

Global Diabetes 2020: Health information Technologies in diabetes management - Eduardo J Simoes - University of Missouri

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Abstract:

About 1 in 11 adults worldwide now have DM, 90% of who have type 2 diabetes (T2D). Successful glycaemic control helps to prevent and reduce complications of T2D, including disorder, kidney disease, blindness, neuropathy, and limb amputation, and reduce death related to the disease. However, maintaining optimal glycaemic control requires on-going monitoring and treatment, which can be costly and challenging. To reinforce diabetes management, the event of innovative self-care strategies is warranted. Advances in health information technologies (HITs) can have been introduced approaches that support effective and affordable health-care delivery and patient education. Technologies in the mobile, computer, e-mail, and Internet approaches have shown evidence in enhancing chronic disease management, suggesting great potential for diabetes management technologies. During this chapter, we provided a summary of the HITs in use for T2D management. We synthesized the foremost recent findings on HITs' effect in reducing HbA1c and managing complications, cardiovascular conditions, especially. Further, we discussed limitations within the present research during this area and implications for future research. Last, we presented challenges of applying HITs in T2D management within the real-world context and suggested steps to maneuver forward.

Keywords: Health information technologies, type 2 DM, glycaemic control, HbA1c

Introduction: Diabetes is that the fastest growing chronic condition worldwide. The prevalence of people with type 2 diabetes (T2D) is growing in each country. Diabetes is additionally the seventh leading explanation for death within the planet. Around 1.6 million people died because of diabetes in 2016. Higher blood glucose levels also caused an extra 2.2 million deaths, by increasing the risks of cardiovascular and other complications like kidney disease, blindness, neuropathy and limb amputation. Successful glycaemic control can prevent and reduce these complications. However, to require care of optimal glycaemic control requires on-going monitoring and treatment, which can be costly and challenging. Advances in health information technologies (HITs) have introduced approaches that support effective and affordable health-care delivery and education.

A. The Potential of HITs in Chronic Disease Management: HITs may include a broad range of technologies, electronic tools, applications, or systems that provide patient care, information, recommendations, or services for promotion of health and health care. The advantages of using HITs in health care are well documented. They have the potential to empower patients and support a transition from a task during which the patient is that the passive recipient of care services to an active role during which the patient is informed, has choices, and is involved within the decision-making process.

B. HITs in Glycaemic Control among Patients with T2D: A growing research attention has been given to gauge HITs' impact on diabetes management, including the first management goal, glycaemic status, and major complications like cardiovascular conditions. Previous reviews on this subject suggested that HITs have the potential to reinforce these disease outcomes. However, effect size is restricted to the foremost outcome; glycated haemoglobin (HbA1c) varied between studies with reported mean difference ranging from -0.20 to -0.57%. Presented the synthesized findings from the most recent systematic reviews. Heitkemper et al. searched randomized control trials (RCTs) that

studied the effect of HITs on HbA1c among medically underserved patients. During this meta-analysis of 10 eligible trials, HITs were associated with significant HbA1c reduction at six months (pooled standardized difference in mean: -0.36, 95% CI -0.53, -0.19) with diminishing but still significant effect at 12 months (pooled standardized difference in mean: -0.27, 95% CI -0.49, -0.04). HITs in managing cardiovascular risks among patients with T2D are usually amid cardiovascular complications. Adults with diabetes have a 77-87% prevalence of hypertension, a 74-81% prevalence of elevated LDL cholesterol (LDL), and a 62-67% prevalence of obesity. Disorder (CVD) is recognized because the foremost frequent explanation for morbidity and mortality in patients with diabetes, causing up to 70% of all deaths during this patient group. Type 2 diabetes (T2D) confers an approximate twofold elevation of CVD risk, like that of a previous myocardial infarction.

C. Research Limitations and Implications: This research on the effect of HITs in diabetes management has several limitations. First of all, the published trials often don't provide protocols for studies. There's also lack of data on the theoretical bases of the interventions, and whether the HIT interventions are amid other pharmaceutical or lifestyle therapies in their publications. As these HIT interventions are the main therapeutic agents, it'd be beneficial to explicitly prescribe interventions for trials and state the active components (behaviour-change techniques), dose (frequency and intensity of interactions), route (mode of delivery), and duration of treatment.

D. Barriers of using HITs within the Real-world Context and Steps to Maneuver Forward: While features of HITs can expand patients' ability in diabetes management and thus the results from the prevailing research showed their positive effects on outcomes of HbA1c and CVD risk factors, many of these applications described above have so far been explored predominantly within clinical trials rather than a real-world context. For folks that are widely utilized in real health-care setting, like electronic patient record system; both health-care providers and patients have reported difficulties for engagement. Multiple sources of tension contribute to those barriers. First of all, the reliability and also validity of some HITs is concerning.

Conclusion: Overall, this evidence shows that HITs have favorable impact on glycaemic control and CVD risk management among patients with T2D. Future studies can should be examine the long-term effects of HITs and their cost-effectiveness, potential harms, and test and verify their effectiveness in glycaemic control and other important health indicators like CVD risk factors, among diverse populations. HITs could even be valuable tools in enhancing human health and well-being overall. However, their advances also pose challenges in aspects of validity and reliability, patients' privacy, security, and engagement. These issues need to be addressed before a broader implementation of HITs within the real-world setting.

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