



Use of secondary clinical data for research related to diabetes self-management education

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Abstract

Background: Diabetes self-management education (DSME) is a key component of ensuring optimal diabetes outcomes. Electronic medical record (EMR) systems have transformed diabetes management by providing organized and useful data. However, important gaps remain in the process of how practice settings track referrals and attendance to DSME.

Purpose: The purpose of this study was to use EMR data to examine patients' demographic, behavioral, and diabetes risk factors by referral pattern to a DSME program in a large midwestern Academic Medical Center.

Methods: A retrospective cross-sectional design using 2006–2013 EMR data from a Clinical Research Data Warehouse (CRDW). Data on 10,000 patients with type 2 diabetes mellitus (T2DM) were randomly extracted from the CRDW for analysis. Multiple logistic regression analysis was employed to explore adjusted associations with referral to DSME.

Results: Seven hundred forty patients with T2DM were referred to DSME. Results show that age at diagnosis, insurance status, race/ethnicity, language, alcohol use, use of insulin, HbA1c, LDL, systolic blood pressure, ophthalmology appointment, coronary artery disease, neuropathy, diabetic-retinopathy, and nephropathy were found to be factors significantly associated with a referral to DSME. Language emerged as a significant result; non-English speakers were more likely to receive a referral to DSME.

Conclusions: Patients referred for DSME had appropriate medical complications or social needs that would benefit from intensive education; however, there remains a considerable opportunity for improving

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the DSME referral process. Aspects of the physician decision-making process to refer or not refer patients to DSME warrant further investigation.

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Education and support for diabetes self-management have been fundamental in caring for patients with type 2 diabetes mellitus (T2DM).¹ Diabetes self-management educations and support (DSME/S) is a comprehensive educational program designed to help people prevent diabetes or manage diabetes. Specifically, DSME is defined as the process of helping patients learn how to manage their diabetes and diabetes self-management support (DSMS) refers to the ongoing support individuals with diabetes receive to successfully manage their condition in the context of everyday life.² The American Diabetes Association (ADA) and the American Association of Diabetes Educators (AADE) endorse the National Standards for DSME/S to promote quality education for individuals with diabetes. The ADA recommends that all individuals with diabetes receive DSME when newly diagnosed and should be encouraged to receive ongoing education as needed.^{2,3}

The primary goals of diabetes education are to enhance diabetes self-care knowledge, skill training, learning how to overcome identified barriers, and to create self-efficacy.² Effective education and support about diabetes self-management empowers patients to take charge of managing their disease, mainly when clinicians and health care systems deliver information in a way that the patient can understand.^{3–5} DSME has resulted in a better understanding of diabetes and improved self-care behaviors, to reduced levels of HbA1c, weight loss, and a better quality of life.⁶ People who have received diabetes education are more likely to use primary care and preventive services; be more proactive in their care; take medications as prescribed; control their glucose, blood pressure, and LDL cholesterol; and have lower health care related costs.^{7,8}

More than 90% of primary care physicians are the main providers of medical care for individuals with diabetes.⁹ Yet, a critical gap remains in primary care about diabetes-related knowledge and processes in caring for patients with diabetes.^{10,11} Although education provided by physicians is valued by patients, physicians may not be able to fully educate their patients on how to best

manage their diabetes. Previous research has documented a lack of sufficient communication about DSME between patients and physicians.^{9–12}

A growing body of literature focuses on understanding the barriers to attendance at DSME programs^{11–19}; however, little is known about the proportion of persons with newly diagnosed T2DM referred to DSME. The use of EMR data presents an opportunity to identify individuals who are at higher risk for developing complications and organize data that will facilitate diabetes management.²⁰ Thus, this study examined patients' demographic, behavioral, and diabetes risk factors associated with referral patterns to DSME who receive care at a midwestern Academic Medical Center that employs an EMR system.

Methods

Data source

A retrospective cross-sectional design was used to investigate referral patterns to DSME among individuals newly diagnosed with T2DM. The study leveraged 2006–2013 de-identified clinical data from the Clinical Research Data Warehouse (CRDW) which stores EMR data. CRDW includes patient demographics, ICD coded diagnoses, ICD and CPT coded procedures, laboratory test results, inpatient pharmacy orders and text within clinical documents, as well as surgical pathology reports and radiology reports. Institutional Review Board approval was acquired before study activities began and the data was de-identified.

Sample

CRDW identified 56,000 patients with T2DM who received care in the Academic Medical Center during 2006–2013. A cohort of 27,000 patients diagnosed with T2DM, subject to additional inclusion criteria – newly diagnosed with at least one year follow-up. The Data Repository Oversight Committee limits data extraction to 10,000 patients. Therefore, 10,000 patients were randomly extracted from the cohort of 27,000 patients (Fig. 1).

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