

The role of patient, physician and systemic factors in the management of type 2 diabetes mellitus

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Background. Few studies have explored the contextual dimensions and subsequent interactions that contribute to a lack of adherence in the application of guidelines for diabetes management.

Objective. The purpose of this qualitative study was to explore family physicians' issues and perceptions regarding the barriers to and facilitators of the management of patients with type 2 diabetes mellitus (DM).

Methods. Four focus groups composed of family physicians ($n = 30$) explored the participants' experiences in the management of patients with type 2 DM. A semi-structured interview guide began with questions on family physicians' experience of providing care and included specific probes to stimulate discussion about the various barriers to and facilitators of the management of type 2 DM in family practice.

Results. Participants clearly identified type 2 DM as a chronic disease most often managed by family physicians. The findings revealed distinct barriers and facilitators in managing patients with type 2 DM which fell into three domains: patient factors; physician factors; and systemic factors. There was a dynamic interplay among the three factors. The important role of education was common to each.

Conclusions. The interactions of patient, physician and systemic factors have implications for the implementation of a diabetes management model. The care of patients with type 2 DM exemplifies the ongoing challenges of caring for patients with a chronic disease in family practice. The findings, while specific to the management of type 2 DM, have potential transferability to other chronic illnesses managed by family physicians.

Keywords. Clinical practice guidelines, family physicians, patient factors, systemic factors, type 2 diabetes mellitus.

Introduction

It is estimated that the majority of patients with diabetes receive their care from a family physician.¹ The complexity and chronicity of diabetes presents special challenges for family physicians, whose major responsibility is the screening and prevention of diabetes-related complications.

To assist physicians in this regard, expert advisory committees in Canada, the USA and the UK have developed treatment guidelines for primary care physicians to

promote comprehensive care and effective management of patients with diabetes. The major advantages of diabetes clinical practice guidelines (CPGs) are the standardization of care and improved patient outcomes.² However, current literature on physician practice behaviour indicates that CPGs are not widely applied in day-to-day practice.^{3–8} Several researchers have argued that effective development and dissemination of guidelines should identify and address barriers to implementation in practice settings.^{9–13} Barriers cited in the literature specific to adherence to guidelines for diabetes management include: a need for education;¹¹ lack of time and lack of confidence in clinical skills;¹⁴ complexity;¹⁵ a need for effective charting systems (e.g. flow sheets) to improve quality assurance and documentation in practice settings;^{6,15} and the absence of organizational systems to support diabetes management (i.e. registries, automatic recall systems and reminder systems).^{14,16}

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Few studies have explored the contextual dimensions and subsequent interactions that contribute to a lack of adherence in the application of guidelines for diabetes management.^{17,18} Qualitative methods allow for demonstration of the complexity of the problem and illustrate the dynamic interplay among all the relevant factors. The purpose of this qualitative study was to explore family physicians' issues and perceptions regarding the barriers to and facilitators of the management of patients with type 2 diabetes mellitus (DM).

Methods

The qualitative method of focus groups is an effective means for examining issues relevant to the primary care setting in general, and specifically diabetes care.^{19–23} In this study, focus groups were conducted with family physicians.

Participants were recruited from a pool of 36 physicians participating in a simultaneous quantitative study on the management of type 2 DM. Thirty of these physicians agreed to participate in the qualitative portion of the study. Physician participants included 16 males and 14 females who attended one of four focus groups with an average of seven physicians per group (range 5–11). There were seven semi-rural/rural physicians and 23 urban physicians. The average number of years since graduation was 18.7 (range 4–35 years). Twenty-six participants were in group practice and four were solo practitioners. Twenty physicians were certificants of the College of Family Physicians of Canada.

An experienced focus group moderator (JBB) and a family physician (SBH) conducted the focus groups, which lasted ~2 h. A semi-structured interview guide began with questions on family physicians' experience of providing care, and included specific probes to stimulate discussion about the various barriers to and facilitators of the management of type 2 DM in family practice. The University of Western Ontario Ethics Committee on Research of Human Subjects approved this study protocol.

Analysis

All focus groups were audiotaped and transcribed verbatim. After each group, the researchers compared field notes and discussed the group process.^{24,25} Using the strategy of constant comparison analysis, the transcripts were examined independently by three of the investigators to identify the key words, phrases and concepts emerging in each group. Similarities and potential connections among key words, phrases and concepts within and among each of the focus groups were determined by team analysis. This led to clarification, confirmation and consensus of the central themes emerging in all the focus groups. The final stage of analysis involved comparing the central themes identified across all the focus groups.

This allowed for the identification of relationships or patterns between and among the central themes. It also served to condense the data and to identify phrases that most accurately illustrated the themes. Throughout the process, the researchers attended to personal and professional biases that potentially could influence their interpretation of the data.²⁶

Results

Participants clearly identified type 2 DM as a chronic disease most often managed by family physicians. "I don't think that diabetes is any different than any other chronic disease that we deal with." Given the wide-ranging implications of diabetes, participants felt type 2 DM was most appropriately managed by family physicians "I think diabetes is definitely a family practice kind of disease. It permeates so much of the patient's life and health." Finally, participants acknowledged that the management of the patient diagnosed with type 2 DM must involve all aspects of the patient care.

"They're never just there for their diabetes, they're also there to tell you about stuff going on in their own personal lives and family lives. Diabetes itself is such a complicated disease. You're talking about their feet, their heart, their kidneys, their sugar status and just trying to manage blood pressure and then associating that with cardiac risk factors. You're trying to pick and choose which aspect of diabetic care you're going to hit that day."

The findings revealed distinct barriers and facilitators in managing patients with type 2 DM. These fell into three domains: patient factors, physician factors and systemic factors.

Patient factors

Patient facilitators. From the participants' perspective, a key patient facilitator was the patients' ability to assume responsibility and control over their diabetes. "The best controlled diabetic is the person who takes over their own control." Participants identified the initial anxiety experienced at the time of diagnosis as an opportune time to motivate patient behaviour change. "When people are feeling more anxious about their disease they're more likely to want to absorb information and make changes around their lifestyle." They also perceived a major health event or significant change in management (i.e. oral agents to insulin) as motivating patients to assume more responsibility for their diabetes. "Oh if I have to go on insulin I must be really bad now."

Participants believed that early educational interventions for patients with diabetes resulted in better outcomes. "The better job you do right at the start of educating them, the longer the effect's going to last."

If you just sort of gloss over [it] at the start, they don't really take it seriously."

Patient barriers. Participants viewed a major barrier to be patients' lack of acceptance of diabetes as a chronic illness; one requiring significant lifestyle modifications. "[This is] a chronic lifestyle change that you're requesting and that's not a small request for patients." Also, because patients frequently reported being asymptomatic, many failed to recognize the seriousness of their condition. "Unless your sugars are really out of whack, you can go for years and when you do get a complication then it's too late."

Another major barrier was patient adherence. "It's kind of a life sentence . . . Patient compliance is very important and it tends to slip [over] the years." Participants described patients' lack of adherence as "the difference between knowing and doing" and viewed this as not so much a lack of information but a lack of motivation. "It's easier for patients to have something done to them, like take a pill, as opposed to doing something for themselves. It takes a lot of self-motivation and encouragement and education."

Linked to issues of adherence and motivation were patients' attitudes towards their disease. Prior experience with a family member with diabetes could result in a fatalistic attitude. "His father died at age 62 of horrible complications of diabetes and this guy was 58. I could not convince him that this was not a death sentence . . . because he just figured that was it." Participants acknowledged other patient attitudes, such as denial, passivity or unrealistic perspectives, as significant barriers. "She said a fortune-teller told her that she wasn't going to live to 55 so she didn't really see any point . . . because she was going to die anyway."

Participants identified co-morbid diseases as additional barriers to self-care. "His kidneys are failing him, he's lost most of his left foot because of infection, he still abuses alcohol and his sugars are high." Aspects of the patient's life context, such as their cultural background, were also identified as barriers. Other issues, for example cost of medications, shift work and attending a diabetes education centre, were also identified as contextual barriers for patients in managing their type 2 DM.

"Diabetes is a fairly expensive illness. The testing, the medication, the diet and the frequency of visits. For my truck driver, for example, he's very concerned about his illness but he's paid by the hour. He can't come down during the day or else his boss will fire him."

Physician factors

Physician facilitators. Ongoing continuing medical education (CME) was perceived as the key facilitator in the care of patients with type 2 DM. "We need to be

constantly educated about it [DM] if we're going to be that kind of caregiver". Participants felt that CME should be accessible, practical and readily applicable. "It has to be very practically oriented. We don't need a lot of theory. We need something that we can go back to the office that afternoon and start using it right away." While education by pharmaceutical representatives and contact with local specialist consultants were acknowledged as sources of CME, most participants endorsed the small group format stressing presentations and a safe learning environment. "The safety factor is a big factor, in terms of learning and being able to take risks about what you do know or what you don't know and what's working and what's not."

Information technology was recognized as an important facilitator. Participants anticipated that increased familiarity and comfort with using this technology would be advantageous not only in tracking patients with diabetes, but in educating them as well.

"Eventually I would see this [computers] as being helpful in terms of being able, not only physician wise, being able to track things so that you would have sugars that are in the computer . . . [but] you can graph them so [the patient] can visualize them."

Physician barriers. Participants discussed how an inadequate skill set was the major barrier to managing type 2 DM. For example, lack of knowledge and comfort with initiating a diabetic diet or starting insulin were viewed as barriers when they were not part of the physician's clinical repertoire. "I'm not so comfortable with insulin so I tend to resist using that."

Practice organization barriers were also a central concern. Specifically, not having a systematic way to 'recall' or track their patients with diabetes through their computer system. "I don't have a system where my computer tells me when one of my diabetic patients hasn't been in for many months. That's how they fall through the cracks." It was often only through serendipity, such as a patient presenting with a minor illness, that their need for diabetes care would be identified.

"When the person comes in for a cold, they're not identified as being a diabetic. You find that information and you kind of forget about it and then you look back and find that they haven't really been in for three years."

Even when participants were able to develop a recall or tracking system, logistical issues remained, including system maintenance and personnel. "We have a full-time secretary and full-time nurse and they do not have time to call people back." Another practice organization challenge was the reality that diabetes is often difficult to manage due to the complexity of the concomitant problems. "Often their diabetes is not the only problem that you're having to deal with . . . you're looking at 3 or 4 separate issues at a time." This was often exacerbated by

the lack of clearly organized protocols for office-based family practice.

“I haven’t got anything established. [I need a] strategy to follow in terms of how often to bring a patient in, what should I do at what interval of time, how should I respond to certain values and how aggressive should I be.”

Systemic factors

Systemic facilitators. Current aspects of the health care system, in Ontario, Canada, were perceived as facilitators in the management of type 2 DM such as in-home services. “I just enjoyed the home care type of situation because of the nurse. I knew I had somebody competent calling me and the patient over the week.” Drug plans were seen as key “Thank goodness . . . for drug plans”. Participants also described the diabetes education centres (DECs) as a valuable resource and stressed the importance of referring the patient soon after the diagnosis. “Once they first find out about their illness they’re more willing to listen and spend the time. So I usually send them [to a DEC] early on.”

Systemic barriers. The main health system barriers were time and physician remuneration. Participants emphasized the importance of adhering to CPGs and taking time to educate their patients, but they did not feel that the current health care system supported this activity. “They all need attention and a motivational approach and it’s quite time consuming to do it well.”

While participants recognized CPGs as assisting them, they felt “overwhelmed” by the large number of guidelines.

“The new guidelines make me feel awful. I have enough trouble doing what I’m doing and then trying to do menopausal counselling, osteoporosis counselling, smoking cessation counselling, hormonal therapy counselling, car seat counselling for babies, sunscreen counselling, drug counselling, sexually transmitted disease counselling and, then put in more new guidelines [for diabetes] it makes me think I might scream.”

They also perceived that it takes additional time and effort to first learn, and then incorporate CPGs into practice. “You just have to keep plugging away at it and keep going back. What were those guidelines again? It slowly sinks in but it’s not like you can create a major shift in practice.” As a result, the participants tended to individualize guidelines to each patient: “We need to be free to alter these guidelines and to personalize them for each patient.”

Finally, participants identified another systemic barrier, the limited services available for special populations such as the elderly and cultural groups at DECs. “It’s just a different culture and a different way of cooking and

then they come back again and I say, ‘What exactly did you eat?’ And they say: ‘They didn’t tell me not to eat that.’”

Discussion

Our focus group participants identified barriers and facilitators in the care of patients with type 2 DM that were similar to the findings of prior studies regarding diabetes management^{18,27} specifically, and chronic illnesses in general.²⁸ Our findings not only highlighted family physicians’ challenges, but also included patient and systemic barriers and facilitators in the management of diabetes. Our findings substantiate other research studies that have attempted to address the obstacles in working with this patient population.^{8,17,18,29,30} Although the barriers and facilitators to care have been described previously, what became evident during our analysis was the degree to which diabetes care was reliant on the dynamic interplay of patient, physician and systemic factors as described below.

Key patient factors include: acceptance of the diagnosis; education; self-motivation; and adaptation to daily living. Patient facilitators, such as acceptance of the diagnosis of diabetes and the influence of personal experiences, have been cited previously.^{30,31} The patient’s life context as a potential barrier has been noted by other authors.³² van den Arend *et al.*³³ conclude that the patient’s primary responsibility is an alteration in lifestyle. However, to accomplish this change, patient education must transpire within the context of a patient–provider relationship that promotes self-care behaviour.³³ Rayman and Ellison’s³⁴ findings echo a similar sentiment emphasizing that self-management of diabetes occurs when patients are viewed as experts and health care providers as mentors.

Much of the controversy surrounding diabetes control has focused on patient non-compliance.³³ Luftey and Wishner³⁵ encourage practitioners to make a paradigm shift by altering their terminology—moving from medical-centred language, such as compliance, to language which emphasizes patient autonomy, such as adherence. This change in communication style will impact on the interaction between the patient and physician²⁸ and may affect their adherence to a management plan.

Systemic factors interact with the patient through service accessibility and funding for medication and prevention management. Alterations in the system can influence patient factors, as evidence from the UK illustrates. Murphy *et al.*³⁶ found that when an organized general practice-based system of diabetic surveillance was introduced, patient attendance for diabetes monitoring increased 42% (56% pre- and 98% 1 year post-introduction). This was also associated with the importance patients attributed to their diabetes and its management.

Physician factors emphasize: knowledge; implementation of CPGs; and practice organization challenges. Recognition of the need to institute changes in the organizational structure of family practice in the treatment/management of chronic diseases has been noted by other authors.³² Griffin and Kinmonth³⁷ conclude, in their Cochrane review, that responsibility for diabetes by family physicians will only succeed with adequate support in the office practice such as computerized, prompted recall and review of patients with diabetes.

Our participants, like many other family practitioners around the world, endorse CPGs in general, but concomitantly recognize the need to tailor their application of CPGs to the individual patient,^{38–40} reflecting the dynamic interplay between patient and physician factors. The potential barriers affecting the participants' implementation of CPGs are similar to those documented by Lomas *et al.*⁴¹ and Haynes.^{42,43} Physician factors interact with systemic factors including: economic, administrative and time pressures; and educational barriers. While the CPGs may be explicit regarding the management of type 2 DM, our findings suggest that knowledge alone is insufficient to create a change in practice behaviour. Recognition must be given to the interaction of physician, patient and system factors. This is particularly salient when dealing with a chronic disease, as complex as diabetes, where multiple issues must be considered.

When the focus is on systemic factors, the issue of access to health care services, for example diabetes education centres in our study, becomes evident. In New Zealand, Simmons *et al.*,⁴⁴ in a cross-sectional household survey, also found health care service barriers to diabetes care including a lack of community-based services and a limited range of available services. Issues of funding affect both patients and physicians in the form of adequate coverage and remuneration, respectively. Again research has documented the interplay between physician and systemic factors, highlighting the organization of family practice, in particular an organized recall system.³⁵ Some authors have suggested that the health care system, with an emphasis on acute and episodic illness, is not designed to address the complex and multisystemic nature of a chronic disease such as diabetes.⁴⁵ Furthermore, universal health care, such as provided in Canada and the UK, supports prevention strategies in diabetes care. Since the late 1980s, The Netherlands has had in place a standard for diabetic care in general practice which includes comprehensive care for all type 2 diabetes patients.³³

A central concept interconnecting each of the three factors is education. Our participants emphasized the importance of educating patients at every opportunity, with ongoing educational interventions being a cornerstone of diabetes care. To assist in the management of patients with type 2 DM, continuing medical education was viewed as essential. However, participants perceived

a lack of support from the broader system regarding the importance of education.

Prior research has indicated that even when an educational intervention is offered, behaviour change may not be sustained.⁴⁶ The failure of the educational intervention has been attributed to difficult systemic forces that are too powerful for physicians to overcome and too difficult for patients to negotiate.⁴⁵ Thus behaviour change will only occur when education is provided not only to patients and physicians, but also to the system in general.

Our findings illustrate the dynamic interplay of patient, physician and systemic factors in the management of patients with type 2 DM. In addressing this interaction, several authors^{47,48} have recommended a disease management approach to diabetes care. For example, Larme and Pugh,¹⁶ recognizing the frustrations experienced by primary care providers in the management of diabetes, recommended the adoption of a model of medical care for chronic illnesses, such as diabetes. Our findings suggest that each factor in diabetes care—patient, physician and systemic—influences, and in turn is influenced by the barriers and facilitators specific to the others. Therefore, a diabetes management model needs to include patients and other key players of the health care system, as well as physicians. All must be active participants in the implementation of a quality diabetes management model.

Limitations

The small sample size and restricted geographic area limit the transferability of the findings to other family physicians. Also, the findings reflect only the views of family physicians regarding the challenges of managing patients with type 2 DM. Future study requires input from both patients and other health care providers.

Conclusion

The failure to care adequately for patients with type 2 DM may be assigned to a lack of patient adherence, a failure of physicians' knowledge and skill level, or insufficient funding and organization of necessary programmes in the current health care system. However, our findings suggest that no single player is at fault and, with education, the integration of the three factors relevant to diabetes care is achievable through implementation of a diabetes management model.

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