

Introduction

Telemedicine (TM), allows providers to communicate with and treat patients via video-conferencing, electronic medical record (EMR), and/or via secure email messaging.

This mode of communication can be done in a more efficient and timely fashion instead of waiting for the usual care (UC), visit for disease management.

Patients with type 1 or type 2 diabetes mellitus (DM), have co-morbidities that can be improved by increasing the patient's self-management of their disease.

Clinical Question:

“Does the usage of TM improve self-management outcomes in patients with type 1 and type 2 diabetic patients, as compared to UC or face-to-face visits?”

Significance

World Health Organization (2014) estimated 347 million people with DM in the world. In 2030, DM will be the 7th leading cause of death world-wide

Cost of DM management is about \$245 billion/year. \$176 direct cost to patients and healthcare, loss of work productivity, and premature mortality includes \$69 billion (CDC, 2012).

In U.S. 29 million Americans have DM, 215,000 are under the age of 20 years old (2011).

Objectives

All pages of patients with type 1 or type 2 DM, regardless of ethnicity, race and gender.

Evaluated the effect of TM vs. UC on HgbA1C, LDL cholesterol, as well as systolic and diastolic blood pressure (BP).

Additional outcomes measured included: self-blood glucose monitoring, adherence to appointments, behavioral change and weight management.



Methods

This study used RCT, quasi-experimental and case report studies.

A search of four databases, and relevant organizational websites were searched. 450 articles were found, after duplicates removed, 254 studies were screened by title and abstract for eligibility.

83 full-text articles were retrieved, and each was assessed for eligibility by two independent reviewers using JBI Critical Appraisal Tool. 75 articles were excluded, and the remaining 8 full-text studies, RCT, from 1990-2014 were critically appraised and included in the systematic review.

Data was extracted and included in the SR using JBI MASTARI by 2 independent reviewers. Quantitative data was pooled, and meta-analysis was done through JBI MASTARI program.

Effect sizes expressed as mean difference for continuous data, and their 95% confidence intervals (CI) were calculated.

Results

The meta-analysis was only able to be done on 3 out of the 8 included studies. The usage of TM in patients with DM did show a meaningful reduction in HgbA1C (95% CI, -0.25, -0.06), as well as reduction in SBP (95% CI, -0.25, -0.06), and DBP (95% CI, -0.26, -0.04). TM did also reduce LDL, but not as significant as the other outcomes (95% CI, -0.41, -0.02).

Practice Implications

TM usage in some studies did show improvement in self-management (SBG monitoring, adherence to meds, and appointments online).

The studies did show increased connectivity with providers with TM as well as increased knowledge about their disease, as compared to UC visits.

It is not clear what form of TM is most effective. Some studies relied on secure email messages for DM management, other patients participated in educational websites. Some providers gave participants their own educational modules.

Adolescent population studies are scarce, and this population should be included in TM visits with providers early on so they can develop healthy self-management techniques, and lifestyle choices they can use into adulthood.

Conclusion

Most of the complications of DM are manageable, and it starts with a solid education about the disease, and strategies to decrease the risk of developing complications through self-management.

The usage of TM in this study did support improvement in self-management outcomes in patient with type 1 or type 2 DM, as compared to UC or face-to-face visits.

