

## Diabetes stories: use of patient narratives of diabetes to teach patient-centered care

Arno K. Kumagai · Elizabeth A. Murphy · Paula T. Ross

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**Abstract** A critical component to instituting compassionate, patient-centered diabetes care is the training of health care providers. Our institution developed the Family Centered Experience (FCE), a comprehensive 2-year preclinical program based on longitudinal conversations with patients about living with chronic illness. The goal of the FCE is to explore the experience of illness from the patient’s perspective and ultimately to incorporate this perspective in clinical practice. In this qualitative study, we wished to investigate the impact of “diabetes stories”—the stories of FCE volunteers with diabetes—on medical students’ understanding of diabetes and its management. Individual interviews were conducted with medical students who had worked with a volunteer with diabetes to answer the questions: “in what ways was learning through these ‘diabetes stories’ different from that acquired through lectures and textbooks,” and “how did these stories impact the students’ understanding of diabetes and its care?” Thematic analysis of the transcribed interviews was performed using Grounded Theory. Several major themes emerged: There was more to diabetes than the “scientific” knowledge acquired through lectures; the stories challenged students’ assumptions about having or working with people with diabetes and allowed students to see the world through the perspective of someone with diabetes, and the stories motivated students’ development as physicians and influenced their general perspectives of doctoring and medicine. First-person narratives of living with diabetes allow for learning in affective, experiential, and cognitive dimensions, stimulate self reflection and perspective-taking, and enhance growth through the challenging of previous

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A. K. Kumagai · E. A. Murphy  
Department of Internal Medicine, University of Michigan Medical School, Ann Arbor, MI, USA

A. K. Kumagai  
Department of Medical Education, University of Michigan Medical School, Ann Arbor, MI, USA

A. K. Kumagai · P. T. Ross  
Office of Medical Education, University of Michigan Medical School, Ann Arbor, MI, USA

A. K. Kumagai (✉)  
3901 Learning Resource Center #0726, University of Michigan Medical School, Ann Arbor, MI  
48109-0726, USA  
e-mail: akumagai@umich.edu

assumptions, beliefs, and perspectives. This type of learning is transformative and may result in a shift in students' perspectives towards more open, inclusive attitudes towards patient-centered diabetes care.

**Keywords** Doctor–patient relationship · Humanism · Professionalism

## Introduction

Patient-centered approaches to the treatment of chronic illness have become increasingly emphasized in medical education (Greiner and Knebel 2003; Laine and Davidoff 1996). The conceptual basis for these approaches is the recognition of the patient as an individual with his or her own unique perspectives, values, preferences, and life goals (Duggan et al. 2006). It is in this context that the relationship between physician and patient shifts from a “top-down,” expert/novice paradigm towards interactions involving acknowledgment of patient autonomy, collaboration, and shared decision-making. Implicit in this overall perspective is an awareness of the dichotomy between disease and illness, i.e., the difference between the biomedical construct of the pathophysiological processes underlying a medical condition and the subjective experience of an individual who lives with it (Kleinman 1988). Narratives—stories, literature, movies, and other modes of expression—are being extensively used as a means of exploring the subjective experience of illness (Branch et al. 1998; Charon 2001; Kleinman 1988). This exploration is particularly relevant in the case of diabetes, where patients and physicians often have divergent perceptions, concerns, and goals (Anderson 1986; Cohen et al. 1994; Freeman and Loewe 2000; Loewe and Freeman 2000; Ritholz and Jacobson 1998).

To foster a patient-centered approach to medical care, our institution recently implemented a required course, the Family Centered Experience (FCE), as part of a new first- and second-year curriculum (Kumagai 2008; Kumagai et al. 2005). In the FCE, pairs of medical students make scheduled visits over 2 years to the homes of volunteer patients and their families in order to share the volunteers' experiences with serious or chronic illness. These home visits, as well as readings, assignments, and small group discussions, serve as a foundation for the students to explore the experience of chronic illness and its care from the patient's perspective. With few exceptions, the pairs of students work with the same volunteer and same small group during the full 2 years of the program, and because the student pairs are assigned to different small groups, each small group of 10–12 students becomes familiar with the stories of 10–12 volunteers and their families. The FCE is meant to complement the biomedical training that the students receive during their first 2 years in medical school and aims ultimately to train physicians who are equally skilled in understanding both the complexities of clinical medicine and the personal and psychosocial aspects of illness and its care.

In a previous focus group study, we sought to understand the impact that listening to the stories of individuals with chronic illness had on medical students (Kumagai et al. 2005). In the present study, we performed in-depth, face-to-face interviews with individual medical students who had worked with volunteers with diabetes in order to answer two general questions: “In what ways were the students' understanding of diabetes and its management influenced by the stories they had heard,” and “in what ways did this understanding differ from the knowledge they gained through readings and lectures on diabetes and diabetes care?”

## Methods

A qualitative, interview-based approach was selected in lieu of a quantitative survey in order to more fully explore the meanings that the students derived from their interactions with their volunteers (Creswell 1998). All medical students who had worked with a volunteer with either type 1 or type 2 diabetes mellitus in the FCE program for at least 1 year were eligible to participate in the study. Eligible students were invited by email to meet with one of the investigators who had no connection with the course (E.A.M. or P.T.R.) for a brief interview about their experiences with their FCE volunteers. At the time of the interviews, the students were in their second or third year of medical school. The interviews used open-ended questions and were performed by two of the investigators (E.L.M. and P.T.R.). Informed consent was obtained from all participants, as well as consent to audiotape the interviews, and the interviews were held in a location that was convenient for the student and ensured privacy and confidentiality. As a token of appreciation for their time, each student respondent received a \$10 gift certificate from a local coffee stand. Of a possible 40 eligible students, 12 students were interviewed. The final number of students interviewed was dependent on responses to the email invitations, as well as saturation of the emerging themes. Of the students who were interviewed, five were second-year (M2) students, and seven were in their third (M3) year. Interviews lasted from 30 to 60 minutes and were transcribed verbatim. Individuals with both type 1 and type 2 diabetes were represented among their FCE volunteers. FCE volunteers were not interviewed or contacted in this study.

Transcriptions of the interviews were content-analyzed using Grounded Theory methodology (Creswell 1998; Glaser and Strauss 1967; Strauss and Corbin 1998). Grounded Theory seeks to derive theoretical frameworks from the primary data (interview transcripts, journal entries, written reflections, etc.). Its product may be expressed as a theoretical schematic construct through which the structural relationships of individual interactions—as well as the meaning given to those interactions—may be understood (Creswell 1998; Glaser and Strauss 1967). Investigators independently performed “line-by-line” reading of the transcripts of individual interviews, followed by open coding (i.e., identification of general themes). The investigators met and, through discussion and repeated readings of the original transcripts, agreed on general codes. The transcripts were then reread, and axial coding was independently performed to identify relationships and variations among the general codes (Strauss and Corbin 1998). This process was reiterated several times in order to investigate emerging themes and perspectives. Throughout the process, validation of the approach and saturation of codes was considered achieved when repeated analysis of the data reveal no new information (Strauss and Corbin 1998). The open and axial codes were summarized, and the summary was shared with the study participants to solicit suggestions. All aspects of the study received approval by the medical school’s Institutional Review Board.

## Results

Thematic coding revealed five major themes (Table 1), which are described below.

### Theme 1

There is more to diabetes than “scientific knowledge.” Students commented on the “emotional side” of the volunteers’ stories and how the volunteers’ experiences of, and attitudes towards, their diabetes were very different from the “scientific” or “statistical”

**Table 1** Major themes and subthemes from student responses

Major themes	Representative examples
1. There is more to diabetes than “scientific knowledge”	
a. The experiential side of diabetes	[In] lecture, they always focus on the scientific part ... but she’s more focused on how it affects her life and the doctors, how they treated her ... So I think all the scientific stuff, it’s what we’re going to learn short term for the test
b. Volunteers’ stories make diabetes “personal”	I think that in lecture we concentrate on the patient as a representation of everyone at the same time. They’re not talking about anybody in particular. The emphasis is on disease, the process, what can happen. It’s all statistics, and it’s a lot different when you actually see a patient, the statistics don’t matter. It’s easy to say “Oh, you give them insulin like six times a day,” and it doesn’t seem like a big deal, but to actually see how this is played out and see a young child and the family deal with this situation is so different. People’s lives are so chaotic
c. Stories have emotional power	I think that you can read about the disease and understand the cause of the disease but you don’t really get the full effect about just finding out about [it] from the beginning when you go to the hospital and figure out why you’re feeling the way you are and the shock of what to expect. You don’t really get that from books at all. At home when they talked about when she first found out she had diabetes and how she sat in bed and cried ... you can’t get that from a book. You can’t get the full effect of what it’s like
2. The volunteers’ stories often challenged the students’ assumptions	
a. Living with diabetes	I walked into it thinking I knew everything about it, or I needed to know just [enough] to address it in a clinical sense, but I think I learned so much just based on his unique situation. Not only about the diabetes, but what makes this disease so dangerous for someone who doesn’t have the proper support
b. Patient goals	Wow! He’s completely different from what we hear in medical school cause ... we hear about potential clogging of arteries or we’re concerned about the eye, or about the kidney. He doesn’t really care about that. He wants to be able to just run around and be normal. So, mom versus son versus medical school are ... vastly different
c. The burdens of illness	[H]e says it’s one of the best things that have happened to him because he used to be not really sure of himself ... He’s in great shape now. He really feels pretty good about himself. He’s got girls and ... he’s really doing well for an adolescent
3. The stories allowed an opportunity to adopt the perspective of someone with diabetes	Even now when I see people with diabetes in clinic I kind of think back to her and ... my experiences with her and how well she had incorporated things in her life. [It was] just pretty amazing ... I try and picture myself more, now that I’ve seen someone and seen them at home and how they deal with it, you know, what if I were diagnosed with diabetes? I don’t think I would handle it nearly as well as she did
4. The emotional impact of the volunteers’ stories gave students motivation to change and develop as physicians	
a. More vigilant about preventing complications	When you get to go to someone’s house and you see the problems and how they are a result of the complications of diabetes, you get a lot more concerned about making sure you wouldn’t want anyone else to go through that

**Table 1** continued

Major themes	Representative examples
b. Impetus to work towards social change	[I]t was a very interesting contrast in [my] adolescent type 1 diabetic and a classmate of mine who had a type 2 diabetic who was poor. My patient is pretty financially well off. The other patient is old and uninsured and he had been uninsured for a while, so he stopped taking insulin all together ... Now he needs so much help on a daily basis. He's so emotionally troubled by this whole situation ... So that was really striking ... It kind of makes you fired up and you try to figure out what you could do about it and then ... you're like "simmer down, we've got other things to think about." It was really sad to look at this other patient: "Oh well my insurance has changed. I can't afford this. I'm not going to take my medicine." And to watch what happens
c. Impetus to develop into humanistic physician	I think if you want to get patients to be healthier ... you change their lifestyle. It's hard enough to get them to take a pill, that's hard enough, but changing their life style? That's a pretty big thing. You have to be really careful with that. If you go too aggressively into it then they're just going to turn off. And, if you don't put enough emphasis on it they'll blow you off and not really care ... I really admire those who can find a delicate balance and work with their patients effectively. I would love to be one of those doctors. But I think it takes a while
5. The stories had an impact on the students' general views of medicine	
a. The authority of doctors	I think the whole thing with doctors telling people what to do, I think that applies to people in general. You can't be telling people what they should be doing. I guess people listen to us more now knowing that we're going to be doctors. It's just a matter of allying yourself with people and understanding that whatever kind of coat you wear or whatever initials you put after your name, or ... how tall or short you are, or ... how good you are at something, you still have to get to know people before you can affect the ways that they [behave]
b. Reflection on privileges	I certainly appreciate my state of health very much, just being at the hospital, and seeing my FCE family, and talking with other students in our small groups about the conditions that other FCE family members have. I appreciate my family situation, because ... we're blessed with not as much chronic illness, but I guess I just have a good appreciation with what a large part of society is affected with ... and that we really need to recognize that and respect that as physicians
c. Renewed or new interest in treating chronic illness	I think the first thing we all think about is the acute things like ER and surgical sorts of things and that's wonderful and great and of course necessary. But ... more and more of medicine is becoming the chronic sorts of things and things that need to be managed over time ... and in that aspect I think FCE changed that for all of us and made it more personal with the families

approach to the subject that they learned in lectures. For these students, diabetes was contextualized in individual volunteers' unique lives and perspectives: the stories "put a human face" on diabetes and its management, and lent poignancy and emotional force to their understanding.

## Theme 2

The volunteers' stories often challenged the students' assumptions regarding having diabetes or working with individuals with diabetes. Students remarked that despite their understanding of the pathophysiology of diabetes and its complications, they "had no appreciation how it really impacts someone on a daily basis and how they really have to fit it into all their daily activities." The students described themselves as "being floored" by their discussion with their volunteer or "shocked" that a volunteer's doctor had not been aggressive in monitoring possible renal complications. One student was surprised that her volunteer, a teenager with diabetes, was able to be so flexible about what he ate:

He could eat what he wanted to eat, which was really striking to me. I always thought that diabetics ... you have to eat special foods or don't eat sugar at all. He could eat whatever he wanted as long as he was careful. He could dose himself appropriately. He has an incredible handle on it.

This sense of surprise was pervasive among the student comments and often led to a "change in perspective" regarding living with diabetes. One student described her experience by stating that her conversations with her volunteer "impacted me to see [diabetes] in a different light."

## Theme 3

The stories allowed an opportunity to adopt the perspective of someone with diabetes. Numerous students expressed how the volunteers' stories allowed them to see the world, relationships, school and work through the eyes of someone with diabetes. This type of perspective-taking was frequently associated with the students' self reflection and comparison with the volunteer: "I was trying to picture myself in his shoes and I would have gone nuts." Adopting the worldview of someone with diabetes also allowed students to understand fears and concerns. Witnessing the interactions between his FCE volunteer, who was worried about a persistent rash, and her physician, a student recalled, "I think it was still just in the back of her mind that she was showing signs of this disease." One student's appreciation of the many difficulties that her volunteer faced in managing his diabetes led her to question the assumptions that she—and other health care providers—might make when encountering such an individual:

At first it was easy to just look at him and just say, "Oh my goodness, this guy obviously doesn't take care of himself. Mainly it's his fault that he lost his eye sight." ... But it's so much more complex than that. Just talking to him all that time and realizing all the other [problems they faced] in maximizing their health status made it so much more complex.

## Theme 4

The emotional impact of the volunteers' stories also gave students motivation to develop as physicians. Students consistently expressed—either explicitly or implicitly—how they wished to incorporate "lessons" from the stories they heard into their own approach to patients. A student spoke of being "very concerned" about helping his patients with diabetes avoid its complications after seeing his volunteer struggle at home. Another student reflected on the relative lack of personal experiences with serious illness in many younger medical students and remarked:

I think in my age group you don't really get to experience much, so we might be a little more insensitive to this. So I think this has been a great change.

The small group discussions accompanying the home visits also acted to underscore the diversity of experiences with diabetes among the volunteers and the financial difficulties that many patients had in attempting to control their diabetes. One student described how hearing about her classmate's volunteer's financial difficulties got her "fired up" and inspired her to work for social change. Another student, influenced by the diversity of the experiences with diabetes she had learned about in small group stated, "I came to the realization that people are all really different that have this same disease," while another student concluded, "it's just kind of a matter of getting to know them and finding out what's important to them."

Several third-year students described how their experiences with their volunteers influenced their approach to patients with diabetes whom they encountered during their clinical clerkships. One M3 student stated that after listening to his volunteer,

I make sure every time that, to discuss with them what our goals are and why we care about those things. For example, why we care about their renal function, why we care about their glucose levels, and often times no one has ever explained to them the correlation between the two.

#### Theme 5

The stories had an impact on the students' general views of medicine. Students also described how their experiences with their volunteers and the discussions in small groups stimulated their thoughts on issues beyond diabetes and its management and influenced their views on medicine and life in general. One student described how he learned that "physicians [can't] tell patients what to do, because patients won't listen" and extended his insights to human interactions in general, while several other students described how their experiences with their volunteers made them aware of the privileges they had because of good health, insurance or family support and how complex the demands of life can be without those privileges. In describing his volunteer's lack of a social support system, one student remarked:

I think it has shown me the value of personal relationships, and how important they can be in an individual's life ... the way they approach their well-being and how they take care of themselves and it's very important to be able to have others to depend on and not having that makes it very difficult at times both on a tangible level and an emotional level.

Finally, several students commented on how their experiences with their volunteers reaffirmed or stimulated their interest in preventative care and working with patients over time in primary care settings. One student summed up his experiences in the FCE by stating "It's been a reminder of what we're really striving for, of how it's going to be after we get of med school. You'll be working with people every day."

#### Discussion

In the present study, we used in-depth, face-to-face interviews and Grounded Theory methodology to investigate the reflections, insights, and personal meanings that medical students developed through the longitudinal relationships with individuals with diabetes and the small group activities that comprise the Family Centered Experience. From this

analysis, we wished to elucidate the interactions and learning processes involved in this narrative approach.

The students perceived that the understanding of diabetes that they gained through their interactions with their volunteers was qualitatively different than the “scientific” or “statistical” knowledge cognitively acquired through lectures or textbooks. The poignancy of individual stories, interactions with volunteers and their families, and direct observation of the impact that diabetes and its complications had on the lives of the volunteers stimulated student learning in affective and experiential, as well as cognitive, dimensions. The students’ perception of living with diabetes in this context was “individualized” rather than abstract and gave meaning to the experience of chronic illness through the attitudes, perspectives, feelings and approaches of specific individuals in the context of their lives. As suggested by the passages cited above, the responses that the students expressed in recalling the stories of people with diabetes was highly emotional in tone and illustrates the power of narrative to create an affective link between the storyteller and the listener through which the personal meaning and significance of an experience may be communicated (Charon 2001; Kleinman 1988; Kumagai 2008).

The students’ comments also elucidate two other important and related psychological mechanisms through which they learned about the human dimensions of chronic illness: perspective-taking and self reflection. Comments, such as “I was trying to picture myself in his shoes and I would have gone nuts” illustrate an essential characteristic of perspective-taking: an identification of the self with the other while simultaneously recognizing the other as a separate individual with his/her own values, perspectives, and life context (Hoffman 2000). This affective identification with the struggles or suffering of another while simultaneously recognizing the other’s difference and autonomy is at the core of the more mature forms of empathy (Hoffman 2000) and has been recognized, for example, in medical student narratives through “critical incident reports” during their clinical experiences (Branch et al. 1998). As suggested by some of the students’ comments, this affective link with someone with chronic illness is particularly important in light of a lack of personal experience on the part of some students due to their relative youth and good health.

A prominent theme arising from the students’ responses was that the stories challenged the students’ assumptions of having diabetes or working with individuals with diabetes. The dissonance between pre-existing assumptions and beliefs, as well as the biomedical knowledge about the pathophysiology and treatment of diabetes, on the one hand and the students’ and volunteers’ exploration of the personal and psychosocial dimensions of living with diabetes on the other stimulated self reflection and a new and broader understanding of diabetes and its management. This observation suggests that the type of learning occurring in this setting is linked with important developmental stages. Evidence from developmental psychology suggests that significant learning occurs in the setting of what Piaget has termed “cognitive disequilibrium,” i.e., when encountering new or unfamiliar ideas, beliefs or experiences, an individual is forced to “step outside” of him or herself and critically reflect on his or her personal thoughts, feelings, attitudes, and experiences (Kohlberg 1981; Piaget 1985). The self reflection which accompanies this activity often results in an incorporation of the new experiences or perspectives into a more open, complex, and dynamic view of oneself and others in the world and may foster personal growth and development (Kegan 2000; Kohlberg 1981; Piaget 1985). In the words of one student: “My view [of diabetes] became so much more complex ... It’s not as simple as family and friends who check their blood sugar every so often and then stay away from the desserts at dinner but otherwise lead pretty normal lives.” We believe that this ability of



narrative to stimulate self reflection through the creation of cognitive, ethical or emotional dissonance underlies the educational value of Branch’s “seminal events” (Branch et al. 1998), Bolton’s “meaningful moral dilemmas” (Branch et al. 1998) or Wear’s view of literature’s ability to evoke discomfort and vulnerability (Wear and Nixon 2002).

In the present study, students reported that listening to and discussing the volunteers’ stories or seeing the obstacles that their volunteers faced motivated them to incorporate those concerns into their approaches as future clinicians. Furthermore, comments from third-year students suggest that this shift in perspective may persist beyond the preclinical years and influence the manner in which they viewed new patients they had under their care. In this sense, the students’ experiences with the FCE volunteers may act as a type of “empathic memory” whose recall—either conscious or unconscious—may influence the students’ future approaches to patients and their medical care.

Based on the major themes emerging from the students’ comments, we wish to propose an overall structural scheme of the meaning and significance of diabetes narratives on medical students’ perspectives of diabetes and its care (Fig. 1). The affective, experiential, and cognitive learning that occurs through the students’ interactions with their volunteers complements and enriches the cognitive, instrumental learning which is acquired through study of the biomedical and clinical science of diabetes and its management. The interactions the students have with their volunteers, along with their small group discussions, stimulate self reflection and perspective-taking and enhance development through the challenging of previous assumptions, beliefs, and perspectives. In the words of one student, by “adding the emotion to it,” the experiences the students have with their volunteers and in their small groups foster a type of learning that is in essence *transformative*. Mezirow defines transformative learning as “a process by which we transform our taken-for-granted frames of reference ... to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action” (Mezirow 2000). As evidenced in the student responses in the current study, the interactions the students have with their FCE volunteers and the discussions and reflections that result engage the student as a whole person, enrich his or her perspective at a critical time in professional development and encourage an orientation that considers patients as individuals and medicine as a profession that addresses fundamental human needs. Evidence of the persistence of this orientation is suggested by comments of students during their clinical years, and although it is beyond the scope of this study, these comments suggest that the insights gained from the FCE

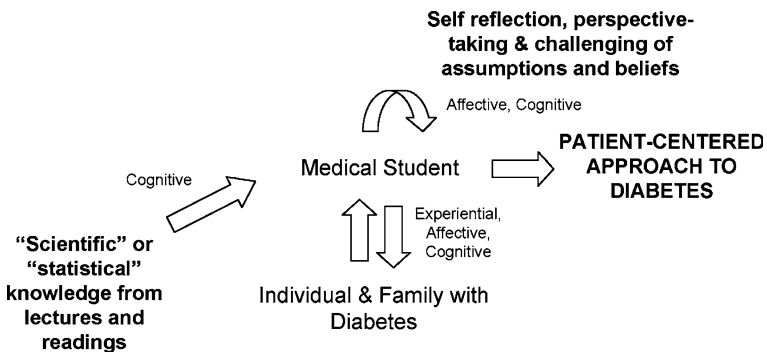


Fig. 1 Diabetes narrative theoretical scheme

influence student attitudes towards other chronic illnesses as well. Finally, because it is linked with fundamental developmental processes, we believe that the “empathic memory” arising from these interactions may shape the ways in which future physicians work with patients and may engender the type of compassionate, reflective practice that is at the core of patient-centered care (Kumagai 2008).

In the present study, there are in effect two levels of narrative: the story of illness that the volunteers share with the pairs of students in the Family Centered Experience and the description of the students’ understanding of the volunteers’ stories which is related to the interviewer and takes the form of the interview transcript. In this sense, this study is not an analysis of the illness narratives themselves; rather it focuses on the second level of narrative, i.e., the students’ understanding of the stories and the patients’ experiences. There is, of course, an inherent tension between the two levels of narrative regarding accuracy of student recollections of the original story, selective emphasis on parts of the original story because of an individual student’s interest or memory, and degree of empathic perspective-taking by the student narrator. Because our focus, however, is on the type of knowledge students acquire through listening to the narratives, i.e., on the process of understanding rather than on the original narratives per se, we have chosen to perform a close study of this second level of narrative to elucidate the processes underlying the students’ acquisition of more patient-centered approaches.

This specific approach was informed by a previous study (Kumagai et al. 2005) in which we used Grounded Theory to analyze transcripts of focus groups of first-year students’ comments on their discussions with FCE volunteer families to understand the content of—i.e., the “lessons learned” from—their discussions. Whereas the first study consisted of a description of what the students had learned about living with chronic illness (e.g., the psychosocial impact of illness, the burden of illness, the importance of communication, etc.), in the present study, we asked the students to “step back” and reflect on their ways of knowing diabetes and how this understanding differs from that acquired by more traditional means, such as textbooks or lectures. These reflections formed the textual basis of the current analysis. Individual, face-to-face interviews were chosen over focus groups to more fully explore the understanding and perspectives of individual students.

It should be acknowledged that the conceptual perspective of the analysis in this study is influenced by a constructivist-developmental (as opposed to, say, a behaviorist) worldview. By “constructivist-developmental,” we mean a view that individuals “make meaning” of their lived experiences through interaction and communication (Mezirow 1991) and that analysis of everyday language may be used to understand the meanings that are given to experiences, normative values, shared understandings etc. and which serve as the basis for moral action (e.g., Habermas 1990). Nonetheless, we have been careful to avoid over-interpretation of the students’ comments or to superimpose our own perspective on analysis of the data. By consciously suspending any preconceived assumptions in analyzing the data and by continuously and critically challenging our interpretation by returning to the original transcripts (Strauss and Corbin 1998), we have attempted to allow the common themes and perspectives articulated by the student learners to emerge from the data without bias. This, we believe, is the strength of the Grounded Theory approach.

There are two limitations to this study. First, the number of students interviewed was relatively small. Although the concept of “representative samples” is incongruous in qualitative research—which emphasizes authenticity and accuracy over generalizability (Strauss and Corbin 1998)—students who benefited from their discussions with their FCE volunteers may have been more willing to participate in the study than those who did not. This selection may have led to a lack of “negative” experiences reported, i.e., all students

demonstrated, to various degrees, an empathic understanding of the patient's perspective. Nonetheless, the goal of this study was to elucidate the possible ways of knowing about diabetes that students constructed from their discussions with their volunteers. By ensuring the major themes were saturated (Strauss and Corbin 1998), i.e., that no new information emerged as major themes in the students' comments with additional interviews, and by continually returning to the transcripts and sharing the conclusions with the students, the authenticity and accuracy of the students' responses were ensured.

A second limitation to the study was that the study was restricted to students with FCE volunteers with diabetes. It is possible that the structural scheme presented in Fig. 1 is characteristic only for students working with individuals with diabetes and is not applicable to students with volunteers who have other chronic illnesses. An earlier focus group study (Kumagai et al. 2005) suggested, however, that the emotional power of the stories of individuals with other chronic diseases influences student understanding of the human dimensions of chronic illness, including diabetes. In the present study, we wished to use diabetes as a paradigm for chronic illness in general; however, whether the structural scheme we have proposed may be generalized to other chronic illnesses is unknown. This, as well as the impact of telling their stories on the volunteers themselves, is the focus of future research efforts.

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## References

- Anderson, R. M. (1986). The personal meaning of having diabetes: Implications for patient behaviour and education or kicking the bucket theory. *Diabetic Medicine*, 3, 85–89.
- Branch, W. T., Jr., Pels, R. J., & Hafler, J. P. (1998). Medical students' empathic understanding of their patients. *Academic Medicine*, 73, 360–362. doi:10.1097/00001888-199804000-00007.
- Charon, R. (2001). Narrative medicine: Form, function, and ethics. *Annals of Internal Medicine*, 134, 83–87.
- Cohen, M. Z., Tripp-Reimer, T., Smith, C., Sorofman, B., & Lively, S. (1994). Explanatory models of diabetes: Patient practitioner variation. *Social Science & Medicine*, 38, 59–66. doi:10.1016/0277-9536(94)90300-X.
- Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, Ca: Sage Publications.
- Duggan, P. S., Geller, G., Cooper, L. A., & Beach, M. C. (2006). The moral nature of patient-centeredness: Is it "just the right thing to do"? *Patient Education & Counseling*, 62, 271–276. doi:10.1016/j.pec.2005.08.001.
- Freeman, J., & Loewe, R. (2000). Barriers to communication about diabetes mellitus. Patients' and physicians' different view of the disease. *Journal of Family Practice*, 49, 507–512.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory; strategies for qualitative research*. Chicago: Aldine Pub. Co.
- Greiner, A., & Knebel, E. (Eds.). (2003). *Institute of medicine. Health professions education: A bridge to quality*. Washington, DC: National Academies Press.
- Habermas, J. (1990). *Moral consciousness and communicative action*. Cambridge, Mass: MIT Press.
- Hoffman, M. L. (2000). *Empathy and moral development: Implications for caring and justice*. New York: Cambridge University Press.
- Kegan, R. (2000). What "form" transforms? In J. Mezirow (Ed.), *Learning as transformation: Critical perspectives on a theory in progress* (pp. 35–70). San Francisco: Jossey-Bass.
- Kleinman, A. (1988). *The illness narratives: Suffering, healing, and the human condition*. New York: Basic Books.
- Kohlberg, L. (1981). *The philosophy of moral development: Moral stages and the idea of justice*. San Francisco: Harper & Row.

- Kumagai, A. K. (2008). A conceptual framework for use of illness narratives in medical education. *Academic Medicine* (in press).
- Kumagai, A. K., White, C. B., & Schigelone, A. (2005). The family centered experience: Using patient narratives, student reflections, and discussions to teach about illness and care. *Annals of Behavioral Science and Medical Education Journal*, *11*, 73–78.
- Laine, C., & Davidoff, F. (1996). Patient-centered medicine. A professional evolution. *The Journal of the American Medical Association*, *275*, 152–156.
- Loewe, R., & Freeman, J. (2000). Interpreting diabetes mellitus: Differences between patient and provider models of disease and their implications for clinical practice. *Culture, Medicine & Psychiatry*, *24*, 379–401. doi:[10.1023/A:1005611207687](https://doi.org/10.1023/A:1005611207687).
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. San Francisco: Jossey-Bass.
- Mezirow, J. (2000). Learning to think like an adult. In J. Mezirow (Ed.), *Learning as transformation: Critical perspectives on a theory in progress* (pp. 3–34). San Francisco: Jossey-Bass.
- Piaget, J. (1985). *The equilibration of cognitive structures: The central problem of intellectual development*. Chicago: University of Chicago Press.
- Ritholz, M. D., & Jacobson, A. M. (1998). Living with hypoglycemia. *Journal of General Internal Medicine*, *13*, 799–804. doi:[10.1046/j.1525-1497.1998.00243.x](https://doi.org/10.1046/j.1525-1497.1998.00243.x).
- Strauss, A. L., & Corbin, J. M. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks: Sage Publications.
- Wear, D., & Nixon, L. L. (2002). Literary inquiry and professional development in medicine: Against abstractions. *Perspectives in Biology & Medicine*, *45*, 104–124. doi:[10.1353/pbm.2002.0019](https://doi.org/10.1353/pbm.2002.0019).