Implementation of a Structured Diabetes Consultation Model to Facilitate a Person-Centered Approach: Results From a Nationwide Dutch Study

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OBJECTIVE

We assessed both from a patient and provider perspective the usefulness and added value of a consultation model that facilitates person-centered diabetes care.

RESEARCH DESIGN AND METHODS

The model consists of *1*) inventory of disease and patient-related factors; *2*) setting personal goals; *3*) choosing treatment; and *4*) determination of required care. It was implemented in 47 general practices and 6 hospital outpatient clinics. Providers were trained, and patients were recommended to prepare their visit. All filled out a questionnaire after every consultation. Differences between primary and secondary care practices and between physician-led and nurse-led consultations were analyzed.

RESULTS

Seventy-four physicians and thirty-one nurses participated, reporting on 1,366 consultations with type 2 diabetes patients. According to providers, the model was applicable in 72.4% (nurses 79.3% vs. physicians 68.5%, *P* < 0.001). Physicians more often had a consultation time <25 min (80.4% vs. 56.9%, *P* < 0.001). According to providers, two of three patients spoke more than half of the consultation time (outpatient clinics 75.2% vs. general practices 66.6%, *P* = 0.002; nurses 73.2% vs. physicians 64.4%, *P* = 0.001). Providers stated that person-related factors often determined treatment goals. Almost all patients (94.4%) reported that they made shared decisions; they felt more involved than before (with physicians 45.1% vs. with nurses 33.6%, *P* < 0.001) and rated the consultation 8.6 of 10. After physician-led consultations, 52.5% reported that the consultation was better than before (nurse visit 33.7%, *P* < 0.001).

CONCLUSIONS

A consultation model to facilitate person-centered care seems well applicable and results in more patient involvement, including shared decision making, and is appreciated by a substantial number of patients.

Diabetes treatment is shifting from "disease management" to "patient-centered care." A position statement of the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) (1) advises to integrate patient's preferences, needs, values, and self-management possibilities into daily diabetes care to achieve patient-centered care. Importantly, the statement emphasizes that any HbA$_{1c}$ target should reflect mutual agreement between patient and physician.

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A person with diabetes plays a central role in implementing diabetes management plans in daily life. In doing so, not only individual characteristics, but also the environment in which behaviors are enacted has great influence, from family eating patterns to the work setting. Because diabetes provides a prime example of this interaction of individual characteristics with contextual factors, an ADA consensus report (2) emphasizes the need to consider contextual factors that impact virtually all domains of diabetes management. Besides contextual factors, diabetes care providers are recommended to consider an assessment of diabetes distress, depression, anxiety, disordered eating, and cognitive capacities. They should also monitor a patient's self-management behaviors as well as psychosocial factors impacting the person's self-management (3). More importantly, all health care team members should realize that diabetes self-care behavior depends on a patient's health beliefs or illness perceptions, self-efficacy, wishes and preferences, proactive coping, family support,

financial resources, and everyday events (4). Taking all these aspects into account goes far beyond protocolled disease management, implies shared decision making (5), and is suggested to enhance the effectiveness of the regimen and care provision (6).

In the Netherlands, diabetes care provision is good. About 85–90% of patients with type 2 diabetes are treated by a primary care (PC) diabetes team that consists of a general practitioner and a practice nurse, almost all within the frame of a care group (7,8). Overall, mean HbA$_{1c}$, blood pressure, and lipid levels are excellent (9). However, diabetes care is strictly protocolled and is not person centered. It is based on guidelines from the Dutch College of General Practitioners (10) on type 2 diabetes care, which recommends monitoring of patients with type 2 diabetes two to four times a year, including an annual checkup by the general practitioner.

Patients who need more complex care are referred to an internal medicine specialist, often also specializing in

endocrinology, working in hospital outpatient clinics (secondary care [SC]). Internal medicine specialists collaborate with diabetes specialist nurses. To put a patient-centered approach into practice, the Dutch Diabetes Federation developed a comprehensive consultation model for general practitioners, internal medicine specialists caring for patients with diabetes, practice nurses, and diabetes specialist nurses (11). The model consists of four steps (Fig. 1). In the first step, the diabetes care provider discusses not only health-related factors such as diabetes-related complications, glycemic control, and medication use, but also personal factors such as quality of life, diabetes knowledge, self-management skills, illness perceptions, and the social context of the patient. Which topics are addressed will depend on the patient's actual situation and is not protocolled. Care providers may use the list, as mentioned in step 1 of the Fig. 1, as support. After discussing pros and cons, in steps 2–4 shared decisions are made related to personalized health goals, treatment options, and the type and

Consultation model

Step 1
Discussing factors that influence goals, treatment options and professional support with the patient

Patient's life related factors:
- Age
- Education level
- Ethnicity
- Stage of life
- Quality of life
- Lifestyle
- Pregnancy (wish)
- Illness perceptions
- Motivation
- Patient's preference
- Self-management:
  - knowledge and skills
  - self-confidence
  - opportunities for development
- Social context: home, school, work, 'leisure time'

Health related factors:
- Glucose control
- Cardiovascular risk factors
- Complications
- Comorbidity
- Disease duration
- Hereditary factors
- Medication use
- Results of previous treatments

Step 2
Setting personal and health related goals together

Based on:
- Results of step 1
- Guidelines

Step 3
Discussing treatment options to reach the goals and making decision

Based on:
- Results of steps 1 and 2
- Guidelines
- Expert (center)

Step 4
Assessing professional support

Based on:
- Results of steps 1, 2 and 3

Support of:
- Physicians
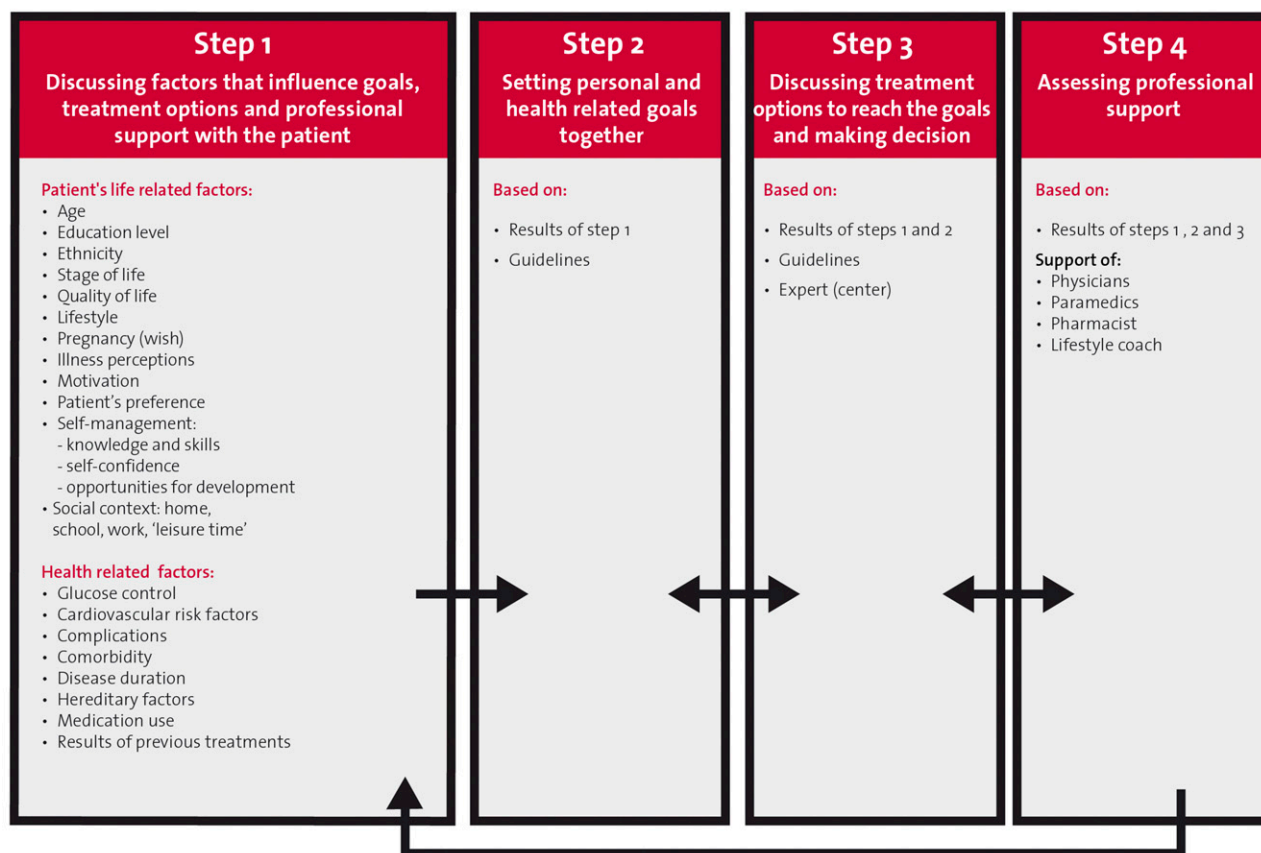- Paramedics
- Pharmacist
- Lifestyle coach

Figure 1—Consultation model.

extent of professional diabetes care for the upcoming year.

We conducted a nationwide implementation study in PC and SC to assess the use of the consultation model in real life. Here we report the usefulness and applicability of the consultation model and its added value for care providers and individuals with type 2 diabetes.

RESEARCH DESIGN AND METHODS

Study Design and Setting

A nationwide Dutch implementation study started in November 2015. General practices and hospital outpatient clinics were invited to participate via care groups, personal contacts, flyers, articles, and websites. Both patients with type 1 and type 2 diabetes could be included. Here we report on patients with type 2 diabetes. Inclusion criteria were as follows: age >18 years, sufficient mastery of the Dutch language, ability to fill out questionnaires, and mentally able to participate.

Eligible individuals were sent an information letter about the new consultation to their homes or they received the letter in the PC practice or hospital outpatient clinic a month before the annual checkup. If people decided to participate, it was recommended that they prepare for the conversation by answering for themselves the following questions: *1*) do you have health problems? *2*) do you want to solve your health problems? *3*) how do you want to do that? *4*) what kind of support do you need?

No ethical approval was needed (12).

Diabetes Care Providers' Training

Groups of 10–14 physicians and nurses received training in how to use the consultation model during two sessions, each lasting 2 h. The training started with an introduction about the determinants of diabetes self-management, especially about illness perceptions, self-confidence (self-efficacy), and the social context. Afterward, the trainer taught the principles of shared decision making. After an explanation of how to manage the conversation, training in communication skills took place using role playing. Afterward, the participants' experiences were shared between the group members. Two weeks after the training, participants applied the model during the annual diabetes checkup. In a second training session, participants discussed their experiences and how they can deal with disagreement about goals

and treatment choices with their patient; again, participants were trained in communication skills using role-play.

Data Collection and Variables

Patients' Questionnaire

Participants were requested to fill out the following questionnaires before the conversation:

- A questionnaire on age, sex, ethnicity, marital status, education, employment status, illness duration, family history of diabetes, diabetes-related complications, and comorbidity. The prevalence of comorbidity was assessed using a standard list of 14 chronic diseases, including asthma/chronic obstructive pulmonary disease, myocardial infarction, heart failure, stroke, depression, and eye problems. Participants were asked about illnesses they had experienced during the past year.
- The Patient Activation Measure (PAM-13) (13,14). The PAM-13 consists of 13 items assessing knowledge, skills, and confidence for self-management. All items have five answering options, ranging from 1 ("disagree strongly") to 4 ("agree strongly") or 0 ("not applicable"). Internal consistency of the PAM in this study was good (Cronbach α = 0.87).
- After the consultation, people were asked to fill out an 11-item questionnaire; 5 items about shared decision making during the consultation, 3 items about their satisfaction with the consultation, and 3 items about the diabetes management plan they made (Supplementary Material 1). If they had not prepared the four questions before the conversation, they were asked to give a reason why (open question).

Diabetes Care Providers' Questionnaire

Physicians and nurses were asked to fill out an online questionnaire after the consultation about the applicability of the model, shared decision making, and the role of the patient. They were asked to give an explanation if the consultation model was partly or not applicable. Finally, they were requested to mention the three most important factors (both personal and diabetes-related factors) that were in their opinion determining the treatment goals and care needed.

Data on diabetes type, HbA$_{1c}$, lipids, blood pressure, and BMI were retrieved from the patient's electronic files.

Statistical Analysis

Patient and provider characteristics are presented as the mean (SD) or median (interquartile range [IQR]) for continuous variables and as counts and percentages for nominal variables. Means were compared using Student t test or Mann-Whitney U test for unpaired samples, and the χ^2 test was used for proportionate samples to assess differences between participants from PC and SC and between physician-led and nurse-led consultations.

Education level was recoded into "low" (no education, primary school or lower education), "intermediate," or "high" (higher education or university degree). For the PAM, patients who filled out <10 items or who answered all items with "disagree strongly" or "agree strongly" were excluded. Subsequently, mean scores were calculated leaving out items that were deemed not applicable by the respondents and were then transformed into a standardized activation score ranging from 0 to 100, based on a conversion table provided by the developers for the year 2014, with higher scores indicating greater activation (15).

Patients' reasons for not preparing the conversation were grouped and counted. The answers to questions about the appreciation of the conversation were classified as "(much) more pleasant than before," "not differing from before," or "(much) less pleasant than before."

Answer options about shared decision making were coded into *1*) "yes" (strongly agree, agree), *2*) "doubtful," and *3*) "no" (disagree, strongly disagree). Treatment satisfaction was recoded into *1*) "good/excellent," *2*) "neither good nor bad," and *3*) "bad/very bad."

The answers of physicians and nurses to questions about the applicability of the consultation model and shared decision making were categorized into the following three categories: "largely/completely," "partly/partly not," and "largely not/completely not." Providers' reasons for assessing the model not applicable were grouped and counted. We compared outcomes that differed between patients in SC and PC and between physician-led and nurse-led consultations controlling for patient characteristics that differed between the two populations and were considered relevant from the literature (age, sex, ethnicity, and number of comorbid conditions). Patient's judgments on the appreciation of the conversation

were dichotomized into "(much) more pleasant than before" and "not different/(much) less pleasant than before." Their judgments on shared decision making were dichotomized into "yes" (sure, pleasant) and "doubtful/no" (not really, certainly not).

Multivariable binary logistic regression analyses were performed.

Because the exclusion of patients with missing values can result in reduced statistical power and can lead to biased results, missing data were handled with multiple imputation. We generated five imputations and report the estimates based on the pooled results of these imputed data sets.

Data analyses were performed using SPSS version 23.0 (SPSS, Chicago, IL). A P value <0.05 was considered significant.

RESULTS

The Study Population
The consultation model was implemented in 47 general practices with 57 general practitioners and 23 practice nurses and in 6 hospital outpatient clinics with 17 medical specialists and 8 diabetes specialists nurses across the country. Of

the general practices, 43% are located in a city with >50,000 inhabitants and 57% are located in the urbanized countryside or rural areas. The majority of the practices are group practices (53%), 6% are single-handed practices, and 41% are duo practices. Two hospitals are university hospitals. The mean age (SD) of the diabetes care providers was 46.8 years (9.5 years). The mean age (SD) and proportion of female diabetes care providers were as follows: general practitioners: 46.9 years (10.0 years) and 51%; internal medicine specialists: 50.4 years (9.2 years) and 41%; and nurses: 45.0 years (8.6 years) and 94%.

A total of 2,617 patients with type 1 and type 2 diabetes were invited to participate, of whom 1,487 (56.8%) decided to participate. Of these participants 1,366 had type 2 diabetes; 1,200 (87.8%) were treated in PC and 166 (12.2%) in SC; and 895 had a conversation with a physician (65.5%) and 471 (34.5%) with a nurse. Participants did not differ from nonparticipants with regard to age (mean age 64.3 years [SD 11.4 years] and 64.4 years [14.6 years], respectively). However, fewer

women participated (42.9% vs. 49.9%; P = 0.001).

Table 1 shows the baseline characteristics of the patients with type 2 diabetes. Their mean age was 65.8 years, 76.5% were married, one of five participants was highly educated, and 28.8% had a paid job. Patients treated in the PC setting were older and more often married or cohabiting compared with those treated in SC. Patients had a median (IQR) illness duration of 8 years (4–14 years), and those in SC had a longer diabetes duration than those in PC. The overall median (IQR) HbA_{1c} level was 6.8% (6.4–7.5%) (51.0 mmol/mol [46–58 mmol/mol]) and the BMI of the population was 29.4 kg/m^2 (26.4–33.2 kg/m^2), with a lower median BMI in PC. The latter group also had a lower HbA_{1c} (P < 0.001) and systolic blood pressure (P = 0.001). Participants' mean (SD) score on the PAM questionnaire was 60.1 (13.4).

Care Providers and the Applicability of the Consultation Model
Table 2 shows the applicability of the model according to the care providers. Seventy-two percent of all the conversations

Table 1—Patient characteristics

	PC (n = 1,200)		SC (n = 166)		All patients (n = 1,366)	
	n		n		n	
Age (years), mean (SD)	1,199	66.1 (9.7)	166	64.0 (10.1)*	1,365	65.8 (9.8)
Female sex	1,128	41.1	157	44.6	1,285	41.6
Ethnicity	1,124		154		1,278	
Caucasian		93.6		91.6		93.3
Other		6.4		8.4		6.7
Marital status	1,131		156		1,287	
Married or cohabitating		77.4		69.9*		76.5
Single		22.6		30.1		23.5
Education level	1,116		154		1,270	
Low		34.8		30.5		34.3
Intermediate		44.5		46.8		44.8
High		20.7		22.7		20.9
Employment status	1,099		152		1,251	
Having a job		28.9		27.6		28.8
PAM-13	1,069	60.2 (13.5)	149	59.2 (12.6)	1,218	60.1 (13.4)
Illness duration (years)	945	8 (4–14)	147	18 (12–25)*	1,253	10 (5–16)
Family history of diabetes	1,117	63.2	154	66.2	1,271	63.6
Number of comorbid conditions	1,121	1 (0–2)	154	2 (1–3)	1,275	1 (1–2)
HbA_{1c}	1,123		159		1,282	
%		6.8 (6.4–7.3)		7.7 (6.9–8.7)*		6.8 (6.4–7.5)
mmol/mol		51 (46–56)		61 (52–72)*		51 (46–58)
Systolic blood pressure (mmHg), mean (SD)	1,120	136.0 (14.9)	158	141.3 (19.9)*	1,278	136.6 (15.7)
Diastolic blood pressure (mmHg), mean (SD)	1,120	78.0 (9.1)	158	78.3 (11.9)	1,278	78.1 (9.5)
LDL cholesterol (mg/dL), mean (SD)	1,116	43.2 (15.5)	137	43.8 (16.1)	1,253	43.3 (15.5)
BMI (kg/m^2)	1,122	29.3 (26.3–33.0)	152	30.7 (27.8–34.9)*	1,274	29.4 (26.4–33.2)

Data are the median (IQR) or n (%), unless otherwise indicated. *Significant (P < 0.05) difference between diabetes patients in PC and SC.

Table 2—Judgment of the consultation model, according to the diabetes care providers

	PC (n = 1,200)		SC (n = 166)		Physician-led conversations (n = 895)		Nurse-led conversations (n = 471)		All conversations (n = 1,366)	
	n	%	n	%	n	%	n	%	n	%
Duration of conversation <25 min	1,137	72.8	145	65.6	823	80.4	459	56.9**	1,282	72.0
The consultation model was applicable	1,137		145		823		459		1,282	
Largely/completely		72.3		73.1		68.5		79.3**		72.4
Partly		17.2		16.6		19.6		12.6		17.1
Largely not/completely not		10.5		10.3		11.9		8.1		10.5
Patients spoke >50% of the consultation time	1,137	66.6	145	75.2*	823	64.4	459	73.2**	1,282	67.6
Doctors and diabetes nurses gain insight into patient's life-related factors	1,137		145		823		459		1,282	
Largely/completely		89.2		85.5		86.6		92.6**		88.8
Partly		8.8		11.7		11.1		5.7		9.1
Largely not/completely not		2.0		2.8		2.3		1.7		2.1
Shared decisions about treatment goals	1,133		145		823		455		1,278	
Largely/completely		80.1		77.2		79.8		79.8		79.8
Partly		9.7		14.5		10.7		9.5		10.3
Largely not/completely not		10.2		8.3		9.5		10.7		9.9
Shared decisions about treatment and care	1,132		145		823		454		1,277	
Largely/completely		82.5		82.8		81.5		84.4		82.5
Partly		10.9		11.0		11.2		10.4		10.9
Largely not/completely not		6.6		6.2		7.3		5.3		6.6

n, number of consultations in PC and SC, and on the level of physicians and nurses. *Significant ($P < 0.05$) difference between diabetes patients in PC and SC. **Significant ($P < 0.05$) difference between physician- and nurse-led consultations.

could be performed within 25 min. Physicians had a conversation of <25 min more often than nurses (80.4% vs. 56.9%; $P < 0.001$). In 72% of care providers, the model was largely or completely applicable, more often according to the nurses compared with the physicians (79.3% vs. 68.5%; $P < 0.001$). The care providers mentioned as main circumstances in which the model was less applicable if 1) the conversation focused on one or two complaints, questions, or life events; and 2) the patients had no complaints regarding their diabetes and were satisfied about their treatment.

Providers mentioned that two of three patients spoke for >50% of the consultation time, more often in SC compared with PC (75.2% vs. 66.6%; $P = 0.002$), and more often in nurse-led consultations (73.2% vs. 64.4%; $P = 0.001$). In 88.8% of the consultations, the model supported them to gain insight into patients' personal factors, which was reported more often by nurses than physicians (92.6% vs. 86.6%; $P = 0.004$). In 8 of 10 patients, they could make shared decisions about goals and treatment choices. According to the providers, current glycemic control, the motivation of the patient, as well as a patient's preference and lifestyle, quality of life, and self-management were most frequently influential in decisions about treatment

goals. Decisions on the required type and amount of professional diabetes care were most frequently influenced by a patient's preference and motivation, glycemic control, self-management, lifestyle, and quality of life (Supplementary Table 1).

Patients' Judgment about the New Consultation
Seventy-four percent of all patients prepared the consultation at home. Of the patients who did not, the three most mentioned reasons were as follows: 24% reported no reason, 25% found it unnecessary, and 19% had forgotten it.

Patients reported that they were sufficiently informed about treatment options (92.4%) and the related pros and cons (86.0%). Compared with SC, patients from PC reported more often that they were sufficiently informed about treatment options (93.1% vs. 87.3%; $P < 0.001$). Almost all patients were reported to be involved in making decisions about their treatment goals (94.4%). Four of ten patients felt more or much more involved in making treatment decisions than before, and more often in physician-led than in nurse-led consultations (45.1% vs. 33.6%; $P < 0.001$). Almost all patients reported that they had made a good to excellent treatment choice (96.4%). Patients rated the consultation 8.6 of 10;

46.0% found the consultation more or much more pleasant than before. Patients who consulted their physician reported more often that it was more pleasant than before compared with those who consulted their nurse (52.5% vs. 33.7%; $P < 0.001$) (Table 3).

The Relationship Between Patients' Judgments and Patients' Characteristics
Before imputation, 6.0% of all values were missing, distributed among 291 cases (21.3%).

After controlling for confounders, SC patients were less often sufficiently informed about treatment options than PC patients (OR 0.49; $P = 0.022$). Feeling sufficiently informed was associated with a higher BMI (OR 1.05; $P = 0.045$).

After controlling for confounders, patients were less likely to feel more involved in making treatment decisions when they had a nurse-led conversation (OR 0.62; $P < 0.001$), had an intermediate (OR 0.52; $P < 0.001$) or higher education level (OR 0.438; $P < 0.001$), or had a Caucasian ethnicity (OR 0.57; $P = 0.022$). Older patients were more likely to feel involved in treatment decision making (OR 1.0; $P = 0.047$).

A nurse-led conversation was experienced as more pleasant less often than

Table 3—Patients' judgment on the consultation within PC and SC, and on physician-led and nurse-led consultations (percentage patient questionnaires)

	PC (n = 1,200)		SC (n = 166)		Physician-led conversations (n = 895)		Nurse-led conversations (n = 471)		All conversations (n = 1,366)	
	n	%	n	%	n	%	n	%	n	%
Prepared four questions before the consultation	1,043	74.6	149	69.8	784	73.5	408	75.0	1,192	74.0
The professional sufficiently informed me about the treatment options	1,056		150		792		414		1,206	
Yes		93.1		87.3*		91.7		93.7		92.4
Doubtful		2.6		2.0		2.9		1.7		2.5
No		4.4		10.7		5.4		4.6		5.1
The professional sufficiently informed me about the treatment-related pros and cons	1,046		150		783		413		1,196	
Yes		86.0		86.0		86.0		86.2		86.0
Doubtful		4.7		4.7		4.5		4.8		4.7
No		9.3		9.3		9.5		9.0		9.3
Shared decision about treatment goals	1,068		152		802		418		1,220	
Yes		94.5		94.1		94.6		94.0		94.4
Doubtful		1.7		3.3		2.2		1.2		1.9
No		3.8		2.6		3.1		4.8		3.7
The professional involved me in making decisions about my treatment	1,043		150		779		414		1,193	
More/much more than before		40.7		44.0		45.1		33.6**		41.1
No more or less than before		59.1		55.3		54.4		66.4		58.6
Less/much less than before		0.3		0.7		0.5				0.3
The professional helped to understand all information	1,052		152		789		415		1,204	
Yes		95.7		94.7		95.3		96.1		95.6
Doubtful		1.7		2.0		2.2		1.0		1.7
No		2.6		3.3		2.5		2.9		2.7
The treatment choice for next year is	1,058		151		792		417		1,209	
Good/Excellent		96.2		98.0		96.3		96.6		96.4
Neither good, nor bad		3.7		2.0		3.5		3.4		3.5
Bad/very bad		0.1				0.1				0.1
Conversation score (mean)	1,061	8.6	153	8.5	800	8.6	414	8.5	1,214	8.6
The conversation was	1,049		150		784		415		1,199	
More pleasant than before		46.0		46.0		52.5		33.7**		46.0
Not different from before		53.7		54.0		47.2		66.0		53.7
Less pleasant than before		0.3				0.3		0.3		0.3

Consultation model. *Significant (P < 0.05) difference between diabetes patients in PC and SC. **Significant (P < 0.05) difference between treated by physicians and nurses.

before compare with a physician-led conversation (OR 0.47; P < 0.001). Patients who had an intermediate (OR 0.55; P < 0.001) or higher education level (OR 0.45; P < 0.001), or had a Caucasian ethnicity (OR 0.47; P = 0.002) were less likely to have a more pleasant conversation than before (Supplementary Table 2).

CONCLUSIONS

In this Dutch nationwide study, a new approach to facilitate real patient-centered care for people with type 2 diabetes proved to be applicable in both PC and SC settings. Diabetes care providers gained insight not only into health-related factors, but also into the patient's life-related factors, which undoubtedly influence self-management. Indeed, almost all conversations were ending with perceived shared decision making on treatment and on the necessary diabetes care for the forthcoming 12 months. Almost half of the patients appreciated the consultation more than the former "annual check-ups." In our opinion, the physicians and nurses who achieved communication with their type 2 diabetes patients that was in line with the consultation model put person-centered care into daily practice.

In 28% of participants, care providers reported that the model was not fully applicable, mostly if the consultation focused on a specific complaint or life event. We would like to emphasize that if the goals in such cases were reframed as addressing the emergent social determinants of health—and both complaints and life events are such determinants—our conversation model is quite helpful. Just talking about diabetes does not seem very meaningful in such a case. Also, in patients who were without complaints and/or were satisfied with the diabetes treatment, the consultation model was assessed as not fully applicable. However, in these patients a yearly consultation as described here is also valuable, because most contextual factors may change over time, and the need for self-management support can change during the course of illness and the course of life (6,16).

Physicians had shorter consultations, and nurses reported more often that the model was applicable and more often provided insight into life-related factors. According to Collins (17), the communication style of nurses is mediated by the

contributions of patients, whereas physicians tend to give an overarching direction to the consultation as a whole. As a result, physicians' and nurses' consultations provide different opportunities for the involvement of patients. Against that background, it is not surprising that patients felt more involved in making treatment decisions than before and that the change over time was clearer in consultations with physicians. Our conversation model may change the relationship between the health care provider and the patient, resulting in more patients who perceive that treatment decisions are shared ones (18). Physicians often feel inadequately trained to address diabetes patients' psychosocial issues, and this perceived lack of expertise may hinder self-care communication (19). Training programs are essential in order to help care providers learn how to engage patients effectively in their health care via shared decision making (20). We feel that our training facilitates the implementation of the consultation model on a large scale.

Shared decisions about treatment goals and strategies were made in almost all cases. In the providers' training, striving for mutual agreement about treatment goals and strategies has explicitly been emphasized, which is in line with the ADA/EASD position statement (1). Importantly, person-related factors like motivation, preference, lifestyle, quality of life, and self-management were influential in decisions about treatment goals and the required type of professional diabetes care. This "real-life" finding is a strong underpinning for the ADA/EASD position statement (1).

We think that our findings are generalizable to the Dutch health care system—and probably to many other health care systems—because we implemented the consultation model in both PC and SC. However, selection bias cannot be ruled out. Research locations were not randomly selected, resulting in a slight overrepresentation of group practices (51% vs. 39% overall). Participating general practitioners are representative with regard to age and sex (mean age 46.9 vs. 48.0 years, respectively; and female sex 51% vs. 48%, respectively) (21). Also the age of nurses was comparable to that of the whole population of nurses (22). Participating internal medicine specialists were slightly older compared with the total group of Dutch internal medicine specialists and relatively more often

were female (mean age 50.5 vs. 47.4 years; female 47.6% vs. 41.0%, respectively) (H.v.V., personal communication).

The 57% participation rate of individuals with type 2 diabetes in our study is in line with the rates of other studies (23,24). It does not imply that nonparticipants do not prefer an annual person-centered diabetes consultation. However, the consultation was offered within a "research" context with additional efforts to be made by patients. We expect that without such a context more people would appreciate a person-centered consultation. The division of participants with type 2 diabetes treated in the PC (88%) and SC (12%) settings is representative for Dutch diabetes care (8). Our study population is representative for the PC population of patients with type 2 diabetes with regard to age and sex (mean age 66.1 vs. 65.0 years; female sex 41.1% vs. 48.9%) (25). The PAM score in our study population (mean 60.1) is comparable to another population of people with type 2 diabetes (mean 59.1–59.5) (26).

The strength of our study is the large sample size and its nationwide character. Furthermore, to our knowledge this is the first study that facilitates patient-centered care using a consultation model that includes many relevant factors that influence self-management and incorporate shared decision making as a central feature.

It can be considered as a proof of concept demonstration regarding implementation of this consultation model among receptive providers and patients. Its clinical efficacy, for example whether overtreatment and undertreatment were addressed, is not evaluated, and the model was implemented in an already highly resourced care system. A follow-up measurement, 1 year after the first consultation and with both patients and diabetes care providers more accustomed to the conversation model, will provide further insight into whether the new approach was useful in gaining mastery over the peoples' and providers' illness management. That measurement will also provide information on the proportion of people who received less or more intensive care compared with the "one size fits all" approach.

The implementation of this type of diabetes care will ultimately depend on its costs and return on investment. Currently, general practitioners receive a fixed annual

fee per type 2 diabetes patient from the care group that is responsible for the contracted diabetes care (7,8). The lump sum includes the payment for an annual diabetes consultation of ~20 min by the general practitioner, for three consultations by the practice nurse (15–20 min), and for postgraduate education. Given our finding that overall 72% of the consultations took <25 min and the training of diabetes care providers took only 4 h and cost ~$100 U.S. per physician or nurse, the incremental diabetes care costs will be limited. The return on investment could be substantial because we assume that the effectiveness of the diabetes care is enhanced if patients' preferences are structurally taken into account. Patients with good cardiometabolic control and without preference for their monitoring frequency can visit the PC physician less often, resulting in considerable cost savings (27). Such a policy is supported by both Dutch general practitioners and patients (28,29). From another study (30), we learned that only 40% of Dutch type 2 diabetes patients are willing to take tablets until all treatment targets are attained. If such a preference remains "hidden," nonadherence to prescribed medications is likely and diabetes care is not effective.

However, some limitations need to be considered. There was no validation of the provider-reported outcomes, whether patients spoke >50% of the consultation time, and whether the decisions about treatment goals and treatment/care were indeed shared decisions. However, nurses, PC physicians, and hospital-based specialists independently answered in the same way, clearly indicating that the vast majority of the patients had an active role in the consultation. Their answers with regard to shared decision making were in line with the patients' answers. As stated above, it may be that the relationship between health care provider and patient changed through the more "personal" talk, which positively reinforces the perception that shared decisions were made (18). Second, we do not report on clinical outcomes. Our study aimed to make person-centered diabetes care concrete to enhance the effectiveness of diabetes care (6). In our opinion, the results so far are promising.

The new approach leads to more patient involvement and a more relevant perception of shared decision making and is appreciated by a substantial number

of patients. Diabetes care providers may need limited training to put into practice what the ADA and EASD recommend, namely providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensures that patients values guide all clinical decisions.

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