

# Patient-centeredness and quality management in Dutch diabetes care organizations after a 1-year intervention

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**Background:** More focus on patient-centeredness in care for patients with type 2 diabetes requests increasing attention to diabetes quality management processes on patient-centeredness by managers in primary care groups and outpatient clinics. Although patient-centered care is ultimately determined by the quality of interactions between patients and clinicians at the practice level, it should be facilitated at organizational level too. This nationwide study aimed to assess the state of diabetes quality management on patient-centeredness at organizational level and its possibilities to improve after a tailored intervention.

**Methods:** This before–after study compares the quality management on patient-centeredness within Dutch diabetes care groups and outpatient clinics before and after a 1-year stepwise intervention. At baseline, managers of 51 diabetes primary care groups and 28 outpatient diabetes clinics completed a questionnaire about the organization’s quality management program. Patient-centeredness (0%–100%) was operationalized in six subdomains: facilitating self-management support, individualized care plan support, patients’ access to medical files, patient education policy, safeguarding patients’ interests, and formal patient involvement. The intervention consisted of feedback and benchmark and if requested a telephone call and/or a consultancy visit. After 1 year, the managers completed the questionnaire again. The 1-year changes were examined by dependent (non) parametric tests.

**Results:** Care groups improved significantly on patient-centeredness (from 47.1% to 53.3%;  $P=0.002$ ), and on its subdomains “access to medical files” (from 42.0% to 49.4%), and “safeguarding patients’ interests” (from 58.1% to 66.2%). Outpatient clinics, which scored higher at baseline (66.7%) than care groups, did not improve on patient-centeredness (65.6%;  $P=0.54$ ) or its subdomains. “Formal patient involvement” remained low in both care groups (23.2%) and outpatient clinics (33.9%).

**Conclusion:** After a simple intervention, care groups significantly improved their quality management on patient-centeredness, but outpatient clinics did not. Interventions to improve quality management on patient-centeredness in diabetes care organizations should differ between primary and secondary care.

**Keywords:** diabetes care, patient-centeredness, patient centered, quality management, patient involvement, self-management support

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## Introduction

Over the past 25 years, care for patients with type 2 diabetes has changed from acute reactive services to regular integrated chronic care management, in recognition of the changing needs of patients.<sup>1</sup> To improve their coping with the disease, a pro-active attitude of the patients is necessary.<sup>2</sup> Moreover, various health care providers are

involved in the treatment of patients with type 2 diabetes. Therefore, patient-centeredness is becoming increasingly important in diabetes care.<sup>3</sup>

Patient-centered care has been called one of the six aims of high-quality health care, being defined as:

Providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions.<sup>4</sup>

Patient-centeredness is associated with higher patient satisfaction, enhanced adherence, improved illness-related knowledge and health behavior, and decreased health care utilization.<sup>5</sup> It may increase the quality and cost-effectiveness of health care.<sup>6</sup> Patient-centeredness in health care might be self-evident, because it fulfils the care providers' obligation to place the interests of the patient above all and to respect patient's autonomy. However, health policy makers often poorly understand the meaning of patient-centered care and why it matters.<sup>7</sup> Therefore, the practice of patient-centered care needs close attention. Although patient-centered care is ultimately determined by the quality of interactions between patients and clinicians at consultation level, it should also be facilitated at the level of organizations responsible for the provision of diabetes care.<sup>8</sup>

These organizations could facilitate patient-centeredness in several ways. First, they could facilitate self-management support by offering postgraduate courses for physicians, nurses, and dieticians to improve their relevant attitudes and skills in this respect. Second, organizations could stimulate the use of individual care plans, as it is assumed to be a prerequisite for successful management of diabetes.<sup>9</sup> Third, organizations could develop and implement a policy regarding patient education. Patient education is needed to give patients insight into their illness and to understand the treatment possibilities in order to make a shared decision with the care provider.<sup>10</sup> Fourth, organizations could facilitate patients to have access to their medical files in order to achieve adequate self-management.<sup>11</sup> Fifth, organizations can safeguard patients' interests, by providing easy access to central information on the organization, the presence of a front office or a case manager,<sup>12</sup> alignment of appointments with various care providers, and the assurance of privacy of the medical record.<sup>13</sup> Finally, patient-centeredness can be facilitated by involving patients in formal decision-making processes at organizational level, which would allow care to be better tailored to patient needs.<sup>14</sup> Therefore, patients could be involved in a clients' board, a special commission handling patients' complaints, or in a structural collaboration with a patient association.<sup>15,16</sup>

In the Netherlands, so-called care groups are responsible for the provision of diabetes care in primary care; outpatient

clinics are in secondary care. Care groups are a relatively new type of organization, comparable with Accountable Care Organizations in the United States<sup>17,18</sup> and clinical commission groups in the United Kingdom.<sup>19</sup> As the main contractor of a diabetes care program, they are responsible for the coordination and delivery of diabetes care.<sup>20,21</sup> Apart from general practitioners, they contract other care providers like podiatrists and dieticians. The introduction of diabetes care groups led to a new organizational layer on top of individual general practices.<sup>20</sup> Patients who need more complex diabetes care are treated in outpatient clinics, affiliated to hospitals, in which endocrinologists hold the final responsibility for a diabetes team.

As diabetes care should be facilitated at the level of organizations responsible for the provision of diabetes care, a nationwide study was performed among care groups and diabetes outpatient clinics to measure their quality management before and after a 1-year stepwise intervention and could demonstrate that the level of several quality management domains improved in care groups but not in outpatient clinics.<sup>22,23</sup> This article focuses on their quality management to facilitate the diabetes care teams to implement patient-centered care and its change after the intervention. Furthermore, which steps of the intervention were associated with change in patient-centeredness were studied.

## Materials and methods

### Study design

This is a before–after study with a 1-year follow-up comparing the quality management on patient-centeredness within care groups and outpatient clinics before and after a stepwise intervention. According to the Dutch law on medical scientific research on people, no ethical approval was needed for this study, because it does not meet the WMO (Wet Medisch wetenschappelijk Onderzoek) criteria for medical human scientific research (<https://www.overheid.nl>).

### Study population and recruitment

In January 2012, all managers responsible for diabetes care in Dutch care groups (n=97) and outpatient clinics (n=104) were invited to fill out an online questionnaire measuring quality management. In order to examine whether our intervention changed their level of quality management, all responders were invited to fill out the same questionnaire again, in May 2013.

### Measures of quality management

Based on an extensive literature review, the quality management questionnaires consisted of six domains: 1) organization of care, 2) multidisciplinary teamwork, 3) patient-centeredness,

4) performance management, 5) quality improvement policy, and 6) management strategies. Scores in all the domains range between 0% and 100%, with a higher score indicating a higher level of management in a specific domain. Two slightly different questionnaires were developed, for care groups and outpatient clinics, respectively.<sup>22</sup>

In this article, one of the six (see below) quality management domains, namely “patient-centeredness,” is discussed in detail. This domain was operationalized in six subdomains. The assessment of these subdomains will be discussed in more detail.

1. Self-management support was assessed by one question: “How is self-management supported by the care group or outpatient clinic?” One or more of the following answers were possible: 1) Does not take place; 2) Support is currently under development; 3) Dissemination of informational materials among diabetes care providers, that is, leaflets, booklets; 4) Courses for caregivers; or 5) Courses for patients.
2. Individual care plan support was assessed by the statement: “The implementation of an individual care plan in ‘standard’ diabetes care ....” This could be completed in four ways: 1) is not supported by the organization; 2) is under development by the organization; 3) is actively stimulated by the organization; or 4) is actively stimulated and periodically evaluated by the organization on the basis of predetermined targets.
3. Policy on patient education was assessed by one statement “The policy regarding patient education by the organization is: ....” This statement could be completed in four ways in outpatient clinics: 1) not developed, 2) under development, 3) striving for uniform information for the patients, 4) striving for uniform information for patients and training all health care providers in this respect.

In care groups, there was an additional category, stating that “general practices can decide for themselves on the policy regarding patient education.”

4. Access to the medical file comprised two questions: “How do the patients have access to their medical data?” and “Can patients add data to their medical record?” For answering categories, see Table 1. Both the questions allowed multiple answers.
5. Safeguarding patients’ interest was assessed with six questions (Table 2). Answering categories were “yes,” “no,” or “under development.” In outpatient clinics, a category “do not know” was added.
6. Formal patient involvement was assessed by “How are patients involved in the organization?” with six answering categories (Table 3). Multiple answers were possible.

## Weighing of the subdomains

Two panels of experts, not in any way involved in the organizations that participated in our study, were asked to weigh the importance of the subdomains. The care groups’ expert panel consisted of seven managers, one staff member, one quality manager, and one diabetes nurse. The expert panel for outpatient clinics consisted of two managers, three endocrinologists, and four diabetes nurses. Since there were significant differences (one-sample *t*-tests) between equal weighting of each subdomain and the weight given by the expert panels, the mean weight given by the expert panels was used (Table 4).<sup>23,24</sup>

## Intervention

The intervention consisted of two steps. In the first step, all responders received feedback and a benchmark comparing their scores in all domains to the corresponding type of organization in a radar diagram. A supplementing table also

**Table 1** Change in level of patients’ access to their own medical file per organization (percentages)

| How does the patient have access to his medical data? |   | Care groups (n=51) |                    | Outpatient clinics (n=28) |                    |
|---|---|--------------------|--------------------|---------------------------|--------------------|
|   |   | Baseline           | After intervention | Baseline                  | After intervention |
| Level 1   | If explicitly asked, a patient has access to his medical record         | 44.2               | 24.4               | 57.1                      | 53.6               |
| Level 2   | Access to medical record is under development                           | 30.7               | 31.7               | 10.7                      | 21.4               |
| Level 3   | The patient can access medical data by use of a diabetes passport       | 9.0                | 14.7               | 21.4                      | 10.7               |
| Level 4   | The patient can view his medical record in a patient portal             | 17.0               | 29.2               | 10.7                      | 14.3               |
| P-value <sup>a</sup>                                  |   |                    | 0.02*              |                           | 0.86               |
| Can a patient add data to his medical record?         |   |                    |                    |                           |                    |
| Level 1   | There is no electronic medical record to add data                       | 16.7               | 11.8               | 12.5                      | 10.7               |
| Level 2   | There is an electronic medical record, but patients cannot add any data | 35.3               | 42.2               | 66.1                      | 75.0               |
| Level 3   | Patients’ access for adding data is under development                   | 34.3               | 23.5               | 17.9                      | 7.1                |
| Level 4   | Patients can add data to their medical file                             | 13.7               | 22.5               | 3.6                       | 7.1                |
| P-value   |   |                    | 0.38*              |                           | 1.00*              |

**Notes:** <sup>a</sup>Test of change between the scores on a question on patient-centeredness before and after the intervention tested with the related samples Wilcoxon signed rank *t*-test.

\*Indicates significant.

**Table 2** Organizations and their safeguarding of patients' interests, before and after the intervention (percentages)

| Subquestion  | Care groups (n=51) |                   |      |                      | Outpatient clinics (n=28) |                   |      |             |                      |
|--|--------------------|-------------------|------|----------------------|---------------------------|-------------------|------|-------------|----------------------|
|  | No                 | Under development | Yes  | P-value <sup>a</sup> | No                        | Under development | Yes  | Do not know | P-value <sup>a</sup> |
| Is there a protocol that informs patients on guidelines?                               |                    |                   |      | 0.46                 |                           |                   |      |             | 0.57                 |
| Before   | 48.0               | 13.7              | 38.2 |                      | 48.2                      | 10.7              | 33.9 | 7.1         |                      |
| After  | 41.2               | 17.6              | 41.2 |                      | 57.1                      | 10.7              | 28.6 | 3.6         |                      |
| Is there a front-office or central phone number where patients can ask all questions?  |                    |                   |      | 0.01                 |                           |                   |      |             | 0.52                 |
| Before   | 58.8               | 5.9               | 35.2 |                      | 3.6                       | 3.6               | 92.9 | 0.0         |                      |
| After  | 42.2               | 5.9               | 52.0 |                      | 3.6                       | 3.6               | 89.3 | 3.6         |                      |
| Are the appointment times of several care providers aligned?                           |                    |                   |      | 0.59                 |                           |                   |      |             | 0.41                 |
| Before   | 83.3               | 6.9               | 9.8  |                      | 8.9                       | 7.1               | 80.4 | 3.6         |                      |
| After  | 80.4               | 4.9               | 14.7 |                      | 8.9                       | 10.7              | 80.4 | 0.0         |                      |
| Do patients have a case manager?   |                    |                   |      | 0.07                 |                           |                   |      |             | 0.32                 |
| Before   | 39.2               | 3.9               | 56.9 |                      | 5.4                       | 10.7              | 83.9 | 0.0         |                      |
| After  | 24.5               | 5.9               | 69.6 |                      | 12.5                      | 3.6               | 83.9 | 0.0         |                      |
| Is the patients' privacy guaranteed in the multidisciplinary record?                   |                    |                   |      | 0.24                 |                           |                   |      |             | 1.00                 |
| Before   | 11.8               | 13.7              | 74.5 |                      | 0.0                       | 3.6               | 89.3 | 7.1         |                      |
| After  | 3.9                | 17.6              | 78.4 |                      | 10.7                      | 3.6               | 78.6 | 7.1         |                      |
| Is the patients' privacy assured when gathering information for feedback or benchmark? |                    |                   |      | 0.66                 |                           |                   |      |             | 1.00                 |
| Before   | 0.0                | 2.0               | 98.0 |                      | 0.0                       | 0.0               | 87.5 | 12.5        |                      |
| After  | 2.0                | 0.0               | 98.0 |                      | 0.0                       | 3.6               | 87.5 | 8.9         |                      |

**Note:** <sup>a</sup>Test of change between the scores on a question on patient-centeredness before and after the intervention tested with the related samples Wilcoxon signed rank t-test.

compared their subdomain scores with the corresponding organizations. Subsequently, all participants were granted access to a toolbox with instruments to improve their quality management. For “self-management support,” there was a link to a website with several self-management tools,<sup>25</sup> a questionnaire for the measurement of self-efficacy,<sup>26</sup> a national guideline on blood glucose control,<sup>27</sup> and a course for education and self-management. For “individual care plan support,” links to a national individual care plan<sup>28</sup> and examples of local individual care plans were available. For “policy on patient education,” there were links to online

courses for diabetes patients.<sup>29,30</sup> For “safeguarding patients' interests,” participating organizations shared examples of patient information in the toolbox. For “formal patient involvement,” a report on patient involvement and participation in Dutch care groups was available.<sup>14</sup> There was no tool regarding “access to the medical files.”

In the second step, which was optional, participants were offered the possibility of tailored support for improving their quality management. This support was offered in two ways: first, elucidation on the baseline results was accompanied by telephone advice on how to start the quality management

**Table 3** Patient involvement before and after the intervention (percentages)

| How are patients involved in the organization?   | Care groups (n=51) |                    |                      | Outpatient clinics (n=28) |                    |                      |
|--|--------------------|--------------------|----------------------|---------------------------|--------------------|----------------------|
|  | Baseline           | After intervention | P-value <sup>a</sup> | Baseline                  | After intervention | P-value <sup>a</sup> |
| They are not involved in the organization  | 20.6               | 15.7               | 0.51                 | 21.4                      | 17.9               | 1.00                 |
| They are not structurally involved in the organization; this is in preparation             | 23.5               | 21.6               | 1.00                 | 14.3                      | 14.3               | 1.00                 |
| In a clients' board at organizational level  | 16.7               | 22.5               | 0.38                 | 26.8                      | 32.1               | 1.00                 |
| In a special commission handling complaints of patients                                    | 14.7               | 26.5               | 0.15                 | 21.4                      | 25.0               | 1.00                 |
| In a structural collaboration with a regional patient federation                           | 13.7               | 20.6               | 0.34                 | 8.9                       | 17.9               | 0.69                 |
| In a structural collaboration with the Dutch organization for patients with diabetes (DVN) | 25.5               | 23.5               | 1.00                 | 53.6                      | 46.4               | 0.52                 |

**Notes:** Multiple answers are possible. <sup>a</sup>Test of change between questions on patient-centeredness before and after the intervention tested with the McNemar test.

**Table 4** Weighing of the importance of subdomains within the domain patient-centeredness by two expert panels

| Subdomains                       | Care groups  |                      | Outpatient clinics |                      |
|----------------------------------|--------------|----------------------|--------------------|----------------------|
|                                  | Mean (%)     | P-value <sup>a</sup> | Mean (%)           | P-value <sup>a</sup> |
| Self-management support          | 20.2         | NS                   | 31.1               | 0.04                 |
| Individual care plan support     | 18.7         | NS                   | 12.3               | 0.03                 |
| Policy on patient education      | 12.2         | 0.02                 | 17.3               | NS                   |
| Access to medical files          | 13.7         | NS                   | 11.8               | 0.00                 |
| Safeguarding patients' interests | 16.2         | NS                   | 12.9               | NS                   |
| Formal patient involvement       | 19.2         | NS                   | 14.6               | NS                   |
| Patient-centeredness             | <i>100.0</i> |                      | <i>100.0</i>       |                      |

**Notes:** <sup>a</sup>Significant difference versus equally (each subdomain 16.6%) weighting. Total score which is a weighted average is given in italics.

**Abbreviation:** NS, not significant.

improvement (step 2a); or second, the organization could be visited by an experienced consultant (step 2b). This consultant was committed to spend 10 h per responder to initiate an improvement strategy.

## Statistical analysis

Participation bias was checked by Student's *t*-tests. Both the baseline levels of quality management and the number of patients treated between those organizations that participated only in the first measurement and those that completed the study were compared.

To compute the scores in patient-centeredness for both care groups and outpatient clinics, each question was given a maximum score of 1 point. All questions within a subdomain contributed X% to the score of patient-centeredness, where X was the mean weight given by the corresponding expert panel (Table 4).<sup>23</sup> Organizations scored higher when their developmental stage on an item was higher. Organizations scored 0 points for a question, if they had no policy on an item; if they were developing a policy, they scored 0.33 points; an implemented policy scored 0.66 points, and if this policy was periodically evaluated, they scored the maximal score of 1 point, with the exception of the additional category in question 3, where underdevelopment scored 0.25 points, policy on practice level 0.50 points, policy on care group level 0.75 points, and training care providers full point.

The 1-year change in quality management scores in patient-centeredness and its subdomains was calculated by subtracting the score in 2012 from the score in 2013. To assess the 1-year changes on domain and subdomain levels, dependent *t*-tests were used (if no normality, Wilcoxon matched pairs signed rank *t*-test). On question level, Wilcoxon matched pairs signed rank *t*-test, related samples Wilcoxon signed rank *t*-test and McNemar's test were used.

Analyses were performed using the SPSS 20.0 statistics software package (IBM Corporation, Armonk, NY, USA). All parameters were tested for normality. For all tests, *P*-values <0.05 were considered significant.

## Results

### Care groups

#### Participating organizations

Sixty care groups responded on the baseline measurement and 51 completed the 1-year questionnaire (response rate 53%) (Figure 1). The baseline quality management scores of the 51 responders (mean 59.8%, 95% confidence interval [CI]: 57.0%–62.6%) did not differ from the baseline scores of the nine nonresponders (mean 58.3%, 95% CI: 52.0%–64.5%, *P*=0.66). There was no significant difference between the number of patients treated in the responding (mean 6,130; CI: 4,638–7,627) and nonresponding (mean 5,690; CI: 1,246–10,134, *P*=0.82) care groups.

#### Request for support

Of the 51 responders, 27 wanted support, 24 were not interested in further support. Of those wanting support, 17 received an elucidating telephone call for an average 0.8 h; eight were visited by an experienced consultant with an average 8.1 h; and two could not be reached (Figure 1).

#### Level of quality management on patient-centeredness

The overall change in the domain "patient-centeredness" improved significantly by 6.2% (standard deviation 13.6%) from 47.1% to 53.3% after the intervention (Table 5). Next, the results on the six subdomains are discussed briefly.

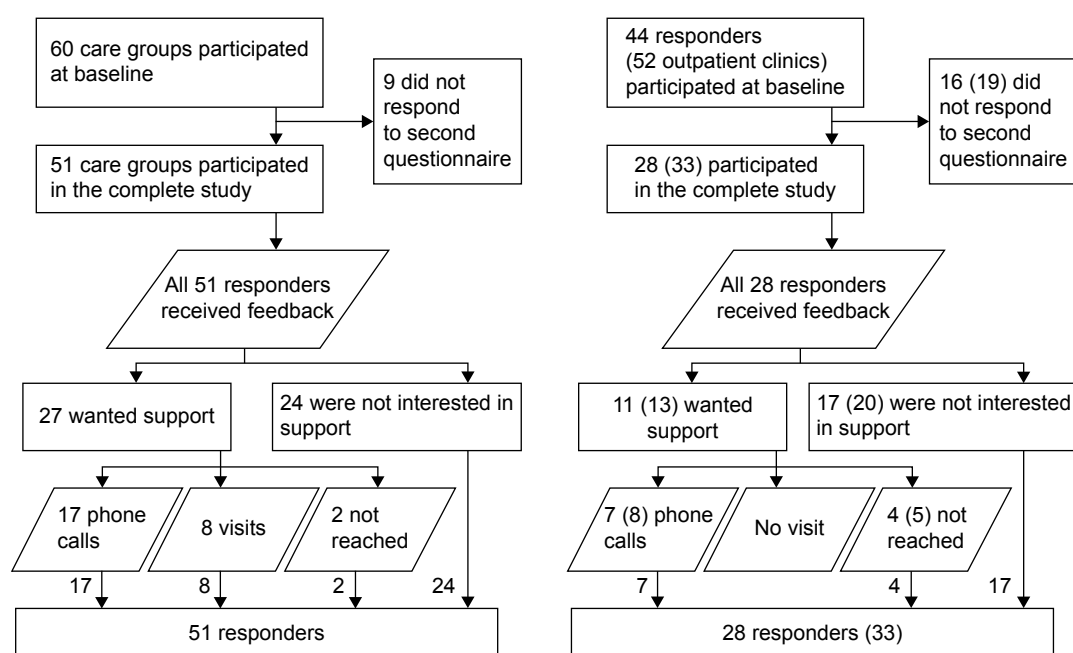
#### Self-management support

"Self-management support" did not improve significantly (Table 5). At baseline, 10% of the organizations did not support their primary care diabetes teams (general practitioners, practice nurses, dieticians, and podiatrists) to enhance patients' self-management; 60% were developing such a support; 60% supported the dissemination of brochures to promote self-management for patients; 41% supported the organization of courses in self-management for care providers; and 24% organized courses for patients. After the intervention, these percentages were 4%, 73%, 66%, 62%, and 27%, respectively (data not provided in the table).

#### Individual care plan support

This subdomain did not improve significantly (Table 5). At baseline, 14% of the care groups had no policy regarding an individual care plan. After the intervention, 100% had some





**Figure 1** Flowchart of inclusion and intervention in care groups and outpatient clinics.

**Note:** The number of outpatient clinics are represented within parentheses.

policy to support such a plan. Before the intervention, 58% were developing a policy to support the implementation of an individual care plan; 23% were already supporting this; and 6% supported this actively with a periodic evaluation. After the intervention, these percentages were 65%, 31%, and 4%, respectively (data not provided in the table).

### Policy on patient education

This subdomain was not enhanced significantly (Table 5). The percentage of care groups without a policy for patient education remained stable with 4%; whereas at baseline 23% were developing such a policy, about 1 year later, this percentage had risen to 25%; at baseline 18% were trying

**Table 5** Quality management scores regarding patient-centeredness and its subdomains, at baseline and after the intervention (percentages)

| Domains and subdomains           | Baseline |      | After intervention |      | Change |      | P-value |
|----------------------------------|----------|------|--------------------|------|--------|------|---------|
|                                  | Mean     | SD   | Mean               | SD   | Mean   | SD   |         |
|                                  | (%)      | (%)  | (%)                | (%)  | (%)    | (%)  |         |
| <b>Care groups (n=51)</b>        |          |      |                    |      |        |      |         |
| Self-management support          | 69.1     | 34.7 | 76.7               | 34.6 | 7.6    | 37.9 | 0.16    |
| Individual care plan support     | 39.9     | 24.5 | 46.4               | 18.9 | 6.5    | 27.1 | 0.09    |
| Policy on patient education      | 56.9     | 27.9 | 58.6               | 30.3 | 1.7    | 32.6 | 0.71    |
| Access to medical files          | 42.0     | 29.2 | 49.4               | 30.7 | 7.4    | 25.4 | 0.04    |
| Safeguarding patients' interests | 58.1     | 19.7 | 66.2               | 17.3 | 8.1    | 18.4 | 0.003   |
| Formal patient involvement       | 18.2     | 17.9 | 23.1               | 21.3 | 4.9    | 19.4 | 0.08    |
| Patient-centeredness             | 47.1     | 16.2 | 53.3               | 15.2 | 6.2    | 13.6 | 0.002   |
| <b>Outpatient clinics (n=28)</b> |          |      |                    |      |        |      |         |
| Self-management support          | 89.7     | 21.3 | 82.1               | 27.1 | -7.6   | 27.9 | 0.16    |
| Individual care plan support     | 53.0     | 32.4 | 53.6               | 27.7 | 0.6    | 32.2 | 0.92    |
| Policy on patient education      | 78.0     | 24.9 | 84.5               | 19.2 | 6.6    | 25.0 | 0.18    |
| Access to medical files          | 33.0     | 25.9 | 32.7               | 23.8 | -0.3   | 20.1 | 0.94    |
| Safeguarding patients' interests | 80.5     | 16.4 | 77.7               | 20.7 | -2.8   | 18.5 | 0.43    |
| Formal patient involvement       | 31.0     | 27.3 | 33.9               | 31.7 | 2.9    | 38.0 | 0.69    |
| Patient-centeredness             | 66.7     | 14.2 | 65.6               | 16.5 | -1.1   | 9.7  | 0.54    |

**Note:** Total score which is a weighted average is given in *italics*.

**Abbreviation:** SD, standard deviation.

to make information materials similar between practices, and 19% were training their care providers in this respect; after the intervention, these percentages were 21% and 24%, respectively. At baseline, in 37% of the care groups, general practices decided on this policy themselves; after the intervention, this percentage had decreased to 26% (data not provided in the table).

### Access to medical files

This subdomain improved significantly (Table 5). Table 1 shows that care groups significantly shifted from only granting access to the medical files after explicitly asking for it toward facilitating patients to view their medical record. However, the progress in the possibility for a patient to add data to his medical file was not significant.

### Safeguarding patients' interests

This subdomain also improved significantly (Table 5). Improvements on all items were made, although five of six were not significant. The percentage of care groups that had a front office or central phone number where patients can ask questions increased significantly (Table 2).

### Formal patient involvement

"Formal patient involvement" did not improve significantly (Table 5). Before and after the intervention, this involvement varied; after the intervention, more care groups installed a special commission handling complaints of patients (not significant) (Table 3).

## Outpatient clinics

### Participating organizations

At baseline, 52 outpatient clinics completed the questionnaire; 33 outpatient clinics responded after the intervention. The baseline quality management scores of the responders (mean 65.7%, CI: 60.3%–71.1%) were higher than the baseline scores of the nonresponders (mean 56.6%, CI: 48.2%–65.0%,  $P=0.06$ ). The average number of patients treated did not differ between responders (1,962; CI: 1,600–2,323) and nonresponders (1,929; CI: 1,335–2,523,  $P=0.92$ ) (Figure 1).

### Intervention

Of the 33 responders, 20 were not interested in further support. Of the 13 who got any support, eight received an elucidating telephone call for an average 0.3 h; no outpatient clinic received a visit by an experienced consultant; and five responders could not be reached (Figure 1).

## Level of quality management on patient-centeredness

In outpatient clinics, the overall change in the domain "patient-centeredness" did not change significantly; the same applied to all subdomains (Table 5).

### Self-management support

At baseline, 30% of the outpatient clinics were developing self-management support, 91% supported dissemination of information brochures; 59% organized courses for care providers; 66% organized courses for patients. After the intervention, these percentages were 18%, 82%, 54%, and 57%, respectively (data not provided in the table).

### Individual care plan support

After the intervention, the percentage of outpatient clinics that had no policy to support the use of an individual care plan decreased from 13% to 4%; the percentage that was developing such a policy increased from 39% to 50%. At baseline, 27% were actively promoting its use; and 21% were promoting and periodically evaluating the use of a care plan. These percentages changed into 29% and 18% respectively after the intervention (data not provided in the table).

### Policy on patient education

Whereas at baseline, 4% of the outpatient clinics had no policy on patient education; after the intervention, all outpatient clinics had developed some policy on patient education. Before the intervention, 5% were developing a policy, 45% were trying to achieve uniform information for their patients; another 46% were also training care providers on this issue. After the intervention, these percentages changed into 4%, 39%, and 57%, respectively (data not provided in the table).

### Access to medical files

The percentages of outpatient clinics where patients could view their medical file and add data increased after the intervention, but not significantly (Table 1).

### Safeguarding patients' interests

There were no significant changes in this subdomain (Table 2).

### Formal patient involvement

There were no significant changes in this subdomain (Table 3).

## Discussion

In care groups, quality management on patient-centeredness in diabetes care improved significantly from 47.1% to 53.3% on a 0%–100% scale after the intervention. Care groups improved significantly on the subdomains “access to the medical file” and “safeguarding patients’ interests.” Outpatient clinics, which scored higher at baseline (66.7%) compared to care groups, showed no significant improvement on patient-centeredness. In both the types of organizations, “formal patient involvement” showed the largest room for improvement.

The overall improvement in patient-centeredness in care groups might have several reasons. Care groups are relatively new organizations, focused on improving their management level. As care groups are responsible for the quality of the contracted care, they have an increasing need to control these complex processes by quality management. Moreover, health insurance companies, which until recently used process and outcome indicators as a measure for quality of diabetes care delivered by care groups, started to make organizational quality management measurements obligatory for care groups. In outpatient clinics, diabetes quality management is only a small part of a more complex organization and hospitals do not (yet) have to share their results on diabetes care in detail.

The significant improvement on “safeguarding patients’ interests” in care groups was mainly the result of the increased number of care groups with a front office or central phone number where patients could ask all questions. Despite the lack of specific tools for “access to the medical file” in our toolbox, care groups also improved significantly on this subdomain, which might be explained by the ongoing trend of emerging online versions of personal health records that allow patients to manage their health data both in the US and Europe.<sup>31</sup> Care groups probably scored higher on “access to the medical file” because general practitioners already started to introduce an electronic patient file, obligatory for a web portal, in the 1990s,<sup>32</sup> whereas the development of an electronic medical file was introduced much later in hospitals and their affiliated outpatient clinics. Other subdomains in care groups did not improve significantly.

Outpatient clinics did not improve their quality management on patient-centeredness. Because of their relatively high baseline performance on patient-centeredness, they might have focused less on such an improvement. The high levels on “self-management support” and “safeguarding patients’ interests” may be explained by the more complex patients with type 2 diabetes treated in outpatient clinics, most of them requiring blood glucose self-monitoring,

in which education plays a paramount role.<sup>10</sup> Compared to care groups, outpatient clinics still scored higher on all subdomains of patient-centeredness after the intervention, except on “access to the medical file,” as explained in the previous paragraph. Furthermore, whereas care groups, being new entities, are constantly asked to demonstrate the quality of their contracted care, outpatient clinics are part of a more established organization and endocrinologists do probably not need to be focused on quality management.

Although “formal patient involvement” was one of the subdomains on which both the types of organizations achieved the lowest scores, it did not improve after the intervention. Both patients and care groups themselves encounter difficulties to formalize patient involvement in care groups.<sup>14</sup> In European hospitals, patient involvement is the least widely applied quality improvement strategy.<sup>33</sup> Managers need more tools and methods for improving patient involvement and patient experiences.<sup>34</sup> Involving patients has contributed to improvements in the services of organizations, like attempts to make services more accessible, producing information leaflets for patients, and changes in attitudes of organizations to involve patients. However, the effects of this process on the quality and effectiveness of these services are still unknown.<sup>15</sup>

Although all participation organizations received feedback and a benchmark, only a limited number of them were further supported or wanted further support. In outpatient clinics, responsible endocrinologists were hard to reach and had no time available for the tailored support and seemed less interested in quality management support. Care groups, which are staffed with quality managers to improve the level of quality management, were very much interested in the feedback and benchmark. Besides, a benchmark can promote learning and dissemination of good practice.<sup>35,36</sup> As feedback and a benchmark are relatively easy to perform, future systematic implementation of feedback and benchmark is recommended. An additional process evaluation could give more insight in what type of quality management support we should strive for.

The strength of the study is the nationwide assessment of quality management on patient-centeredness, allowing managers of participating organizations to discern clearly the areas that require improvements.

However, the study has several limitations. Selection bias in the outpatient clinic group is likely: mainly the better performing outpatient clinics continued participating in the second questionnaire. Given the absence of improvement in the participating outpatient clinic group, one can only



speculate whether the nonparticipants have improved their quality management policy or not.

Another limitation is the validity of the questionnaires. Construct validity, which was based on literature and a review of seven models for quality management, resulting in the six domains for diabetes quality management, still needs confirmatory factor analyses. Criterion validity of the questionnaires could not be tested, as there is no golden standard to measure quality management.<sup>37</sup> Face and content validity was already warranted by scrutinizing literature for quality management models and comparing the relevant items by experts.<sup>37</sup> Experts from both the types of organizations were involved in the development of the questionnaires. Furthermore, expert panels from care groups and outpatient clinics weighed the subdomains within a domain. In a pilot study, both draft questionnaires were tested by four and five experts from primary and secondary care, respectively.

A third limitation might be that developments outside our study might have influenced our results. There has been much attention to improvement in diabetes care in general by a broad 4-year national campaign by the Dutch Diabetes Federation<sup>38</sup> of which this study was only a small part. In addition, other trends were already going on, like increasing focus on self-management.

In conclusion, after a relatively simple intervention, care groups significantly improved their quality management on patient-centeredness, especially on “access to the medical file” and “safeguarding patients’ interests”; outpatient clinics, which scored higher at baseline, did not. Interventions to improve quality management on patient-centeredness in diabetes care organizations should differ between primary and secondary care.

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## Disclosure

The authors report no conflicts of interest in this work.

## References

- McHugh S, O'Mullane M, Perry JJ, Bradley C. Barriers to, and facilitators in, introducing integrated diabetes care in Ireland: a qualitative study of views in general practice. *BMJ Open*. 2013;3(8):e003217.
- Lorig KR, Holman H. Self-management education: history, definition, outcomes, and mechanisms. *Ann Behav Med*. 2003;26(1):1–7.
- Bodenheimer T. Coordinating care – a perilous journey through the health care system. *N Engl J Med*. 2008;358(10):1064–1071.
- Institute of Medicine (IOM). *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington (DC): National Academies Press; 2001.
- Maizes V, Rakel D, Niemiec C. Integrative medicine and patient-centered care. *Explore (NY)*. 2009;5(5):277–289.
- Coulter A, Ellins J. Effectiveness of strategies for informing, educating, and involving patients. *BMJ*. 2007;335(7609):24–27.
- Epstein RM, Fiscella K, Lesser CS, Stange KC. Why the nation needs a policy push on patient-centered health care. *Health Aff (Millwood)*. 2010;29(8):1489–1495.
- Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. *Lancet*. 2003;362(9391):1225–1230.
- Ahola AJ, Groop PH. Barriers to self-management of diabetes. *Diabet Med*. 2013;30(4):413–420.
- Peyrot M, Rubin RR, Funnell MM, Siminerio LM. Access to diabetes self-management education: results of national surveys of patients, educators, and physicians. *Diabetes Educ*. 2009;35(2):246–248, 252–256, 258–263.
- Davis GT, Menon S, Parrish DE, Sittig DF, Singh H. Patient access to medical records and healthcare outcomes: a systematic review. *J Am Med Inform Assoc*. 2014;21(4):737–741.
- Sutherland D, Hayter M. Structured review: evaluating the effectiveness of nurse case managers in improving health outcomes in three major chronic diseases. *J Clin Nurs*. 2009;18(21):2978–2992.
- Carrion Senior I, Fernandez-Aleman JL, Toval A. Are personal health records safe? A review of free web-accessible personal health record privacy policies. *J Med Internet Res*. 2012;14(4):e114.
- Lemmens LC, de Bruin SR, Struijs JN, Baan CA. *Patient involvement on organizational decision-making in care groups; Understanding and recommendations based on literature search and experiences of care groups and patient representatives*. [In Dutch]. Bilthoven: National Institute of Public Health and the Environment (RIVM); 2013. RIVM report 260434001/2012.
- Crawford MJ, Rutter D, Manley C, et al. Systematic review of involving patients in the planning and development of health care. *BMJ*. 2002;325(7375):1263.
- van de Bovenkamp HM, Trappenburg MJ, Grit KJ. Patient participation in collective healthcare decision making: the Dutch model. *Health Expect*. 2010;13(1):73–85.
- Luft HS. Becoming accountable-opportunities and obstacles for ACOs. *N Engl J Med*. 2010;363(15):1389–1391.
- Rosenthal MB, Cutler DM, Feder J. The ACO rules – striking the balance between participation and transformative potential. *N Engl J Med*. 2011;365(4):e6.
- Ham C, Zollinger-Read P. What are the lessons from the USA for clinical commissioning groups in the English National Health Service? *Lancet*. 2012;379(9811):189–191.
- Struijs JN, Baan CA. Integrating care through bundled payments – lessons from the Netherlands. *N Engl J Med*. 2011;364(11):990–991.
- van Til JT, de Wildt JE, Struijs JN. *The organization of care groups in 2010. Current state and recent developments* [In Dutch]. Bilthoven: National Institute of Public Health and the Environment (RIVM); 2010. RIVM Report 260332001/2010.
- Campmans-Kuijpers MJE, Baan CA, Lemmens LC, Rutten GEHM. Change in quality management in diabetes care groups and outpatient clinics after feedback and tailored support. *Diabetes Care*. 2015;38(2):285–292.
- Campmans-Kuijpers MJ, Baan CA, Lemmens LC, Rutten GE. Diabetes quality management in Dutch care groups and outpatient clinics: a cross-sectional study. *BMC Res Notes*. 2014;7(1):497.
- Campmans-Kuijpers MJ, Lemmens LC, Baan CA, et al. Defining and improving quality management in Dutch diabetes care groups and outpatient clinics: design of the study. *BMC Health Ser Res*. 2013;13:129.
- Self-management: working together on tailored care for patients [in Dutch]. Available from: <http://www.zelfmanagement.com/zorgverleners/tools-voor-de-zorgverlener/>. Accessed July 15, 2016.
- Diabetes Management Self-efficacy Scale [in Dutch]. Available from: [http://www.meetinstrumentenzorg.nl/Portals/0/bestanden/352\\_3\\_N.pdf](http://www.meetinstrumentenzorg.nl/Portals/0/bestanden/352_3_N.pdf). Accessed July 15, 2016.

27. National guideline on blood glucose control for patients with type 2 diabetes [in Dutch]. Available from: <http://www.actieprogrammadiabetes.nl/home/275-multidisciplinaire-richtlijn-over-zelfcontrole-van-bloedglucosewaarden>. Accessed July 15, 2016.
28. Individual care plan. Available from: [http://www.actieprogrammadiabetes.nl/images/stories/downloads/06815\\_owja\\_izd-dv.pdf](http://www.actieprogrammadiabetes.nl/images/stories/downloads/06815_owja_izd-dv.pdf). Accessed July 15, 2016.
29. Diep: Diabetes Interactive Education Program [in Dutch]. Available from: <http://www.diep.info/>. Accessed July 15, 2016.
30. DVN i-learner [in Dutch]. Available from: <https://www.dvn.nl/dvn/actueel/nieuws/1131/>. Accessed July 15, 2016.
31. Pagliari C, Detmer D, Singleton P. Potential of electronic personal health records. *BMJ*. 2007;335(7615):330–333.
32. Knottnerus JA. Role of the electronic patient record in the development of general practice in the Netherlands. *Methods Inf Med*. 1999;38(4–5):350–354.
33. Lombarts MJ, Rupp I, Vallejo P, Sunol R, Klazinga NS. Application of quality improvement strategies in 389 European hospitals: results of the MARQuIS project. *Qual Saf Health Care*. 2009;18(Suppl 1):i28–i37.
34. Wiig S, Storm M, Aase K, et al. Investigating the use of patient involvement and patient experience in quality improvement in Norway: rhetoric or reality? *BMC Health Serv Res*. 2013;13:206.
35. Dorr D, Bonner LM, Cohen AN, et al. Informatics systems to promote improved care for chronic illness: a literature review. *J Am Med Inform Assoc*. 2007;14(2):156–163.
36. Hermans MP, Elisaf M, Michel G, et al. Benchmarking is associated with improved quality of care in type 2 diabetes: the OPTIMISE randomized, controlled trial. *Diabetes Care*. 2013;36(11):3388–3395.
37. Carmines EG, Zeller RA. *Reliability and validity assessment*. Newbury Park: Sage Publications, Inc.; 1991.
38. National Action Program on diabetes. Available from: <http://www.actieprogrammadiabetes.nl/>. Accessed July 15, 2016.

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