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Impact of Home-Centered Care on Type 2 Diabetes Mellitus: A Comprehensive Review

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ABSTRACT

Type 2 diabetes mellitus (T2DM) is a prevalent chronic condition with a growing global burden, requiring sustainable management strategies that extend beyond clinical settings. Home-centered care (HCC), which focuses on patient management within the home environment, has emerged as a transformative approach. This review explores the impact of HCC on glycemic control, lifestyle adherence, psychological well-being, and healthcare costs. It highlights the benefits of personalized care, technological advancements, and family engagement in managing T2DM. Additionally, it addresses the challenges of implementing HCC, including resource allocation, caregiver burden, and health inequities. HCC has proven effective in enhancing patient outcomes and satisfaction, offering a pathway for comprehensive diabetes care in the future.

Introduction

Type 2 diabetes mellitus (T2DM) is a global health crisis characterized by insulin resistance, hyperglycemia, and associated complications such as cardiovascular disease, nephropathy, and neuropathy. The International Diabetes Federation (IDF) reported that approximately 537 million adults were living with diabetes in 2021, and this number is projected to rise significantly by 2045(1). Managing T2DM requires an integrated approach encompassing medical treatment, lifestyle changes, and patient engagement. Traditional clinical management often falls short in addressing barriers such as limited access to care, inadequate patient education, and the psychological toll of chronic disease. Home-centered care (HCC) has emerged as a patient-focused strategy that aims to deliver care within the comfort of the patient's home, fostering self-management and reducing reliance on clinical visits. By integrating telemedicine, personalized coaching, and family involvement, HCC addresses the multifaceted challenges of T2DM management. This review examines the impact of HCC on managing T2DM, focusing on its benefits in glycemic control, self-management, quality of life, and cost-effectiveness. It also discusses the challenges of implementing HCC and explores future directions to enhance its adoption and effectiveness.

1. Benefits of Home-Centered Care in T2DM Management

1.1. Improved Glycemic Control

Continuous monitoring through home-based care allows for better glycemic control. Telehealth devices, such as glucose monitoring systems, provide real-time data that enable healthcare providers to make timely adjustments to treatment

plans. Studies have shown significant reductions in HbA1c levels among patients receiving HCC interventions compared to traditional care models (2).

1.2. Enhanced Self-Management

HCC emphasizes patient education, empowering individuals to take control of their condition. In-home coaching and educational sessions on diet, exercise, and medication adherence improve self-efficacy. A study highlighted the effectiveness of HCC in promoting self-management behaviors, leading to better health outcomes(3).

1.3. Psychological Well-Being

Living with T2DM often imposes a psychological burden, including anxiety and depression. HCC fosters a supportive environment by involving family members and providing psychological counseling. Patients receiving home-centered interventions report higher satisfaction and reduced feelings of isolation (4).

1.4. Cost-Effectiveness

Although implementing HCC requires upfront investments in technology and training, it significantly reduces healthcare costs in the long term by decreasing hospital admissions and emergency visits. Study (5) found that HCC models are cost-effective for managing chronic conditions like T2DM.

1.5. Lifestyle Modifications

HCC integrates tailored interventions for dietary habits and physical activity within the patient's daily routines. For instance, in-home visits by dietitians and physiotherapists provide practical strategies for lifestyle modifications, leading to sustained improvements in metabolic health (6).

2. Challenges in Implementing HCC for T2DM

2.1. Resource Allocation

The initial setup of HCC programs requires substantial investments in telehealth devices, staff training, and logistical support.

2.2. Technological Barriers

Access to technology remains a challenge in underserved and rural areas, limiting the reach of HCC programs.

2.3. Caregiver Burden

Family members involved in HCC may experience stress and burnout. Support mechanisms for caregivers are essential to ensure the program's sustainability.

2.4. Health Inequities

Socioeconomic disparities can affect the accessibility and success of HCC, necessitating targeted interventions for vulnerable populations.

Future Directions

Advancements in technology, such as wearable health devices and artificial intelligence, have the potential to enhance HCC for T2DM. Policymakers should focus on creating equitable access to HCC programs and incentivizing healthcare providers to adopt these models. Research into optimizing resource allocation and addressing caregiver challenges will be crucial for scaling HCC effectively.

Conclusion

Home-centered care represents a paradigm shift in T2DM management, offering comprehensive solutions to improve glycemic control, patient self-management, and quality of life while reducing healthcare costs. Although challenges remain, such as resource allocation and health inequities, HCC has the potential to transform diabetes care. Integrating advanced technologies and addressing implementation barriers will be critical for realizing its full benefits.

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