

A Qualitative Assessment of Educational Opportunities for Primary Care Providers in Type 2 Diabetes Care

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The management of people diagnosed with diabetes increasingly challenges health care personnel in the United States. The number of people with diabetes increases by ~ 1 million yearly,¹ and diabetes was the primary diagnosis in 23.8 million visits to office-based physicians in 2006, most commonly to general practitioners, family physicians, and internists.² Managing diabetes requires practitioners to be competent in complexities of disease management as well as in patient communication, counseling, and education—understanding how multiple psychosocial factors affect patient care and outcomes. Primary care practitioners (PCPs) are therefore required to master both physiological and psychosocial approaches to treatment and management. Yet many are challenged in doing so.³

Although diabetes requires patients to accept a large role in self-management of their illness, examination of patients' and physicians' viewpoints revealed disparate viewpoints and experiences in approaches to treatment and psychosocial implications of managing and coping with the disease. Patients expressed frustration with practitioners' lack of understanding of their perspective, whereas health care practitioners expressed frustration with patients' inability to achieve objectives in health-behavior change and metabolic control.^{4,5} Although physicians acknowledged the importance of psychosocial issues and behavioral factors in diabetes management, their interaction and educational interventions with their patients centered primarily on dis-

ease, pathophysiology, and treatment regimens—an emphasis inconsistent with their patients' perceived needs.⁶ Comparison of patients' and providers' estimates of patient self-care activities revealed further discrepancies, with patients reporting higher levels of their own adherence to therapeutic regimens compared with reports of their providers.³

Programs targeting improvement in patient adherence are complex and can include multiple intensive components such as reminders, reinforcement, counseling, and family therapy.⁷ To further compound the disparity between needs of patients and actions of professionals, clinicians acknowledged that their patients had multiple physical and psychosocial obstacles to treatment adherence and self-care, yet in practice, they focused almost entirely on managing blood glucose levels.⁶ Clinicians reported lack of crucial resources—particularly skill, time, and adequate referral sources—to manage these problems.³ This was particularly true of generalists (both physicians and nurses), who were significantly less likely than diabetes specialists to utilize psychosocial strategies.⁸

Nurses overall perceived significantly higher severity and prevalence of psychosocial problems than did physicians, and nurses were significantly more active in using psychosocial strategies despite their perception of their skills being lower compared to physicians.⁸ Psychological treatment by PCPs or specialists was relatively rare; only 10% of patients reported receiving such help.³ Availability of services was an important variable; physi-

cians and nurses who perceived greater availability of psychosocial and educational resources made more referrals to these resources.⁸

Physicians themselves do not adhere to treatment guidelines. Despite the availability of evidence-based guidelines, physicians report difficulty in making treatment decisions, often resulting in non-compliance with guidelines and algorithms.⁹⁻¹¹ Physicians tended to be slow in initiating or intensifying pharmacotherapy, even when indicated to achieve therapeutic targets.^{9,10} Medication choices were based on generalized assessments of patients' health and comorbidities, A1C levels, and adherence behavior rather than precisely formulated, formalized expert guidelines and hospital algorithms.¹¹

Furthermore, differences were found between the approaches of generalists and specialists. Generalists were found to be more likely to consider patient-centered variables such as patients' adherence behaviors, preference for lifestyle modifications and oral medications, and fear of injections in initiating insulin therapy, whereas specialists did not recognize these as major factors or barriers.¹¹ Specialists, compared to generalists, also placed less emphasis on guidelines and significantly greater emphasis on quantitative measures such as A1C, age, and weight.

The literature thus suggests that care provided to people with diabetes remains suboptimal. Further examination of key gaps and underlying barriers is needed to inform development of effective educational initiatives targeting improvements in

Table 1. Sample Description: PCPs

Area of Expertise	<i>n</i>	Population in Practice Area	<i>n</i>
PCPs	22	> 100,000	22
AHPs (physician assistants, registered nurses, nurse practitioners)	13	20,000–99,999	12
Total	35	Total	34
Proportion of Practice Composed of Patients With Diabetes	<i>n</i>	Number of Patients With Diabetes Seen in the Past Month	<i>n</i>
7–10%	3	< 10	4
11–25%	10	11–25	3
26–50%	13	26–50	8
51–75%	6	51–75	7
> 76%	3	75–100	6
		> 100	7
Total	35	Total	35

the patient-physician relationship. An in-depth qualitative study of behavioral and performance gaps, barriers, and educational needs of PCPs providing care to people with type 2 diabetes was therefore undertaken. PCPs, allied health professionals (AHPs [physician assistants, registered nurses, and nurse practitioners]), and patients with type 2 diabetes were included, and perspectives of these groups were compared and contrasted in a triangulated research design.

The objectives of the study were fourfold:

- To determine issues and challenges affecting PCPs' effectiveness in treating and managing type 2 diabetes
- To assess PCPs' knowledge, skill, confidence, and educational needs in screening, testing, diagnosing, treating, and managing patients with type 2 diabetes
- To explore PCPs' knowledge, skills, and training in interaction and communication for purposes of educating and supporting behavior change in their patients, based on the perspective and input of both practitioners and patients

- To examine the functioning of interdisciplinary health care teams in diabetes care

RESEARCH DESIGN AND METHODS

The study targeted patients with type 2 diabetes and the PCPs who treat them. It employed a qualitative research design, including both qualitative and quantitative data collection techniques to provide robust and trustworthy findings.^{12,13} Qualitative research facilitated in-depth examination of knowledge and skills as well as perceived and unperceived attitudes, confidence, and contextual issues. In-depth qualitative data collection and analysis allowed the elicitation and identification of concepts and variables involved in complex processes such as adherence.^{13,14} The qualitative approach was based on previous findings but also allowed for discovery of unexpected results. Moreover, triangulation of findings from multiple participant groups and data sources was used, further strengthening the evidence provided.¹⁴

Current best practices in the care of patients with type 2 diabetes were determined based on a comprehen-

sive literature review. Qualitative data collection instruments (open-ended discussion group and interview guides and an accompanying quantitative questionnaire) were designed based on best practices identified in the literature review and the key themes this identified. In the questionnaire, statements were rated by participants on a 5-point Likert scale. Gap analysis items were included in which subjects rated their current and desired levels of knowledge or skill, with the difference being the gap. In gap analysis, a difference of ≥ 1.0 is generally accepted as substantive, identifying an important shortfall between the knowledge that subjects feel they have (current level) and that which they feel they need (desired level).¹²

Six half-day homogeneous focus groups were conducted with PCPs (three groups, $n = 22$), AHPs (two groups, $n = 13$), and patients (one group, $n = 8$) across the United States between 17 June and 25 July 2008; five 1-hour telephone interviews were also conducted with patients. The sampling method used was purposive or selective sampling.¹⁵ To ensure ethical treatment of participants, institutional review board approval and participants' informed consent were obtained.

Subjects' characteristics are described in Tables 1 and 2. Patients with diabetes were well represented in PCPs' practices; 66% of practices (23/35) were composed of 11–50% of patients with diabetes and 89% of practices (28/35) saw more than 26 patients with diabetes per month. Practices were located predominantly in urban settings with populations > 100,000. Patients (Table 2) were largely between 45 and 74 years of age and described themselves as African American or Caucasian.

Qualitative data from each focus group were audio-recorded. Coding of data was based on grounded theory.¹⁴ Coders were experienced qualitative researchers, including co-author SMH, who reviewed and discussed categories before analyzing transcripts to reach a consensus of understanding. Open coding of each text segment of the transcripts was initially performed, with detailed

Table 2. Sample Description: Patients

Age		Ethnic Background	
45–59 years	4	African-American	3
60–74 years	3	Caucasian	5
≥ 75 years	1		
Total	8	Total	8

review of the data based on the conceptual framework and research questions.¹⁶ Coding categories were then grouped into related themes and subthemes. Themes were validated among coders, and discrepancies were resolved through discussions until concordance was achieved for all cases. Selective coding was then performed, whereby data were systematically coded with respect to core concepts.¹³ N-Vivo 7.0 software (QSR International, Cambridge, Mass.) was used to carry out this analysis.

RESULTS

Gaps were found in PCPs' knowledge, skill, and confidence in caring for patients with diabetes across the continuum of care: screening and testing, diagnosis, treatment, management, and referral. PCPs in diabetes care reported filling many roles for which they were not formally trained, particularly the role of supporting necessary patient behavior change. They further identified gaps in their knowledge and skill in applying diagnostic and treatment guidelines.

Screening and Testing

Neither PCPs nor AHPs reported any knowledge gaps in their ability to screen and test for type 2 diabetes (gaps: 0.32–0.82), rating their current knowledge between 4.09 and 4.45. However, both groups of practitioners reported that they did not systematically screen patients for diabetes as would be appropriate, reporting that testing is expensive, impractical, difficult to use in all patients, and time-consuming.

PCPs reported gaps in testing for diabetes. They described measurement of A1C as the simplest test to

perform but identified drawbacks to using the test because it is not suitable for patients with certain blood disorders (e.g., sickle cell disease) and is not covered by insurance. They described glucose tolerance tests as expensive, impractical in a primary care setting, and time-consuming, resulting in testing not being prioritized. As one AHP stated,

“The glucose tolerance test is so expensive and time-consuming and yet it’s, you know, it would be wonderful to do that.”

— AHP

Practitioners also noted that patients are reluctant to be screened because of the stigma that insurers attach to the diagnosis.

“I know some people who don’t even want to go get tested, and they don’t want to get diagnosed because once they get diagnosed, now they’ve got this stigma [...] attached to them and dealing with the insurance providers.”

— MD

Diagnosis

Patients reported being frightened when receiving a diagnosis of diabetes and reacting with emotions such as denial and anger. PCPs expressed discomfort in delivering the diagnosis, attributed to lack of skill in managing patients' emotional reactions. As a result, they reported attempting to soften the impact by minimizing the diagnosis through the use of ambiguous terms such as “borderline diabetes,” “glucose impairment,” and “high blood sugar” to avoid saying “diabetes.”

“I’m guilty of writing ‘borderline’ because it’s hard for me to look at a patient and say, ‘You’re diabetic’.”

— AHP

“That denial is big, and we may be a little bit at fault ourselves trying to ease the news with the patients. So we need to be more clear.”

— MD

PCPs reported lacking confidence in making a differential diagnosis

of type 2 diabetes. They described guidelines from various associations and organizations as incongruent, with grey areas persisting. One example was laboratory test value cutoff points, which they reported differing among guidelines, leading to confusion. AHPs expressed a greater desire for increased knowledge in differentiating type 2 diabetes from type 1 diabetes, gestational diabetes, impaired glucose tolerance, and thyroid disorders (gap: 0.63–0.91, desired level of knowledge 4.45–4.91) than did primary care physicians (gap: 0.28–0.78, desired level of knowledge 4.50–4.68).

“It would be helpful if the diabetic associations, multiple ones, come up with mutually acceptable criteria for diagnoses of diabetes.”

— MD

“There’s nothing more confusing than the myriad . . . diabetes guidelines; they don’t ever really tell you much, they’re so confusing.”

— AHP

Treatment

The confusion engendered by the multiplicity of guidelines extends into treatment, with both PCPs and AHPs reporting substantive gaps in their knowledge of pharmacological treatment (Table 3). The greatest gaps for both groups related to insulin use and contraindications to treatment.

PCPs lacked the knowledge and confidence to optimally prescribe treatment. They stated that the plethora of medications and classes of medications currently available makes it difficult to stay current, particularly for AHPs.

“Some of the drugs that are new, we’re still not using them. We’re still skeptical about using the drugs.”

— AHP

Insulin, while not a new medication, is particularly problematic. All PCPs expressed lack of confidence in prescribing it, describing substantive gaps in their knowledge of its correct use (Table 3). Some patients refused

Table 3. Gap Analysis: PCP Knowledge About Treatment and Management of Type 2 Diabetes Rated on a 5-Point Likert Scale*

Level of Knowledge of Items, Rated on a 5-Point Scale*	Current Level of Knowledge		Desired Level of Knowledge		Gap	
	PCP (n = 22)	AHP (n = 13)	PCP (n = 22)	AHP (n = 13)	PCP (n = 22)	AHP (n = 13)
Oral pharmacological treatment	3.95	3.82	4.77	4.91	0.82	1.09
Insulin treatment	3.62	3.33	4.67	4.92	1.05	1.59
Contraindications to treatment	3.81	3.33	4.86	4.83	1.05	1.50
Balancing treatment and metabolic syndrome	3.57	3.67	4.48	4.83	0.91	1.16
Balancing treatment and comorbidities	4.00	3.92	4.50	5.00	0.50	1.08
Management of patient expectations	3.64	3.75	4.73	4.83	1.09	1.08
Appropriate psychological support and resources	3.18	3.67	4.73	4.83	1.55	1.16
Patient communication	3.82	4.00	4.68	4.92	0.86	0.92
Diet changes in treatment	3.48	3.92	4.67	4.92	1.19	1.00
Exercise in treatment	3.95	4.18	4.73	4.91	0.78	0.73
Weight treatment	3.81	4.09	4.86	4.91	1.05	0.82
Nonpharmacological treatment	2.68	2.93	4.09	4.25	1.41	1.32

*1 = Low level of knowledge, 5 = High level of knowledge; substantive gaps are indicated with gray shading.

it outright, and practitioners, lacking conviction, did not urge them to change their minds. A segment of physicians described a lack of knowledge in prescribing insulin treatment, but did so regardless. They further reported using insulin punitively when patients did not adhere to treatment regimens.

“I think unfortunately many patients think of insulin treatment as a punishment . . . and we may be at fault of that a little bit . . . despite them doing everything right, the diabetes may still progress.”

— MD

All PCPs in the sample reported substantive gaps in their knowledge of contraindications to specific treatments. They also reported gaps related to their ability to treat patients with cases of concomitant metabolic syndrome. AHPs also reported important gaps in knowledge about treating patients with comorbidities, especially renal and vascular complications.

Management and Referrals

Both PCPs and AHPs identified gaps in their knowledge of how to manage patients’ expectations (Table 3) and provide appropriate psychosocial support (PCP 1.55, AHP 1.16) to patients trying to self-manage their condition. Not having been trained in therapeutic relationship skills, they reported struggling to help their patients make behavior changes, stay motivated to adhere to treatment regimens, and participate in long-term follow-up. PCPs in particular seldom involved patients’ family and friends in diabetes education and discussion of management strategies.

“Not that any of this is easy, but it’s going to be easier to manage that person if the whole family buys in and supports them.”

— AHP

PCPs and AHPs reported a lack of skill in communicating with their patients, identifying gaps of 0.8–1.55 for PCPs and 0.92–1.16 for AHPs, with the greatest gap for both pertaining to appropriate

psychological support and resources (Table 3). They also demonstrated lack of cultural awareness (e.g., not understanding the specifics of a Mexican-American patient’s diet). These assessments were reciprocally supported by the patients’ experiences.

“I think health care providers . . . they’re so into talking medicine and that type of language, they forget they’re talking to . . . a layman that doesn’t understand all this carbohydrates this and that and complex this and that.”

— Patient

Several AHPs stated that not all patients understand the multi-disciplinary team approach to care or the roles of various allied health care practitioners, such as certified diabetes educators and nurse practitioners. The study revealed that patients also do not understand the referral system; for example, they do not consistently realize that they must return to their PCP after seeing

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a consultant and can get lost in the system.

“It’s amazing how many times . . . we send out a referral and then get a letter back saying, ‘No patient, didn’t show up’ or ‘Patient wasn’t interested.’”

— AHP

CONCLUSIONS

This educational needs assessment assessed gaps and barriers in care provided to patients with type 2 diabetes by their PCPs and AHPs. Both groups of health care providers generally reported similar knowledge and performance gaps across the continuum of care. They reported awareness of the risk factors for type 2 diabetes and confidence in their abilities to screen and test for it; however, they did not consistently do so in a systematic way. In addition, they identified gaps in their knowledge of diagnostic criteria and clarity regarding laboratory test value cutoff points and characterized guidelines as unhelpful in providing optimal clarity for clinical practice. The health care providers identified gaps in treatment competencies as well, particularly in knowledge and confidence in prescribing insulin and in managing comorbidities. As in screening and diagnosis, guidelines were characterized as confusing and not useful in the clinical setting.

The diagnosis of diabetes has an emotional impact on patients, and optimal management of type 2 diabetes requires that patients understand and follow complex dietary, activity, and medication regimens. Yet PCPs and AHPs reported gaps in their ability to support their patients in coping with the psychological and emotional impact of their diagnosis and in supporting the behavior changes necessary to ensure long-term management and health, engaging in cognitive-rational versus emotional-behavioral strategies.

Study Limitations

This study is based on self-report, with the limitations of self-perception and personal insight intrinsic to this form of data collection; however, the multiple perspectives and

triangulation of findings serve to enhance confidence in these findings. The subject sample did not include all multidisciplinary health care team members, such as endocrinologists or diabetes educators, which would have provided a broader, more complete view of care. Sample size is appropriate for qualitative research, which does not seek to provide generalized results but rather seeks to provide in-depth examination of study phenomena. Further examination would serve to validate study findings. The nature of a needs assessment is to concentrate on gaps rather than on excellence, which can seem to provide a negative and pessimistic view of care.

Implications for Practice

The gaps identified in this study have implications for clinical practice and patient outcomes. For example, the early stages of type 2 diabetes are asymptomatic. However, vascular changes caused by diabetes may already be accumulating, with duration of glycemic burden being a strong predictor of adverse outcomes. PCPs who do not screen and test for type 2 diabetes are less likely to detect the disease early in its course and thus prevent the progression of pre-diabetes to diabetes or to reduce the risk of complications in patients with diabetes.¹⁷

Even when the disease is detected early, practitioners who are confused by the presence of multiple practice guidelines, unclear about diagnostic cut-off points, or having trouble staying current regarding available pharmacological treatments will be less likely to prescribe either oral medications or insulin effectively according to guidelines. Diabetic patients have reduced life expectancy, increased risk of microvascular and macrovascular complications, and diminished quality of life.¹⁸ Lack of timely intervention and suboptimal care result in an increased burden of illness for individuals and for society.

People with diabetes play a central role in determining their quality of life. Self-management offers them a chance to take control of their medical condition and make informed choices for self-directed

behavior change.¹⁹ It has become a cornerstone of diabetes care that patients engage in self-care with the support of multidisciplinary, integrated diabetes health care teams.²⁰ However, the effectiveness of this model requires motivated, knowledgeable patients and health care teams. Self-management suffers when PCPs and AHPs lack skills to address patients’ emotional reactions and to help them with psychosocial issues, when they lack adequate referral sources, and when they have difficulty communicating with their patients in an effective manner.³ Health care practitioners must also ensure that patients understand the value of the diabetes health care team, the roles of various stakeholders, and how to successfully navigate the health care system to take advantage of available support.

The findings of this study highlight important needs within our health care system that must be addressed if we are to enhance the well-being of patients with diabetes. First, for health care providers, educational initiatives are needed to improve competencies in communicating with patients and their families and to improve communications among health care team members. As health care evolves, the roles of both providers and patients evolve with it. Health care professionals are called on to provide a broader range of care, encompassing not only medical expertise but also competence in communicating and collaborating with patients, families, communities, and each other in interdisciplinary teams.^{21–23} The current findings indicate that these capabilities are lacking. Second, clear, unambiguous, and clinically relevant guidelines are needed for diabetes management in primary care venues. Third, further programs are needed to support PCPs in providing not only biomedical aspects of care but also psychosocial and educational support for their patients. Furthermore, PCPs and AHPs require guidance in the management of adherence and behavior change through effective patient communication and education strategies. Public health education has

the potential to expand and support education and lifestyle changes for patients, their families, and their communities, providing a healthier social context.

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