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Development and Preliminary Validation of the Older Adult Service Usage Assessment

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Abstract

This study provides information on the development and factor scaling, validity, and reliability of a newly developed community service utilization measure (Older Adult Service Usage Assessment-OASUA). Analyzes indicate the OASUA can be used to assess current perceived community service use and satisfaction, as well as providing an indication for future service use and potential service needs with older persons. Additional data collection sites should be identified and a broader sample obtained so as to confirm the psychometric properties of the instrument in conjunction with further development of the OASUA.

Keywords

Older Adult, Home and Community-Based Services, Rural Aging

1. Introduction

Information about the use and perceived future availability of Home and Community-Base Services (HCBS) for the rural older adult is limited [1]. HCBS is a federally funded program that is designed to meet the needs of people who prefer to obtain long-term care services and supports in their home or community, rather than in an institutional setting [2]. Rural older adults continue to experience less access (e.g., limited transportation, longer travel distances, etc.) to community-based services [3] [4] [5]; are socially isolated [6], and are less aware of potential services leading to lower overall service use [7]. It is this lack of access, social isolation, and limited service awareness and subsequent use that leaves rural older adults without adequate care and services that might promote overall health and a higher quality of life.

Recognizing needs of rural older adults are constrained by a lack of knowledge on factors impacting rural aging in place [8], the overall goal of this project was

to develop an instrument for gathering information about HCBS. This needs assessment, which identifies older adults' HCBS use and satisfaction, and possible future service use along with perceived needs, was developed by the current author and was used to survey older adults in rural western Nebraska and throughout the Eastern Plains of Colorado. These regions were selected for their proximity to one another, similar distance to urban services, and comparable population density. As a result, data from 176 rural older adult participants were used to measure the Older Adult Service Usage Assessment's (OASUA) reliability, content and construct validity (convergent and discriminant), and factor structure.

1.1. HCBS Measurement Need

The study builds upon current Affordable Care Act's Medicare and Medicaid innovative initiatives (March 2016) that call for population-specific, effective long-term home-based services [9]. What is known about HCBS use comes primarily from institutional reports rather than individual measurement [10]. If there is individual measurement, data rely on caregiver reports to assess services and needs of older rural people [11], does not focus on older adults [12], or measures only home care satisfaction [13].

Using the need component of the Social Behavior Model [14], the current study focused on the perceived service needs of older persons in rural communities for the development of the OASUA. An earlier version of this model [15], which was originally not adapted for older people, was tested by Sonnega *et al.* (2016). In this first national HCBS service use study, the researchers found many common HCBS services were not available in the 19 community-services identified. The HCBS user in this national study included individuals who were female, low SES, black or Hispanic minority status, on Medicaid, over the age of 75, and not employed. Creation of an instrument that measures a more comprehensive number of individual community-based services used by rural older adults was necessary.

1.2. Older Adult Service Usage Assessment (OASUA)

The OASUA was developed to measure current and future perceived need and expressed use of HCBS programs along with service satisfaction. The OASUA generates information based on dimensional HCBS use. Survey items were derived from Area Agency on Aging (AAA) fliers of services available within these rural areas. Operating from a foundation of perceived and expressed needs, the first 43 service items assess current or recent service use on a 6-point scale (*i.e.*, 0 = *no use*, 1 = *single use*, 2 = *multiple uses but not weekly*, 3 = *weekly*, 4 = *twice a week*, 5 = *more than twice week*) along with service satisfaction (*i.e.*, 0 = *not satisfied*, 1 = *limited satisfaction*, 2 = *some satisfaction*, 3 = *moderately satisfied*, 4 = *very satisfied*, 5 = *extremely satisfied*). The second 43 items measure perceived future service utilization (*i.e.*, *no use*, *single*, *use*, *multiple uses but not weekly*, *weekly*, *twice a week*, *more than twice week)* and potential future needs (*i.e.*, *not*

needed, *limited need*, *some need*, *moderate need*, *very needed*, *extremely needed*). This scoring format allows for a possible indication on awareness of service availability and frequency of specific service use.

Scoring of the OASUA. The easily scored structure of the OASUA allows for individual or group identification on the total number of services used to date, frequency of specific services, satisfaction with prior services, total number of services predicted for future use, potential frequency of future identified services, and the perceived need of specific services required for the future. Access to services is indicated with completion of the OASUA along with the potential for additional prompts to be added. Self-administration time for the OASUA is approximately 10-15 minutes. Individuals with lower literacy rates may require additional time or assistance. Anyone with literacy below the 6th grade or who use English as a second language should be provided assistance. The benefits of using the OASUA include ease of use, speed of completion, ease of scoring, and applicability to a wide range of older adults. The OASUA is a measure that focuses on service use and is a valid and reliable instrument. The OASUA generates information based on dimensional HCBS use (e.g., current expressed service use and satisfaction, and future possible use and perceived needs). It appears to also be reliable, demonstrates content validity (service use), while also measuring convergent validity and discriminant validity.

As a result of the service rural service gap for use and perceived availability of services, the intent of the study was to (a) develop an appropriate assessment of service use for older adults; and (b) evaluate reliability, validity, and factor loadings for the OASUA. Development of such an instrument has the potential for promoting healthy community-based living through measurement of community services used by older adults either through a single point of measure or by identifying service use changes over time.

2. Methodology

2.1. Procedures

Power analysis indicated a minimum of 88 participants from each of the two regions was required to complete a comparison at an alpha of 0.05. A total of 176 face-to-face interviews were conducted with comparison groups of older adults residing in rural eastern Colorado and western Nebraska. The Older Americans Act of 1965 defined an older adult as any individual over the age of 60. This Act provides guidelines for service eligibility for older adults [16]. Through interview or guided self-completion, which allows for definitions to be provided and probes to be used, the OASUA was administered. Participants were obtained via convenience sampling, which has been found to be an effective manner to obtain entrance into difficult to obtain communities such as older adults aging in place. For the current study, participants were excluded if they did not meet the age or region criteria. If required, cognitive impairment would have been assessed using the Mini Mental State Examination with a cut-off score of 20/30 or below needed for participation. No such assessment was mandated. Information was

provided on specific services of interest with the completion of each survey.

2.2. Western Nebraska and Eastern Plains of Colorado Participants

Participants were selected from the western portion of Nebraska and from the Eastern Plains of Colorado because minimal research on older adult service use has been completed for these regions. Limited prior research from rural Nebraska and Colorado suggests the importance on the development of a needs assessment and the identification of older adult HCBS perceptions. The current study is significant in that it occurred in two states with similar rural regions that are experiencing modest success for HCBS and with an older population (65+) growing faster than state growth rates in the same demographic [17] [18]. All counties that are part of the current study have a health professional shortage, are eligible for Center for Medicaid Services-Rural Health Clinics Program, and for Federal Office of Rural Health Policy grant programs [19]. Additionally, no data for Colorado are included in the Medicaid Analytical Extract (MAX) for either the 2008 or 2011 extract and each state's HCBS program differs in its eligibility criteria, funding amounts, and possible service use [1]. The development of this instrument, which specifically measures the frequency of current service use and satisfaction, and future use and perceived service needs, was created for initial use in these two areas.

Participants included 117 females (66.5%) and 59 males (33.5%) who were primarily Caucasian (n = 169, 96.0%) residing in rural western Nebraska or the Eastern Plains of Colorado. Participant average age was 75.77 years (SD = 7.57, range = 60 - 96 years) with 22.2% having a bachelor's degree or higher level of education. Those who completed the measure were generally married at the time of interview (56.8%) as compared to those who were widowed (26.7%), divorced (14.2%), or never married (2.3%). The primary source of income was Social Security (84.7%), 35.8% indicated having only one source of income, 30.7% reported two sources, 24.4% stated three sources, 6.3% four sources, and 2.8% reported five sources (e.g., social security, savings, investments, pension, and land). No differences between the comparison groups were indicated for age (Nebraska, M = 76.2; Colorado, M = 75.2), $F(1, 174) = 0.838$, $\eta = .374$, $p = 0.36$. Between group differences were identified for gender, $\chi^2(1, N = 176) = 4.30$, $p = 0.03$, education, $\chi^2(10, N = 176) = 21.59$, $p = 0.02$, marital status, $\chi^2(3, N = 176) = 9.84$, $p = 0.02$, and income of participants, $\chi^2(12, N = 176) = 26.88$, $p = 0.01$.

3. Results

3.1. Exploratory Factor Analysis

Exploratory factor analysis (EFA) was used to analyze the OASUA using principal components extraction with varimax (orthogonal) rotation. On initial running, the variable of *case management* demonstrated no current or potential future participant use; therefore it was eliminated. With this variable removed, 37-items were extracted meeting the criteria of an eigenvalue of 1.0 or greater,

which accounted for 88.8% of the total variance. The first item loading accounted for 15.9% of the variance. All items factored into the theoretical components without significant cross loading. Results are shown in Table 1.

The scree test, factor eigenvalues, and amount of variance accounted for yielded four factors, which were all greater than 0.40. Sixty items loaded onto factor one. Most of the 60 items, with the exception of *current health insurance use*, related to services participants' felt would be used in the future or were items of future perceived need. Ten items loaded onto the second factor. These items were related to participants' current use and service satisfaction in the areas of service referral (*i.e.*, adult protection services, consumer affairs and legal counsel, counseling and support groups, information and referral, elder abuse consultation) and need for durable medical equipment. The third factor loaded 10 items. Items centered on current and future older adult activities (*i.e.*, senior center activities, religious programs, senior meal sites); as well as, the perceived need for information on grandparents raising grandchildren. Older adult activities and program availability may have relevant connections for those interviewed. Eleven items loaded onto the fourth factor. These items were health related (*i.e.*, health insurance satisfaction and perceived future need; current use, satisfaction with, and perceived future need for hearing and vision clinics; current home health care use; current use and satisfaction with respite care; and current and future use of veteran services) or dealt with future use of senior low rent housing/non-subsidized. Senior low rent housing may be part of this last factor with the recognition that as overall health declines financial consequences follow. A decline in finances directly impact type and quality of housing.

3.2. Reliability of the OASUA

Cronbach's α was used to assess the internal consistency of responses within the OASUA. The scale demonstrated overall excellent reliability (Cronbach's α = 0.95), with subscale reliabilities ranging from 0.76 to 0.94 (current services used: 0.76; service satisfaction: 0.77; future service utilization: 0.92; future perceived service needs: 0.94).

3.3. Validity of the OASUA

The convergent validity of OASUA was examined by considering the relationship between the subscales. The rationale being that current or recent service use would predict future service use and perceived needs, as well as satisfaction with services experienced. Using a Pearson's Product-Moment Correlation, the total number of current services used correlated with total perceived future service use, $r(173) = 0.59$, $p < 0.001$, and with total number of future perceived service needs $r(174) = 0.43$, $p < 0.001$). A correlation was evident between future service utilization and future perceived needs $r(173) = 0.84$, $p < 0.001$). Discriminant validity was apparent with the total number of services used not being related to total reported service satisfaction $r(166) = -0.03$, $p > 0.05$). The number of the services used was correlated with increases in future use and perceived need.

Table 1. Factor loadings for exploratory factor analysis with varimax rotation of OASUA.

Item	Factor 1	Factor 2	Factor 3	Factor 4
Health, Education and Wellness (AAA, Wellness Line) (F)	0.698			
Housing (Assisted Living) (F)	0.687			
Caregiver Program (e.g., Alzheimer's Association) (F)	0.686			
Home Health Care (F)	0.678			
Information and Referral (F)	0.675			
Caregiver Program (e.g., Alzheimer's Association) (PN)	0.659			
Hospice & Palliative Services (F)	0.654			
Nursing Home (PN)	0.647			
Transportation (F)	0.634			
Elder Abuse (F)	0.630			
Outpatient Physical & Occupational Therapy (F)	0.619			
Adult Day Care (PN)	0.614			
Adult Day Care (F)	0.611			
Respite Care (F)	0.605			−0.491
Physician (F)	0.602			
Outpatient Physical & Occupational Therapy (PN)	0.601			
Options for Long-term Care (F)	0.591			
Financial Assistance (F)	0.590			
Chore Service Program (F)	0.589			
Personal Alert System (F)	0.586			
Hearing & Vision Clinics (F)	0.581			
Home Health Care (PN)	0.580			
Housing (Assisted Living) (PN)	0.580			
Nursing Home (F)	0.576			
Counseling & Support Groups (PN)	0.575			
Information (PN)	0.575			
Energy Assistance (F)	0.573			
Options for Long-term Care (PN)	0.569			
Hospital (F)	0.568			
Elder Abuse (PN)	0.562		−0.424	
Health, Education and Wellness (AAA, Wellness Line) (PN)	0.561			
Consumer Affairs (PN)	0.561	0.417		
Food (Food stamps, Grocery Shopping & Delivery) (F)	0.561			
Durable Medical Equipment (PN)	0.561			
Hospice & Palliative Services (PN)	0.558			
Counseling & Support Groups (F)	0.556	0.495		
Chore Service Program (PN)	0.554			
Health Insurance (Benefits Counseling, Medicaid, Medicare) (F)	0.548			
Senior Nutrition Program (Meals on Wheels, Food Bank) (F)	0.530			
Transportation (PN)	0.530			
Ombudsman (PN)	0.528			
Emergency Room (F)	0.527			
Hospital (PN)	0.526			
Senior Nutrition Program (Meals on Wheels, Food Bank) (PN)	0.516			

Continued

Housing Subsidized (PN)	0.511			
Ombudsman (F)	0.511			
Durable Medical Equipment (F)	0.505			
Legal Assistance (F)	0.503			
Physician (PN)	0.492			
Housing Subsidized (F)	0.476			−0.420
Recreation Center (PN)	0.469			
Personal Alert System (PN)	0.468			
Respite Care (PN)	0.464			
Adult Protective Services (F)	0.445			
Health Insurance (Benefits Counseling, Medicaid, Medicare) (U)	0.437			
Employment Services (PN)	0.431			
Financial Assistance (PN)	0.425			
Energy Assistance (PN)	0.418			
Adult Protective Services (PN)	0.405			
Elder Abuse (U)		0.820		
Consumer Affairs (U)		0.820		
Adult Protective Services (U)		0.816		
Consumer Affairs (S)	0.424	0.810		
Counseling & Support Groups (U)		0.810		
Adult Protective Services (S)	0.431	0.784		
Consumer Affairs (F)	0.491	0.618		
Information (U)	0.484			
Information (S)	0.418			
Durable Medical Equipment (S)	0.417			
Senior Centers (S)			0.610	
Senior Meal Site Locations/Specific to Seniors (S)			0.603	
Senior Centers (U)			0.602	
Senior Centers (F)			0.583	
Senior Meal Site Locations/Specific to Seniors (U)			0.561	
Senior Centers (PN)			0.468	
Senior Meal Site Locations/Specific to Seniors (F)			0.458	
Grandparents Raising Grandchildren (PN)			−0.488	
Religious Programs (U)			0.431	
Religious Programs (F)			0.426	
Veteran Services (U)				−0.606
Veteran Services (F)	0.420			−0.574
Respite Care (U)	0.412			−0.549
Respite Care (S)	0.431			−0.501
Health Insurance (Benefits Counseling, Medicaid/Medicare) (PN)	0.401			0.483
Hearing & Vision Clinic (PN)	0.477			0.481
Health Insurance (Benefits Counseling, Medicaid, Medicare) (S)				0.461
Health & Vision Clinic (U)				0.458
Housing Seniors Only, Non-subsidized/Low-Rent (F)	0.402			−0.442
Home Health Care (U)	0.412			−0.435
Health & Vision Clinic (S)				0.426

Note: F = Future Use; PN = Perceived Need in Future; S = Satisfaction; U = Current or Recent Use.

Service satisfaction did not correlate with future service utilization $r(165) = -0.14$, $p > 0.05$, but was negatively correlated with future perceived needs $r(173) = -0.20$, $p < 0.01$). This finding suggests lower current satisfaction with service use has the potential to be related to higher future perceived service needs.

4. Discussion

This study was intended to develop and examine the psychometric properties of the OASUA with an older adult population. The EFA indicated a four-factor solution. The OASUA is an 86-item instrument designed to measure current service use and satisfaction (43-items), as well as future service use and potential service needs (43-items) supporting older adults. The OASUA provides an indication of awareness on service availability along with frequency of use. Case management as a variable choice was eliminated from the OASUA for two reasons: no participant indicated use of this service, which was removed from the EFA and following an ensuring review case management was not listed as one of the 19 services indicated in a national survey for HCBS availability [10]. These same researchers listed tax preparation assistance in the list of 19 services and as a result this variable was added to the OASUA keeping it an 86-item measure for future investigation. Table 2 provides a subsequent revision of the OASUA.

Findings from this study give support for the need component of the Social Behavior Model and recognition for older adults' informed choices in service awareness and potential utilization as mandated by the Older Americans Act Reauthorization of 2016 (https://www.congress.gov/bill/114th-congress/senate-bill/192). One method to promote informed choice is the measurement of HCBS service availability and use by individuals programs are intended to serve. Measurement of the older adult's aging experience as tied to service utilization and frequency of use, along with a needs assessment is of particular importance in rural settings. The limited availability and access found in rural areas is recognized as some of the most significant barriers to the use of services and long-term care [7]. The OASUA can be used as a single point of measure or to evaluate changes in community-based service use, satisfaction, future service use, and/or perceived needs over time. Older adults should be recognized as the consumers they are and who have the ability to evaluate community-based services.

5. Limitations and Conclusion

The intent of this research was to develop a service needs assessment. Several limitations exist: 1) the current study included a predominantly Caucasian rural sample; 2) participants for this study resided in two different states; however, the service offerings were similar in number and structure allowing for thoughtful comparison; 3) all collected data was self-report and interpreted as such; 4) convenience sampling was used to identify the population of interest. The sampling method employed was chosen because HCBS person level data was only available to employees of the AAA. A random sample was approached by randomly

Table 2. Older adult service usage assessment.

(Previous/Current Perceived Needs)
Which of the following programs are you currently using or have used. Please indicate the frequency of your use of a program (0: not used; 1: single use; 2: multiple uses but not weekly; 3: weekly; 4: twice a week; 5: more than twice a week) and your satisfaction with the program (0: not satisfied; 1: limited satisfaction; 2: some satisfaction; 3: moderately satisfied; 4: very satisfied; 5: extremely satisfied). If a program has not been used then a satisfaction score is not required.
____ ____Adult Protection Services
____ ____Chore Service Program/Homemaker services (Formal)
____ ____Caregiver Program (Alzheimer's Association)
____ ____Grandparents Raising Grandchildren
____ ____Legal Assistance
____ ____Ombudsman (advocate for person in long-term care)
____ ____Options for Long-term Care (Who provided these options:_____)
____ ____Senior Nutrition Program
____ ____Senior Meal Site Locations
____ ____Community Partners
____ ____Adult Day Care
____ ____Consumer Affairs/Legal
____ ____Counseling/Mental Health & Support Groups
____ ____Durable Medical Equipment
____ ____Dental Care
____ ____Elder Abuse
____ ____Emergency Room/Urgent Care
____ ____Employment Services
____ ____Energy Assistance (Low Income Energy Assistance, LEAP; Weatherization)
____ ____Financial Assistance (County Dept. of Human Services, Social Security)
____ ____Food (Food Stamps, Grocery Delivery, Meals on Wheels, Nutrition Sites, Food Bank)
____ ____Health Education & Wellness (AAA, Community Wellness Line)
____ ____Health Insurance (Benefits Counseling, Health Insurance Counseling, Medicaid, Medicare)
____ ____Hearing & Vision Clinics
____ ____Home Health Care (Medical and Non-medical)
____ ____Hospice & Palliative Services
____ ____Hospital & Clinics
____ ____Housing (Subsidized)
____ ____Housing (Seniors Only Non-Subsidized, Low rent)
____ ____Housing (Assisted Living)
____ ____Information & Referral (AAA, Catholic Charities, Senior Resource Services, United Way)
____ ____Nursing Homes
____ ____Outpatient Physical & Occupational Therapy
____ ____Personal Alert Systems
____ ____Physician Care
____ ____Religious Programs
____ ____Respite Care (Day)
____ ____Senior Centers
____ ____Recreation Centers
____ ____Tax Preparation Assistance
____ ____Transportation (Medicaid medical transportation, Bus, Cabs, Friends, Family)
____ ____Veteran Services
____ ____Volunteer Opportunities (Where do you volunteer:_____)

Continued

(Future Perceived & Expressed Needs)

Which of the following programs are you interested in using in the future. Please indicate the frequency of possible use (0: no use; 1: single use; 2: multiple uses by not weekly; 3: weekly; 4: twice a week; 5: more than twice a week) and perceived need of the program (0: not needed; 1: limited need; 2: some need; 3: moderate need; 4: very needed; 5: extremely needed).

____ ____Adult Protection Services

____ ____Chore Service Program/Homemaker Services (Formal)

____ ____Caregiver Program (Alzheimer's Association, etc.)

____ ____Grandparents Raising Grandchildren

____ ____Legal Assistance

____ ____Ombudsman

____ ____Options for Long-term Care (Who can provide these option:_____)

____ ____Senior Nutrition Program

____ ____Senior Meal Site Locations

____ ____Community Partners

- ____ ____Adult Day Care
- ____ ____Consumer Affairs/Legal
- ____ ____Counseling/Mental Health & Support Groups
- ____ ____Durable Medical Equipment

____ ____Dental Care

____ ____Elder Abuse

____ ____Emergency Room/Urgent Care

____ ____Employment Services

____ ____Energy Assistance (Low Income Energy Assistance, LEAP; Weatherization)

____ ____Financial Assistance (County Dept. of Human Services, Social Security)

____ ____Food (Food Stamps, Grocery Delivery, Meals on Wheels, Nutrition Sites, Food Bank)

____ ____Health Education & Wellness (AAA, Community Wellness Line)

____ ____Health Insurance (Benefits Counseling, Health Insurance Counseling, Medicaid, Medicare)

____ ____Hearing & Vision Clinics

____ ____Home Health Care (Medical and Non-medical)

____ ____Hospice & Palliative Services

____ ____Hospital & Clinics

____ ____Housing (Subsidized)

____ ____Housing (Seniors Only Non-Subsidized, Low rent)

____ ____Housing (Assisted Living)

____ ____Information & Referral (AAA, Catholic Charities, Senior Resource Services, United Way)

____ ____Nursing Homes

____ ____Outpatient Physical & Occupational Therapy

____ ____Personal Alert Systems

____ ____Physician Care

____ ____Religious Programs

____ ____Respite Care (Day)

____ ____Senior Centers

____ ____Recreation Centers

____ ____Tax Preparation Assistance

____ ____Transportation (Medicaid medical transportation, Bus, Cabs, Friends, Family)

____ ____Veteran Services

____ ____Volunteer Opportunities (Where do you volunteer:_____)

sampling facilities where older adults congregate to create a sampling frame of places. From the randomly selected settings list, individuals were sampled-as they self-selected whether to participate; and 5) measurement of service use via survey method is less reliable when a single assessment is obtained. Multiple measurement points would allow for increased accuracy and the examination of linear relationships. As a result of these limitations, further data collection should occur within other states and with more diverse sampling. Despite these limitations, the OASUA is an instrument that could be administered multiple times throughout a calendar year to improve participant recall and provide for a more complete picture of service use and allowing for measurement of predictive validity. With multiple measurements, changes in perceptions can be identified.

In conclusion, OASUA can be used to gauge current service use and frequency, overall satisfaction with services; as well as perceptions of future service use and frequency, and potential need for services in the future. The OASUA may help to inform stakeholders and potential insurers on the service needs in these two states along with other rural areas. This measure may provide community-based service providers with an increased awareness of region specific current and future service use and needs for rural older adults and the associated satisfaction. As the population continues to age, bettering HCBS use through effective communication of service availability may improve the overall aging experience. Sustained measurement of service use and perceived needs could play a role toward furthering healthy aging and informing funding policy with regard to service cost effectiveness. Future research may want to ascertain additional information regarding service use management strategies (e.g., telemedicine, family and extended support) and additional community-based services (e.g., tax preparation assistance, etc.) thereby allowing for an adjustment to ineffective individual approaches. Findings from the current study may not be generalizable to all rural areas; however, understandings gained may be transferable to regions with similar services and circumstances.

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