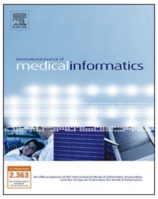
International Journal of Medical Informatics 113 (2018) 9–16

Contents lists available at ScienceDirect

International Journal of Medical Informatics

journal homepage: www.elsevier.com/locate/ijmedinf



Physicians' perceptions of the impact of the EHR on the collection and retrieval of psychosocial information in outpatient diabetes care

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ARTICLE INFO

Keywords:
Health informatics
Electronic health records
Outpatient care
Diabetes
Social determinants

ABSTRACT

Background: Psychosocial information informs clinical decisions by providing crucial context for patients' barriers to recommended self-care; this is especially important in outpatient diabetes care because outcomes are largely dependent upon self-care behavior. Little is known about provider perceptions of use of psychosocial information. Further, while EHRs have dramatically changed how providers interact with patient health information, the EHRs' role in collection and retrieval of psychosocial information is not understood.

Methods: We designed a qualitative study. We used semi-structured interviews to investigate physicians' (N = 17) perspectives on the impact of EHR for psychosocial information use for outpatient Type II diabetes care decisions. We selected the constant comparative method to analyze the data.

Findings: Psychosocial information is perceived as dissimilar from other clinical information such as HbA1c and prescribed medications. Its narrative form conveys the patient's story, which elucidates barriers to following self-care recommendations. The narrative is abstract, and requires interpretation of patterns. Psychosocial information is also circumstantial; hence, the patients' context determines influence on self-care. Furthermore, EHRs can impair the collection of psychosocial information because the designs of EHR tools make it difficult to document, search for, and retrieve it. Templates do not enable users from collecting the patient's 'story', and using free text fields is time consuming. Providers therefore had low use of, and confidence in, the accuracy of psychosocial information in the EHR.

Principal conclusions: Workflows and EHR tools should be re-designed to better support psychosocial information collection and retrieval. Tools should enable recording and summarization of the patient's story, and the rationale for treatment decisions.

1. Background

Psychosocial factors are important to consider in providing diabetes (T2DM) care because they can impact vital self-care behaviors, and consequently outcomes. "Psychosocial factors" is a general term used in various areas of healthcare research. We define psychosocial factors as the psychological factors—how an individual thinks and feels—and social factors—an individual's social milieu—that affect self-care behavior. They are the individual (e.g., financial circumstance, perceptions) and structural (e.g., social support, community resources, and cultural traditions) factors that influence self-care behavior (see Appendix A). For example, financial strain presents barriers to medication adherence [1], and health literacy is inversely associated with HbA1c control [2]. Therefore, providers may consider these factors when making decisions such as recommending counseling and emotional support [3].

Despite its importance to clinical decision-making, psychosocial information use is inconsistent primarily due to lack of appropriate tools to collect and retrieve it [4,5]. The electronic health record (EHR) helps facilitate data collection and supports clinical decision-making [6], and EHR adoption has impacted how various providers make treatment decisions. For example, physicians can use EHR-enabled electronic prescribing to identify prescribing errors and avoid adverse drug events [7]. Nurse practitioners use EHRs to support patient monitoring for physical exams and immunizations [8]. And across hospital systems nurse administrators use EHR-enabled medication management capabilities to help determine the need for postacute referral [9]. Yet providers acknowledge the need for better collection and

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https://doi.org/10.1016/j.ijmedinf.2018.02.003
Received 29 November 2017; Received in revised form 25 January 2018; Accepted 3 February 2018

use of psychosocial information, principally to help them assess, and address, unmet social needs [10].

For EHRs to better support T2DM clinical decisions, we must first understand how EHR adoption has influenced the capture and provision of psychosocial information related to diabetes self-management. Despite considerable literature on EHR adoption and recent research on mining psychosocial information from EHR notes [11], the EHRs' role in psychosocial information collection and use is not clearly understood. Specifically, little is known of physicians' perspectives regarding how EHR use affects their collection and retrieval of patient-specific psychosocial information. Understanding these perceptions is particularly important for meeting the identified need for improved design of EHRs to better incorporate psychosocial information [5].

To address these gaps we interviewed physicians to understand their perceptions concerning psychosocial information use. Furthermore, we investigated their perspectives regarding any changes in its documentation and retrieval before and after the adoption of EHRs.

2. Methods

2.1. Overall study design

We used semi-structured interviews to collect qualitative data to understand the role of psychosocial information in physicians' T2DM-related clinical decisions, and how EHRs support its collection and use.

2.2. Setting and sample

We used purposive sampling to recruit physicians with experience treating adult, T2DM patients in the outpatient setting via various professional networks.

2.3. Data collection process and instruments

The first author (CS) conducted individual, interviews, in person with physician participants. We constructed the interview guide with open ended, main questions based on the extant literature and follow-up probes (see Appendix B). The semi-structured interview format remained consistent, however insights gleaned from the initial interviews helped guide probes in subsequent interviews. Audio recordings of the interviews were transcribed verbatim.

2.4. Data analysis

We used the constant comparative method to analyze the interview data [12]. We used NVivo qualitative analysis software (Version 10) to code the transcripts. We calculated interrater reliability (IRR) to determine the extent to which multiple coders agreed. The first author (CS) coded all transcripts. A second researcher coded 24% randomly selected transcripts (4 of 17). IRR was 98.436%, well above 90%, which is generally recommended. During coding, we used memos to capture ongoing reflections. Both descriptive and explanatory categories emerged from the constant comparative method, and themes were directly observed in the data [13].

3. Results

3.1. Sample

The physician interview sample was drawn from five U.S. states. The 17 interviews took place between February 2014 and January 2015 (see Appendix C). Our analysis resulted in three key findings.

3.2. Key finding #1: psychosocial information is unlike other types of clinical information

Psychosocial information explicates issues such as financial strain, life stressors, level of social support, and experiences of interpersonal violence. According to physicians interviewed, psychosocial information holds characteristics that make it fundamentally different from other clinical information—such as HbA1c, prescribed medications, and comorbidities—in three ways described as follows.

3.2.1. Psychosocial information is in narrative form

Psychosocial information is qualitative in nature and narrative in form. Physician interview participants highlighted the importance of understanding psychosocial factors in the context of the patient's story. Since T2DM is complex to manage, no one aspect of a person's situation was deemed more important than the patients' overall stories. For example, an internal medicine physician (P02) with 20 years of experience practicing in urban areas, stated, *"diabetes is probably the most difficult of diseases … [it requires] management all your life. It affects every facet of your life"*. The patient must undertake relatively strict, daily self-care practices such as specific dietary choices—which can be difficult if, for example, a patient experiences an insecure or chaotic living situation. Consistency with the timing and type of food is an important factor that makes diabetes more difficult to manage, for the patient and for the physician:

> *If you need to be on insulin then you really need to be pretty regiment [ed]. You eat the same amount of carbs every day, and every meal. Otherwise you can't figure out, you can't know how much insulin you should be taking. It needs to be at the same time every day or things get out of whack pretty quickly*. (P16, Family Medicine)

Given its narrative form, use of psychosocial information for outpatient clinical decision-making reflects the providers' interpretation of a narrative, perhaps with the help of the patient. Notably, physicians attempt to assess the degree to which the patient is, as one participant stated, "*managing their lives*." If their story indicates that they are doing this well, then physicians expect good outcomes. However, if physicians perceive the patient's story to include considerable barriers to managing their day-to-day responsibilities, then they will experience barriers to following recommended self-care resulting in poor outcomes. A medical director of a Federally Qualified Health Center described this reasoning as follows:

> *About five years ago, we tried to figure out why [a] sub-population of patients are consistently with A1Cs greater than nine. We looked at demographic information, age, country of origin, male versus female. The only persistent factor that we found out of our population of 700 plus diabetics … [was that they] have a poor control of what's called "managing their lives" … [so they] have obviously a poor control with managing their diabetes*. (P01, Family Medicine)

3.2.2. Psychosocial information is abstract

Psychosocial information is also unique because it is often more abstract and less reified than quantitative clinical information. Specifically, processing and use of psychosocial information relies upon the identification of patterns in a narrative; therefore, it requires considerable judgement to identify and interpret the relevant themes. Physicians assess patterns of life stressors in their attempts to determine barriers patients may be experiencing to recommended self-care. An internal medicine physician (P12) discussed how psychosocial information frequently comes in the form of the patient's story, which EHR templates simply cannot capture, "*a template is very regimented, it's very mechanical. And it just doesn't make any sense. It's not what the person would've told you in your own words. It's a very mechanical version of that, but I think that the gap between the story and the mechanical version is enormous*."