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Home-Based Primary Care in Patients with Dementia: Impact on Cost, Medication Use, and Patient Satisfaction

Megan O'Leary
Augsburg University

Home-Based Primary Care in Patients with Dementia: Impact on Cost, Medication Use, and Patient Satisfaction

By:

Megan O'Leary, PA-S

Masters Advisor:

Ryane Lester, MPAS, PA-C

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Abstract

Background: Individuals living with dementia deserve affordable, accessible, and effective healthcare. These patients often face barriers that make it difficult to consistently access traditional in office primary care. Home-based primary care (HBPC) holds the opportunity to bridge the gap between individuals with dementia and preventative healthcare resources.

Purpose: Dementia rates are increasing as the population ages, and additional research is needed to determine the optimal treatment model for individuals with dementia. This literature review evaluates if patients with dementia receive improved care with HBPC vs in office primary care through examining cost, medication use and compliance, and patient satisfaction.

Methods: A comprehensive literature review was conducted usingPubMed, Google Scholar, and ScienceDirect using the search terms “home-based primary care,” “dementia,” “homebound,” “standard of care,” “primary care,” and “medication”. Virtual interviews were conducted with two physician assistants who work in HBPC settings.

Conclusions: HBPC can offer benefits to patients, caregivers, and healthcare systems through decrease in costs, increase in medication compliance, and increase in patient satisfaction. Adequate funding and resources are required for these advantages to occur. Each patient’s specific situation needs to be considered before choosing HBPC, and more research needs to be conducted in order to further optimize the HBPC model.

Key Words: home-based primary care, dementia, homebound, standard of care, primary care, medication, cost

Home-Based Primary Care in Patients with Dementia: Impact on Cost, Medication Use, and Patient Satisfaction

Introduction

55 million people worldwide live with the diagnosis of dementia.[1] By 2030, the World Health Organization predicts this number to be 78 million.[1] There is no cure for dementia, it often causes disability, and it is the seventh leading cause of death. Cognitive deficits, changes in behavior, and a decrease in performance of activities of daily living are characteristics of dementia.[2] Due to these changes, safety issues often arise for people with dementia. Optimizing healthcare for these individuals needs to be a priority due to the significant economic, social, caregiver, and quality of life impacts which increase healthcare burden. In a 2020 study using data from the National Health and Aging Trends, 28.6.% of homebound Medicare beneficiaries had dementia.[3] Dementia is estimated to have the most rapid increase in health related suffering from 2016 until 2060.[4] Revised standard of care for patients with dementia may lessen this burden. With functional and clinical impairments, these individuals need consistent, accessible, and quality healthcare.

Homebound is defined by Medicare as never or rarely leaving home, or leaving home only with assistance or significant difficulty.[5] As the population ages, the number of homebound adults will grow. Between 2011-2017, only 11% of homebound Medicare beneficiaries received home-based primary care (HBPC). In older adults, being homebound is linked with an increase in mortality rate.[3] This higher risk is due to several factors, including decreased access to healthcare. Homebound older adults often have functional impairment, a lack of social support, a decrease in mobility, and cost limitations that make it more challenging to be seen by a primary

care provider in a clinic. When these individuals are not routinely accessing preventative care, they are more likely to present to the emergency department or hospital.[6]

Probable dementia is one of the risk factors for being homebound, according to a seven year trajectory study of Medicare beneficiaries.[7] Risks for homebound people with dementia include decreases in personal safety and health maintenance.[2] Factors that decrease safety and increase the probability of falling include medication side effects, obstacles or slippery surfaces in the bathroom, improper footwear, rugs or tripping hazards, dehydration, and a lack of grab bars. Home-based primary care (HBPC) offers a solution to many barriers faced by homebound individuals. HBPC involves a medical team that provides consistent in-home healthcare, often to patients who have high needs and possible high costs.[6] The provider can assess the environment in which the patient lives, which is a significant advantage to HBPC for homebound adults. This allows for an assessment of many social determinants of health, including safety, housing, nutrition, medications, and social support.

The number of individuals with dementia and homebound adults continues to grow. This paper will evaluate if patients with dementia receive improved care with home-based primary care vs in office primary care. First, the current healthcare provided for patients with dementia and some of the barriers they face will be discussed. HBPC vs in office primary care for people with dementia will be assessed by examining cost differences, medication use and compliance, and overall patient satisfaction.

Methods

To assess the current literature about HBPC for patients with dementia and its relation to cost, medication use and adherence, and patient satisfaction, the key words “home-based primary

care," "dementia," "homebound," "standard of care," "primary care," and "medication" were used. These terms were searched on PubMed, Google Scholar, and ScienceDirect. Filters included date of publication, peer-reviewed journals, and clinical trials. Reference sections of many papers were reviewed to find related and relevant articles. Background information and standard of care details were found on The World Health Organization and Mayo Clinic websites.[1,8] Virtual interviews were conducted with two physician assistants who work in HBPC settings, along with email communication.

Review of the Literature

Dementia

The diagnosis of dementia includes taking a thorough history and completing a physical examination.[8] Cognitive and neuropsychological tests are completed to assess factors such as memory, orientation, reasoning, judgment, language, visual perception, senses, and attention. CT, MRI, PET scans, blood tests, and a psychiatric evaluation will help to rule out other causes of the symptoms being experienced.[8]

No cure is available for dementia.[1] Current dementia care goals include early diagnosis, maintaining physical health and cognition, treating other illnesses, managing changes in behavior, and supporting caregivers. Standard pharmacological treatment of dementia includes medications such as cholinesterase inhibitors or memantine.[8] Managing symptoms of dementia also entails non-pharmacological interventions and caregiver support. Non-pharmacological treatment involves cognitive stimulation, aromatherapy, multisensory stimulation, music therapy, massage therapy, and animal therapy.[9] Modifying the individual's home environment and routine may help, such as exercise, staying engaged with activities, creating a nighttime routine,

maintaining a schedule, and planning ahead.[8] Support groups and counseling may benefit both the person with dementia and their caregiver.

Factors to be assessed when considering management of dementia include activities of daily living, cognitive status, medical and behavioral conditions, nutritional status, medications, caregiver needs and risks, the patient's support system, and the patient's decision-making ability.[9] Depending on these factors and the disease progression, a change in care management may be considered. The overall comparison of standard dementia care versus HBPC in relation to costs, medication use and compliance, and patient satisfaction will be evaluated and discussed.

Cost

In 2019, dementia cost the world $1.3 trillion.[1] Lower costs are reported for individuals receiving HBPC by the Department of Veterans Affairs and non-Veterans Affairs practices, as well as the Center for Medicare and Medicaid Innovation's Independence at Home project.[5] In the Independence at Home demonstration, $2,700 per beneficiary was saved per year on average.[10] Projections from the Independence at Home two year results estimates that $2.6 billion to $27.8 billion will be saved over ten years depending on the program's growth. These significant cost savings have the potential to help grow HBPC.

In a study analyzing characteristics of HBPC practices in the United States, 77% of practices reported that they receive funding through Medicaid or Medicare reimbursement.[6] Although 61% of the practices were for-profit, 78% accepted and provided care for patients with Medicare. Despite HBPC accepting Medicare and Medicaid, many of these patients do not have enough money to pay for HBPC services out of pocket but also do not meet eligibility requirements to be covered by insurance. In practices that also conduct care coordination, costs to patients and insurance coverage are common barriers to coordinating care. However, some

HBPC agencies are completely covered by Medicare and Medicaid based on care complexity (Kelsey McFarlane, PA-C, email communication, October 2022).

In a study examining HBPC costs in fee-for-service Medicare beneficiaries, one challenge was a lack of a financial HBPC model with reimbursement for those with chronic illness or functional impairments within the fee-for-service Medicare model.[5] One solution that some practices have found is using value-based contracts instead of fee-for-service. While fee-for-service models pay providers based on the services they deliver, value-based models pay providers based on patient health outcomes.[11] Value-based care has the ability to shift the focus from quantity to quality. Long term, costs reduce for patients as chronic conditions are managed more efficiently and personally, as well as increasing the focus on disease prevention.

Medicare encourages value-based programs in an effort to decrease healthcare costs per capita, improve patient experience, and improve population health.[12] These value-based contracts can increase the revenue per patient.[5] Not only do value-based contracts allow for Medicare payment for complex patients, but also creates the opportunity to cover non-medical costs such as travel, social work, and home modifications to decrease safety risks. More payment reform is necessary to ensure affordability and insurance coverage for those who will benefit from HBPC. Long-term, these reforms will save costs for the healthcare system and patients.[5,11]

Receiving in-home general practitioner based dementia care delayed the need for a higher level of care, saving costs for the patient and insurance.[13] HBPC allows individuals to stay in their own homes due to the opportunity for the provider to see the patients' actual living environments and possible safety risks or social needs.[6] Health outcomes often improve by addressing these risks and needs, which cuts back on hospitalizations, moves to long-term care facilities, and costs. However, a barrier for HBPC is funding for staff (Kelsey McFarlane, PA-C,

email communication, October 2022). Underpaid staff often results in high employee turnover. Many patients with dementia benefit from consistent staff who they learn to trust and become familiar with. When asked what are the challenges or limitations of HBPC, Marisa Felker, PA-C replied, "the biggest limitation is resources" (August 2022). With more funding, resources could expand to meet the needs of patients and staff. This barrier to improved care holds a simple solution, but the path to get there is complex. Increasing funding for staff, both in salary and the number of employees hired, is one important aspect in providing stability for patients. In addition to cost, medication adherence plays a vital role in caring for patients with dementia. Medication use and adherence will be assessed next.

Medication

Due to the memory loss and forgetfulness associated with dementia, medication nonadherence is a concern for patients with dementia.[2] Medication safety concerns that may arise include missed doses, overdoses, adverse drug interactions, and side effects such as falls. Many HBPC practices are multidisciplinary, including a nurse or medical assistant to support the patient with medication refills.[6] Homebound adults often require services related to medication adherence, and HBPC is able to accommodate this need. A member of the HBPC team helps to ensure that medications are reviewed and administered. HBPC allows for more time dedicated to patient and caregiver education related to medications (Kelsey McFarlane, PA-C, email communication, October 2022). Education regarding the medications that a patient receives holds significant importance, including safety, trust in the patient-provider relationship, and increased understanding of the patient's medical conditions.

In a retrospective pharmacy study, medication therapy problems were evaluated in HBPC patients with dementia, depression, or delirium.[14] Issues related to cognitive decline include

underuse or overuse, ineffective dosing, and safety. 79% of indication related problems were underuse, which means that many patients do not consistently take their medications. With underuse, it is difficult to identify where any problem originates. Specific safety concerns consist of undesirable effects, impaired cognition, unsafe medications, drug interactions, or high doses. One possible solution to these potential issues is to include pharmacists on the HBPC team. In this setting, a pharmacist can help identify medications that are cognitively harmful or have other side effects and assess the patient for cognitive symptoms or conditions that are not being treated.

A study that compared in-home general practitioner based dementia care with standard primary care found an increased rate of antidementia drug use in patients receiving home dementia care.[13] Antidementia drugs in this study include donepezil, rivastigmine, galantamine, memantine, and donepezil and memantine. The use of potentially inappropriate medication was not significantly different between the two groups. Homebound adults use more medications in general than their non-homebound peers.[5] Pharmacologic treatment of dementia should prioritize the improvement of cognitive function, decrease in behavioral symptoms, and improving activities of daily living.[9]

In interviews, both Marisa Felker, PA-C and Kelsey McFarlane, PA-C noted they did not observe a difference in medication adherence with patients receiving HBPC (Marisa Felker, PA-C, email communication, August 2022 and Kelsey McFarlane, PA-C, email communication, October 2022). This was, in part, due to a large number of their clients living in care facilities with staff following medication administration on strict schedules. Patients living independently at home frequently have a caregiver consistently checking in. Overall, HBPC can aid in increasing medication use and compliance through including a pharmacist on the care team,

ensuring a caregiver is available to assist in administration, and including medication education. Another evaluation of HBPC for people with dementia includes patient satisfaction, which will be discussed next.

Patient Satisfaction

Despite any positive effects on cost or medications, patients and their families will be unlikely to choose HBPC if they do not experience an increase in satisfaction with their overall care. In a study comparing in-home general practitioner based dementia care with standard primary care, several patient satisfaction factors were improved in the home-based care group.[13] These included decreased neuropsychiatric symptoms, caregiver burden, and functional inabilities. While these factors improved over twelve months in the group receiving in-home care, they became worse in the group receiving care as usual. This study also found an increase in quality of life in patients not living alone and receiving in-home care. Additional research is needed on specific subgroups of homebound people with dementia to identify why this increase in quality of life occurred and what other factors play a role.[13] Marisa Felker, PA-C, noted similar findings in her work in HBPC in memory care settings (email communication, August 2022). Felker finds that taking patients with dementia out of their known environments can lead to fear and behavioral symptoms. Seeing patients in their home not only is more comfortable for them, but also allows for the opportunity to identify environmental or social needs. These needs may include evaluating for fall risks, food scarcity, neglect, need for supplies, and medical or social specialty care. This can lead to increased connection and trust between the provider and patient or caregiver.

Another factor that increases patient satisfaction is the delay or avoidance of moving to a long-term care facility. The majority of older Americans want to age at home rather than in

institutionalized settings.[12] One reason HBPC can allow individuals to stay in their own homes for longer is the ability of the provider to see their living environment and identify social determinants of health.[6] Factors addressed by home-based primary care providers include safety, nutrition, and equipment needs (Kelsey McFarlane, PA-C, email communication, October 2022). Marisa Felker, PA-C, provided several examples of these needs, including "looking for rugs that may pose a fall risk, low rise toilets with patients having knee pain, food scarcity, signs of neglect and the relation to their mental health" (email communication, October 2022). By addressing potential safety risks and social needs, health outcomes will likely improve.[6] Most older patients prefer days spent at home, so this delay in the need to live in a long-term care facility increases patient satisfaction. In a study with interviews of people with dementia, individuals were satisfied with home care largely due to the ability to stay in their own homes.[15] They reported feelings of autonomy and belonging, even when their dementia diagnosis led to decreased independence.

Not only can HBPC delay the move to a long-term care facility, but it can also decrease the number of emergency room visits and hospitalizations.[16] A study in Taiwan examined factors of home healthcare in relation to burdensome transitions in patients with dementia.[16] These transitions included emergency room visits and hospital or intensive care unit admissions. Home healthcare in this study covered physician visits, nursing care, drug administration, respiratory therapy, and laboratory testing. Patients receiving home healthcare of longer duration and higher frequency experienced improved continuity of care, which is associated with fewer burdensome transitions.

More patient-centered end-of-life care is provided for patients with dementia receiving HBPC vs non-HBPC.[17] This was assessed through place of death and enrollment in home

palliative care or hospice in a study comparing HBPC to non-HBPC in people living with dementia. Among the patients who died in this study, those with HBPC received significantly more home palliative care or hospice and had higher rates of dying at home compared to those without HBPC.

In the same study comparing HBPC and non-HBPC in people living with dementia, caregivers reported satisfaction in terms of coordination, continuity of care, and convenience.[17] They also felt the HBPC was in line with their goals for their loved one and that emotional needs were met by the care team. The HBPC practice that Kelsey McFarlane, PA-C, worked for included a primary care provider and clinical assistant, and the company partnered with various other services, including pharmacy, home care, and laboratory services (email communication, October 2022). This coordination allowed for services to be brought to the patient, which reduced transportation needs and the amount of time required for the patient to leave their home environment. Similarly, the HBPC team that Marisa Felker, PA-C, works with includes a primary care provider, direct care staff, nurse, psychiatrist, behavioral specialist, medical assistant, and often a physical therapist, occupational therapist, or speech therapist based on need (email communication, August 2022). Having these resources all available in-home provides a benefit to HBPC. In traditional in-office primary care, these separate services often need to be coordinated by the patient or their caregiver, and may be at a number of different locations. Lessening this burden for patients with increased needs can increase satisfaction for the patient and caregiver.

Disadvantages of HBPC in relation to patient satisfaction include coordination difficulties and eligibility requirements.[6] Coordination challenges involve meeting both medical and non-medical or social needs. Partnerships are not always seamless, and administrative tasks such

as referrals or orders are often missed in HBPC models (Kelsey McFarlane, PA-C, email communication, October 2022). If partnerships are unreliable or delayed, preventable emergency department or urgent care visits occur.

One solution to this issue would be utilizing a care management model, but this is not used among primary care providers and would need to be built upon. In addition, only 19% of the HBPC practices used electronic medical records in a 2018 study on HBPC coordination for homebound adults.[6] These practices also commonly lacked a point person for care coordination. Both medical providers and caregivers expressed the need for improvement in communication between the HBPC practice and the patient or caregiver.[6,17] Caregivers faced difficulty finding assistance with personal care, medical expenses, and after-hours support. They were often told to seek help elsewhere in these areas, further confirming a lack of communication regarding which services each HBPC practice provides.[17] By implementing an electronic medical record system and care management, coordination may improve. Communication with outside providers becomes more difficult without an electronic medical record system utilized in the HBPC agency.

Although the HBPC model allows for increased shared decision making and individualized care, a study interviewing people with dementia found this area to be lacking.[15] The patients with dementia felt that they were not involved in their care planning and that several decisions were being made for them. Individualized care can be difficult with a HBPC model for patients who require specialists. Limitations exist for what primary care providers, specifically physician assistants and nurse practitioners, can safely manage at a patient's home (Kelsey McFarlane, PA-C, email communication, October 2022). The primary care provider can feel

forced to take on a specialist role for patients with complex physical and mental health conditions if the HBPC agency does not have access to specialty resources.

Another perspective to consider is that patients with dementia or in care facilities often benefit from going into the community (Kelsey McFarlane, PA-C, email communication, October 2022). Some people "feel HBPC further institutionalizes and isolates people" (Kelsey McFarlane, PA-C, email communication, October 2022). Before choosing HBPC, patients, their caregivers, and their healthcare teams should consider if this care model will be isolating or further distance the patient from their community. The benefits of comfort and ease versus the risks of institutionalization need to be weighed for each individual patient, while also considering the disease progression of the individual's dementia and other ways the patient engages socially or with the community. In evaluating patient satisfaction in HBPC, factors to examine include quality of life, social needs, burdensome transitions, available resources, individualized care, and isolation.

Discussion/Analysis

Optimizing standard of care for those living with dementia is essential for the health and safety of patients, and to decrease the healthcare burden as the population ages. As this literature review demonstrates, HBPC is a strong treatment model for patients with dementia. While the decision to see a primary care provider at home versus in a clinic needs to be assessed for each person considering their specific needs, HBPC offers unique and individualized care. Factors to consider when deciding which care model is best for a patient include cost, medication needs, and the components of care that will improve patient and caregiver satisfaction.

Homebound older adults often have functional impairment, a lack of social support, a decrease in mobility, and cost limitations that make it more challenging to be seen by a primary care provider in a clinic. When these individuals do not have routine preventative care, their chances of presenting to the emergency department, hospital, or higher level of care increase.[6] A decrease in hospital visits can reduce cost and distress levels for the patient, while also saving the healthcare system money and resources. HBPC has demonstrated decreased costs for patients according to studies by the Department of Veterans Affairs and non-Veterans Affairs practices, as well as the Center for Medicare and Medicaid Innovation's Independence at Home project.[5] Some HBPC agencies use value-based contracts instead of fee-for-service. Value-based contracts are a model in which the providers are paid based on patient health outcomes.[11] Not only does this model reduce costs for patients, especially those with effectively managed chronic conditions, but also helps ensure that the focus of care is on quality instead of quantity. When optimized, HBPC is beneficial in terms of cost for the patient and for the healthcare system as a whole.

Many homebound adults with dementia require increased support with medication adherence.[6] HBPC has the potential to fill this need through at-home services and visits in which aid can be provided with medication administration, reminders, and education. This additional support holds value because more antidementia drugs are used in patients who receive HBPC.[13] These medications can improve cognitive function, decrease behavioral symptoms, and improve activities of daily living. Although many of these benefits can also be met with an in-office primary care provider, being in the patient's environment can shine light on barriers to medication adherence.

Due to the ability of a HBPC provider to see the patient's environment, many social determinants of health factors can be considered more easily. Unmet needs such as safety, housing, nutrition, medications, and social support may be brought forward and more resources have the opportunity to be provided. These needs can be filled without taking patients out of their environment, reducing fear and behavioral symptoms while increasing feelings of autonomy and belonging (Marisa Felker, PA-C, email communication, August 2022). In turn, patient satisfaction related to neuropsychiatric symptoms, caregiver burden, and functional abilities have been found to improve in HBPC settings.[13] Through bringing awareness to and addressing environmental and social needs, health outcomes are likely to improve.[6] While HBPC can benefit patient outcomes and satisfaction, caregivers also reported satisfaction, specifically in relation to coordination, continuity of care, convenience, medical goals, and emotional needs.[17] Caregiver satisfaction can help reduce burnout and increase the quality of care they provide to the patient.

In order for HBPC to be effective and safe, a consistent interdisciplinary team with coherent communication needs to be established.[18] This team may involve partnerships with various specialists and outside services, requiring a high level of reliability and trust (Marisa Felker, PA-C, email communication, August 2022). Increased funding for staff will aid in establishing a consistent treatment team (Kelsey McFarlane, PA-C, email communication, October 2022). By increasing funding, staff turnover and burnout can decrease. In turn, patients may feel more at ease through forming trusting relationships with the staff. With a dependable treatment team, the patients and staff will likely work more smoothly together.

Another factor contributing to the success of HBPC is having a system in place for ongoing assessment of patient satisfaction and quality of care. This evaluation will aid in

ensuring the best care for patients and providing the opportunity for evolution of the system. Necessary changes may relate to specialty services, care coordination, and communication. Evaluations may include surveys, open door policies, or having someone specific to direct all concerns with.. HBPC agencies will operate more smoothly with up to date technology and electronic medical records, in terms of both patient care and administrative tasks. While most in-office primary care clinics operate on electronic medical records with sharing capabilities, many HBPC clinics are behind. Having up to date medical instruments and technology is imperative to providing the best care. Considering cost, medication, and patient satisfaction, HBPC has the capability to be beneficial for patients with dementia.

Conclusions

Individuals living with dementia deserve reliable, accessible, and quality preventative healthcare, but often face barriers that make it difficult to consistently access traditional in-office primary care. HBPC holds the potential to offer a decrease in the cost of care, increase in medication compliance and understanding, and improvement in patient satisfaction. These benefits not only apply to patients, but also to caregivers and healthcare systems. In order to optimize these positive qualities, HBPC needs increased funding and resources to ensure adequate care coordination, staffing, specialty services, and up-to-date technology.

This literature review examines if patients with dementia receive improved care with HBPC versus in office primary care. Before choosing HBPC for an individual with dementia, their specific needs, goals, and circumstances should be considered. Considering cost, medications, and patient satisfaction, HBPC can be beneficial for patients with dementia. More research needs to be done to find how to best utilize HBPC.

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