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Research Paper

Predicting long-term nursing home transfer from MI choice waiver program

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ABSTRACT

This study aimed to identify characteristics of elderly participants in the Michigan Home and Community-Based Waiver Program that are associated with high risk of long-term nursing home (LT-NH) placement. We identified 8172 waiver clients aged 65 and older during 10/1/2010–9/30/2014. A proportional cause-specific hazards regression model was used to analyze risk factors of waiver elderly for LT-NH placement. Waiver elderly participants who were white (HR (white vs. black): 2.76, with 95% CI (1.91, 4.00); HR (white vs. other races): 1.77, with 95% CI (1.05, 2.97)), had a history of long-term care use (HR: 1.42, 95% CI (1.14, 1.76)), mental disorders (HR: 1.51, 95% CI (1.23, 1.86)), bathing dependency (HR: 1.43, 95% CI (1.07, 1.89)), and finance management dependency (HR: 1.73, 95% CI (1.15, 2.60)) had greater hazards of LT-NH placement. Our study can be useful for policy makers to develop relevant support to reduce LT-NH placement.

Introduction

Preventing permanent nursing home placement is a major focus in long-term care as the elderly population grows in the US.[1] Nursing facility care represents significant costs for both public and private finances. The national average in 2014 was $87,600 which was covered by Medicaid as the primary payer.[2,3] To lower long-term care costs and to assist elderly population to live in their homes, resources have shifted to the home and community-based services (HCBS). Of total national Medicaid spending on long-term care, the portion of HCBS spending increased from 43% in FY 2007 to 49.3% in FY 2012 and to 51.3% in FY 2013.[4,5]

The MI Choice Home and Community-Based Services Waiver Program is a Medicaid program in Michigan that provides long-term care in non-institutional settings.[6] Eligible waiver participants are aged 65 and older, or disabled individuals aged 18 and older, who have low income and meet Medicaid requirements for nursing facility level of care. Waiver participants remain in the community and receive Medicaid-covered support services. Waiver program services include transition services, living supports, assistance with activities of daily living (ADLs) and instrumental activities of daily living (IADLs), and personal emergency response services. Waiver services are delivered based on periodic assessments using the InterRAI for Home Care (i-HC) Assessment System. These assessments document changes in social and medical status of waiver clients. Clients may exit the waiver program any time for reasons such as relocation out of the state, nursing home placement or death.

One of the primary goals of the waiver program is to effectively direct resources to prevent nursing home placement. Therefore, it is critical to identify participants with high risk of nursing home placement and their corresponding needs for long-term care services. Risk factors associated with nursing home placement can be summarized into predisposing, enabling, and need characteristics in the Andersen's framework (1968).[7,8] Predisposing factors describe socio-demographic status prior to the medical conditions. Enabling factors describe the resources that provide individual's ability to access medical care. In our study, Medicaid is considered as an enabling factor, since Medicaid gives every waiver participant access to medical care. Need factors include functional limitations such as ADLs, IADLs, cognitive status, co-existing and comorbid health conditions. Past research has identified a number of predictors of LT-NH placement among the elderly population[8–11]

Abbreviations: ADL, Activities of daily living; CI, Confidence Interval; COPD, Chronic obstructive pulmonary disease; HR, Hazard ratio; IADL, Instrumental activities of daily living; LT-NH, long-term nursing home; PH, Proportional hazard.

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including predisposing factors such as age,[11–13] prior NH placement,[13] and need factors such as cognitive impairment,[11,14,15] ADLs.[13,16] Inconsistent predictors for NH placement include gender (male), being married, living arrangement (living alone), and previous hospitalization.[10,16,17] These findings however were derived from study populations in a variety of settings.[9,10,18,19] Better understanding on the characteristics and the needs of clients in a specific HCBS setting is needed in order to help HCBS prevent unnecessary nursing home placement. Only a limited number of studies[13,20,21] focused on risk factors of LT-NH placement among individuals in the HCBS settings. For example, age,[13] white race,[22] money management dependency,[21] living alone[21] and previous skilled nursing home stay[21] were associated with high risk of nursing homes transfers from HCBS settings. Other studies revealed that insufficient care in some HCBS programs may lead to LT-NH transfers, such as inadequate resolution of acute health conditions,[23,24] mental health issues,[23] stressed family caregiver(s)[23] or lack of integrated and continuous care.[25] Few studies have investigated the risk factors of LT-NH placement specifically for waiver clients.

To improve the care in the waiver program and avoid unnecessary LT-NH transfers, this study examined predictive factors for LT-NH placement among waiver program participants at the time of program enrollment to evaluate the association of clients' specific needs with their risk of LT-NH placement. The results of our study may inform policy makers about how to adjust and focus services to prevent or delay LT-NH placement.

Materials and methods

Institutional review board oversight

This study was submitted to the Biomedical and Health Institution Review Board (IRB) at Michigan State University. It was determined to not meet the definition of human subjects' research and exempt from IRB review.

Data sources

MI Choice program eligibility and enrollment data, Medicaid enrollment data, InterRAI for Home Care (i-HC) assessment data, and nursing home Medicaid claims data were integrated for the analysis. Included data files did not contain identifiable information and linking was done by the use of an encrypted beneficiary ID maintained by MDHHS. Beneficiaries participating in the MI Choice (waiver) program were identified from program enrollment data and Medicaid enrollment data. Socio-demographic data (e.g. age, gender, and race) and death data were obtained from Medicaid enrollment data. Assessment data was collected by licensed social workers and registered nurses trained in the use of i-HC assessment system. These data contained information on functional status and medical conditions of the waiver participants. The program enrollment data were also used to identify disenrollment. Medicaid nursing facility claims data were used to track the utilization of nursing home facilities.

Study population

The study population included waiver program participants aged 65 and older who had at least one enrollment period of any length between 10/1/2010–9/30/2014. While the waiver program provides care for younger disabled clients, we restricted our sample to those 65 years of age and older, since our goal was to support guidance on long-term care for the elderly. Moreover, the elderly population represented the majority of clients in the waiver program. We identified 8901 (70%) individuals aged 65 or greater out of 12,661 total waiver clients who were enrolled during our study period. We tracked this population through the waiver program enrollment data, Medicaid enrollment data, i-HC assessment data, and nursing home Medicaid claims data. If an enrollee did not have an assessment within 30 days of the waiver enrollment date, that individual was excluded from the study, as our primary interest was in the predictive ability of the baseline characteristics of participants on the risk of LT-NH placement. Assessments performed more than 30 days after enrollment may represent changes of baseline characteristics due to the provision of waiver services. A total of 669 clients were excluded due to this reason. Sixteen clients were enrolled for only one day, and 44 clients were observed in the nursing home claims files with dates conflicting with their waiver program participation. These clients were also excluded from the analysis. A total of 8172 waiver clients met inclusion criteria. Although some participants may have multiple enrollments in the waiver program, we only followed the study population up until one day after the end of their first waiver enrollment period, since our goal was to study the hazard of LT-NH placement during the waiver program participation.

Of 8172 waiver program participants, 482 (5.9%) were transferred to a long-term nursing home, 1447 (17.7%) died during the observation period, and 6243 (76.4%) remained in the waiver program.

Outcomes

The primary outcome was long-term nursing home (LT-NH) placement. A LT-NH placement was defined as a nursing facility stay for 90 days or longer. The length of stay was identified from the Medicaid nursing facility claims data. Length of stay of 90 days or longer was used to distinguish LT-NH stays for custodial care from short-term skilled nursing facility stays.[26–28] Death information was obtained from the Medicaid enrollment data.

Independent variables

The following characteristics of the elderly waiver participants were obtained from the enrollment data or assessment data. Predisposing factors included socio-demographic factors, which were age, gender, race, and living arrangement. Need factors included medical conditions and functional limitations. Medical conditions diagnosed prior to or at the time of assessment were analyzed. These medical conditions included hypertension, arthritis, chronic obstructive pulmonary disease (COPD), incontinence, hip fracture, dementias, cancer, diabetes, stroke, depression, and Alzheimer's Disease. The medical conditions were obtained based on any diagnosis from physicians. Cognition conditions were assessed via standardized questions from the i-HC assessments conducted by social workers. Information regarding cognitive function could also be obtained from the family caregiver(s) or through observations. A variable that reflect mental disorder based on the presence of a variety of behavior changes related to cognitive problems was included into the analysis. Functional status included nine activities of daily living items (ADLs) and eight instrumental activities of daily living (IADLs) performance items. ADLs refer to basic daily self-care activities, while IADLs refer to activities that people perform beyond their basic function. ADL items were bathing, dress, eat, mobility transfer, toilet use, toilet transfer, manage personal hygiene, locomotion ability (ability to move between locations on the same floor), and mobility in bed. Instrumental activities included housework, shopping, transportation, meal preparation, stair use, finance management, medication management, and phone use. A registered nurse assessed the performance of ADL and IADL items.