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Assessing Health Status Differences Between Veterans Affairs Home-Based Primary Care and State Medicaid Waiver Program Clients

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Abstract

Objectives—Comprehensive health care for older adults is complex, involving multiple comorbidities and functional impairments of varying degrees and numbers. In response to this complexity and associated barriers to care, home-based care models have become prevalent. The home-based primary care (HBPC) model, based at a Michigan Department of Veterans Affairs Medical Center, and the Michigan Waiver Program (MWP) that includes home-based care are 2 of these. Although both models are formatted to address barriers to effective and efficient health care, there are differences in disease prevalence and functional performance between groups. The objective of this study was to explore the differences between the 2 groups, to shed some light on potential trends that could suggest areas for resource allocation by service providers.

Design—Using a retrospective analysis of data collected using the interRAI-home care, we examined a cross-sectional representation of clients enrolled in HBPC and MWP in 2008.

Participants—The HBPC sample had 89 participants. The MWP database contained 9324 participants from across the State of Michigan and were weighted to be comparable to the HBPC population in sex and age, and to simulate the HBPC sample size.

Results—Veterans were more independent in basic activities of daily living performance, but there was no difference in the rate of reported falls between the 2 groups. Veterans had more pain and a higher prevalence of coronary artery disease ($z = 7.0$; $P < .001$), Chronic obstructive pulmonary disease ($z = 3.9$; $P < .001$), and cancer ($z = 8.5$; $P < .001$). There was no statistically significant difference between the 2 groups in terms of the prevalence of geriatric syndromes. Scores on subscales of the interRAI-home care indicated a lower risk of serious health decline and adverse outcomes for MWP compared with HBPC clients (1.4 ± 1.1 vs 0.9 ± 0.1 ; $z = 2.5$; $P = .012$). Veterans receiving home-based care through the Veterans Affairs Medical Center were more burdened by chronic disease and had higher degrees of loneliness than their MWP counterparts-

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factors, which may increase their likelihood of hospitalizations. MWP participants had more cases of cerebrovascular accident ($z = 2.1$; $P = .039$), as well as a higher rate of diagnosed dementias ($z = 2.7$; $P = .006$). Though not different, stress among caregivers in both groups, and depression in clients of both groups were substantial. Overall, sleep, pain, coronary artery disease, chronic obstructive pulmonary disease, and cancer are significant issues for Veteran clients, and clients treated through MWP home-care in Michigan have higher than national average rates of dementias, diabetes, hypertension, and coronary artery disease.

Conclusion—With expanded home care models of service on the horizon, comparisons such as the one presented here could identify more efficient and effective service, with potential for improved client health outcomes.

Keywords

HBPC; home health care; primary care; interRAI; waiver program

Comprehensive health care for older adults is complex, involving multiple comorbidities and functional impairments of varying degrees and numbers. Limitations within standard outpatient care frequently restrict the ability of providers to fully address all patient needs within the time frame of a regular ambulatory care setting appointment. This can lead to an increased number of unscheduled visits to costly emergency departments or other acute care environments.^{1–3} In response, home-based care services have arisen to meet the challenges of providing effective and efficient healthcare services to older adults with substantial barriers to care and complex healthcare needs.³ These programs increase patient satisfaction and lead to decreased hospital readmissions.^{4,5} While long-term decrease in readmissions remains an unclear outcome, home-based primary care can increase quality of life⁴ and satisfaction of providers in the ability to “rigorously and efficiently monitor patient outcomes.”⁵

Within the Veterans Health Administration, this need is being addressed in part by the Veterans Affairs (VA) home-based primary care program (HBPC) program. The program is delivered by teams, including services from a range of health professions such as social workers, psychologists, dietitians, rehabilitation therapists, pharmacists, and specialty nursing care in areas such as rehabilitation and care management, in addition to physicians.¹ Begun nationwide in 1972, the HBPC model focuses on the goal of increasing access for veterans to needed medical care for complicated chronic conditions. These veterans have been determined to “have failed routine, episodic clinic-based care,” or to “have advanced, life-limiting conditions refractory to disease-modifying treatment, with conditions prone to relapses or exacerbations, resulting in a high rate of utilization of acute or subacute care services.”⁶ It is the goal of HBPC to support physical, cognitive, and psychosocial functioning with appropriate care, to reduce the number of emergency visits to clinics and hospitals, as well as stays in long term care and rehabilitation facilities, while preserving participants’ independence to the greatest extent possible.^{1,3} At this Michigan-based VA, the HBPC program counts approximately 120 veterans on their caseload at any given time. These veterans are referred to the program by their primary care physician and face declining health status that restricts their daily living activities, although not necessarily at a level requiring skilled care. A thorough description of HBPC programs and their operational procedures is described by Chang et al in their 2008 article.⁷

For the civilian population, a comparable program could be the Michigan Waiver Program (MWP). The Centers for Medicare and Medicaid Services administer federally allocated funding and regulations to the states for Home and Community Based Services [1915(c) of the Social Security Act] Waiver programs targeted at specific subpopulations in 48 states and the District of Columbia. One of the waiver programs, administered by the state of

Michigan, is focused on delivering home-based services to older adults and adults with physical disabilities who meet Michigan's nursing facility level of care and would require institutionalization without the services available through the MWP. Waiver services are implemented through a network of enrolled providers acting as organized health care delivery systems known as "waiver agents," including the Area Agencies on Aging across the state. The overarching goal of the MWP is to divert patient care from nursing homes and optimize the ability of individuals to remain in their home with appropriate long-term services and supports.⁸⁻¹⁰ Although there are some differences in resource availability and long-term goals,^{1,3} the overall patient referral base of the MWP matches well with the VA's HBPC program, in that persons are provided necessary services that enable them to remain in their communities to reduce burden on emergency services, long term care facilities, and hospitals.

Using the interRAI home care (interRAI HC) assessment instrument,^{11,12} data were collected on both MWP participants and a sample of Michigan HBPC participants in 2008. The goal of this article is to use these existing data sets of interRAI HC assessment data to investigate unique characteristics in client needs of these 2 populations at baseline. Similarities and differences were explored with regard to the multiple domains assessed by the interRAI HC instrument, including physical and cognitive function, disease presence and symptoms, social support, and service use. This comparison produces a more nuanced characterization of the needs of older adults being served by HBPC and by the MWP and highlights differences in the care needs of these 2 groups.

Methods

Given the social networks created by and for veterans, we hypothesized that the HBPC population would be more physically fit and more cognitively intact, with greater social functioning and less burden related to chronic disease than their counterparts in the MWP group. We framed our investigation with these questions:

1. What are the similarities and differences between these 2 groups of clients served by home-based programs, in terms of physical and social functioning, cognitive abilities, comorbidities, and the prevalence of geriatric syndromes?
2. Are there areas of need that are unique in VA or MWP clients, for which care provision may be more efficiently targeted?

The interRAI HC instrument is a standardized, validated assessment instrument with good inter-rater reliability. It addresses physical and cognitive function, disease processes and symptoms, social support, and some broad information about prior service use. The interRAI HC is generally administered prior to beginning new services, as a screening and assessment tool that can help to identify areas of potential need for the client. The interRAI HC assessment used in this study is a "minimum data set" that captures a range of the most important descriptors of physical and cognitive functions and behaviors. As such, it provides the basis for care planning, which may involve additional assessment. The interRAI HC has additional modules that can capture dual diagnosis of substance and mental health, but these were not employed in this study. As part of a clinical demonstration project at a Michigan-based Veterans Affairs Medical Center, assessments were completed on 89 veterans in the HBPC program using the interRAI HC, and data were entered into an SPSS v. 17 database (SPSS Inc, Chicago, IL). Assessments with the same instrument completed on the MWP home care population in 2008–2009 are part of a database held at the University of Michigan, in a SAS-based dataset. For the HBPC group, a research assistant completed the instrument with patients after their intake paperwork was completed; for the MWP group, the interRAI HC instrument was a part of their routine intake paperwork and usually

completed by nurses. Despite this minor difference, the specificity of the instrument has demonstrated excellent reliability, even across types of assessors.¹²

To compare the 2 populations while protecting individual-level data, each dataset was analyzed separately using the same methods of analysis (means, SDs, range, frequencies, and percentages), and aggregate data for each outcome variable was entered into an Excel spreadsheet for direct comparison between groups. Because of the age and sex limitations of the HBPC data ($n = 89$), the MWP data ($n = 9324$) were limited to enrollees with ages 50–96, and weighted in all calculations to be comparable to the HBPC population in gender (98% male) and to simulate an equal sample size (89). In particular, each of the 2322 males in the MWP with age 50–96 was assigned a weight of $87/2322$, or 0.0375; similarly, each of the 5992 females in the MWP in the same age range was assigned a weight of $2/5992$, or 0.0003. Dichotomous (present/not present; yes/no), and demographic variables (sex, marital status, age, ethnicity) were produced as descriptive data. Weighted frequencies, percentages, and means were calculated for all continuous variables. Scores from three interRAI HC scales that have been validated in previous studies of the interRAI-HC were also calculated from algorithms provided by the research team. They included a measure of cognitive function, the Cognitive Performance Scale,¹³ the Changes in Health, End-stage disease, Signs and Symptoms (CHESS) score,¹⁴ a scale predicting mortality, and a measure of physical function, the activities of daily living hierarchy scale.¹⁵

Given the sample sizes, the aggregate data from both HBPC and MWP samples were compared and tested for statistically significant differences using a 2-sample z-test at an alpha level of 0.05. Clinical significance of differences was decided by consensus of physician study team members. Interpretation of clinical significance of all available information was done by the team members collaboratively, providing insight from medical and social science professionals, as well as from a member of the research team that created the instrument who is an expert in use of the large interRAI databases.

Results

Both cohorts were predominantly Caucasian (HBPC = 84%; MWP = 72%) and male (the MWP sample was gender-weighted to match the HBPC sample of 98% male). There were about one-half as many African Americans in the HBPC sample (14% vs 22%). There was no statistically significant difference in the ages of the 2 groups (HBPC 76.8 ± 9.8 vs MWP 70.5 ± 1.2 years). About one-third were married in each group, about one-half were widowed, divorced, or separated, and twice as many MWP were never married (Table 1). The percentage of veterans married is lower than that seen in available national HBPC data, where half are married, although mean age and sex proportions are similar.¹

Comparing the 2 groups on social and cognitive functioning (Table 1), more veterans admitted to loneliness ($z = 2.2$; $P = .03$), although fewer suffered with anxiety ($z = 3.0$, $P = .003$). Veterans were more able to communicate with others: “always” able to make themselves understood ($z = 3.1$; $P = .019$), and “always” able to understand others ($z = 3.1$; $P = .008$). Fewer veterans had adequate hearing ($z = -3.7$; $P < .001$), an issue that may be related to their service histories. As predicted, significantly more veterans were considered to be cognitively intact ($z = 4.7$; $P < .001$), whereas more enrollees in the MWP fell into the moderately impaired categories ($z = 4.4$; $P < .001$). There was no statistically significant difference between the 2 groups in terms of the prevalence of major geriatric syndromes (Table 2).

In terms of physical functioning (Table 2), MWP enrollees were less independent in basic activities of daily living performance ($z = 5.9$; $P < .001$) and toilet transfer ($z = 8.1$; $P < .$

001), and walked with an assistive device more frequently than their counterparts ($z = 3.5$; $P = .001$). There was no statistically significant difference in the rate of falls between the 2 groups; however, in the 3 days preceding the survey, fewer MWP enrollees exhibited difficulty turning around ($z = 2.5$; $P = .012$).

The prevalence of sleep problems was higher in the HBPC sample, particularly regarding difficulty falling asleep ($z = 2.1$; $P = .037$). This may or may not be related to pain levels, as nearly twice as many veterans had pain described as “daily, severe, or excruciating” than their counterparts (22% vs 13%; $z = 2.6$; $P = .009$). Similar percentages of both groups, however, reported some pain. Interestingly, as shown in Table 2, veterans had a significantly higher prevalence of coronary artery disease ($z = 7.0$; $P < .001$), chronic obstructive pulmonary disease ($z = 3.9$; $P < .001$), and cancer ($z = 8.5$; $P < .001$). MWP participants had more cases of cerebrovascular accident ($z = 2.1$; $P = .039$), as well as a higher rate of diagnosed dementias ($z = 2.7$; $P = .006$).

Finally, on the CHESS scale, HBPC participants scored significantly higher than their MWP counterparts (1.4 ± 1.1 vs 0.9 ± 0.1 ; $z = 2.5$; $P = .012$), indicating a greater risk of serious decline and adverse outcomes (Table 2). This is especially true for scores reflective of substantial instability, ie, exceeding the threshold of 3 (21% vs 7.3%; $z = 4.9$; $P < .001$).

Discussion

The rapidly expanding older adult segment of the population has compelled health policy makers to rethink the care delivery paradigm. In general, older adults prefer to live in their own homes, an arrangement that has been demonstrated to be cost effective for the health care system.^{2,3,10} As such, many program innovations in care delivery are designed to bring as much care as possible to the home setting. Two examples of such home-based care models are the VA’s Home-Based Primary Care program for Veterans, and the Michigan State Medicaid Waiver program. By examining assessments done on samples of these 2 populations side by side, we can better understand their health profiles under the respective care delivery systems. This study found differences between older veterans being served by HBPC services through a local VA and their civilian counterparts who receive home-based services through the state Medicaid waiver program using local providers. Understanding of the special needs of these groups can help enhance quality of life and ensure best practices and efficient allocation of resources for client care.

As hypothesized, HBPC participants were physically higher functioning than MWP participants. They were more independent in the completion of basic activities of daily living and less reliant on an assistive device for ambulation. It is possible that this may be related to more systematic access to rehabilitative services within both the HBPC team and the larger VA medical care system. The MWP group does have significantly higher rates of dementia, which could be a possible contributing factor to these findings, as well. Additionally, it is possible that there is selection bias involved in this finding, as the HBPC program does not require a need for nursing home level of care as a criterion for intake, whereas the MWP does. Veterans were more hearing-impaired, something that may be related to noise trauma from exposure to combat or similar settings during a time frame when hearing protection was less common in the field. Better communication skills in veterans may be a reflection of their better ratings of cognitive capacity. Notably, however, percentages of diagnosed dementias in both the HBPC (15.7%) and MWP (24.7%) groups were somewhat lower than national averages for veterans (33%), although higher than general US population estimates (6%–10% for adults 60 and older).^{1,16,17}

HBPC participants had greater degrees of loneliness; the reasons are unclear. There is a substantial literature on the mental health and well-being of veterans as they age, however, and this finding appears to be consistent with previous research indicating that veterans, particularly those of the Korean or Vietnam era, are at high risk for social isolation and are consequently at higher risk for hospitalizations.¹⁸

The higher score of veterans on the CHESS scale denotes poorer overall health status,¹⁴ compared with the MWP population. It is consistent with the higher prevalence in HBPC of coronary artery disease, chronic obstructive pulmonary disease, and cancer. Alternately, given the higher percentage of Medicaid waiver participants who are African American, and the reality that all the enrollees in the MWP are low income, their lower prevalence of these chronic diseases may reflect their limited access to high quality medical care that discovers and treats these conditions. Tobacco and alcohol use are risk factors for these diseases, but 85% of the HBPC sample responded that they did not smoke on a daily basis and only 9% had had more than 1 drink at a sitting in the 2 weeks preceding the survey; therefore, the reasons for the higher prevalence of cardiac diseases in the HBPC population remain unclear. Current use, however, is not reflective of prior use, and this may be a contributing factor to this finding.

Several limitations to this study should be noted. The data that were used for this study are cross-sectional in time and limited to the items in the interRAI HC instrument. It should be noted that items such as falls, smoking, and alcohol consumption are self-report and may not accurately reflect behaviors in either group. As this instrument is designed for the general home care population and not specifically for the Veteran population, it does not capture post-traumatic stress disorder or service related traumas in an explicit manner; it is possible that these may be mediating factors for some of the findings presented here. Services available to MWP enrollees do not include primary health care; the long-term services, such as personal assistance and private duty nursing, can vary substantially among waiver agents, and it is impossible to know precisely what access was available for individuals in this sample. In addition, individuals who are served by the Veterans Health Administration are eligible for benefits from corollary agencies such as the Disabled American Veterans, who offer support not available to non-veteran populations. The HBPC sample is small, with only 89 individuals and cannot be considered as representative of any population outside of the state of Michigan, and may not have the statistical power to determine differences between groups. Similarly, the MWP is state specific, limiting any generalization beyond the state. We believe, however, that the comparison of population groups remains valuable, as indicators of service need emerge from this consideration that may be further studied for replication in other geographic areas.

Findings from this study support our premise that participants in the HBPC program were more physically functional and more cognitively intact than their civilian counterparts in the MWP program. However, contrary to expectation, veterans receiving home-based care were more burdened by chronic disease and reported higher degrees of loneliness than their local Michigan counterparts, which are factors that may increase their likelihood of hospitalizations. This may be explained by the fact that medical complexity and health instability, characteristics which register strongly on the CHESS scale, are among the qualifying criteria for enrollment in the HBPC program, whereas MWP qualifying criteria are weighted toward functional and/or cognitive disability. In addition, although not different, stress among caregivers in both groups and depression in both groups of clients are substantial, issues that may impact on long-term health outcomes. It may be helpful to providers to know that sleep, pain, coronary artery disease, chronic obstructive pulmonary disease, and cancer are significant issues for Veteran populations, usually served by HBPC programs and VA hospitals, but that the prevalence of geriatric syndromes is about equal to

what we might see in the general Michigan population. Similarly, it is useful information for providers to know that MWP participants in Michigan have higher than national average rates of dementias, diabetes, hypertension, and coronary artery disease.

Conclusion

The identified differences in care needs of these 2 groups provide an argument for governments to reconsider how home care services are allocated, relative to the needs of their consumers. With implementation of the Affordable Care Act, there will be expanded services available through home care models, and states could strengthen their programs by addressing important needs for primary care. Programs such as Independence at Home encourage changes in Medicare service; further research is needed to identify more efficient services that could increase effective outcomes.

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Table 1Demographics and Psychosocial Factors Affecting VA-HBPC and MWP Enrollees^a

	VA-HBPC	MI Waiver Program ^b
Sample size	89	89
Male	82 (98%)	82 (98%)
Age	76.8 ± 9.8 (range 50–96)	70.5 ± 1.2 (range 51–95)
Ethnicity		
Caucasian	75 (84%)	64 (72.4%)
African American	12 (14%)	20 (22.4%)
Hispanic	2 (2%)	2 (2.7%)
Other	0	1.6 (2.2%)
Marital status		
Married/partner	35 (39.3%)	31 (34.8%)
Widowed	19 (21.4%)	19 (21.7%)
Divorced/separated	28 (31.5%)	24 (27.8%)
Never married	7 (7.9%)	14 (15.4%)
Caregiver under stress	18 (20.2%)	22 (24.7%)
Loneliness ^c	44 (49.4%)	14 (15.7%)
Anxiety ^d	10 (11.2%)	23 (25.8%)
Depression	27 (30.3%)	38 (42.7%)
Home environment in disrepair	6 (6.7%)	13 (15%)
Difficulty making self understood ^c	3 (3.4%)	6 (6.7%)
Difficulty understanding others ^d	3 (3.4%)	6 (6.7%)
Socially inappropriate behavior	2 (2.2%)	1 (0.5%)

^ainterRAI HC items are scored for the past 3 days, unless otherwise noted. Caregiver stress, loneliness, anxiety, and depression are shown simply as “present” and include collapsed categories of primary diagnosis, secondary diagnosis, and receiving active treatment, and monitoring only.

^bMI waiver sample limited to enrollees with ages 50–96, and is weighted to make it comparable to the VA population in gender and to simulate an equal sample size (89).

^cSignificant at 0.05 alpha level.

^dSignificant at 0.01 alpha level.

MWP, Michigan Waiver Program; VA-HBPC, Veterans Affairs Home-Based Primary Care.

Table 2

Prevalence of Select Medical Conditions, Geriatric Syndromes, and Functional Characteristics among VA-HBPC and MWP Program Enrollees^a

	VA-HBPC	MI Waiver Program
Problems with ADL hierarchy (performance in hygiene, toilet use, locomotion, eating) ^e	27 (30.3%)	54 (71.2%)
Needs assistance with toilet transfer ^e	14 (15.6%)	47 (53.6%)
Assistive device/bedbound ^e	60 (67.4%)	72 (81.7%)
Pain: daily/severe ^e	20 (22.5%)	11 (13.1%)
Bladder incontinent/catheter-controlled	40 (45%)	41 (47.5%)
1+ falls in last 30 days	43 (48.3%)	24 (27%)
Difficulty moving to standing	55 (61.7%)	50 (56.7%)
Difficulty turning around ^d	56 (62.8%)	44 (49.5%)
Unsteady gait	55 (61.8%)	59 (65.8%)
Difficulty falling asleep ^d	30 (33.7%)	21 (24.2%)
Inability to see in adequate light	38 (42.7%)	30 (34.4%)
Inadequate hearing ^d	48 (53.9%)	30 (34.8%)
Cognitive performance scale ^b 3 ^e	8 (9%)	22 (24.7%)
Diagnosed dementias ^e	14 (15.7%)	22 (24.7%)
Dizziness	25 (28.1%)	16 (18%)
Pressure ulcer	8 (9%)	7 (7.6%)
Diabetes mellitus type 2	43 (48.3%)	37 (41.6%)
Hypertension	60 (67.4%)	65 (73%)
Coronary artery disease ^e	56 (62.9%)	31 (34.8%)
Chronic heart failure	30 (33.7%)	27 (30.3%)
Cerebrovascular accident ^d	18 (20.2%)	27 (30.33%)
Chronic obstructive pulmonary disease ^e	39 (43.8%)	26 (29.2%)
Parkinson's disease	5 (5.6%)	4 (4.5%)
Hip fracture	1 (1.1%)	2 (2.2%)
Cancer ^e	29 (32.6%)	10 (11.2%)
Major skin problems	7 (7.8%)	11 (12.4%)
Foot problems		
Present but not limiting	10 (11.2%)	9 (10.1%)
Present, limiting	14 (15.7%)	11 (12.4%)
Acid reflux symptoms	13 (14.6%)	10 (11.2%)
CHESS ^c : Score of 3	19 (21%)	6.25 (7%)

^a interRAI HC items are scored for the past 3 days, unless otherwise noted. Conditions are shown simply as "present" and include collapsed categories of primary diagnosis, secondary diagnosis and receiving active treatment, and monitoring only.

^b Cognitive performance scale scores of 0,1, or 2 are equivalent to a mini-mental status examination of 19 or higher; scores of 3 indicate impairment equivalent to less than 19 on the mini-mental status examination.

^cThis scale predicts likelihood of rapid health decline; scored 0 (not at all unstable) to 5 (highly unstable) where a higher score indicates poorer health. A score of 3 is clinically significant.

^dSignificant at 0.05 alpha level.

^eSignificant at 0.01 alpha level.

MWP, Michigan Waiver Program; VA-HBPC, Veterans Affairs Home-Based Primary Care.