

Housing and Health: Health Status and Functionality of Older Adults in Public Housing

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Abstract

Objective: We sought to describe the self-reported health status, chronic disease burden, and functional status of elderly public housing residents in Asheville, North Carolina.

Methods: The 2013 Medicare Health Outcomes Survey (v. 2.5) was administered face-to-face to an incentivized, convenience sample of dual-eligible seniors. Self-reported health status, disease burden, functionality, and patient-physician interaction were reported; relationships between indices were examined at the bivariate level using Pearson correlation or Chi square analysis ($p < 0.05$).

Results: Participants were predominantly white (79.8%), female (60.6%), and living alone (72.1%). A small majority (61.8%) reported good to excellent health status; 41.3%-45.2% reported declines in health status over the year preceding the survey. Chronic disease burden was high (defined as ≥ 5 chronic conditions) among 48.1%; hypertension (69.2%), depression symptoms (61.2%), arthritis (55.8%), urinary incontinence (35.6%) and diabetes mellitus (33%) were the most prevalent conditions. Most respondents (64.4%) reported minimal to no functional impairments although many reported problems with walking (48.5%) and chronic pain (30.1%). Relatively few respondents endorsed discussing health conditions with medical providers; 47.1% had discussed falls and 35.7% had discussed urinary incontinence with providers.

Conclusions: Participants reported robust health status and functionality in spite of high chronic disease burden. This optimism and resilience should be harnessed in interventions designed to preserve health and functioning among this population.

Key Words: Dual-eligibility; Elders; Functionality; Health status

Introduction

Residents of public housing have poorer health status than individuals of similar socioeconomic status who do not live in public housing.¹⁻⁴ A number of health issues disproportionately affect public housing residents including depression, hypertension and Human Immunodeficiency Virus infection. Public housing residents have higher levels of stress and fear of violence.¹⁻⁶ Residents of public housing have worse self-reported health status than similar non-publicly housed individuals; Parsons and colleagues demonstrated that those having lived in public housing at any point during an 11 year period were twice as likely to report either fair or poor health status than those who had not lived in public housing.³

Although the specific mechanisms of disproportionately poor health status among public housing residents are unknown, residents of public housing have cited physical properties of the housing developments including building quality, a lack of resources for health promotion activities, and a lack of social activities and connectedness among residents as barriers to optimal health.^{2,4}

Functional status is an important predictor of health and mortality in older adults and symptom burden has serious implications for disability trajectory in this population.^{3,7-9} Older adults living in public housing have been shown to have a higher prevalence of fatigue, a symptom associated with disability, than community dwelling elders.³ Furthermore, unmet mental health needs have contributed to disability in older adults living in public housing.⁵⁻⁶

Individuals who are low income and elderly or disabled often qualify to receive benefits from both Medicare and Medicaid. These dually eligible enrollees are high cost beneficiaries for both programs.¹² Dually eligible beneficiaries enrolled in Medicare managed care have higher rates of chronic diseases, depression and chronic pain than other beneficiaries enrolled in Medicare managed care plans.¹³ Dually eligible beneficiaries are more likely to have disabilities and live in poverty than other Medicare beneficiaries and are thus more likely to qualify for publicly subsidized housing.

In 2005, approximately 2 million older adults lived in public housing in the United States (US); this number is increasing as the number of older adults increases.¹¹ Approximately 9.1% of the 44.5 million adults aged 65 years or older (roughly 4 million people) in the US live in poverty and are eligible for housing assistance programs.¹⁰ Thus, older adults living in public housing represent a large and medically vulnerable population that is increasing in number.³

We sought to describe the self-reported health status, chronic disease burden, and functional status of a group of dually eligible, elderly, public housing residents in Asheville, North Carolina in order to further understand the healthcare needs of this high-risk demographic group.

Methods and Materials

Participant Selection

We solicited volunteer participants among residents of two subsidized housing apartment complexes for elderly and disabled adults in Asheville, NC. The researchers enlisted the aid of service coordinators – professional liaisons between the Council on Aging of Buncombe County and the residents of each public housing building – to help facilitate two information sessions in the lobby of each apartment building. During these sessions, residents of the building were informed of the purpose of the research, and were apprised of the financial incentive (a \$10 grocery gift card) for participation. Self-selected participants volunteered to complete a survey. Our goal was to recruit 75 participants; 104 individuals voluntarily completed surveys. This project was approved by our hospital Institutional Review Board.

Survey Instrument

We used the 2013 Medicare Health Outcomes Survey version 2.5 (MHOS), a standardized, interviewer-administered instrument designed to measure the quality of life and functional status of Medicare beneficiaries; use was approved by the National Center for Quality Assurance.¹⁴⁻¹⁵ We used the first 70 of the 72 items, excluding the name of the person completing the survey and household income.

Survey Administration

Survey administration was conducted by interviewers between December, 2013 and March, 2014. Interviewers included five physicians, none of whom were responsible for direct patient-care of the individuals surveyed, one physician's assistant who was engaged in direct patient-care for a small number of individuals surveyed, and two professional service coordinators who were well-known to residents in each. All interviewers reviewed the survey instrument and received instruction in survey administration from the lead researcher prior to performing surveys with participants.

Due to a printing error, the last page of the survey containing demographic information was not administered to 20 (19.2%) participants. All participants received a \$10 grocery gift card for participation.

Data Analysis

Age was calculated by subtracting the year of birth from the year of administration. Body mass index was calculated from self-reported height and weight [(pounds/height²)*703]. The two items from the Patient Health Questionnaire-2 (PHQ-2; #41a and 41b) were summed for the depression score. Positive depression screen was defined as a score ≥ 3 on a 6-point scale.¹⁶

Number of chronic diseases is reported as the sum of affirmative responses to survey items asking if the participant has ever been diagnosed with any of 15 chronic diseases and if the participant has ever experienced accidental leakage of urine. Scores for number of self-reported chronic diseases ranged from 0 to 16.¹⁷

Physical health component (PHC) and mental health component (MHC) scores from the first 12 questions of the survey were scored following standard procedures for the Veterans-Rand 12-Item Health Survey; PHC and MHC responses were transformed to normative scores on a scale of 0-100 with a mean equal to 50 and standard deviation equal to 10.¹⁸

The six items that assessed difficulty with daily activities were scored according to the Katz Index of Independence in Activities of Daily Living (ADL).¹⁹ Scores ranged from 0 to 6 with ≤ 2 indicative of severe functional impairment, 3-4 moderate impairment, 5 minimal impairment, and 6 full functioning.¹⁹

Descriptive data are presented as frequency and percent [n(%)], mean \pm standard deviation (M \pm SD), or median, minimum score and maximum score [Med(min-max)]. Pearson correlation coefficients were calculated in the bivariate analyses of relationships between PCH, MCH, ADL, and PHQ-2 scores and number of chronic conditions.

Participant Debriefing

The research team felt that it was important to share the results of our survey with the participants in order to facilitate development of collaborative partnerships between the research team and community members. As such, the research team hosted one meal in the commons room of each facility in which we provided research participants with a summary of de-identified survey data and discussed the results. Participants shared opinions regarding the causes of survey findings and described ideas for addressing commonly identified health problems in their communities.

Results

The 104 participants were born between 1916 and 1972; ages ranged from 42 to 98 with an average age of 70.3 ± 9.4 years. Three participants (2.9%) completed the survey with assistance from their professional caregiver. The majority of participants who completed the entire survey were white women, aged 65 or older, who were not currently partnered and lived alone. Further, the majority was overweight or obese (see Table1).

Table 1. Participant Characteristics

		N = 104 n (%)
Age	Less than 65 years	24 (23.1)
	65 years or older	78 (75.0)
	Unknown	2 (1.9)

Table 1. Participant Characteristics continued

Sex	Female	63 (60.6)
	Male	41 (39.4)
Race	White	83 (79.8)
	Black	16 (15.4)
	Other	3 (2.9)
	Unknown	2 (1.9)
Hispanic ethnicity		6 (5.8)
English as second language		9 (8.6)
Marital status	Married	9 (8.7)
	Divorced/Separated	54 (51.9)
	Widowed	23 (22.1)
	Single	16 (15.4)
	Unknown	2 (1.9)
Education	Less than High School	15 (14.4)
	High School graduate/GED	24 (23.1)
	College/Post graduate	44 (42.3)
	Unknown	21 (20.2)
Live alone	Yes	75 (72.1)
	With partner/children/relatives	9 (8.7)
	Unknown	20 (19.2)
Caregiver in your home		1 (1.2)
Difficulty getting places	Always	17 (16.3)
	Sometimes	17 (16.3)
	Almost never/never	50 (48.1)
	Unknown	20 (19.2)
		N = 104 n (%)
Blind/Visually impaired		22 (21.2)
Deaf/hearing impaired		16 (15.4)
Body Mass Index	Normal	29 (27.9)
	Underweight	3 (2.9)
	Overweight	37 (35.6)
	Obese	32 (30.8)
	Unknown	3 (2.9)
Smoking status	Every day	15 (14.4)
	Some days	5 (4.8)

Health Status

We assessed participants' overall health status and health status relative to others of similar age and relative to one's self a year ago. The majority (61.8%) of participants reported their current health status as good, very good or excellent. The majority (65.4%) of participants reported their health status compared to others their age as good, very good or excellent. Thirty-seven (35.6%) respondents described their current physical health as about the same as one year ago; 24 (23%) reported their current physical health status as either slightly better or much better than one year ago, while 43 (41.3%) reported their current physical health status as either slightly worse or much worse than one year ago. Forty-seven (45.2%) participants described their mental health status as about the same as one year ago; 29 (27.9%) respondents reported improved mental health (either slightly better or much better) compared to one year ago, while 28 (26.9%) reported either slightly worse or much worse mental health status than one year ago.

The number of days during the past month when physical or emotional health was not good ranged from 0 to 30 days with a median of 5 days for physical health (mean = 10.3 ± 11.3) and 4 days for emotional health (mean = 9.6 ± 11.2). Forty-six (44.2%) reported *not* feeling calm and peaceful some to all of the time, and 29 (28.2%) reported feeling downhearted and blue a good bit to all of the time. Over half [58 (55.8%)] reported not having a lot of energy at least a good bit of the time. The average pain score over the past 7 days ranged from 1 (no pain) to 10 (worst imaginable pain) with a median of 3. The number of days within the preceding month that poor physical or mental health interfered with usual activities ranged from 0 to 30 with a median of 1.5 (mean = 8.2 ± 10.3).

Chronic Disease Burden

The total number of self-reported chronic conditions per participant ranged from 0 to 10 with a median of 4. Just under half [50 (48.1%)] reported 5 or more chronic conditions. The five most prevalent conditions included: 1. Hypertension (HTN) – 69.2%; 2. Depression symptoms – 61.2% and a history of depression – 55.8%; 3. Arthritis (hip or knee and/or hand or wrist) – 55.8%; 4. Urinary Incontinence (UI) – 35.6%; and 5. Diabetes Mellitus (DM) – 33% (see Table 2). Additionally, 2 in 5 reported a fall within the past 12 months.

Table 2. Prevalence of Medical Problems and Diseases

	N	Time Frame	n (%)
Falls	104	Past 12 months	42 (40.4)
Balance/Walking Problems	104	Past 12 months	67 (64.4)
Depression Symptoms*	103	Past 2 weeks	63 (61.2)
Depression Diagnosis	104	Ever	58 (55.8)
Urinary Incontinence (UI)	104	Past 6 months	37 (35.6)
Symptoms	37		
If yes:			
Big problem			13 (35.1)
Small problem			15 (40.5)
No problem			9 (24.3)
Treatment for UI	37	Ever	12 (32.4)
Hypertension	104	Ever	72 (69.2)
Coronary Artery Disease	103	Ever	15 (14.6)
Congestive Heart Failure	103	Ever	11 (10.7)
Myocardial Infarction	104	Ever	14 (13.5)
Other heart conditions	104	Ever	27 (26.0)

Table 2. Prevalence of Medical Problems and Diseases continued

Stroke	104	Ever	10 (9.6)
Emphysema, asthma, COPD	104	Ever	27 (26.0)
Crohn's dx, ulcerative colitis, Inflammatory bowel disease	104	Ever	7 (6.7)
Arthritis			
Hip or knee	104	Ever	49 (47.1)
Hand or wrist			39 (37.5)
Any			58 (55.8)
Osteoporosis	103	Ever	23 (22.3)
Sciatica	104	Ever	34 (32.7)
Diabetes Mellitus	103	Ever	34 (33.0)
Any cancer (CA; not skin)	102	Ever	22 (21.6)
If yes, treatment?:		Ever	
Colorectal CA Tx	20		3 (15.0)
Lung CA Tx	20		2 (10.0)
Breast CA Tx	19		3 (15.8)
Prostate CA Tx	19		3 (15.8)
Other CA TX (not skin)	20		4 (20.0)

Notes. * Score of ≥ 3 on PHQ-2.

Abbreviations. COPD = Chronic obstructive pulmonary disease

Functionality

ADL scores ranged from 0 to 6 with a median of 5. The majority of respondents [67 (64.4%)] reported minimal impairment to full functioning; 24 (23.1%) reported moderate impairment and 13 (12.5%) reported serious impairment. The most impairment was noted in walking [49 (47.1%)], followed by preparing meals [33 (31.8%)], getting in and out of chairs [28 (26.9)], and bathing [26 (25%)]. Few respondents reported problems taking medications as prescribed [9 (8.6%)]. More than one in four people reported their health and/or pain limited their physical and social activities (see Table 3). Slightly less than one in four reported their emotional problems limited their activities.

Table 3. Difficulties and Interference in Daily Activities Due to Health Problems

Serious Difficulties - Yes	N	n(%)
Concentrating, remembering, making choices	102	49 (48.0)
Walking or climbing stairs	103	50 (48.5)
Dressing or bathing	103	24 (23.3)
Doing errands alone	104	36 (34.6)
ADL/IADL Problems – Yes/Unable to do	104	n(%)
Bathing		26 (25.0)
Dressing		18 (17.3)
Eating		5 (4.8)
Getting in or out of chairs		28 (26.9)
Walking		49 (47.1)
Using the toilet		12 (11.6)
Preparing meals		33 (31.8)
Managing money		16 (15.4)

Table 3. Difficulties and Interference in Daily Activities Due to Health Problems continued

Taking medicine as prescribed		9 (8.6)
Health limits activities now – A lot		n(%)
Moderate activities – move a table, vacuum, golf, bowl	104	28 (26.9)
Climbing several flights of stairs	103	40 (38.8)
Health causes problems with work/daily activities in past 4 weeks – Most days/Always		n(%)
Physical health led me to accomplish less	104	34 (32.7)
Physical health limited kind of work/activity	104	34 (32.7)
Emotional health led me to accomplish less	104	23 (22.1)
Emotional health led to less carefulness	103	22 (21.2)
Physical or emotional interfered with social activities	103	27 (26.2)
Pain interferes – Quite a bit/Extremely		n(%)
Normal work (outside and housework)/ past 4 weeks	103	31 (30.1)
Day to day activities/ past 7 days	104	27 (25.9)
Socializing/ past 7 days	104	15 (14.4)
Memory Problems – Most days/Every day		
Interfere with you daily activities	104	15 (14.4)

Abbreviations. ADL = Activities of Daily Living; IADL = Independent Activities of Daily Living

Preventive Screening

Over a third of respondents who reported leakage of urine within the past 6 months had *not* discussed this with a health care provider [10 of 28 (35.7%)]. Likewise, about one in three overall reported *no* discussion of exercise or physical activity with a provider. Less than half reported discussing falls or balance problems [38 (36.5%)], or fall prevention strategies [49 (47.1%)]. Conversely, most women [46 (73%)] and a few men [5 (12.2%)] reported having had a bone density test at some point in their lives.

Relationships

There were significant, moderate, positive relationships between PHC, MHC and ADL scores. Further, there were significant, moderate but negative relationships between these three scores and number of chronic conditions and PHQ-2 scores (see Table 4).

People who reported a fall in the last 12 months were also more likely than those who did not fall to have discussed falls and balance problems with a doctor in the past 12 months: 24 (57.1%) vs. 14 (23.3%); $p=0.001$. However, those who had fallen were not more likely to report that a doctor had intervened to help prevent falls: 25 (59.5%) vs. 24 (40.7%); $p=0.062$.

Table 4. Significant Bivariate Relationships between Scores

	PHC	MHC	ADL	PHQ-2
MHC	0.690			
ADL	0.659	0.479		
PHQ-2	-0.604	-0.787	-0.450	
Number of chronic conditions	-0.577	-0.571	-0.449	0.496

Note. Pearson correlation coefficients; $p=0.0001$.

Abbreviations. PHC = Physical health component; MHC = Mental health component; ADL = Activities of Daily Living; PHQ-2 = Patient Health Questionnaire - 2

Discussion

This research adds to the body of data describing the health and functional status of older adults and disabled adults living in public housing in the United States. Our findings were unexpected: our participants' self-reported health status and functional status were better than anticipated, and yet participants' self-reported chronic disease burden, including depression, and history of falls were higher than comparison groups.²⁰ The finding of robust self-reported health status in mental and physical health domains is significant because a recent study, using national data from MHOS, demonstrated that general self-rated health and health related quality of life were both important predictors of mortality in older adults.²¹

Comparisons to National Data

With respect to self-reported health status, United States population standards for average PHC and MHC scores from the MHOS of 2000-2002 were 39.82 ± 12.2 and 50.08 ± 11.4 , respectively.¹⁵ Our participants' scores were 55.80 ± 29.27 and 60.9 ± 26.98 , respectively. Our average scores were more than a standard deviation higher, reflecting significantly better self-reported health status in both physical and mental health domains. However, there was considerably greater variability in our scores and scores ranged from 0 to 100 for both components, presumably reflective of heterogeneity in the health of participants. Similarly, only 13.5% of our participants met criteria for poor health status – a composite measure computed from MHOS data – compared to 20% of Medicare Managed Care beneficiaries who received the MHOS between 2000-2002.¹⁵ In spite of positive self-reported health status data, when compared with the same national sample of Medicare Managed Care beneficiaries, our participants reported a much higher prevalence of chronic diseases including hypertension, diabetes mellitus, depression, and arthritis (upper and lower extremity), and a higher prevalence of falls.¹⁵

Given likely confounding from socioeconomic status inherent in the comparison between a sample of Medicare beneficiaries and a sample of older adults residing in public housing, we sought to compare our sample to a more socioeconomically similar sample, namely dually eligible beneficiaries. Thus, we compared our sample to data for all dually eligible beneficiaries nationally.²²⁻²³ Our sample was slightly more elderly (60% vs 75%), slightly less racially diverse (26% minorities vs 21.2%), and was comprised of slightly fewer females (69% vs 60.6%) than the national sample.²²⁻²³

According to the Congressional Budget Office report and the Center for Healthcare Strategies, the five most common chronic conditions for all dually eligible beneficiaries in 2009 were diabetes mellitus (29%), COPD (17%), congestive heart failure (15%), dementia (14%) and osteoporosis(10%).²²⁻²³ Our sample reported higher prevalence of diabetes mellitus (33% vs. 29%), COPD (26% vs. 17%), and osteoporosis (22.3% vs. 10%) than all dually eligible beneficiaries in 2009.²²⁻²³ Thus, our sample reported a higher prevalence of common chronic diseases than a nationally representative sample of dually eligible beneficiaries socioeconomically similar to our sample.

Functional Status

Over half (61.7%) of our sample reported minimal impairment to full functioning, and most (71%) of our participants denied many difficulties with ADLs. Nationally representative US data,

available from the National Center for Health Statistics, demonstrate that between 2003 and 2007, 94.3% of adults 65 years old or older reported no limitations in ADLs, and 1.4% of adults 65 years old or older reported limitation in one ADL.²⁴ Further, only 12.2% reported limitations in independent ADLs (IADLs).²⁴ Clearly, our sample was more functionally impaired than a nationally representative sample of US adults, but the national sample was not limited to public housing residents and did not include participants younger than 65 with baseline functional impairment.

Apparent Discrepancy between Chronic Disease Burden and Health Status

Our study population reported better subjective physical and mental health than comparable populations, in spite of bearing a larger burden of chronic disease. The reason for the discrepancy between self-reported health status and actual chronic disease burden among our sample is unclear. However we speculate that our participants' relatively preserved functional status plays a role in this discrepancy. A recent prospective study demonstrated that among a cohort of 492 patients evaluated in a comprehensive geriatric assessment facility in Dublin, Ireland, a patient's self-rated health was strongly influenced by IADL performance capacity.²⁵ Similarly, analysis of data from the 2001 MHOS demonstrated that age and arthritis were most strongly associated with PHC scores, while depressive symptoms and urinary incontinence were most strongly associated with MHC scores; researchers concluded that these chronic conditions exerted effects on overall PCH and MHC scores via their impact on functionality.¹⁵ In our sample, a significant, moderate, positive relationship was seen between PHC, MHC and ADL scores, suggesting that functional status did influence our participant's physical and mental health scores. This does provide objective evidence to substantiate the belief that preserved functional status plays a role in bolstering self-reported health status among our sample.

Another possible explanation for the disparity between self-reported health status and chronic disease burden could be that our respondents were afraid to report perceived poor health status for fear that this might lead to a more restrictive living arrangement; it is possible that a perceived power-differential between survey participants and surveyors could have contributed to such hypothetical concerns.

Limitations

The limitations of this study arise from the fact that we used a relatively small sample of individuals in a single small city. Further, while reflective of the demographics of the public housing residences surveyed, our sample population was less racially and ethnically diverse than comparison groups, including dually eligible people nationally.²¹⁻²² These factors limit the generalizability of our data.

Additionally, individuals administering the survey included professional service coordinators, physicians and a physician's assistant who were known to the survey respondents. While there were very few direct clinical relationships among surveyors and respondents, it is possible that the power differential between respondents and surveyors could have biased participant responses.

Finally, we did not ascertain the insurance status of respondents. While this was intentional and motivated by a desire to protect participant privacy, it does preclude direct comparison to published datasets which are aggregated based on insurance status. Nonetheless, we have drawn conclusions using reasonable comparison groups based on published literature describing the public housing population generally.¹⁻⁴

Conclusions

The self-reported physical and mental health status of the survey population exceeded national averages, as did the respondents' chronic disease burden when compared to similar populations. The reason for the discrepancy between subjective health status and actual chronic disease burden is unclear, but it seems likely that relatively preserved functional status among our respondents was a factor in bolstering subjective health status as evidenced by a moderate positive relationship between total physical and mental health scores and ADL scores. These findings are significant because they illuminate a source of optimism and motivation among residents of publicly-subsidized apartment complexes for elderly and disabled adults, namely functionality. Residents of publicly-subsidized housing complexes for elderly and disabled adults represent a medically high-risk group with a disproportionate burden of chronic disease; interventions designed to address chronic disease among these individuals may be enhanced by acknowledging functional status as a source of motivation or resilience in this population.

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Amanda Williams, DO, Co-Investigator: Study conceptualization, design, data collection, presentation and comments on drafts of the manuscripts.

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