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

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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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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 regimented. 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.”

3.2.3. Psychosocial information is circumstantial

Psychosocial information is defined largely by the patient's circumstances, which determine the meaning of a particular psychosocial factor, and its relevance for self-care. Therefore, understanding the circumstance is needed to determine the importance of psychosocial information to inform clinical decision-making. Context is essential because individuals respond differently to similar situations; for instance, caregiving responsibilities might stand in the way of one patient's self-care behavior, but not another's. Some issues must be addressed for self-care to even be possible. Physicians explain that patients typically prioritize basic needs higher than diabetes self-care. A family medicine physician (P14) with extensive experience with at-risk patients, shared: "... lights, water, cable, internet, phone. All those things. Because if they don't have that, nothing else matters. They're just trying to get the lights on, 'Don't even talk to me about my diabetes, because I'm trying to get my lights on.'" Understanding such circumstances therefore assisted the clinician in determining which issues needed to be addressed most urgently.

3.3. Key finding #2: EHRs can facilitate use of specific psychosocial information

In specific circumstances, physicians use EHR tools to document and retrieve particular psychosocial information to support clinical decisions and to facilitate communication of clinical information across the care team. With regard to documentation of psychosocial information, some information is in structured form, albeit in many different locations in the EHR. The patient's insurer, for example, is documented under patient demographics while mental health diagnosis may be populated during clinical encounters. Details of past referrals, such as to a counselor or social worker, may also be available in structured fields. Some information is also deliberately gathered and recorded in a structured format as part of intake forms and/or interviews. For example, one internal medicine physician (P07) stated that "all intakes get questions about fear of becoming homeless ..."; this information was then used to populate a field that is used in subsequent EHR alerts.

Frequently, however, psychosocial information is documented in free-text format; this is perhaps unsurprising given the narrative form of this information. One of the benefits of these free-text fields is that they can be used to document factors that the provider deems important. For example, a family medicine physician (P01) documented this type of information in the social history part of the EHR; "...part of a doc's social history [is] trying to figure out who's at home. What sort of contacts there are? What impacts those contacts are making on people? So for me, it's important to know where they're working, who they're living with, who's important to them.... It is [captured in the social history]." Such information may also be located in family history, as this family medicine physician continued, "...there's a place where you can put notes. And you can put a note like, 'Patient's son recently committed suicide.' And you can put that in there kind of like in the family section." Psychosocial information may also be recorded in the free-text note for a specific clinical visit. A family medicine physician (P14) described how she uses the EHR during the consultation to document psychosocial information in pithy phrases "it's paraphrased because they'll be telling me a story—about depression, the drinking, their relationships, their home environment."

With regard to the retrieval, physicians typically used the EHR to inform a specific clinical decision or help trigger their memory of relevant psychosocial information. When psychosocial information is in a structured format, an automatic alert can trigger a referral. For example, an internal medicine physician (P07) described intake information that may trigger a referral to support for homeless patients or those who are experiencing unstable living situations: "...that's an automatic flag in our system. We will refer them to Social Work to get them early intervention. It's a great system." Physicians also retrieve notes to help jog their memories; P14 noted that her documentation practice is intended to facilitate future recall: "I don't need to put the whole story in. I

just need a little tickler to remember. I look at it and I'll be like 'Ah! Yes, I remember!' It just comes flowing back, just the entire visit just comes back. I will never remember if I don't type it right then." She described how physicians capture psychosocial information in pithy phrases that help remind them of what may have been discussed during the clinical visit; "it's paraphrased because they'll be telling me a story—about depression, the drinking, their relationships, their home environment."

3.4. Key finding #3: EHRs are not optimized to facilitate the use of psychosocial information

EHRs present barriers to the documentation, retrieval and use of psychosocial information. Difficulty of use raises questions among physicians concerning the completeness of information and contributes to low confidence in the accuracy of psychosocial information in the EHR.

3.4.1. Difficult to document, search for, and use psychosocial information

Participants believe that the complex and multi-layered designs of EHR tools present barriers to documenting, retrieving, and therefore using psychosocial information. There is no standard location in the EHR for documenting psychosocial information that informs crucial clinical decisions. For example, a family medicine physician (P16) said:

I don't think it's as explicit as we'd like it to be. [The] ideal would be some place in the chart where we indicate that we set a patient's A1c goal at 8 or 9 and clarify the reason that we're not doing tight control. It may be at the end of a note, but it's not some place that's easy to find. I'm not even sure that I do it the way that I think would be ideal.

The structured format of social history templates also does not enable capture of pertinent information. The same family medicine physician (P16) described how the templates do not enable providers to capture the patient's story sufficiently:

Epic [EHR] has a big section for social stuff. But it's not all that usable. I don't quite know why it doesn't work, but it doesn't work. Nobody uses it [because] psychosocial history is very story oriented, it's not very checkbox oriented.

Further, there are stark limitations to what structured data fields can capture. For example, an internal medicine physician (P09) discussed limitations for documenting specific psychosocial information in data fields; "you can code for narcotic addiction or tobacco, nicotine addiction, but there's not [a field] for poverty or economic, food insecurity or shelter insecurity. So we missed the boat." More experienced physicians discussed how psychosocial information was captured more effectively prior to EHR adoption. A family medicine physician (P12) who completed his residency in 1984 described limitations of current tools when compared to documenting the patient's story using handwritten notes:

The days before EMR, it'd be written either in a consultation note, or it'd be dictated and typed. But it was a story, because you could read it. And the really good people could, in very succinct terms, elegantly describe what the patient had allayed to them. And you really had a great sense of time, pace of the illness, what things were maybe affecting it, what things weren't. And you had a very good understanding of it. The EMR doesn't do that. It's just scattered, and it's very hard, and it makes a lot of people, like myself, very anxious. And it's very hard for most of us.

Psychosocial information documented in free-text fields may be difficult to use because it is not documented in phrases that provide insight, or is difficult to locate within the text. This is especially the case when other members of the care team may have documented it; "somebody else might find that it's [psychosocial information] cryptic or it's very broad. It doesn't actually give the granular detail or it's simply not in a place they can find [it], and if they did, it's a note, it's a phrase" (P08, Internal Medicine).

Physicians shared how free-text fields enable the capture of patient-

specific psychosocial information, but they must also rely on their memory when it is difficult to retrieve psychosocial information from the EHR, or if they perceive that needed information may not even be in the electronic record, “A lot of things aren’t in the [EHR] chart” (P15, Family Medicine). In such cases, memory embedded within a long relationship with a patient may be sufficient from a physician’s perspective. Additionally, this information can be augmented with confirmation from the patient during a visit; “Most of that [psychosocial information] ... I’m actually relying on what’s in my head. If I vaguely remember something, I’ll ask [the patient] again to verify what I remember, or clarify” (P08, Internal Medicine).

3.4.2. Documenting psychosocial information is time consuming

Psychosocial information may emerge sporadically over the course of the clinical consultation, so it may not be documented because of the time it takes to enter the relevant narrative information. An internal medicine physician (P02) with 20 years of practice experience described how he struggles using free text to document psychosocial information, “I wrestle with free text ... it’s slow.” A family medicine physician (P12) discussed time constraints across different care teams; “Not everybody, myself included, would always include a very robust social history in writing. It just took too much time.” Time constraints result in perceived inconsistency across care teams. For example, another family medicine physician (P15) noted that he might miss information in notes in the family history section because he perceives that other members of the care team may not have time to review it: “I don’t routinely check that [family history] section. I don’t think other people do either.” An internal medicine physician (P08) cited time as a barrier to documenting more extensive psychosocial information, which includes barriers to following the recommended diabetes regimen; “Because of time, sometimes typing really fast it might be something like, ‘DM discussed difficulties with lifestyle,’ and that may be all I say, and I may know a 10-minute story about that but I didn’t put it in [the EHR].” A result of this barrier may be that the information contained in the EHR is incomplete.

4. Discussion

This study is among the first to investigate physicians’ descriptions of the characteristics of psychosocial information and perceptions of using the EHR to collect, retrieve and use this information. Our analysis resulted in three key findings. First, psychosocial information is unlike other clinical information. Second, in particular circumstances the EHR can facilitate use of specific psychosocial information. Third, EHR designs are not optimized for the collection, retrieval and use of psychosocial information.

Findings regarding the narrative nature of psychosocial information are consistent with work showing that patient-centered care delivery is predicated upon understanding the patient’s story; this story guides clinical decision making (i.e. care planning) by enabling providers to share and act upon patient-specific information (i.e. level of social support) [14,15]. This study is also consonant with findings that EHR designs can impede collection of general patient information, though not psychosocial information in particular. For example, various provider types express frustration with attempts to use patient data in free-text fields, specifically to inform a care plan [16]. Findings also align with the Comprehensive Process Model of Clinical Information Interaction in Primary Care (CIIM), which shows that the selection of information for use in clinical decisions is contingent upon evaluation of that information, which flows in part from workflow integration and system usability [17].

However, study findings provide novel insights to help inform improvements in EHR capabilities in light of how they can facilitate use and communication of psychosocial information across the care team, but can present barriers to documentation, retrieval and use. Tools should be refined to better capture and facilitate psychosocial information sharing among providers who make or influence T2DM care

decisions in the outpatient setting. Psychosocial information tends to be in narrative form, conveyed through patient stories. Consequently, tools should be redesigned to specifically collect and facilitate retrieval of this form of information. With regard to documentation, providers need the ability to record rationales for treatment decisions, as well as facilitating both summarization and recording of the story as a whole. Furthermore, building on recent initiatives from the IOM [4,5] and an investigation of EHR tools specifically focused on social determinants of health for community health centers [18], the creation of templates that gather a larger number of relevant structured data points could be helpful. Methods for gathering such data, such as patient surveys and interviewing techniques, require further investigation. Additionally, results highlight the need to design workflows that support documentation of psychosocial information.

To support use, one improvement could be to create novel views (i.e. dashboards) that collate psychosocial information from multiple locations in the EHR to better facilitate the big picture regarding a patient’s situation prior to the clinical consultation [17]. This view might profit from Natural Language Processing techniques that summarize pertinent phrases in free-text notes. These enhancements could better support providers’ abilities to incorporate patient-specific information such as level of social support and financial strain in making T2DM clinical decisions. To inform such efforts, aspects of the patients’ story should be investigated across large patient populations to create templates that focus on the most relevant information. Our research also offers the novel insight that, given the unique nature of psychosocial information, such systems should support the cognitive processes of pattern finding in narrative stories, and of weighing circumstances to facilitate issue prioritization. Building on this, there is a need for additional understanding of how providers use psychosocial information in the primary care setting; this insight should be taken into account in order to ensure effective support for clinical decision-making. This understanding should also enhance user acceptance, an important predictor of use [19,20].

A limitation of this study is a lack of perspective concerning individual EHR packages (e.g., eClinicalWorks, Allscripts, Epic, etc.). However, the sample included considerable diversity of clinical experience and accordingly with various EHRs. Additionally, EHR implementations can be highly customized so comparisons of specific capabilities should be considered in future investigations of EHR use for psychosocial information. Last, physicians who chose to participate may be particularly sensitized to psychosocial factors and their influence on patient self-care. Nevertheless, this study offers novel insights and depth into the documentation, retrieval and use of psychosocial information in outpatient diabetes care.

Future studies should investigate other providers’ (i.e., nurse practitioners, diabetes educators) perceptions concerning the impact of EHR adoption on collection and use of psychosocial information. Also, since our focus was T2DM clinical decisions, future investigations should consider EHR use for other common chronic conditions, including clinical decisions for patients with multi-morbidities.

5. Conclusion

EHR adoption has enabled aggregation and analysis of patient data from different sources. Our findings reveal important opportunities to enhance current EHR tools to better facilitate the use of psychosocial information. New capabilities should be created to better accommodate the distinct characteristics of psychosocial information. These findings support recent recommendations that EHR capabilities should be expanded to include the patient’s socio-cultural context in order to support patient-centered care [21]. Our findings build on these recommendations by demonstrating a need to improve capabilities for collecting and using psychosocial information. This is essential because psychosocial aspects of the patient’s story provide crucial inputs into clinical decisions.

Ethics committee approval

The University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board (IRB) approved the study on February 7, 2014 (eResearch ID HUM00085503; OHRP IRB Registration Number: IRB00000246).

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Conflict of interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

Appendix A. Psychosocial Factors

As initially described in the Background section, psychosocial factors are the psychological factors—how an individual thinks and feels—and social factors—an individual’s social milieu—that affect self-care behavior; they include both individual (e.g., access to financial resources, perceptions of risk) and structural (e.g., level of social support, cultural traditions) factors [22–26]. This is a description of the psychosocial factors investigated in the provider survey.

1. Sociodemographic psychosocial factors

1 Financial strain	lack of resources that impact access to food, safe housing, transportation, or medications
1 Employment	job demands that may influence self-care (e.g. work hours, type of job, ability to take time off for self-care)
1 Payer status/Type of insurance	if a patient has insurance coverage, type of coverage, private insurance, government health insurance (Medicare, Medicaid, Military, State-specific plans, Indian Health Service)
1 Culture and spirituality	cultural norms and traditions which include dietary practices, faith beliefs, and practices
1 Other responsibilities	work, family responsibilities (e.g. serving as caregiver for elderly adults), self-care activities
1 Level of education	level of formal schooling
1 Literacy	Literacy is the ability to use printed and written information to function in society, to achieve one’s goals, and to develop one’s knowledge and potential
1 Country of origin	U.S. born or non-U.S. born, Immigrant status
1 Level of English proficiency	ability to understand and speak English

1. Psychological psychosocial factors

1 Mental health status	appearance; manner and approach; orientation, alertness, and thought processes; mood and affect
1 Life Stressors	negative events, chronic strains, traumas
1 T2DM perceptions-beliefs	perceptions of the relative quality-of-life effects of complications and treatments
1 Health Literacy	measure of patients’ ability to read, comprehend, and act on medical instructions (2)
1 Health Numeracy	the degree to which individuals can obtain, process, and understand the basic quantitative health information and services they need to make appropriate health decisions

1. Social Relationship/Living Conditions psychosocial factors

1 Social Support	social isolation, social connections, support includes four dimensions: appraisal support, informational support, instrumental support and emotional support.
1 Threat of violence – from abusive relationship(s)	a pattern of coercion, physical abuse, sexual abuse, or threat of violence in personal relationships
1 Threat of violence – from community	perception of violence caused by violence-inducing or violence-protecting conditions

Authors’ contributions

Each author contributed equally in the development of the manuscript. Each author contributed to the literature search, study design, data collection, analysis, writing and editing the manuscript.

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1. Neighborhood/Community psychosocial factors

1 Patient's Rural/Urban/Suburban residence setting	residency setting, may influence health care utilization or access
1 Neighborhood residence	physical aspects of a neighborhood that influence a patient's ability to purchase products (food), enable mobility, and interact and informally monitor another's behavior
1 Housing security	Stable housing, access to affordable, safe housing
1 Food security	access to fresh, healthy, and affordable food
1 Access to transportation	barriers which can lead to missed appointments, missed or delayed medication use
1 Access to places to exercise	accessible facilities, include perception of safe places to exercise

Appendix B. Semi-Structured Interview Guide

1 Describe your experience in treating adult, type 2 diabetes patients.

[**Specific Probes:** Length of time treating adult T2DM patients? Current practice setting? Types of T2DM patient population(s) you have treated (e.g. rural/urban; income level; payer status; age, gender, comorbidity-which?)]

1 Describe situations in which you strongly consider clinical practice guidelines? In which situations do you consider them less?

[**Specific Probes:** When you do consider them less, what factors do you consider in establishing alternative treatment goals for specific patients, which we'll refer to as 'patient-centered care goals? What are some examples of these patient-centered care goals that may differ from CPGs, or those that may be organizational or practice goals (e.g. HbA1c of 7.8, instead of 7.0)? What *patient characteristics* trigger consideration?]

1 There is no one, universal definition of psychosocial factors (Martikainen et al., 2002). For the purposes of this study, we define psychosocial factors as those that are *not* genetic, nor directly driven by comorbid conditions; they are psychological and social factors that affect patients, their families and health care providers (IOM, 2008). Describe the psychosocial factors you think are important in making care decisions (e.g. decisions in pursuit of treatment goals which differ from CPGs, referral to support services). How do you consider these factors? What additional psychosocial information would you like to use? Why don't you use it?

[**Guide for Probes:** In RWJ's 2011 Health Care's Blind Side Survey of 1000 physicians they identified social factors that affect health outcomes: **inadequate housing, un-/under-employment, access barriers to transportation, food, or other neighborhood deficiencies.** Also, family factors like **family conflict** and **stress, high levels of cohesion** and **organization, good communication** are associated with T2DM regimen adherence and metabolic control (Delamater et al., 2001).]

1 Describe the situations in which you think it is more important to consider psychosocial factors. For example, for certain clinical situations (e.g. A1c spike, certain patient populations, new patient)? Please describe specific psychosocial information considered more heavily, for specific situations. What role, if any, might psychosocial factors play for new patients, the first patient visit?

[**Guide for Probes:** Example (if needed) patient cases—Mr. A has a history of family stability and employment while Mrs. B is faced with declining cognition and stressed caregiver—can help describe circumstance when certain patient situations trigger certain treatment alternatives (Hackel, 2013). Age—comorbid depression higher in diabetic women than men (Anderson, 2001), other factors could be: employment, housing stability, family support.]

1 How do you use this information in setting patient goals?

[**Guide for Probes:** Where/how do you get information on these factors (EMR)? What are some barriers to accessing this information and using it? Which are currently accessible in the medical record? To what degree do you use this info that may be in the record? What additional information is needed?]

1 Where do you get psychosocial information (specific patient, and/or patient population/groups)? What informs your insight on psychosocial factors? Is there additional information you do not access? If so, how? If not, why not? If you were training new physicians, what psychosocial factors would you tell them they should consider? In which circumstances?

[**Guide for Probes:** How do you know if a patient is uninsured, or experiencing low social support? How do you know if they are experiencing financial barriers to adherence? How do you know if they are experiencing stress due to neighborhood violence? How do you know if a patient may be experiencing barriers to access healthy foods? What information is currently in the medical record? What needs to be added? What are your perceptions of the accuracy of psychosocial (patient) data that is self-reported?]

1 How can we improve collection and use of psychosocial information in order to better support your care decisions? Would an index help you? How would you access and keep it current?

2 Demographics: Type of practice; Family or GP, Internal Medicine; When/where did you complete medical school? When did you complete residency? Type of residency? Where? Did you treat T2DM pts during residency? Where/how did you gather psychosocial insights gathered?

3 Is there anything else you'd like to tell me about your experience with psychosocial factors in treating adult, T2DM pts?

Appendix C. Interview Participants

Specialty	Year Finished Residency	Current Practice Location	Practice Setting	Date	Duration (hh:mm:ss)
P01 Family Medicine	1998	Manchester, NH	FQHC	2.25.2014	46:30
P02 Internal Medicine	1995	Hartford, CT	Clinic of Public Hospital	2.25.2014	45:44
P03 Internal Medicine	2012	E. Lansing, MI	Clinic of Public Hospital	2.28.2014	34:50
P04 Internal Medicine	2015	Detroit, MI	Clinic of Public Hospital	3.20.2014	57:37
P05 Endocrinology	2012	Detroit, MI	Clinic of Public Hospital	3.31.2014	49:46
P06 Family Medicine	2007	Ann Arbor, MI	Clinic of Teaching Hospital	5.29.2014	1:08:39
P07 Internal Medicine	2004	Ann Arbor, MI	University Teaching Hospital	6.9.2014	1:01:10
P08 Internal Medicine	2000	E. Lansing, MI	University Teaching Hospital	6.23.2014	56:39
P09 Internal Medicine	1991	Dallas, TX	Clinic of Private Hospital	6.25.2014	50:19
P10 Family Medicine	2007	Dallas, TX	Community Clinic	6.25.2015	1:00:27
P11 Internal Medicine	2010	Dallas, TX	Community Clinic	6.25.2014	54:45
P12 Family Medicine	1984	Boston, MA	Community Clinic	6.27.2014	1:12:23
P13 Internal Medicine	2009	Ann Arbor, MI	VA, University Teaching Hospital	7.10.2014	1:10:30
P14 Family Medicine	2010	Ann Arbor, MI	VA, University Teaching Hospital	7.15.2014	1:04:46
P15 Family Medicine	2011	Ann Arbor, MI	VA, University Teaching Hospital	7.15.2014	1:20:49
P16 Family Medicine	1998	Ann Arbor, MI	VA, University Teaching Hospital	7.29.2014	1:05:21
P17 Family Medicine	2003	Portage, IN	FQHC	1.16.2015	49:02

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