that the population we are examining are extremely vulnerable, this finding suggests that not only are these older adults accessing HCBS due to their unmet health needs, they may also be accessing the programs and services to combat social isolation and loneliness as a result of living alone. The use of HCBS to address social isolation is beyond what our study can address here, but it is a topic that warrants further consideration ([Hudson, 2017](#); [Ryerson, 2017](#)).

Since we know that living alone is one predictor of nursing home admission ([Cai, Salmon, & Rodgers, 2009](#); [Gaugler, Duval, Anderson, & Kane, 2007](#)), it is important that we have a better understanding of how the population receiving HCBS compares to the general population of older adults. In the United States, approximately 28% (14.3 million) of adults aged 65 and older lived alone in 2018. They represented 34% of older women and 21% of older men ([Administration for Community Living, 2019](#)). Among OAA clients receiving HCBS, the percentage of older adults living alone varies by program. In 2018, 58% of home-delivered meal clients, 51% of congregate meal clients, 60% of case management clients, 74% of homemaker clients, and 65% of assisted transportation clients lived alone ([Administration for Community Living, 2018b](#)). Thus, the implications of our findings are that a higher percentage of older adults receiving HCBS live alone than the general population indicating they have an increased likelihood of entering a nursing home if their needs are not adequately met.

The present analysis brought up another important question about the difference between the informal support provided by a live-in caregiver (i.e., spouse or partner) compared to support provided by family and friends who live elsewhere. Does the difference in the proximity of the caregiver place vulnerable older adults at greater risk of nursing home placement due to unmet needs? This difference is critical to understanding how best to support this extremely vulnerable population who want to remain living in their homes and communities. OAA programs and services are available to all older adults over age 60; they

are, however, targeted to reach the most vulnerable older adults including those who live alone. Given the findings of this research, should more resources be allocated to senior centers and local providers to identify vulnerable older adults living alone in their communities? More research is needed to better understand how the effects of living alone differ based on health status, place of residence, and access to support network.

The finding that extremely vulnerable older adults who live alone are more likely to use services is quite significant in advancing the development of theory related to older adults' use of services. While there is an increasing focus on social isolation and its consequences, there has been less focus on the role of social isolation in service use. Also using HRS data, [Shaw and colleagues \(2017\)](#) operationalized social isolation among older adults by combining social network and interaction with respondents' Medicare claims data (i.e., inpatient, outpatient, skilled nursing facility use). Their results showed that there are greater Medicare expenses for socially isolated older adults compared to similar older adults with better social connections. The current study, paired with the work by [Shaw and colleagues \(2017\)](#), demonstrates the importance of expanding the conceptualization of Andersen's enabling resources on service use to account for the effects of living alone as a form of social isolation.

One methodological limitation of the study is the small sample sizes in the regression analyses, which contribute to low precision for some model estimates. For example, the coefficient for "Any difficulties, has helper(s)" is statistically significant in Model 1; however, the confidence interval for the point estimate ranges from a lower bound only slightly greater than the null value to an upper bound over 4 times the null value (odds ratio = 2.100*, 95% CI = 1.004–4.392). These coefficients should be interpreted with caution and careful consideration to the size of confidence intervals. This limitation was partly addressed by conducting sensitivity analysis and fitting additional regression models using larger subpopulations of older adults (not shown) to confirm the results.

Conclusion

In seeking to understand the role of informal support on HCBS use among extremely vulnerable older adults, this study revealed that an additional vulnerability to include in our theoretical conceptualization was the strongest indicator of HCBS use: living alone. As found in prior research, low income older adults who live alone and have difficulties with ADLs are at an increased risk for not having their needs met ([Desai, Lentzner, & Weeks, 2001](#)). In order to support older adults who wish to remain living in the community, further investigation and expansion of theoretical considerations is needed to identify the differences between live-in support (e.g., spouse or partner) and support from

outside the home as well as the role of social connectedness among older adults who live alone.

Supplementary Material

Supplementary data are available at *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences* online.

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Author Contributions

K. N. Robinson and H. L. Menne planned the study, supervised the data analysis, and wrote the paper. R. Gaeta performed all statistical analyses and contributed to revising the paper.

Conflict of Interest

None reported.

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