

Patients' experiences of diabetes education teams integrated into primary care

Barbara Grohmann RD MHSc Sherry Espin RN PhD Enza Gucciardi MHSc PhD

Abstract

Objective To explore patients' perspectives on care received from diabetes education teams (a registered nurse and a registered dietitian) integrated into primary care.

Design Qualitative study using semistructured, one-on-one interviews.

Setting Three diabetes education programs operating in 11 primary care sites in one region of Ontario.

Participants Twenty-three patients with diabetes.

Methods Purposeful sampling was used to recruit participants from each site for interviews. Educator teams invited patients with whom they had met at least once to participate in semistructured interviews. Data were analyzed using thematic analysis with NVivo 11 software.

Main findings The diabetes education teams integrated into primary care exhibited many of the principles of person-centred care, as evidenced by the 2 overarching themes. The first is personalized care, with the subthemes care environment, shared decision making, and patient preference for one-on-one care. Participants described feeling included in partnerships with their health care providers, as they collaborated with physicians and diabetes educators to develop knowledge and set goals in the convenience and comfort of their usual primary care settings. Many participants also expressed a preference for one-on-one sessions. The second theme is patient-provider relationship, with the subthemes respect, supportive interaction, and facilitating patient engagement. Supportive environments created by the educators built trusting relationships, where patients expressed enhanced motivation to improve their self-care.

Conclusion Diabetes educators integrated into primary care can serve to enrich the experience of patients, provide key education to improve patient understanding, and support primary care physicians in providing timely and comprehensive clinical care. Diabetes patients appear to benefit from convenient access to interprofessional teams of educators in primary care to support diabetes self-management.

EDITOR'S KEY POINTS

- Specialized diabetes educators in primary care can provide customized education and support to meet patients' individualized needs and goals, and they can provide primary care physicians with key information to improve overall clinical care.
- Participants in our intervention, based on their interview responses, appeared to be very receptive to their sessions with the diabetes educators and had no negative comments.
- Most participants not only would recommend this intervention to others with diabetes, but indicated that it was a critical step to improved self-management.

This article has been peer reviewed.

Can Fam Physician 2017;63:e128-36

Les expériences vécues par les patients avec les équipes d'information sur le diabète intégrées aux soins primaires

Barbara Grohmann RD MHS^c Sherry Espin RN PhD Enza Gucciardi MHS^c PhD

Résumé

Objectif Explorer les opinions des patients sur les soins reçus par une équipe d'information sur le diabète (une infirmière autorisée et une diététiste autorisée) intégrée aux soins primaires.

Conception Étude qualitative au moyen d'entrevues individuelles semi-structurées.

Contexte Trois programmes d'information sur le diabète travaillant dans 11 centres de soins primaires, dans une région de l'Ontario.

Participants Un total de 23 patients diabétiques.

Méthodes Une échantillonnage par choix a servi à recruter des participants de chaque centre pour des entrevues. L'équipe d'éducatrices a invité les patients rencontrés au moins une fois à participer à une entrevue semi-structurée. Les réponses ont été évaluées au moyen d'une analyse thématique à l'aide du logiciel NVivo 11.

Principales constatations Les équipes d'information sur le diabète intégrées aux soins primaires ont mis en pratique bon nombre des principes des soins centrés sur la personne, comme en témoignent les 2 thèmes qui se sont particulièrement démarqués. Le premier concerne les soins personnalisés, dont les sous-thèmes sont l'environnement des soins, la prise de décisions conjointe et la préférence des patients pour les soins en tête à tête. Les patients ont décrit un sentiment d'inclusion dans un partenariat avec leurs professionnels de la santé, parce qu'ils ont collaboré avec les médecins et les éducatrices spécialisées en diabète pour acquérir des connaissances

et établir des objectifs, dans le confort et la convenance de leur milieu de soins primaires habituel. De nombreux participants ont aussi exprimé leur préférence pour les séances en tête à tête. Le deuxième thème cerné porte sur la relation patient-professionnel, comportant les sous-thèmes du respect, de l'interaction de soutien et de l'engagement du patient facilité par les professionnels. Les environnements de soutien créés par les éducatrices ont permis d'établir des relations de confiance, et les patients ont dit être plus motivés à améliorer leurs propres soins dans ce type de milieu.

POINTS DE REPÈRE DU RÉDACTEUR

- Des éducatrices spécialisées en diabète intégrées aux soins primaires peuvent adapter sur mesure l'information et le soutien dans le but de répondre aux besoins et aux objectifs individuels des patients. Elles peuvent aussi fournir aux médecins de soins primaires des renseignements importants pour améliorer les soins cliniques globaux.
- Selon les réponses exprimées dans leur entrevue, les participants à notre intervention ont semblé très réceptifs à leurs séances avec des éducatrices spécialisées en diabète et n'avaient aucun commentaire négatif.
- La plupart des participants non seulement recommanderaient cette intervention à d'autres personnes diabétiques, mais ils ont aussi indiqué que c'était une étape essentielle pour une meilleure prise en charge autonome du diabète.

Cet article a fait l'objet d'une révision par des pairs.

Can Fam Physician 2017;63:e128-36

Conclusion Des éducatrices sur le diabète qui sont intégrées aux soins primaires peuvent servir à enrichir l'expérience des patients, fournir des renseignements importants pour une meilleure compréhension par le patient et aider les médecins de soins primaires dans la prestation de soins cliniques opportuns et complets. Les patients diabétiques semblent bénéficier de l'accès pratique à des équipes interprofessionnelles d'éducateurs en soins primaires pour appuyer la prise en charge autonome de leur diabète.

Almost 2 million Canadians live with diabetes and 6 million are at high risk of developing it.¹ During the past decade, the prevalence of diabetes has almost doubled to 7.6% and by 2020 will likely rise to 9.9%, affecting approximately 1 in 3 Canadians.²⁻⁴ Diabetes mellitus, which is a progressive disease, costs Canada's health care system approximately \$12 billion annually, which is projected to increase to \$16 billion by 2020.^{2,5}

Uncontrolled diabetes can lead to complications that account for approximately 80% of health care costs.^{2,5} Nonetheless, 50% of complications can be prevented or delayed through effective management.² Patient self-management can increase glycemic control and reduce the risk of health complications.⁶⁻⁸ Diabetes self-management education (DSME) is critical to patients effectively managing the disease.^{9,10} Diabetes self-management education improves overall knowledge of diabetes, dietary habits, self-monitoring skills, and weight and glycemic control.¹¹ Unfortunately, not everyone diagnosed gets the education they need.¹¹⁻¹⁴ Only 24% to 35% of those diagnosed attend diabetes classes. Primary barriers to attendance include inconvenient program location or time, English as a second language, lack of patient willingness, and irregular visits to primary care physicians.^{11,15,16} Half of new patients drop out of DSME programs, primarily owing to work conflicts, apathy, and lack of familiarity with services offered.^{15,16}

As a result, most individuals with diabetes receive care solely from their primary care physicians.¹⁷ If physicians do not promote education, patients are either not aware of the DSME programs or do not understand the benefits of attending.^{12,18} Given the disease's complexity, access to DSME is essential to decrease the risk of complications.¹⁹ Given the low proportion of patients who complete DSME programs, an alternative is needed. Specialized diabetes education teams integrated into primary care sites can deliver DSME, coaching, and support to patients while providing medication optimization recommendations and decision support to primary care physicians. These specialized teams comprise registered nurses and registered dietitians who are certified diabetes educators. The purpose of our study was to explore patients' health care experiences with diabetes education teams integrated into primary care settings.

METHODS

Intervention

Three specialized diabetes education teams operated in 11 primary care sites in one region of Ontario from November 2009 to August 2014. Eight of the 11 primary care sites were family health teams, 2 were family group practices, and 1 was a sole-physician practice. Primary care physicians referred patients to the teams, which served patients

newly diagnosed with type 2 diabetes who had poor glycemic control, had complications, or needed insulin. Patients who required more intense and specialized treatment were referred to diabetes treatment centres.

The diabetes educators at the primary care sites saw patients to assess their level of self-care, diabetes knowledge, and lifestyle habits (half an hour each with a registered nurse and a registered dietitian, or with both together, where space was limited). The teams provided individualized education and developed treatment priorities and action plans in consultation with patients. These were shared with physicians, who reinforced them on subsequent patient visits. For all patients, half-hour visits with the educator teams continued over the following year. At these appointments, action plans, patient goals, and needs were reviewed, discussed, and potentially revised. After the first year, follow-up visits were scheduled based on patients' needs and the educators' clinical judgment.

Data collection and participants

The institutional ethics boards at Ryerson University in Toronto, Ont, and at the 11 sites approved the study protocol, consent forms, and initial interview guides. Purposeful sampling was used to recruit participants from each site for interviews. Educator teams invited patients with whom they had met at least once to participate. After the study was described to potential participants, written informed consent was obtained. Interview guides were pilot-tested with 2 participants and assessed for clarity, comprehensiveness, and ease of completion. A total of 23 participant interviews were conducted 1 year after the intervention began. Data on participants' age, level of education, and sex were collected (Table 1). Interviews continued until no new themes were generated from the data.²⁰ All interviews were audiorecorded and transcribed verbatim.

Data analysis

Data analysis was concurrent with data collection. Thematic analysis²¹ of data from all the interviews, including the 2 pilot-test interviews, was facilitated by NVivo 11. Data were systematically classified into categories and the categories then were grouped into overarching themes with similar meanings.^{21,22} Investigators focused on descriptions of the phenomena to identify themes through repeated readings of the transcripts and coded data, identifying subthemes and key quotes for each theme.²³

FINDINGS

We identified 2 overarching themes: personalized care and patient-provider relationship. Personalized care comprises 3 subthemes: care environment, shared decision making, and preference for one-on-one care. Patient-provider

relationship comprises 3 subthemes: respect, supportive interaction, and facilitating patient engagement. **Table 2** presents definitions of the themes and subthemes.

Table 1. Demographic profile of participants: Mean (SD) time living with diabetes was 10 (9) y.

CHARACTERISTIC	PARTICIPANTS (N = 23), N (%) [*]
Age group, y	
• 30–39	0 (0)
• 40–49	6 (26)
• 50–59	6 (26)
• ≥ 60	11 (48)
Sex	
• Female	15 (65)
• Male	8 (35)
Highest level of education	
• Less than high school	5 (22)
• High school or GED test completed	6 (26)
• Vocational or technical school or some college	2 (9)
• Graduated from college	5 (22)
• Graduated from university	5 (22)
GED—General Educational Development. [*] Percentages might not add to 100 owing to rounding.	

Personalized care

The diabetes educators worked with patients to ensure their understanding of diabetes management while taking into consideration each patient's knowledge base, confidence, and skills. The one-on-one environment facilitated personalized care, made access convenient, and reduced potential stress.

Care environment. Participants appreciated having the diabetes educators located at their primary care physicians' offices, as they were familiar with both the office setup and the staff. The locations were often close to either work or home, making attendance at appointments convenient and reducing anxiety about traveling to unfamiliar locations with unfamiliar staff and practices. Participants also valued having all health care providers in one location. Appointments could be scheduled conjointly or successively and, if needed, diabetes educators could easily consult each patient's physician about medication changes. As one person commented, "Patients would have everything right there." (Patient 23)

Shared decision making. Partnerships were forged between diabetes educators and patients, who described being involved in their DSME sessions.

I think they definitely try to make it feel [like] more of a team approach. (Patient 10)

A partner ... not like a teacher or student. It was like a partnership. (Patient 20)

Table 2. Overarching theme and subtheme definitions

THEMES	DEFINITIONS
Personalized care	Clinical care tailored to the person based on his or her needs, preferences, and abilities; conducted in a one-on-one setting; helping to meet his or her specific goals
• Care environment	Ease of access and comfort or familiarity with setting or staff, with diabetes educators working in the primary care location. Access to the physician if medications need adjustment or for insulin initiation, without the need for additional appointments
• Shared decision making	Team relationship and partnership created among diabetes educators, primary care physicians, staff, and patients, all working together on goal setting and decision making
• Preference for one-on-one care	Desire of patients to continue with one-on-one, individualized care rather than attending group classes
Patient-provider relationship	Positive, trusting working relationships between patients and their diabetes educators during the intervention
• Respect	Intangible treatment by diabetes educators and office staff described by participants; treatment that is considerate of patients' time, choices, fears, opinions, and medical or cultural eating patterns; nonjudgmental, and helpful
• Supportive interaction	Educators supporting patients' learning through listening, responding to specific questions, providing appropriate education, and focusing on patients' learning needs
• Facilitating patient engagement	Increased awareness, skills, and knowledge were created or gained through relationships of patients with diabetes educators. Participants described increased confidence and self-efficacy in managing medications and self-care

Patients and providers worked together as teams to make decisions and create goals, addressing each person's unique needs and challenges. Participants described these exchanges as supportive, not as didactic lectures.

Preference for one-on-one care. Participants explained that, in one-on-one appointments, they were more likely to ask personal questions or spend extra time on areas that were difficult for them to grasp. Educators and participants reviewed confusing information on topics such as insulin or food labels, and discussed specific goals such as portion control or blood glucose targets.

Participants appeared to prefer one-on-one counseling over diabetes education classes, although only 39% had attended such programs. When asked about group classes, they explained that information tended to be general and not tailored to individuals' needs. Participants described group classes as time consuming, confusing, and frustrating. They recalled that certain patients dominated the classes, asking multiple unhelpful questions, while others did not bother asking questions because of the group's size. One participant commented, "There [were] too many people there with too many different questions." (Patient 21)

Almost all of the participants voiced a preference for one-on-one sessions with diabetes educators rather than group classes. As one participant said, "Individual, yeah. 'Cause we're all different." (Patient 2)

Patient-provider relationship

Participants described relationships that developed with the educators as respectful, supportive, and understanding. These relationships created spaces where patients improved their knowledge or skills and, as they expressed, increased their awareness and confidence in managing their diabetes. Many participants described feeling motivated after their DSME sessions to implement the educators' recommendations, reduce their hemoglobin A_{1c} levels, increase their exercise levels, and lose weight.

Respect. The diabetes educators were consistently described as helpful, approachable, and receptive. Participants expressed appreciation for the treatment they received during the sessions.

I found that they didn't judge, which was nice.
(Patient 22)

They don't seem overly judgmental. (Patient 10)

Respect extended beyond treatment to patients' dietary choices. Dietary recommendations were tailored to each patient's preferences or needs. Educators worked with each patient's existing food choices

and cultural eating patterns to make small, effective changes (eg, portion control) that would lower their blood glucose levels and worked within medical dietary restrictions. One participant reflected on the diabetes educators, "I felt that they respected each other as well as me." (Patient 20) This respect of time, opinions, dietary choices, and culture created a solid foundation to build effective relationships among patients, their physicians, and the diabetes educator teams.

Supportive interaction. Collaborative partnerships among physicians, diabetes educators, and patients also developed through supportive interactions. Participants described how the educators listened to their questions and concerns and responded appropriately. While some participants had family involved with their care, others received no support from family or friends. Participants voiced the importance of support received from the educators. Diabetes can be difficult to manage, as some participants explained.

It's [a] very hard, very hard ... disease. (Patient 5)

It's a strange disease, where you feel like it's your fault. (Patient 10)

Participants recounted that they often left after seeing the diabetes education team feeling good about their situations and their ability to manage diabetes.

Almost all of the participants agreed that diabetes education teams and their primary care physicians provided consistent information. As more than one patient commented, "Everybody's on the same page" (Patients 15 and 20). This consistency of information not only supported patients but all health care team members.

Facilitating patient engagement. The education team sessions helped participants become more aware of diabetes, its potential complications, and keys to improving their outcomes. As one participant commented, "She's made me think more—both of them have—about it [diabetes]. As I said before, I didn't think nothing of it [sic]. It was 'Take my pills, go and forget about it' They've made me more aware of really watching my diabetes." (Patient 1)

Many participants noted an increase in knowledge after the sessions on such topics as healthy eating, portion control, exercise, and medications. The sessions also addressed areas of confusion; for example, as 2 participants described:

I tend to do a lot of research ... myself It was just confirmed by them. (Patient 8)

I'm confused about the diet. Really confused [about] the labels, I should say. (Patient 4)

Participants described being able to implement the new information they learned from the diabetes team into their lives in simple but meaningful ways that fit their lifestyles. Many noted increased skill in managing their medications, whether they are taking oral medications or insulin. Participants learned the most effective ways to take medications in different situations and to suit their individual needs.

The patient interviews highlighted the benefits of personalized care and building a solid patient-provider relationship. The one-on-one sessions allowed patients to express their concerns or confusion in a private setting and allowed educators to target specific goals or topics depending on each individual's needs and understanding. Almost every participant agreed that other persons with diabetes would benefit from this type of intervention. **Table 3** contains additional quotes illustrating these findings.

DISCUSSION

Based on our findings, integrating diabetes educator teams in primary care can reduce barriers to self-management education, develop person-centred care environments, increase patient satisfaction, and support physicians in patient care. As more than 80% of patients with diabetes receive care solely from their primary care physicians, on-site access to diabetes education benefits both patients and physicians.^{3,4}

Providing diabetes education in primary care settings can reduce both time and location barriers. Patients are familiar with the location and staff. Appointments can be booked to coincide with receiving laboratory results or to see other health care providers concurrently, eliminating the need to travel to multiple sites or return on multiple days. Our participants expressed appreciation for this convenience. Patients in remote or rural areas might also appreciate this ease of access.

Integrating diabetes educator teams in primary care settings helps foster trusting patient-provider relationships, which are important in patient outcomes.^{24,25} Trusting relationships also involve patients in all aspects of their care, which is characteristic of a person-centred approach.^{18,26-29} Diabetes educators in primary care settings might develop stronger connections with patients than educators in off-site programs, as patients have increased and more consistent access to educators. With stronger connections, patients might believe they are being treated as a whole person, not just as someone with a disease.³⁰⁻³² Trust, respect, and empathy were consistently voiced by many participants in our study, and these relational characteristics have been identified in the literature as essential to effective diabetes care.³³ These characteristics allow patients to feel like they are part of their care teams and create mutually beneficial

patient-provider relationships that embody the person-centred approach.^{18,34}

Shared decision making fosters partnerships and high-level targeted decisions among physicians, allied health care providers, and patients, along with increased patient satisfaction and independent self-care.^{28,30} Many patients prefer collaborating with health care providers who know them well. Such partnerships can improve communication and the consistency of the information given to patients by multiple care providers.^{6,34,35} Our findings demonstrated that the diabetes educators worked in collaboration with the patients, meeting their individualized needs and concerns.

Participants in our study remarked on how on-site diabetes educators took time to explain information to ensure understanding and tailored it to their needs. Ensuring patient understanding, rather than simply providing information, improves clinical outcomes.³⁵ Interventions that are tailored to match patients' goals, cultural beliefs, and language also have beneficial outcomes and engage patients in self-management, helping to improve their overall health status.^{18,25,28,29}

After their DSME sessions, participants voiced increased awareness and knowledge, which led to greater perceived confidence and self-efficacy in handling different situations, such as making food choices or controlling blood glucose levels, and managing medications more effectively. These outcomes are similar to studies of person-centred interventions that empower patients in decision making about their care and have been shown to improve self-efficacy or reduce uncertainty.^{30,32,36,37}

Our intervention produced an interprofessional team environment that supported primary care physicians.^{11,14} Allied health care providers, such as diabetes educators, have been associated with improved care of chronic diseases such as diabetes.³⁸ After similar interventions, patients remarked that although the doctors were very busy, patients still wanted more involvement either with them or the on-site allied health professionals.³⁹ Integrating diabetes education in primary care settings increases patients' access to care, patient satisfaction, and the consistency of the information provided. Integrated education also improves physicians' diabetes skills and knowledge and reduces referrals to secondary care.⁴⁰ In general, the use of allied health professionals strengthens primary care, and thereby the overall health of the population.^{24,28,29}

Our findings demonstrate that integrating diabetes educator teams in primary care makes health care services more person centred, as care is more individualized and provided in environments that are more convenient and accessible for patients. Diabetes educator teams have more diabetes expertise than primary care physicians do and more time for extended dialogue with patients, building trust and rapport. This, in

Table 3. Additional quotations

THEMES	SAMPLE QUOTATIONS
Personalized care	
<ul style="list-style-type: none"> Care environment 	<ul style="list-style-type: none"> With [the educators] at our doctor's in the same place ... we can arrange our appointment the same time, right after our family doctor, then we go right there and we get rid of it all at one time (Patient 1) It actually works better because I've got the results in and then they ... talk to me about it. If they see anything that needs to be brought to the doctor's attention then usually I have a doctor's appointment on that same day so then they can bring things up. So, if it is a case where they might think that I should change my medication or whatever then they can bring that up to the doctor. So after I see the nurse and the dietitian then I see my doctor (Patient 13) You see the doctor, and after that you see the nurse, and [after] the nurse you see the dietitian, 3 in 1 ... yes, it's very convenient and it's very helpful for any patient (Patient 16)
<ul style="list-style-type: none"> Shared decision making 	<ul style="list-style-type: none"> Because we do work as a team ... it feels like it's a team; definitely a team working on your health care (Patient 15) Well that's usually what we do ... we usually evaluate where I [am] By the end of the session I'm setting a series of goals. And then in our next session, have I attained these goals? If not, we talk about why it didn't happen and what we can do to ... try to get back on track, or try to hit these goals. And then ... we go through that and ... at the end of every session ... here's my next set of goals (Patient 15) The ... dietitian never [said] "You have to." The ... dietitian [said] "Yes, but you know if you get ... that ... and do it ... like that" She never [said] "You have to stop this" or "stop that" (Patient 11) I think it is more collaborative. They look at my numbers, they talk to me about them, they ask me why. I'll explain stuff and we come up with a plan together (Patient 13)
<ul style="list-style-type: none"> Preference for one-on-one care 	<ul style="list-style-type: none"> [She] has helped me out quite a bit with the insulin and she takes her time, she doesn't rush me out of the office. She explains things to me that I'm confused on, like ... the insulin (Patient 4) I found, at my group sessions, it was people who had different needs, so ... everything seemed very generalized, not very specific (Patient 15) Sometimes you might have things that you want to talk about that you don't necessarily want [a] bunch of people there for (Patient 22) It keeps you motivated and you look forward to it When they did it at the diabetic centre there were about 20 [or] 30 people but then a lot of people wouldn't ... ask questions when there's so many people. So here, one-on-one is good (Patient 14) It's like reading instructions if you're trying to put something together. You can read it and reread it and you still have no idea what you're doing. But with them and the staff, they take the time to explain it; to show it to you (Spouse of Patient 2) Knowing what it actually does to your body, knowing ways to change it, knowing ways that you could avoid things or reverse things—that is more assessable on a one-to-one basis (Patient 17)
Patient-provider relationship	
<ul style="list-style-type: none"> Respect 	<ul style="list-style-type: none"> For one thing, they respect my time so I don't have to [wait] [At the] other clinic I waited an hour (Patient 17) They didn't treat me as somebody that was ... stupid, not [like] "OK ... why are you not looking after yourself?" They ... weren't degrading by any means: "We're here to help you" They're not judgmental (Patient 6) It's hard to work with my diet and keep blood sugars down ... and they're trying their best to work around it. [The educator suggested to] take yogurt at this time, add [a] banana to smoothies for my food replacement (Patient 16) I eat a lot of rice ... for example. That's my culture, like we eat a lot of rice and peas and stuff like that I wasn't aware of how ... devastating the amount that I eat [is]. So it's more about portion control and seeing how that's really affecting me (Patient 17)

Continued on page e135

Table 3 continued from page e134

THEMES	SAMPLE QUOTATIONS
<ul style="list-style-type: none"> • Supportive interaction 	<ul style="list-style-type: none"> • Both of them were friendly ... and ... wanted to listen and ... get me ... answers to the questions I had (Patient 8) • You need the support; their support. You need the help There's not a diabetic person out there that doesn't need the support (Patient 5) • They were very understanding and helped me sort of adjust to that [diabetes]. So it seems more comfortable now than it did in the beginning (Patient 10) • [They] not only [give] you the medications, they tell you what to do about it, and how to [use it]. The doctor give[s] you the medication, right I like my family doctor but he cannot talk to you all the time That's why he refers you to [the] team who have the time [to] explain ... everything. He cannot keep track of it [all], so you cannot come to him every day The team is like a big support group, but when I see him he reads the results because he has a set of notes. So he knows what's going on, too. He bases his decisions on them, too. This is [a] very good, supportive team (Patient 16) • It's quite a good team in terms of the information being consistent (Patient 13) • I find [that] they base their decisions on each other ... my doctor, he bases decisions on how to increase [medications], because he talked to her and ... she recommended that (Patient 16)
<ul style="list-style-type: none"> • Facilitating patient engagement 	<ul style="list-style-type: none"> • You make little ... changes, like ... I don't drink juices anymore. I'll eat the food rather, and I'll ... drink water I find that's something that I've changed and I don't put cream or sugar in my coffee anymore, I just put milk in. Sometimes these little things make a difference in the long run, and ... I didn't find [it] that hard to change (Patient 22) • She has been very good at breaking down the medication. We've talked expansively about the best times to take medication, switching things around to see how they work She suggested that I split the Diamicon [gliclazide] [into] 2 in the morning and 2 in the evening, along with the other diabetic medications, and it actually helped lower the morning number (Patient 13) • Because of what I have learned and my confidence in myself in being able to manage my diabetes, I think that ... other people should be doing this (Patient 20) • I feel a lot better about [diabetes] now because I know what I can do (Patient 21) • I'm now better at managing it. The diabetes is not better, but I'm now better managing it (Patient 18) • We're learning everything all the time and it is important because, again, we didn't know about the insulin. We don't know what else is out there that could be more beneficial for [Patient 2]. And for myself because, again, I live with him (Spouse of Patient 2) • I know what to do. I know everything about [diabetes], blood sugar, carbohydrates and glucose, insulin ... when to take it. [What to do] if I am low, or if I am high. I check my blood sugar. I look [at] what I eat. I usually ... make sure about carbohydrate[s]. When I buy stuff ... I read the label. I count the carbohydrate[s]. I like that (Patient 19)

turn, facilitates patient decision making, satisfaction with care, and engagement.^{30,37}

Strengths and limitations

As our study was conducted in one highly urbanized region of Ontario, the findings might not apply to rural or remote Canadian regions. Nonetheless, the study has a number of strengths. Our semistructured interview guides ensured consistency and reliability in data collection without limiting conversational flow or multiplicity of themes. Data saturation was reached, indicating that the number of interviews was sufficient to explore all relevant themes. Finally, the study was broad, crossing 3 diabetes education programs and 11 primary care sites with 3 types of family practices.

Clinical implications

Specialized diabetes educator teams consisting of registered nurses and registered dietitians integrated into primary care offer patients increased access, convenience, and one-on-one care. This alternative improves satisfaction, self-management, and engagement. Primary care physicians also benefit from having an interdisciplinary team that supports patient care and provides clinical recommendations.

Determining if there is a measurable change in understanding and behaviour following a series of one-on-one sessions with diabetes educators is a possible area of future research. Both implementation of specialized diabetes teams in primary care and interprofessional collaboration during an integration of this care

model have been explored.^{41,42} While increased awareness is an important step, it would be crucial to determine whether this awareness is being translated into changes in self-management practices.

Conclusion

Diabetes self-management education programs have low usage and high attrition rates. Participants in our intervention described preferring the experience of one-on-one sessions at their primary care physicians' location and working in a collaborative manner with the diabetes educators to meet their individual needs and goals. Integrating diabetes educator teams into primary care aligns with the concept of person-centred care, which has been shown to increase patient self-care efficacy. Person-centred care and integrated health services, recommended by the World Health Organization,^{28,29} are the next evolution of health care. Diabetes education integrated into primary care is an example of this evolution in action.

Ms Grohmann is a dietitian at Idlewyld Manor in Hamilton, Ont. **Dr Espin** is Associate Professor in the Daphne Cockwell School of Nursing at Ryerson University in Toronto, Ont. **Dr Gucciardi** is Associate Professor in the School of Nutrition at Ryerson University.

Acknowledgment

Funding was provided by the Canadian Institutes of Health Research. The views presented in this manuscript are our own and not an official position of Ryerson University or the Canadian Institutes of Health Research.

Contributors

Ms Grohmann contributed to data analysis, identifying emerging themes, and writing the manuscript. **Dr Espin** contributed to the conception of the research project, obtaining funding for the research project, data analysis, drafting the manuscript, revising the manuscript, and reviewing the final version of the manuscript. **Dr Gucciardi** contributed to the conception of the research project, obtaining funding for the research project, data analysis, drafting the manuscript, revising the manuscript, and reviewing the final version.

Competing interests

None declared

Correspondence

Dr Enza Gucciardi; e-mail egucciard@ryerson.ca

References

- Public Health Agency of Canada. *Reducing health disparities related to diabetes: lessons learned through the Canadian Diabetes Strategy Community-Based Program*. Ottawa, ON: Public Health Agency of Canada; 2011. Available from: www.phac-aspc.gc.ca/cd-mc/diabetes-diabete/rhd-rds-2011/index-eng.php. Accessed 2015 Jun 13.
- Diabetes: Canada at the tipping point. Toronto, ON: Canadian Diabetes Association; 2011. Available from: www.diabetes.ca/publications-newsletters/advocacy-reports/diabetes-canada-at-the-tipping-point. Accessed 2015 Jun 13.
- Imran SA, Tugwell B, Harris S. Diabetes in primary care: back to basics. *Can J Diabetes* 2014;38(3):155-6.
- Lau DC. Diabetes management in primary care. *Can J Diabetes* 2014;38(3):157-8.
- Global diabetes experts emphasize self-management to prevent fatal health complications. Vancouver, BC: Canadian Diabetes Association; 2012. Available from: www.diabetes.ca/newsroom/search-news/global-diabetes-experts-emphasize-self-management. Accessed 2015 Jun 13.
- Hornsten A, Lundman B, Kihl Selström E, Sandström H. Patient satisfaction with diabetes care. *J Adv Nurs* 2005;51(6):609-17.
- Ridgeway NA, Harvill DR, Harvill LM, Falin TM, Forester GM, Gose OD. Improved control of type 2 diabetes mellitus: a practical education/behavior modification program in a primary care clinic. *South Med J* 1999;92(7):667-72.
- Wu SF, Tung HH, Liang SY, Lee MC, Yu NC. Differences in the perceptions of self-care, health education barriers and educational needs between diabetes patients and nurses. *Contemp Nurse* 2014;46(2):187-96.
- Funnell MM, Brown TL, Childs BP, Haas LB, Hoseney GM, Jensen B, et al. National standards for diabetes self-management education. *Diabetes Care* 2010;33(Suppl 1):S89-96.
- Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 clinical practice guidelines for the prevention and management of diabetes in Canada. *Can J Diabetes* 2013;37(Suppl 1):S1-212.
- Cauch-Dudek K, Victor JC, Sigmund M, Shah BR. Disparities in attendance at diabetes self-management education programs after diagnosis in Ontario, Canada: a cohort study. *BMC Public Health* 2013;13:85-90.
- Coonrod BA, Betschart J, Harris MI. Frequency and determinants of diabetes patient education among adults in the U.S. population. *Diabetes Care* 1994;17(8):852-8.
- Ruppert K, Uhler A, Siminerio L. Examining patient risk factors, comorbid conditions, participation, and physician referrals to a rural diabetes self-management education program. *Diabetes Educ* 2010;36(4):603-12. Epub 2010 May 17.
- Shah BR, Booth GL. Predictors and effectiveness of diabetes self-management education in clinical practice. *Patient Educ Couns* 2009;74(1):19-22. Epub 2008 Sep 20.
- Gucciardi E, DeMelo M, Offenheimer A, Grace SL, Stewart DE. Patient factors associated with attrition from a self-management education programme. *J Eval Clin Pract* 2007;13(6):913-9.
- Gucciardi E, DeMelo M, Offenheimer A, Stewart DE. Factors contributing to attrition behavior in diabetes self-management programs: a mixed method approach. *BMC Health Serv Res* 2008;8:33-43.
- Leiter LA, Berard L, Bowering CK, Cheng AY, Dawson KG, Ekoé JM, et al. Type 2 diabetes mellitus management in Canada: is it improving? *Can J Diabetes* 2013;37(2):82-9. Epub 2013 Apr 23.
- Rodriguez KM. Intrinsic and extrinsic factors affecting patient engagement in diabetes self-management: perspectives of a certified diabetes educator. *Clin Ther* 2013;35(2):170-8.
- Diabetes education modules. Brussels, Belgium: International Diabetes Federation; 2011. Available from: www.idf.org/diabetes-education-modules. Accessed 2015 Jun 13.
- McCracken G. *The long interview*. Newbury Park, CA: Sage; 1988.
- Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;3(2):77-101.
- Weber RP. *Basic content analysis*. Beverly Hills, CA: Sage; 1985.
- Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res* 2005;15(9):1277-88.
- Van Weel C. Person-centred medicine in the context of primary care: a view from the World Organization of Family Doctors (Wonca). *J Eval Clin Pract* 2011;17(2):337-8. Epub 2011 Jan 26.
- Gucciardi E, Chan VW, Manuel L, Sidani S. A systematic literature review of diabetes self-management education features to improve diabetes education in women of black African/Caribbean and Hispanic/Latin American ethnicity. *Patient Educ Couns* 2013;92(2):235-45. Epub 2013 Apr 26.
- Van Royen P, Beyer M, Chevallier P, Eilat-Tsananani S, Lionis C, Peremans L, et al. The research agenda for general practice/family medicine and primary health care in Europe. Part 3. Results: person-centred care, comprehensive and holistic approach. *Eur J Gen Pract* 2010;16(2):113-9.
- Wigert H, Wikström E. Organizing person-centred care in paediatric diabetes: multidisciplinary teams, long-term relationships and adequate documentation. *BMC Res Notes* 2014;7:72.
- People-centred and integrated health services: an overview of the evidence. Geneva, Switzerland: World Health Organization; 2015. Available from: www.who.int/servicedeliverysafety/areas/people-centred-care/evidence-overview/en. Accessed 2017 Jan 16.
- WHO global strategy on people-centred and integrated health services. Geneva, Switzerland: World Health Organization; 2015. Available from: www.who.int/servicedeliverysafety/areas/people-centred-care/global-strategy/en. Accessed 2017 Jan 16.
- Dudas K, Olsson LE, Wolf A, Swedberg K, Taft C, Schaufelberger M, et al. Uncertainty in illness among patients with chronic heart failure is less in person-centred care than in usual care. *Eur J Cardiovasc Nurs* 2013;12(6):521-8. Epub 2013 Jan 9.
- Wikblad KF. Patient perspectives of diabetes care and education. *J Adv Nurs* 1991;16(7):837-44.
- Jeon YH, Kraus SG, Jowsey T, Glasgow NJ. The experience of living with chronic heart failure: a narrative review of qualitative studies. *BMC Health Serv Res* 2010;10:77-85.
- Cooper HC, Booth K, Gill G. Patients' perspectives on diabetes health care education. *Health Educ Res* 2003;18(2):191-206.
- Klepac MJ. Theory and practical applications of a wellness perspective in diabetes education. *Diabetes Educ* 1996;22(3):225-30.
- Hörnsten A, Lundman B, Stenlund H, Sandström H. Metabolic improvement after intervention focusing on personal understanding in type 2 diabetes. *Diabetes Res Clin Pract* 2005;68(1):65-74.
- Pulvirenti M, McMillan J, Lawn S. Empowerment, patient-centred care and self-management. *Health Expect* 2014;17(3):303-10. Epub 2012 Jan 2.
- Fors A, Ekman I, Taft C, Björkelund C, Frid K, Larsson ME, et al. Person-centred care after acute coronary syndrome, from hospital to primary care—a randomised controlled trial. *Int J Cardiol* 2015;187:693-9. Epub 2015 Mar 24.
- Beaulieu MD, Haggerty J, Tousignant P, Barnsley J, Hogg W, Geneau R, et al. Characteristics of primary care practices associated with high quality of care. *CMAJ* 2013;185(12):E590-6. Epub 2013 Jul 22.
- Smith SM, O'Leary M, Bury G, Shannon W, Tynan A, Staines A, et al. A qualitative investigation of the views and health beliefs of patients with type 2 diabetes following the introduction of a diabetes shared care service. *Diabet Med* 2003;20(10):853-7.
- Rossi M. Shared practice: integrating diabetes care. *Pract Diabetes Int* 2009;26(7):258.
- Gucciardi E, Espin S, Morganti A, Dorado L. Exploring interprofessional collaboration during the integration of diabetes teams into primary care. *BMC Fam Pract* 2016;17:12.
- Gucciardi E, Espin S, Morganti A, Dorado L. Implementing specialized diabetes teams in primary care in southern Ontario. *Can J Diabetes* 2015;39(6):467-77. Epub 2015 Oct 21.