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Understanding Significance, Challenges, and Barriers in Home-based Medical Care: A Thematic Review of Literature

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Abstract

Home-based medical care (HBMC) is emerging as a cornerstone of modern healthcare, offering a pragmatic solution to the evolving needs of patients. This form of care, which delivers personalized and patient-centric services, catering to individual needs within the familiar environment of their homes, is gaining traction for its ability to improve patient outcomes while simultaneously reducing healthcare costs. This thematic review of the literature aims to shed light on the significance, challenges, and barriers in HBMC. The importance of HBMC in meeting the needs of patients, particularly those with chronic illnesses, disabilities, or advanced age, is highlighted in this paper through analysis of existing research. However, the widespread implementation and effective delivery of HBMC encounter a myriad of challenges. Financial constraints often limit the availability of resources necessary to sustain and expand HBMC programs. Moreover, navigating the regulatory landscape can be daunting, requiring careful adherence to complex standards and guidelines. In addition to financial and regulatory hurdles, inadequacies in infrastructure present a formidable challenge to the adoption of HBMC, since a robust infrastructure is essential to its success. Continued research is needed to identify environmental factors that impact health outcomes in home-based settings, and to evolve best practices for enhancing the quality and accessibility of care. By bridging these research gaps and implementing evidence-based strategies, we can ensure that HBMC continues to evolve as a vital component of the healthcare system. This paper concludes with recommendations for policymakers, healthcare providers, and researchers to overcome challenges hindering the optimization of home-based medical care delivery.

Keywords: Home-based medical care, Home-based healthcare, Patient outcomes, Healthcare accessibility, Space design factors

INTRODUCTION

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Home-based medical care (HBMC) has emerged as a viable alternative to traditional hospital care. It offers a comfortable and familiar environment for patients to recover from ailments and recuperate following surgical procedures, as well as palliative care [1]. For the elderly, HBMC is a cost-effective option for active aging, providing autonomy and dignity while living amidst the caring company of family members [2].

The HBMC refers to the provision of medical services to patients in their own homes, encompassing a wide range of healthcare interventions, including skilled nursing care, physical therapy, medication management, and palliative care. The concept of HBMC has gained increasing

recognition and acceptance as an alternative or complementary approach to traditional hospital-based care, particularly for patients with chronic illnesses, post-surgical recovery, disabilities, advanced age, and end-of-life care [3].

The various features of the home environment play a critical role in ensuring positive health outcomes and improving patient comfort and satisfaction. The design of spaces for facilitating HBMC requires careful consideration of various factors to ensure a safe, comfortable, and supportive environment for patients and the elderly.

The Uma Educational and Technical Society, a leading NGO in Kakinada district, Andhra Pradesh, has been working towards the cause of disability for more than 35 years. The NGO emphasizes the role of familiar surroundings in the home-based rehabilitation process, which makes it easier for patients to resume activities of daily living [4].

This paper presents an in-depth thematic review of the literature surrounding HBMC and investigates its multifaceted dimensions, including clinical effectiveness, patient experiences, caregiver perspectives, and the evolving landscape of telehealth technologies. It offers an understanding of the implications and challenges associated with the provision of medical care in patients' homes. Suggestions are provided to direct the continuous advancement and application of HBMC, including recommendations for policy, practice, and future research.

METHODOLOGY

A thorough literature search was conducted using PubMed, Scopus, and Google Scholar. The search terms used included "Home-based medical care," "Home Hospitalization," "Space Design" and "Health Outcomes." The inclusion criterion for the articles was peer-reviewed publications in English from 2000 to 2022. A total of 30 articles were selected for this literature review paper covering studies conducted in various countries to highlight the different factors that influence the design of home environments for recovery and the continuum of care for chronic and post-acute medical conditions of residents.

DISCUSSION

The information reviewed was identified under five main themes about all the dimensions of healthcare delivery to patients receiving HBMC. The themes included the following:

Significance of Home-based Medical Care

According to the American Hospital Association, hospital-at-home represents an effective strategy that enhances all three facets of the value equation: it improves outcomes, enhances patient experience, and reduces costs. A growing body of research suggests a reduction in mortality in patients who have received hospital-at-home care. Clinical trials have revealed that the expense associated with managing an acute care episode at home is 38% lower than that of usual care patients.

The provision of HBMC offers several significant advantages over hospital-based care. First, home-based medical care promotes patient-centeredness by enabling individuals to receive care in familiar and comfortable surroundings, thereby enhancing their overall quality of life [5]. Moreover, HBMC has been shown to improve patient outcomes, including reduced hospital readmissions, decreased mortality rates, and enhanced functional status [6]. Additionally, it has the potential to mitigate healthcare disparities by increasing access to services in geographically isolated or underserved communities, such as rural communities and individuals with limited mobility [7]. Family caregivers reported a reduction in care burden when delivering care in familiar surroundings and freedom from the hassle of visiting the patient in the hospital and the accompanying anxiety.

Hospital-at-home models have also provided a much-needed alternative for patient care to hospitals overwhelmed by surge events, as seen during the COVID-19 outbreak. Critical clinical staff, such as

respiratory therapists, are available for patients with COVID-19 along with enhanced respiratory remote monitoring to take care of the patient's vitals [8].

According to Kim Carollo (Healing at home: hospital-at-home model takes care of patients), healthcare professionals are working towards strategies for reducing hospitalizations. In pursuit of improved clinical outcomes, increased patient satisfaction, and reduced costs, the HBMC model is gaining prominence and is attracting attention from an increasing number of hospital systems [9].

Effectiveness of Home-based Medical Care

Numerous studies have demonstrated the effectiveness of HBMC in various clinical settings. For example, a meta-analysis [10] found that home-based interventions for heart failure management were associated with significant reductions in hospital readmissions and mortality rates. Similarly, a systematic review [11] showed that home-based rehabilitation has considerable positive effects on the improvement of physical functioning after hip fracture and for patients recovering from orthopedic surgeries, including improved functional outcomes and higher patient satisfaction ratings. These findings highlight the potential of HBMC to deliver high-quality patient-centered services across different healthcare settings and populations. Shepperd et al. conducted a systematic review highlighting the success of admission-avoidance hospital-at-home programs in reducing hospital readmissions.

A randomized controlled trial [12] compared two acute care delivery models: advanced care at home (Mayo Clinic's ACH program, which is a novel virtual hybrid model of "Hospital-at-Home") and traditional brick-and-mortar hospital care in acutely ill patients. The findings of the trial suggest that delivering acute hospital care to patients at home might reduce costs and improve the patient's experience. Another randomized multicenter trial [7] demonstrated that home-based primary care intervention improved most HR-QoL (Health-Related Quality of Life) measures among terminally ill patients and satisfaction among non-terminally ill patients. It simultaneously improved caregiver HR-QoL satisfaction with care and caregiver burden, and reduced hospital readmissions at the same time [13].

Substituting hospital-based care with HBMC reduces costs, healthcare use, and readmission. It also results in increased physical activity (due to ease of movement within a familiar home environment) in patients, thereby facilitating early recovery [14].

Challenges and Barriers

Despite its potential benefits, HBMC faces several challenges and barriers to its implementation. One of the primary challenges is regulatory complexity, as home healthcare providers must navigate a myriad of state and federal regulations governing licensure, reimbursement, and quality assurance [15]. Regulatory issues, as identified by the Centers for Medicare and Medicaid Services, require careful consideration when establishing a standardized framework that ensures the quality, safety, and reimbursement of home-based care services.

Furthermore, resource constraints, including shortages of skilled personnel, equipment, and inadequate infrastructure, pose significant obstacles to the scalability and sustainability of HBMC programs. The delicate balance between providing high-quality care and managing limited resources necessitates a strategic approach to workforce development, infrastructure investment, and technological integration.

In the realm of caregiving, Reinhard [16] highlights the crucial role played by family members and informal caregivers in home-based medical care. The inherent caregiver burden resulting from the responsibility of providing care and support to homebound patients demands attention and intervention strategies to prevent burnout, enhance support systems, and improve overall caregiver well-being [17].

Access to both health and support services is important for maintaining caregivers' health and wellness. To effectively address these needs, a coordinated interdisciplinary outreach service, including peer support, is needed beyond traditional healthcare services [18].

Role of Space Design Factors in Facilitating HBMC

According to the WHO Health Organization International Classification of Diseases and Related Health Problems, diseases result in disability, which is part of the human condition. The term 'Disability' is used to denote impairments, activity limitations, and participation restrictions. It pertains to the negative aspects of the interaction between an individual (with a health condition) and an individual's contextual factors (environmental and personal factors). Difficulties an individual may have in performing activities of daily living (ADL) can be mitigated by designing interventions and customized solutions. The physical, social, and attitudinal environments in which people live and conduct their lives are either barriers or facilitators of the person's independence in functioning and ability to perform ADL. A safe, flexible, and inclusive environment can be provided to patients by designing spaces with careful consideration of the design features. An enabling environment facilitates efficient care delivery by focusing on patient-centered issues and may find increasing appeal among healthcare systems, as it adds value to the idea of HBMC [19].

Smart home devices and sensor-based technologies are gaining acceptance in residential settings. However, these solutions are also perceived as intrusive, and many patients do not want them to be placed in their home environment. The findings of a pilot feasibility study [20] suggest that perceived privacy concerns, perceived usefulness, and curiosity about technology are strong factors when considering which device to install at home. Future trials should be conducted to consider older adults' preferences for the different types and services offered by smart home devices to be installed and the user-friendliness of such devices.

Future Directions and Recommendations

To address the challenges associated with HBMC, concerted efforts are needed from policymakers, healthcare providers, and researchers. First, policymakers should streamline regulatory processes and reimbursement mechanisms to facilitate the expansion of home-based care services and ensure equitable access to all patients. Additionally, healthcare organizations must invest in workforce development initiatives to enhance the recruitment, training, and retention of skilled professionals in home healthcare specialties. Moreover, innovative models of care delivery, such as telemedicine and remote monitoring technologies, hold promises for optimizing the efficiency and effectiveness of HBMC [20].

A mixed epidemiological and randomized controlled trial on the impact of a new method, 'teleSCI' (telemedicine interventions for Spinal Cord Injuries), compared to the old method (usual care), with a focus on the quality of health care services, offers insight into identifying the challenges experienced by patients. This trial provides knowledge about predictable, comprehensive, and evidence-based management and prevention of risk factors [21].

A randomized controlled trial [10] developed an evaluation of comprehensive, facilitated, home-based REACH-HF (Rehabilitation Enablement in Chronic Heart Failure Intervention, a facilitated self-care, and home-based cardiac rehabilitation program) for usual care for adults with heart failure, and caregivers indicated clinical effectiveness in terms of health-related quality of life and patient self-care. The economic analysis conducted alongside the fully randomized controlled trial did not produce significant differences in the EuroQol-5D-5L (a descriptive system comprising five dimensions). However, economic modeling indicated that the intervention was more cost-effective than standard care across dimensions, including mobility, self-care, usual activities, pain/discomfort, and anxiety/depression (each with five levels: no problems, slight problems, moderate problems, severe problems, and extreme problems). The home-based REACH-HF intervention presents a novel evidence-based approach to cardiac rehabilitation, potentially enhancing participation among patients with heart failure who are unwilling or unable to access hospital-based programs. This underscores the

importance of HBMC. Finally, further research is needed to evaluate the comparative effectiveness and cost-effectiveness of home-based care models across diverse patient populations under various clinical conditions.

CONCLUSION

As healthcare transforms, prioritizing value, and patient-centric approaches, a HBMC approach is likely to become more attractive to healthcare systems. With healthcare professionals striving for improved outcomes, heightened patient satisfaction, and reduced costs, the focus is on strategies aimed at preventing hospital admissions. Given that the HBMC operates on the principle of minimizing hospital stays in line with patient preferences, it is no wonder that this model is gaining momentum within an expanding array of hospital systems.

This literature review sheds light on the significance, challenges, and barriers associated with HBMC. Through a comprehensive analysis of existing research, it becomes evident that HBMC plays a crucial role in meeting the diverse needs of patients, particularly those with chronic illnesses, disabilities, or advanced age, by providing personalized and patient-centered healthcare services in the comfort of their homes.

Notwithstanding the benefits, several challenges and barriers exist in the implementation and delivery of HBMC. These include logistical challenges such as ensuring adequate staffing, coordination among healthcare providers, and access to necessary medical equipment and supplies. Additionally, financial constraints, regulatory requirements, and caregiver burdens pose significant obstacles to the widespread adoption and sustainability of home-based care models. Addressing these challenges and barriers requires a multifaceted approach involving collaboration among policymakers, healthcare providers, caregivers, and patients. Strategies such as expanding reimbursement mechanisms, enhancing training and education for healthcare professionals, investing in technology and telehealth solutions, and strengthening community-based support systems are essential for overcoming these obstacles and promoting the effective delivery of HBMC.

Further research is needed to explore innovative models of care delivery, evaluate the impact of HBMC on patient outcomes and healthcare costs, and identify best practices to overcome barriers and improve the quality and accessibility of home-based care environments. By addressing these research gaps and implementing evidence-based strategies, we can ensure that HBMC continues to evolve as a vital component of our healthcare system, ultimately improving patient outcomes, enhancing healthcare delivery, and promoting health equity.

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