ACL Administration for Community Living

IssueBRIEF

AoA Administration on Aging

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Older Americans Act Title III-C Nutrition Services Program: **Examining the Prevalence of Chronic Conditions among Congregate Meal Participants**

BACKGROUND

Many older adults live with chronic health conditions, which are illnesses that usually last a year or more, are generally incurable, and require ongoing medical help (AARP Chronic Care 2009; U.S. Department of Health and Human Services 2010). These conditions can severely limit activities of daily living and substantially increase the costs older adults incur for disease management and support services (AARP Chronic Care 2009; Lehnert et al. 2011). Most chronic conditions, including diabetes and hypertension—which were prevalent among 28 and 59 percent of Medicare beneficiaries in 2016, respectively—can lead to complications or hospitalizations if not properly managed (CMS Chronic Conditions Data Warehouse 2016). Additionally, the prevalence of many conditions among older adults has increased over recent years (Hung et al. 2011; Ward and Shiller 2013). Given that adults ages 65 and older are projected to account for more than 20 percent of the population by 2030, the share who experience chronic conditions is cause for concern (U.S. Census Bureau 2018).

The Older Americans Act Title III-C Nutrition Services Program (NSP) is the largest program in the United States that provides prepared meals to older adults in need. Overseen by the Administration on Aging (AoA) within the Administration for Community Living of the U.S. Department of Health and Human Services, the NSP strives to promote the health and well-being of, and reduce hunger and food insecurity among, older adults by providing congregate and home-delivered meals and a range of services—including nutrition education and counseling, opportunities for social engagement, and health promotion and disease prevention services.

Research on the NSP has focused on the program's effects on outcomes such as food security, diet quality, socialization, and health events, but little is known about the prevalence of chronic health conditions among older adults who receive congregate or home-delivered meals (Frongillo and Wolfe 2010; Mabli et al. 2017, 2018; Racine et al. 2012; Thomas et al. 2015, 2018; Wright et al. 2015). Some research has shown that chronic conditions are highly prevalent among NSP participants (Huffman et al. 2017; Kleinman and Foster 2011; Mabli et al. 2018). However, there is less information on the prevalence of specific and multiple chronic conditions among participants, how the prevalence changes over time, and whether the prevalence differs by participant characteristics or by the availability of health promotion services by NSP agencies.

Using a combination of survey data describing participants' personal characteristics and circumstances, agency-level data indicating health services offered, and longitudinal Medicare administrative records indicating chronic conditions based on submitted healthcare claims, this issue brief assesses prevalence of chronic conditions observed over approximately a 2.5-year period for a sample of nationally representative congregate meal participants. It assesses the prevalence of multiple conditions, identifies 10 common conditions, and assesses the incidence of these conditions over a one-year period. It also examines how these rates differ by participants' income, living arrangements, and geography, and whether they receive meals from agencies that offer health promotion activities. This brief is the first

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of two issue briefs about the chronic conditions experienced by NSP participants. A second brief focuses on the same set of conditions for home-delivered meal participants. Together, these issue briefs can help the AoA, local program administrators, and policymakers better understand the types of conditions experienced by participants in order to improve the ways in which health promotion and disease prevention activities are tailored to older adults in need.

METHODS

The data used in the analysis were collected as part of the Title III-C NSP Evaluation (Mabli et al. 2017, 2018). The evaluation examined the effectiveness of the NSP in reducing older adult food insecurity and improving health and health care use. The original evaluation sample consisted of 596 congregate meal participants. Limiting the sample to participants with valid Medicare claims information resulted in 316 participants in the analysis sample.[1] Some analyses also compared the prevalence of chronic conditions among older adults who received meals from agencies that reported offering health promotion activities and, therefore, limited the sample further to 260 participants with non-missing agency-level data.

The outcomes analyzed include whether the individual had a chronic condition in the nine months preceding the 2015–2016 survey interview (referred to as the baseline period), or in the 12 months after the interview (referred to as the follow-up period). These observation periods were selected based on Medicare data availability. Chronic conditions were identified using individual hierarchical condition categories (HCCs), which are Medicare claims-based conditions that are routinely defined as part of the algorithm for creating a risk score (HCC score) for Medicare beneficiaries.

To examine changes in common chronic conditions over time, the research team mapped individual HCCs into 10 conditions, which were selected based on the role of individual behavior in affecting both the risk of their occurrence, and—to some degree—in exacerbating or reducing their severity. The 10 conditions are: hypertension; hyperlipidemia; diabetes with or without complication (diabetes); vascular disease with or without complications (vascular disease); congestive heart failure (CHF); acute myocardial infarction, unstable angina and other acute ischemic heart disease, or angina pectoris (IHD); chronic obstructive pulmonary disease (COPD); morbid obesity; other significant endocrine and metabolic disorders (endocrine disorder); and cerebral hemorrhage, or ischemic or unspecified stroke (stroke). Participants were coded as having a chronic condition if claims submitted during the observation period indicated the presence of a corresponding HCC.[2,3]

Subgroups were based on participants' personal characteristics as well as agency characteristics and consisted of household income, living arrangement, geography, and whether the agency provided health promotion activities. Individuals are referred to as living in lower-income households if their monthly income (calculated from the NSP outcomes survey as a percentage relative to the federal poverty threshold) was less than the median value in the sample (128 percent for congregate meal participants). Individuals living in higher-income households had income-to-poverty ratios that were greater than or equal to the median value. Living arrangement was determined using the NSP outcomes survey, and was defined as living alone versus living with others. Geography was determined by linking the participants' geocoded address data to the Economic Research Service food environment atlas (Economic Research Service, 2016). These data contain the urban/rural status of the population-weighted center of each census tract based on the 2010 census. An indicator of whether the individual attended an agency that provided health promotion activities was determined by matching participants to the Local Service Provider survey.

FINDINGS

Chronic conditions among congregate meal participants

More than 85 percent of congregate meal participants had at least one chronic condition in the baseline period, and 73 percent had multiple chronic conditions (Table 1). On average, participants had about 3 conditions. Over the following year, there was a sizable increase in the prevalence and number of chronic conditions among participants, with nearly 92 percent of participants having at least one condition and more than half (52 percent) having four or more conditions in the follow-up period. The average number of conditions increased to about 4 conditions.

[1] Because Medicare claims, which identify specific events such as a hospital stay or emergency department visit, are not available for beneficiaries enrolled in managed care plans such as Medicare Advantage, the research team limited the evaluation to those who were enrolled in fee-for-service (FFS) Medicare (known as Original Medicare). Among the individuals with a valid Medicare beneficiary identification number, 64 percent of participants were FFS beneficiaries for either all or part of the 2015–2017 analysis period and were included in the analysis.

[2] If a condition was observed in a claim in the baseline period, that participant was coded as having that condition in the following follow-up period as well. Each of the chronic conditions was included because they have long-term effects; even if it did not show up on a subsequent medical record, it is still an important part of recent medical history.

[3] All analyses were weighted to account for the sample design and to adjust for differences in nonresponse propensities across respondent groups. The weights make the estimates in this article nationally representative of the population of congregate meal participants at the time of the survey.

TABLE 1: Number of chronic conditions experienced by congregate meal participants

	Chronic conditions		Select chronic conditions*	
Number of chronic conditions	Baseline	Follow-up	Baseline	Follow-up
0	13.9%	8.3%	19.0%	9.7%
1	13.2%	8.9%	11.9%	11.9%
2	12.8%	11.1%	23.8%	16.1%
3	24.1%	19.6%	25.6%	31.2%
4 or more	36.1%	52.0%	19.7%	31.0%
Average number of chronic conditions	2.9	3.7	2.2	2.9

Source: Medicare claims and enrollment data matched to AoA NSP outcomes survey, 2015–2016, weighted data.
Note: All units are percentages of the total sample, unless otherwise noted.
Tabulations are based on unweighted sample sizes of 316 congregate meal participants.
*The set of select chronic conditions includes the following 10 conditions: hypertension, hyperlipidemia, diabetes, vascular disease, CHF, IHD, COPD, morbid obesity, endocrine disorder, and stroke.

The prevalence of the set of 10 chronic conditions was also high. More than 80 percent of congregate meal participants had at least one of these chronic conditions and 69 percent had multiple chronic conditions in the baseline period. On average, participants had about 2 of these chronic conditions. As with the larger set of conditions, there was a large increase in the prevalence and number of conditions over the following year. About 90 percent of participants had at least one condition in the follow-up period and the average number of these chronic conditions increased to about 3 conditions.

The 10 chronic conditions of interest had a wide range of prevalence among congregate meal participants (Table 2). Hypertension, the most common condition, was experienced by nearly 75 percent of participants. Hyperlipidemia and diabetes were also common, experienced by 58 and 36 percent of participants, respectively. About one in six participants had vascular disease (17 percent) or CHF (15 percent), while IHD, COPD, morbid obesity, endocrine disorder, and stroke were each experienced by fewer than 7 percent of participants.

The prevalence of each chronic condition increased in the follow-up period. The percentages of participants with vascular diseases and CHF each rose by more than 10 percentage points (17 to 28 percent and 15 to 26 percent, respectively). Hyperlipidemia increased in prevalence by 9 percentage points to more than two thirds of participants (68 percent). The share of participants with hypertension, the most common condition, rose to more than 82 percent of participants, while the share with diabetes increased from 36 to 42 percent. Some of the less common conditions also had large increases. COPD more than doubled in prevalence, increasing from 6 percent to more than 14 percent. IHD, morbid obesity, endocrine disorder, and stroke also had proportionally large increases in prevalence. Another way to look at changes in the extent of chronic conditions is to examine their incidence, defined as the percentage of participants without a chronic condition in the baseline period who experienced the condition in the follow-up period. Based on Table 2, about 49 percent of participants without a chronic condition in the baseline period had a new chronic condition during the follow-up period. About a third of participants (32 percent) were newly diagnosed with hypertension and 22 percent with hyperlipidemia. Vascular disease and CHF were each newly diagnosed for 13 percent of participants. An additional 9 percent of participants were diagnosed with diabetes.

TABLE 2: Number of chronic conditions experienced by congregate meal participants

Chronic condition	Baseline	Follow-up	Increase
Any condition	81.0%	90.3%	9.3
Hypertension	73.9%	82.2%	8.4
Hyperlipidemia	58.4%	67.5%	9.1
Diabetes	36.0%	41.8%	5.8
Vascular disease	17.3%	28.2%	10.9
CHF	15.1%	25.6%	10.6
IHD	6.5%	10.1%	3.6
COPD	6.2%	14.2%	8.0
Morbid obesity	4.9%	8.5%	3.6
Endocrine disorder	2.8%	4.9%	2.1
Stroke	2.2%	4.9%	2.7

Source: Medicare claims and enrollment data matched to AoA NSP outcomes survey, 2015–2016, weighted data.
Note: All units are percentages of the total sample, unless otherwise noted.
Tabulations are based on unweighted sample sizes of 316 congregate meal participants.
*Estimates equal the percentage point increase between percentage of participants with the condition during the baseline period and the follow-up period.

Chronic conditions by participants' income, living arrangements, and geography

The prevalence of chronic conditions differed according to participants' household income, but generally did not differ by living arrangements or geography. Having a chronic condition was less likely for participants in households with lower income than for those in households with higher income (79 versus 83 percent; Table 3). In particular, hypertension and hyperlipidemia were more prevalent among those with higher income than those with lower income. Although the likelihood of having a chronic condition was similar for participants who lived alone and for those who lived with others (about 81 percent), vascular disease was much more prevalent among individuals who lived with others (23 versus 14 percent). Finally, the likelihood of having a chronic condition was similar for participants who lived in an urban area (81 percent) and those who lived in a rural area (82 percent), although diabetes and vascular disease were more prevalent in urban areas.

The incidence of chronic conditions differed according to participants' household income, living arrangements, and geography. Nearly 40 percent of participants in households with lower income acquired hypertension, compared to 24 percent of those in households with higher income (Table 4). Those in higher-income households were twice as likely to experience onset of diabetes (12 versus 6 percent) and about three times as likely to be diagnosed with IHD (6 versus 2 percent). Participants who lived alone were more likely to experience a new chronic condition than participants who lived with others. The largest differences for these groups were for vascular disease (8 versus 23 percent), hyperlipidemia (25 versus 17 percent), and hypertension (30 versus 36 percent). Finally, participants who lived in rural areas were much more likely to acquire hypertension (44 versus 27 percent), but less likely to have new incidences of less common conditions, including IHD (3 versus 4 percent), COPD (7 versus 9 percent), and morbid obesity (2 versus 4 percent).

TABLE 3: Prevalence of select chronic conditions experienced by congregate meal participants, by household income, living arrangement, and geography

Chronic condition	Total (N=316)	Individuals in lower-income households (N=138)	Individuals in higher-income households (N=178)	Individuals who live alone (N=184)	Individuals who live with other family members (N=132)	Individuals who live in an urban area (N=165)	Individuals who live in a rural area (N=151)
Any condition	81.0%	78.7%	83.2%	80.8%	81.3%	80.6%	81.9%
Hypertension	73.9%	71.5%	76.3%	75.0%	72.3%	73.7%	74.4%
Hyperlipidemia	58.4%	56.6%	60.2%	57.4%	60.0%	58.8%	57.4%
Diabetes	36.0%	36.2%	35.9%	35.5%	36.9%	38.0%	31.0%
Vascular disease	17.3%	16.7%	17.9%	13.5%	23.1%	19.1%	12.5%
CHF	15.1%	17.9%	12.2%	13.5%	17.5%	15.9%	13.0%
IHD	6.5%	6.0%	7.0%	5.4%	8.2%	5.7%	8.7%
COPD	6.2%	5.8%	6.7%	6.1%	6.4%	5.5%	8.1%
Morbid obesity	4.9%	9.0%	0.8%	5.9%	3.3%	5.5%	3.2%
Endocrine disorder	2.8%	1.9%	3.8%	2.4%	3.5%	3.2%	1.9%
Stroke	2.2%	2.1%	2.4%	2.6%	1.6%	2.1%	2.6%

Source: Medicare claims and enrollment data matched to AoA NSP outcomes survey, 2015–2016, weighted data.
Note: All units are percentages. Estimates represent the percentage of participants that experienced the chronic condition during the baseline period, among the individuals in each group.
Tabulations are based on unweighted sample sizes of 316 congregate meal participants.

Chronic conditions by agencies' provision of health promotion activities

Local service providers in the national aging network offer a variety of services to improve the health and nutrition of the older adults they serve. These include nutrition screening, assessment, and education services, as well as health promotion and disease prevention services. In 2015, 63 percent of local service providers offered health promotion services (Mabli et al. 2015). This section describes the prevalence and incidence of chronic conditions for older adults who received meals from a local service provider that offered health promotion activities, and for older adults who received meals from a provider that did not offer these activities.

Slightly less than 80 percent of congregate meal participants who received meals from agencies that provided health promotion activities experienced one or more select chronic conditions (Table 5). The most common conditions, each experienced by more than 10 percent of participants, were hypertension, hyperlipidemia, diabetes, vascular disease, and CHF. Compared to participants who received meals from agencies that provided health promotion activities, participants who received meals from agencies that did not provide these activities were slightly more likely to have a chronic condition at baseline (81 versus 78 percent). For several of the most common chronic conditions, such as vascular disease and CHF, participants had similar prevalence of specific conditions regardless of the type of agency from which they received meals. However, participants who received meals from agencies that provided health promotion activities were less likely to have hypertension and diabetes than those who received meals from agencies that did not provide these activities.

The percentage of participants who acquired chronic conditions was generally similar regardless of whether participants received meals

TABLE 4: Incidence of new select chronic conditions experienced by congregate meal participants, by household income, living arrangement, and geography

Chronic condition	Total (N=316)	Individuals in lower-income households (N=138)	Individuals in higher-income households (N=178)	Individuals who live alone (N=184)	Individuals who live with other family members (N=132)	Individuals who live in an urban area (N=165)	Individuals who live in a rural area (N=151)
Any condition	48.9%	—	—	—	—	—	—
Hypertension	32.0%	39.1%	23.5%	29.5%	35.5%	27.4%	44.3%
Hyperlipidemia	21.8%	22.3%	21.3%	24.6%	17.2%	20.8%	24.2%
Diabetes	9.0%	5.7%	12.4%	7.8%	10.9%	9.2%	8.6%
Vascular disease	13.2%	12.9%	13.4%	7.5%	22.9%	13.2%	13.0%
CHF	12.5%	12.9%	12.1%	14.1%	9.8%	12.7%	11.8%
IHD	3.9%	2.0%	5.7%	4.2%	3.4%	4.3%	2.6%
COPD	8.5%	9.3%	7.7%	9.2%	7.4%	9.2%	6.7%
Morbid obesity	3.8%	5.0%	2.8%	5.8%	0.9%	4.4%	2.4%
Endocrine disorder	2.1%	1.7%	2.6%	2.5%	1.5%	2.1%	2.2%
Stroke	2.7%	2.8%	2.7%	1.5%	4.7%	2.9%	2.4%

Source: Medicare claims and enrollment data matched to AoA NSP outcomes survey, 2015–2016, weighted data.
Note: All units are percentages. Estimates represent the percentage of participants that experienced the chronic condition during the follow-up period, among the individuals in each group that did not experience the chronic condition during the baseline period.
Tabulations are based on unweighted sample sizes of 316 congregate meal participants. Sample sizes by cell vary based on the prevalence of the condition during baseline.
"—" Incidence in the "any condition" row not presented due to small sample sizes among subgroups.

from agencies that provided health promotion activities. An exception was that the incidence of hypertension was almost three times larger for participants who received meals from agencies that provided health promotion activities, compared to those who received meals from agencies that did not (45 versus 17 percent).

DISCUSSION

The findings in this issue brief indicate that the prevalence of chronic conditions is high among congregate meal participants. Most (85 percent) participants had at least one condition in the baseline period, and about three quarters (73 percent) had multiple chronic conditions. The three most common conditions in this analysis were about 10 to 15 percentage points more prevalent among NSP participants than among all Medicare beneficiaries, including hypertension (74 versus 59 percent), hyperlipidemia (58 versus 46 percent), and diabetes (36 versus 28 percent) (CMS Chronic Conditions Data Warehouse 2016).

Many participants experienced onset of new chronic conditions over a one-year period, indicating that changes over time in the prevalence of chronic conditions are common. The congregate meal participants showed large (more than 10 percentage point) increases in the prevalence of vascular disease and CHF.

Among participants without a specific chronic condition at baseline, the percentage that acquired a condition was high. Hypertension, hyperlipidemia, and vascular disease had the highest incidence rates among participants. Even though hypertension was already the most common condition before baseline, about a third of congregate meal participants who did not have it experienced it the following year.

TABLE 5: Prevalence and incidence of select chronic conditions experienced by congregate meal participants, by whether agency provided health promotion activities

	Agency provided health promotion activities (N=185)		Agency did not provide health promotion activities (N=75)	
Chronic condition	**Prevalence at baseline**	**Incidence**	**Prevalence at baseline**	**Incidence**
Any condition	78.3%	—	81.0%	—
Hypertension	70.7%	45.4%	77.9%	16.6%
Hyperlipidemia	53.4%	13.8%	57.8%	17.6%
Diabetes	28.9%	9.3%	36.1%	9.5%
Vascular disease	17.6%	14.6%	17.6%	11.7%
CHF	14.6%	11.4%	16.0%	11.8%
IHD	6.0%	4.7%	4.9%	4.3%
COPD	7.2%	8.8%	5.7%	7.4%
Morbid obesity	5.0%	3.7%	1.9%	6.5%
Endocrine disorder	4.2%	0.4%	0.6%	2.6%
Stroke	2.0%	2.5%	0.0%	1.1%

Source: Medicare claims and enrollment data matched to AoA NSP outcomes survey, 2015–2016, and Local Service Provider survey, 2014, weighted data.
Note: All units are percentages. Prevalence at baseline measures the percentage of participants that experienced the chronic condition during the baseline period, among the sample specified. Incidence measures the percentage of participants that experienced the chronic condition during the follow-up period, among the individuals in each group that did not experience the condition during the baseline period.
Tabulations are based on unweighted sample sizes of 185 congregate meal participants who received meals from agencies that provided health promotion activities and 75 congregate meal participants who received meals from agencies that did not provide health promotion activities. Sample sizes by cell vary based on the prevalence of the condition during baseline.
"—" Incidence in the "any condition" row not presented due to small sample sizes among subgroups.

The prevalence of chronic conditions differed according to participants' household income (having a chronic condition was less likely for participants in households with lower income than for those in households with higher income), but generally did not differ by living arrangements or geography. There were notable differences in incidence rates according to congregate meal participants' personal characteristics and circumstances, however. Participants who lived in households with lower income were more likely to acquire hypertension and less likely to acquire diabetes and to be diagnosed with IHD than those in households with higher income. Hypertension was also more likely to develop among individuals who lived with other family members or in rural areas. Local service providers serving meals to these populations should consider targeting non-meal services toward them to help at-risk participants manage these conditions.

The percentage of participants who had a chronic condition was similar among participants who received meals from agencies that did not provide health promotion activities and participants who received meals from agencies that did. However, a high percentage of participants who received meals from agencies that provided health promotion activities had chronic conditions. The incidence of hypertension was almost three times larger for participants who received meals from these agencies compared to those that received meals from agencies that did not provide these services. Agencies that provide these services might be more likely to serve populations with higher rates of illness; these findings underscore the need to identify best practices of how to manage these illnesses.

Nutrition screening and health promotion activities could be especially important to help participants manage conditions

such as hypertension, hyperlipidemia, and diabetes. These three conditions can all lead to cardiovascular complications or mortality, yet many older adults are unaware of their conditions, do not receive treatment, or do not properly control these conditions (McDonald et al. 2009). Program administrators might find it helpful to tailor services and education to particular conditions that increase the most over time, including hypertension, hyperlipidemia, vascular disease, and CHF. Differences between groups could reflect underlying differences in overall health or access to care. Services should be designed to target groups at high risk of developing certain conditions; for example, information about hypertension might be especially effective in sites serving more rural areas. More work is needed to identify the need for targeted health promotion and disease prevention activities.

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