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Focus on functioning in person-centered nurse-led diabetes care

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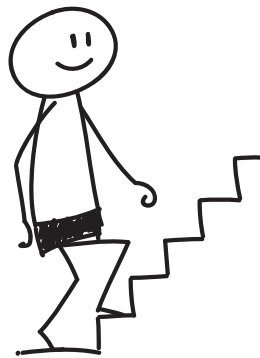
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General Introduction

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INTRODUCTION

Type 2 diabetes mellitus (DM2) is one of the most common chronic conditions worldwide, and its rising prevalence has been recognized as a major global health challenge [1]. DM2 is characterized by elevated levels of blood glucose (hyperglycemia) caused by a deficiency of or resistance to the hormone insulin produced in the pancreas [2]. Risk factors associated with insulin resistance are predominantly lifestyle related and include overweight and obesity, an unhealthy diet, and physical inactivity. Besides hyperglycemia, DM2 is also associated with hypertension and dyslipidemia. DM2 can lead to serious vascular complications, such as cardiovascular diseases, retinopathy, nephropathy, neuropathy, and premature death [1]. Recently diagnosed patients with DM2 often postpone lifestyle changes due to absence of disease burden [3]. However, when complications do occur, patients with DM2 may face obstacles in coping with the impact on and restrictions in daily functioning [4]. The goals for patients with DM2 are to prevent or delay (worsening of) complications and maintain quality of life [5]. This requires pharmacological treatment of hyperglycemia and management of cardiovascular risk factors. Patients' self-care behavior regarding a healthy lifestyle and daily self-management is equally important as pharmacological treatment; however, the former often proves challenging for patients [6].

To support patients' self-management and coping strategies, a person-centered care approach is recommended [7,8]. Person-centered care entails being respectful of and responsive to persons' preferences, needs and values, as well as ensuring that persons' values guide all clinical decisions [9]. Person-centered care involves different dimensions, including respect for patients' values, preferences, and expressed needs; provision of information and education; access to appropriate care; emotional and physical support; involvement of family and friends; and coordination and continuity between and within health services [10]. Person-centered care implies participation from patients in their health care [11] and a biopsychosocial perspective from health-care providers [12]. This perspective refers to a person's biomedical, emotional, social, and behavioral dimensions of health, including their values and quality-of-life priorities and preferences [7,12]. In addition, a key component of person-centered care is shared decision-making, a form of patient care that offers the potential for practicing evidence-based diabetes care while putting patients at the center of their health by taking their values, preferences, needs, and circumstances into account [13,14]. Healthcare providers in general and the nursing profession in particular, of whom the latter play a key role in supporting patients' self-management [15], experience difficulties in applying a biopsychosocial care approach [12,16] and shared decision making [17,18].

The combination of the rising prevalence of DM2 and the availability of resources that can provide sustainable and high-quality person-centered care for people with DM2, means there is a growing need for addressing patients' experiences when performing self-management and nurses' experiences when applying a biopsychosocial care approach and shared decision-making. Therefore, the aim of this thesis is to provide reference points for healthcare providers, in particular the nursing profession, to deliver high-quality, and sustainable person-centered care for patients with DM2.

Personal views of patients and healthcare providers can influence the extent to which person-centered care is actually applied. Therefore, this thesis explores views of patients and healthcare providers on elements of person-centered care. In particular patients' view on their participation in health care and views of nurses and specialized doctors' assistants on a biopsychosocial care approach and shared decision-making (Part I of this thesis). Moreover, health literacy, patient activation for self-management, and diabetes distress are important patient factors to consider in person-centered care. In Part II of this thesis, these patient factors will be examined as they may affect health outcomes, such as glycemic control and health services use.

In the Introduction section, the organization of diabetes care in Dutch primary care is outlined as a background to this thesis. Next, in Part I, the concepts participation, biopsychosocial care and shared decision-making are introduced. In Part II, the patient factors health literacy, patient activation for self-management, and diabetes distress are discussed. Last, the aims, research questions, and an outline of this thesis are presented.

BACKGROUND

Type 2 diabetes mellitus

The age adjusted comparative prevalence (95% confidence interval) of DM2 among the ages of 20–79 years in Europe was 6.3% (4.9–9.2%) in 2019 and is expected to rise to 7.8% (6.0–10.8%) in 2045 [19]. In the Netherlands, one million adults (20–79 years) have DM2, reflecting a prevalence (95% confidence interval) of 5.4% (3.2–8.7) [19,20].

Diabetes care in the Netherlands

In 2003, the standard for multi-disciplinary care for patients with DM2 in the Netherlands was established by the Dutch Diabetes Federation (in Dutch: Nederlandse Diabetes Federatie; NDF) in a 'national standard for diabetes care plan' [21]. The overall goals of this standard are healthier and more engaged patients, self-management and support, transparent and cost-effective care delivery processes, and development and use of indicators to monitor outcomes [21]. Since 2010, diabetes care is provided through an integrally financed disease management program for DM2, also called the 'bundled payment approach' [22]. In this system, health insurers pay a fixed fee to a care group to cover diabetes care provided. Although the NDF standard is essentially person-centered, indicators describing the performance of healthcare providers are predominantly biomedically oriented [23].

Diabetes care is targeted at achieving normal blood glucose, normal blood pressure, and normal cholesterol levels in order to prevent (worsening of) micro- and macrovascular complications and to maintain good quality of life [8,24]. Glycemic control is an important health outcome in DM2 and is reflected by glycosylated hemoglobin (HbA1c in mmol/mol), indicating the average blood glucose in the last

two to three months. It has previously been recommended to individualize the target range for HbA1c according to age, duration of DM2, the presence of complications, patient's values, cognitive status and capacities, as well as living situation, support systems, and life expectancy [25]. Lifestyle management is a core strategy of diabetes care [26] and includes lifestyle modifications, such as weight loss in obese patients, physical activity, and dietary changes. If lifestyle adjustments prove insufficient for reaching the desired health outcomes, the next step is to prescribe blood glucose-lowering medication, for instance, oral medication and/or insulin and/or glucagon-like peptide-1 (GLP-1) receptor agonists as well as medication to lower blood pressure and cholesterol levels [8].

The setting of care delivery for patients with DM2 has shifted from secondary to primary care over the past 30 years [27]. In addition, in both settings the management of DM2 has been largely substituted from a medical specialist or general practitioner to nursing professionals, in particular nurse practitioners and nurses specialized in diabetes care (in a secondary care) or nurses in a primary care ('practice nurses') [28,29]. Both nurse practitioners (educated at a master's level) and nurses (educated at a bachelor's level at a University of Applied Sciences) followed a specialized training in diabetes care. Previous research concluded that diabetes care can be safely and cost-effectively substituted to nurses without compromising the quality of clinical care, health-related quality of life (HRQOL), or patient satisfaction [28–32].

Nowadays, diabetes care in Dutch primary care is provided by a so-called 'POH-S' (in Dutch: *Praktijk Ondersteuner Huisarts-Somatiek*). The position of a POH-S is often performed by nurses as well as specialized doctors' assistants, of which the latter have completed a secondary vocational training, followed by a training in protocolized diabetes care.

Today, a POH-S delivers protocolized diabetes care according to an integrally financed disease management program for DM2 which is based on (inter) national guidelines [5,21,23]. The program for DM2 includes an average of four monitoring visits per year by the POH-S, which consist of a protocolized biomedical check-up (weight, blood pressure, blood glucose, and cholesterol levels) and an assessment of well-being, occurrence and prevention of complications, lifestyle issues, and adherence to medication.

Part I Views of patients with DM2 and healthcare providers on person-centered care

As stated in the Introduction, person-centered care implies participation of patients in health care and a biopsychosocial care approach from healthcare providers. Personal views of patients and healthcare providers on person-centered care can influence the extent to which person-centered care is actually applied. Therefore, this thesis explores patients' views on elements of person-centered care, in particular patients' participation in health care and views of nurses on the relevance of a biopsychosocial care approach for patients with DM2 in the Netherlands. In addition, views of nurses

and specialized doctors' assistants on shared decision-making will be examined as this is one of the corner stones of person-centered care [33] and may encourage healthcare providers to put patients at the center of health care [13]. In this section, the concepts participation, biopsychosocial care, and shared decision-making will be introduced.

Participation

Patients are increasingly expected to be in charge of their own health and are regarded as members of the healthcare team in the role of informed and activated patients, especially in the setting of chronic care [11]. Participation in medical consultations refers to actively contributing to the care process by, for example, asking questions, expressing concerns, and stating preferences [34]. A top three of barriers to participate actively has been previously reported by patients with a broad range of chronic conditions, including the fear of being seen as bothersome, perceiving time pressure during the consultation with their healthcare provider, and having difficulties remembering topics after their consultation [35]. These barriers were most often experienced by patients with low health literacy [36] and patients who are generally less activated to participate [37]. In addition, a previous study performed in the Netherlands showed that patients with DM2 expect a diabetes consultation by their healthcare provider in general practices to be primarily a biomedical check-up rather than an extensive consultation that also addresses psychological wellbeing [38]. To better understand factors affecting participation of patients with DM2, the first study of this thesis (*Chapter 2*) examines helping and hindering factors affecting engagement of patients with DM2 in consultations with their healthcare provider (i.e., nurses or specialized doctors' assistants) in general practices.

Biopsychosocial care

Considering that a chronic condition impacts one's health but does not define it, a new definition of health has been adopted in the Netherlands: "health is the ability to adapt and self-manage in the face of social, physical, and emotional challenges" [39]. This definition strongly emphasizes a person's adaptation and coping skills for dealing with the impact of a range of challenges in daily functioning. Functioning has been recently introduced as the third health indicator, complementing the established first indicator of morbidity and the second indicator of mortality [40]. The concept of functioning in care delivery is highly relevant to nursing care. After all, nursing focuses on functioning and human responses in relation to health and disease in a specific context, rather than a particular pathological condition [41]. To support a biopsychosocial care approach, the World Health Organization published the International Classification of Functioning, Disability and Health (ICF) [42] as the international standard terminology for functioning, together with the conceptual model of health (Figure 1.1) [43]. The ICF is useful for nursing care as it can ensure that potentially relevant aspects of functioning are taken into account [44]. Considering that it is impractical to use the whole ICF in daily practice, specific core sets were developed for different patient populations [45]. An ICF core set is a selected set of

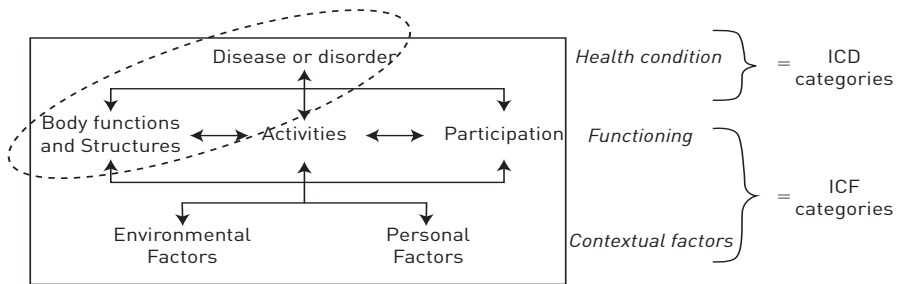


Fig. 1.1 WHO's conceptual model of health representing the interactions between the health condition, components of functioning, and contextual factors. Note the partial perspective of health based on the biomedical model (oval) versus the holistic perspective of health based on the biopsychosocial model (rectangle). ICD: International Classification of Diseases [47]; ICF: International Classification of Functioning, Disability and Health [43].

categories out of the whole ICF, related to a specific health condition and includes the components of functioning (body functions and structures, and activities and participation) and contextual factors (environmental and personal factors). This core set can serve as a minimal standard for the assessment and reporting of a person's functioning and health. To explore the view of nurses on the relevance of a biopsychosocial care approach for patients with DM2, the ICF coreset for DM [46] was utilized in the second study of this thesis (Chapter 3).

Shared decision-making

The pinnacle of person-centered care is shared decision-making, a concept which arose from medical ethics and health services research [48]. Applying shared decision-making implies that healthcare providers and patients jointly participate in making a health decision after discussing options, benefits and harms, and considerations regarding patients' values, preferences, and circumstances. Recent research identified 40 shared decision-making models, which consistently share similar components [49]. Describe treatment options was the most prominent component across the models. Previous research showed an association between shared decision-making and improved decision-making quality, patient knowledge, and patient risk perception [50]. The relevance of shared decision-making as part of the person-centered nursing care process and health outcomes in diabetes care has been described previously [33,51]; however, nurses are struggling to apply shared decision-making in practice due to their protocol-based routines [17]. Nowadays, the overall mean score of shared decision-making in the Netherlands is 69 (in a range from 0-100) and seems to have stabilized since 2016 [52]. Recent research reported; however, that healthcare providers overestimate the extent to which they actually apply shared decision-making in comparison with patients' experiences [18].

To support patients and healthcare providers in applying shared decision-making, decision aids can be used. Decision aids provide evidence-based information and

treatment options to patients and are designed to supplement the interaction between patients and healthcare providers [53]. The Patient Oriented Treatment Decision Aid - diabetes (PORTDA-diab) randomized controlled trial evaluated the effects of a newly developed decision aid in Dutch primary care [54]. This trial showed that the actual use of this decision aid by practice staff (i.e., nurses and specialized doctors' assistants) in diabetes care delivery appeared to be limited. The third study of this thesis (Chapter 4) aims to examine why this decision aid was not used as intended.

Part II Patient factors affecting health outcomes in person-centered care

Health literacy, patient activation for self-management, and diabetes distress are important patient factors to consider in person-centered care for people with DM2. In this thesis, these patient factors will be examined as they may affect health outcomes, such as glycemic control and health services use. These factors will be further discussed below, followed by the aims of this thesis and research questions.

Health literacy

A growing body of evidence emphasizes the association between health literacy and health outcomes [55]. Health literacy is defined as the capacity to obtain, process, and understand basic health information and services [56]. Different instruments are available for measuring aspects of health literacy [57]. Limited health literacy is not always clear to healthcare providers as a result of patients' unawareness of their own lack of understanding or feelings of shame to disclose this [58]. Moreover, healthcare providers may overestimate patients' health literacy skills [59]. Consequently, this may result in a mismatch between patients' needs and the care provided [60], resulting in less than optimal health outcomes.

Primary care is the setting where patients first present their health problems and receive care. Health services use, and determinants of frequent attendance, are often investigated health outcomes in studies [61]. While health services use may reflect the need for self-management support [62] or medical treatment [63], little is known about the influence of health literacy and several other patient characteristics on health services use of patients with DM2, either directly or through mediation. To identify influencing factors on health service use, Andersen's behavioral model of health services use is often employed [64]. This model states that health services use is determined by environmental factors (societal factors and the healthcare system) and patient characteristics, categorized as predisposing, enabling, and (health related) need factors. The fourth study of this thesis (Chapter 5) is guided by Andersen's behavioral model and examines the association between health literacy in patients with DM2 and health services use in general practices, controlled for several patient characteristics.

Patient activation for self-management

Self-management support is one of the cornerstones of person-centered care and is most often provided by nurses [65]. Self-management refers to an individual's ability to manage the symptoms, treatments, physical and psychosocial consequences, and lifestyle changes inherent in living with a chronic condition [66]. Previous research has shown that patients' knowledge, skills, and confidence for managing their health and health care are positively related to a wide range of health outcomes, including self-management performance, daily functioning, and cost effective health care [37,67,68].

The ability to self-manage can be assessed with the Patient Activation Measure (PAM-13) [69]. This validated scale measures knowledge, skills, and confidence for managing one's health and segments patients into one out of four levels of activation. While some patients actually engage in recommended health behaviors and take action to improve their health, other patients believe that their healthcare providers are in charge of their health, making them passive recipients of care [70]. In addition, some patients may not be able to self-manage their condition adequately due to a lack of knowledge or limited health literacy. Given the fact that not all patients seem to benefit from 'one size fits all' self-management interventions, more tailored interventions are needed [71]. The associations between patient activation for self-management and diabetes distress (discussed below) and glycemic control is studied in Chapter 6.

Diabetes distress

The emotional side of having diabetes in relation to daily self-management has received increasing attention in recent years [72]. Emotional distress related to diabetes has been conceptualized as diabetes distress and refers to the 'negative emotional or affective experience resulting from the challenge of living with the demands of diabetes' [73]. A meta-analysis showed an overall prevalence of diabetes distress in patients with DM2 of 36% [74]. Diabetes distress has been recognized as a barrier to optimal emotional well-being and performing self-management adequately, leading to poor glycemic control [75]. However, the social and emotional burden of living with a chronic condition is often overlooked by nurses [76]. Although some patients are satisfied with their healthcare providers' understanding of living with diabetes, many report unmet needs and perceive a lack of person-centered care [77]. However, patients' readiness to receive psychosocial care during nurse-led routine diabetes consultations in primary care was previously noted as limited [38]. As mentioned above, the fifth study of this thesis (Chapter 6) explores the combined associations between-patient activation for self-management and diabetes distress and glycemic control.

AIMS AND RESEARCH QUESTIONS

The aim of this thesis is to explore reference points for healthcare providers to provide sustainable and high quality person-centered care for people with DM2. Therefore, this thesis explores views of patients and healthcare providers on elements of person-centered care. In particular patients' view on their participation in health care and views of nurses and doctors' assistants on a biopsychosocial care approach and shared decision-making (Part I). Moreover, health literacy, patient activation for self-management, and diabetes distress are important patient factors in person-centered care. In this thesis, these patient factors will be examined as they may affect health outcomes, such as glycemic control and health services use (Part II). This thesis addresses the following research questions:

Part I Views of patients with DM2 and healthcare providers on person-centered care

1. Which factors help and hinder active patient participation in consultations with nurses and specialized doctors' assistants in general practices, according to patients with DM2 (Chapter 2)?
2. How relevant is a biopsychosocial care approach in terms of ICF, according to nurses involved in care for patients with DM2 (Chapter 3)?
3. How relevant is shared decision-making in care for patients with DM2, according to nurses and specialized doctors' assistants in general practices (Chapter 4)?

Part II Patient factors affecting health outcomes in person-centered care

4. What is the association between health literacy and health services use when controlled for several patient characteristics in patients with DM2 (Chapter 5)?
5. What are the associations between patient activation for self-management, diabetes distress and glycemic control in patients with DM2 (Chapter 6)?

OUTLINE OF THIS THESIS

Table 1.1 Schematic outline of this thesis

Aim	Person-Centered Care <i>“Being respectful of and responsive to persons’ preferences, needs and values, as well as ensuring that persons’ values guide all clinical decisions” [9]</i>				
	To explore reference points for healthcare providers, in particular the nursing profession, to provide sustainable high quality person-centered care for patients with DM2.				
	Part I Views of patients with DM 2 and healthcare providers involved in diabetes care on elements of person-centered care			Part II Patient factors relevant for person-centered care as they may affect health outcomes	
Chapters	Chapter 2	Chapter 3	Chapter 4	Chapter 5	Chapter 6
Topics of investigation	Patients’ views on participation in health care	Nurses’ views on a biopsychosocial care approach in terms of ICF	Views of nurses and specialized doctors’ assistants on shared decision-making	Health literacy	Activation for self-management and diabetes distress
Outcomes	Helping and hindering factors for active participation from patients’ perspective.	Content validity of the ICF core set for DM from nurses’ perspective.	Applicability, usefulness and feasibility of a new decision aid according to nurses and specialized doctors’ assistants	Health services use in the past year	Glycemic control (HbA1c)
Design	Qualitative study	Delphi study [78]	Qualitative study	Cross-sectional study	Cross-sectional study
Instruments	Booklet and in-depth interviews (group and individual)	ICF core set for DM [46]	Decision aid [54] and in-depth interviews (group and individual)	Set of Brief Screening	PAM [70] & PAID [80] Questionnaires

Part I Views of patients with DM2 and healthcare providers on person-centered care

Part I of this thesis (Chapters 2-4), describes the results of a study in patients with DM2 regarding their views on participation in health care and two studies regarding the views of nurses and specialized doctors’ assistants on the relevance of a biopsychosocial care approach and shared decision-making in care for patients with DM2.

Chapter 2

Research question 1: which factors help and hinder active patient participation in consultations with nurses and specialized doctors' assistants in general practices, according to patients with DM2 (Chapter 2)?

This chapter describes the results of a qualitative study which was undertaken in patients with DM2 to explore helping factors and hindering factors affecting their engagement in consultations with their healthcare provider. Semi-structured focus groups and individual interviews were conducted with patients with DM2 who received diabetes care from nurses or specialized doctors' assistants in general practices in the Middle of the Netherlands. The Feldman-Stewart framework for patient-professional communication within the healthcare setting was used to organize the findings of this study.

Chapter 3

Research question 2: how relevant is a biopsychosocial care approach in terms of ICF, according to nurses involved in care for patients with DM2?

This chapter shows the outcomes of a two-round Delphi study [78], aimed at exploring the relevance of a biopsychosocial care approach from the perspective of nurses (nurse practitioners, nurses specialized in diabetes care, and nurses in general practices) in secondary and primary care. Because the concept of functioning is highly relevant to person-centered nursing care, the content validity of the International Classification of Functioning, Disability, and Health (ICF) core set for DM was utilized in this study to answer the research question.

Chapter 4

Research question 3: how relevant is shared decision-making in care for patients with DM2, according to nurses and specialized doctors' assistants in general practices?

This chapter discusses the results of a qualitative study on the views of staff (nurses and specialized doctors' assistants) in 17 general practices in the Northeast region of the Netherlands regarding shared decision-making. Moreover, in this study, the applicability, usefulness, and feasibility of a newly developed decision aid were evaluated. This decision aid was developed for patients with DM2 within the Dutch randomized controlled PORTDA-diab trial [54], but its use by practice staff appeared to be limited. In total, 24 interviews were conducted. The concept of shared decision-making was used to develop the decision aid and to guide the interviews.

Part II Patient factors affecting health outcomes in person-centered care

Part II of this thesis (Chapters 5 and 6) describes the results of two studies in patients with DM2 regarding patient factors relevant to consider in person-centered care (health literacy, patient activation for self-management, and diabetes distress) as they may affect health outcomes (health services use and glycemic control). Both studies were conducted using a cross-sectional design and used the same dataset of 352 patients with DM2 in general practices in the Northeast region of the Netherlands. Data were collected between January 1, 2020 and September 30, 2020.

Chapter 5

Research question 4: what is the association between health literacy and health services use when controlled for several patient characteristics in patients with DM2?

This chapter reports on the study results regarding the association between health literacy in patients with DM2 and health services use in general practices. Health literacy was assessed by the validated 3-item Dutch translation of the Set of Brief Screening Questionnaire [79]. Andersen's behavioral model for health services use [64] was applied in this study to provide more insight into several associations between patients' predisposing characteristics, enabling factors, and health-related need factors on the one hand and health services use on the other.

Chapter 6

Research question 5: what are the associations between patient activation for self-management, diabetes distress and glycemic control in patients with DM2?

This chapter presents the results of a study on the associations between patient activation levels for self-management and diabetes distress and glycemic control. Patient activation for self-management was assessed by using the validated 'Patient Activation Measure' (PAM-13) [70]. Diabetes distress was assessed by using the validated 'Problem Areas in Diabetes' (PAID-5) scale [80]. Glycated hemoglobin (HbA1c in mmol/mol) was used to reflect glycemic control.

This thesis ends with a general discussion in Chapter 7, in which the main findings, the methodological considerations and a synthesis of the findings are provided. Moreover, practical implications and directions for future research are presented. Chapter 8 provides a summary of this thesis.

REFERENCES

1. World Health Organization (WHO), (2020). <https://www.who.int/news-room/fact-sheets/detail/diabetes>.
2. WHO, Definition and Diagnosis of Diabetes Mellitus and Intermediate Hyperglycemia: report of a WHO/IDF consultation, 2006.
3. A.L. van Puffelen, M.J.W.M. Heijmans, M. Rijken, G.E.H.M. Rutten, G. Nijpels, F.G. Schellevis, Illness perceptions and self-care behaviours in the first years of living with type 2 diabetes; does the presence of complications matter?, *Psychol. Heal.* 30 (2015) 1274–1287. <https://doi.org/10.1080/08870446.2015.1045511>.
4. K. Lisy, J.M. Campbell, C. Tufanaru, S. Moola, C. Lockwood, The prevalence of disability among people with cancer, cardiovascular disease, chronic respiratory disease and/or diabetes, *Int. J. Evid. Based. Healthc.* (2018) 1. <https://doi.org/10.1097/XEB.0000000000000138>.
5. J.B. Buse, D.J. Wexler, A. Tsapas, P. Rossing, G. Mingrone, C. Mathieu, D.A. D'Alessio, M.J. Davies, 2019 update to: Management of hyperglycemia in type 2 diabetes, 2018. A consensus report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD), *Diabetes Care.* (2020). <https://doi.org/10.2337/dci19-0066>.
6. J. Dwarswaard, E.J.M. Bakker, A. van Staa, H.R. Boeije, Self-management support from the perspective of patients with a chronic condition: A thematic synthesis of qualitative studies, *Heal. Expect.* (2016). <https://doi.org/10.1111/hex.12346>.
7. World Health Organization, WHO global strategy on integrated people-centred health services 2016–2026: executive summary, Interim Rep. Placing People Communities Cent. Heal. Serv. Geneva. (2015). <https://interprofessional.global/wp-content/uploads/2019/11/WHO-2015-Global-strategy-on-integrated-people-centred-health-services-2016-2026.pdf>.
8. B.J. Inzucchi SE, Bergenstal RM, Management of hyperglycemia in type 2 diabetes, 2015: a patient-centered approach. Update to a position statement of the American Diabetes Association and the European Association for the Study of Diabetes., *Diabetes Care.* (2015) 38:140–149.
9. A. Wolfe, Institute of Medicine Report: Crossing the Quality Chasm: A New Health Care System for the 21st Century, *Policy, Polit. Nurs. Pract.* (2001). <https://doi.org/10.1177/152715440100200312>.
10. K. Davis, S.C. Schoenbaum, A.M. Audet, A 2020 vision of patient-centered primary care, *J. Gen. Intern. Med.* (2005). <https://doi.org/10.1111/j.1525-1497.2005.0178.x>.
11. T. Bodenheimer, E.H. Wagner, K. Grumbach, Improving primary care for patients with chronic illness, *J. Am. Med. Assoc.* (2002). <https://doi.org/10.1001/jama.288.14.1775>.
12. D.T. Wade, P.W. Halligan, The biopsychosocial model of illness: A model whose time has come, *Clin. Rehabil.* 31 (2017) 995–1004. <https://doi.org/10.1177/0269215517709890>.
13. A.M. Stiggelbout, T. Van Der Weijden, M.P.T. De Wit, D. Frosch, F. Légaré, V.M. Montori, L. Trevena, G. Elwyn, Shared decision making: Really putting patients at the centre of healthcare, *BMJ.* (2012). <https://doi.org/10.1136/bmj.e256>.
14. T.C. Hoffmann, V.M. Montori, C. Del Mar, The connection between evidence-based medicine and shared decision making, *JAMA - J. Am. Med. Assoc.* (2014). <https://doi.org/10.1001/jama.2014.10186>.
15. G. Alleyne, C. Hancock, P. Hughes, Chronic and non-communicable diseases: A critical challenge for nurses globally, *Int. Nurs. Rev.* (2011). <https://doi.org/10.1111/j.1466-7657.2011.00912.x>.
16. A. Van Dijk-De Vries, A. Moser, V.C. Mertens, J. Van Der Linden, T. Van Der Weijden, J.T.M. Van Eijk, The ideal of biopsychosocial chronic care: How to make it real? A qualitative study among Dutch stakeholders, *BMC Fam. Pract.* 13 (2012). <https://doi.org/10.1186/1471-2296-13-14>.
17. S.A. Lenzen, R. Daniëls, M.A. van Bokhoven, T. van der Weijden, A. Beurskens, What makes it so difficult for nurses to coach patients in shared decision making? A process evaluation, *Int. J. Nurs. Stud.* 80 (2018) 1–11. <https://doi.org/10.1016/j.ijnurstu.2017.12.005>.

18. Kantar Public, Samen beslissen, Doelgroepenonderzoek Onder Zorgverleners En Zorggebruikers. VWS. (2020) 77. <https://www.rijksoverheid.nl/documenten/rapporten/2020/05/11/samen-beslissen>.
19. N.H. Cho, J.E. Shaw, S. Karuranga, Y. Huang, J.D. da Rocha Fernandes, A.W. Ohlrogge, B. Malanda, IDF Diabetes Atlas: Global estimates of diabetes prevalence for 2017 and projections for 2045, *Diabetes Res. Clin. Pract.* 138 (2018) 271–281. <https://doi.org/10.1016/j.diabres.2018.02.023>.
20. Nivel, Prevalentie diabetes in huisartsenpraktijk naar leeftijd en geslacht, (2020). <https://www.volksgezondheinzorg.info/onderwerp/diabetes-mellitus/cijfers-context/huidige-situatie#node-prevalentie-diabetes-huisartsenpraktijk-naar-leeftijd-en-geslacht>.
21. NDF, Dutch Diabetes Federation Health Care Standard for type 2 diabetes, (2015).
22. J.N. Struijs, C.A. Baan, Integrating Care through Bundled Payments — Lessons from the Netherlands, *N. Engl. J. Med.* 364 (2011) 990–991. <https://doi.org/10.1056/nejmp1011849>.
23. Nederlands Huisartsen Genootschap (NHG), NHG-Standaard diabetes mellitus type 2 (version 5.4), (2018). <https://richtlijnen.nhg.org/standaarden/diabetes-mellitus-type-2>.
24. I.M. Stratton, A.I. Adler, H.A.W. Neil, D.R. Matthews, S.E. Manley, C.A. Cull, D. Hadden, R.C. Turner, R.R. Holman, Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35): Prospective observational study, *Br. Med. J.* (2000). <https://doi.org/10.1136/bmj.321.7258.405>.
25. F. Ismail-Beigi, E. Moghissi, M. Tiktin, B. Hirsch, S.E. Inzucchi, S. Genuth, Individualizing glycaemic targets in type 2 diabetes mellitus: Implications of recent clinical trials, *Ann. Intern. Med.* 154 (2011) 554–559. <https://doi.org/10.7326/0003-4819-154-8-201104190-00007>.
26. American Diabetes Association, Lifestyle Management: Standards of medical care in Diabetes, 2019, *Diabetes Care.* (2019).
27. K.C. Elissen AMJ, Duimel-Peeters IGP, Spreeuwenberg C, et al. In: Nolte E, Assessing Chronic Disease Management in European Health Systems: Country reports., *Eur. Obs. Heal. Syst. Policies;* (2015).
28. L.J. Ubink-Veltmaat, H.J.G.G. Bilo, K.H. Groenier, R.O. Rischen, B. Meyboom-de Jong, Shared care with task delegation to nurses for type 2 diabetes: Prospective observational study, *Neth. J. Med.* 63 (2005) 103–110.
29. S.T. Houweling, N. Kleefstra, K.J.J. Van Hateren, K.H. Groenier, B. Meyboom-de Jong, H.J.G. Bilo, Can diabetes management be safely transferred to practice nurses in a primary care setting? A randomised controlled trial, *J. Clin. Nurs.* (2011). <https://doi.org/10.1111/j.1365-2702.2010.03562.x>.
30. H.J.M. Vrijhoef, J.P.M. Diederiks, C. Spreeuwenberg, B.H.R. Wolffenbuttel, Substitution model with central role for nurse specialist is justified in the care for stable type 2 diabetic outpatients, *J. Adv. Nurs.* 36 (2001) 546–555. <https://doi.org/10.1046/j.1365-2648.2001.02007.x>.
31. E.E.A. Arts, S.A.N.T. Landewe-Cleuren, N.C. Schaper, H.J.M. Vrijhoef, The cost-effectiveness of substituting physicians with diabetes nurse specialists: A randomized controlled trial with 2-year follow-up, *J. Adv. Nurs.* 68 (2012) 1224–1234. <https://doi.org/10.1111/j.1365-2648.2011.05797.x>.
32. M. Laurant, M. van der Biezen, N. Wijers, K. Watananirun, E. Kontopantelis, A.J.A.H. van Vught, Nurses as substitutes for doctors in primary care, *Cochrane Database Syst. Rev.* 2018 (2018). <https://doi.org/10.1097/00004872-199816040-00004>.
33. T. McCance, B. McCormack, Person-Centred Practice Framework, in: *Pers. Pract. Nurs. Healthc. Theory Pract.*, 2017.
34. R.L. Street, B. Millay, Analyzing patient participation in medical encounters, *Health Commun.* 13 (2001) 61–73. https://doi.org/10.1207/S15327027HC1301_06.
35. I. Henselmans, M. Heijmans, J. Rademakers, S. van Dulmen, Participation of chronic patients in medical consultations: Patients’ perceived efficacy, barriers and interest in support, *Heal. Expect.* (2015). <https://doi.org/10.1111/hex.12206>.

36. M. Heijmans, G. Waverijn, J. Rademakers, R. van der Vaart, M. Rijken, Functional, communicative and critical health literacy of chronic disease patients and their importance for self-management, *Patient Educ. Couns.* (2015). <https://doi.org/10.1016/j.pec.2014.10.006>.
37. R.M. Sacks, J. Greene, J. Hibbard, V. Overton, C.D. Parrotta, Does patient activation predict the course of type 2 diabetes? A longitudinal study, *Patient Educ. Couns.* (2017). <https://doi.org/10.1016/j.pec.2017.01.014>.
38. A. Van Dijk-de Vries, M.A. van Bokhoven, S. de Jong, J.F.M. Metsemakers, P.F.M. Verhaak, T. van der Weijden, J.T.M. van Eijk, Patients' readiness to receive psychosocial care during nurse-led routine diabetes consultations in primary care: A mixed methods study, *Int. J. Nurs. Stud.* 63 (2016) 58–64. <https://doi.org/10.1016/j.ijnurstu.2016.08.018>.
39. M. Huber, J. André Knottnerus, L. Green, H. Van Der Horst, A.R. Jadad, D. Kromhout, B. Leonard, K. Lorig, M.I. Loureiro, J.W.M. Van Der Meer, P. Schnabel, R. Smith, C. Van Weel, H. Smid, How should we define health?, *BMJ.* (2011). <https://doi.org/10.1136/bmj.d4163>.
40. G. Stucki, J. Bickenbach, Functioning: the third health indicator in the health system and the key indicator for rehabilitation, *Eur. J. Phys. Rehabil. Med.* 53 (2017) 134–138. <https://doi.org/10.23736/S1973-9087.17.04565-8>.
41. P. Nathenson, Application of holistic nursing in the rehabilitation setting, *Rehabil. Nurs.* 37 (2012) 114–118. <https://doi.org/10.1002/RNJ.00028>.
42. World Health Organization (WHO), *International Classification of Functioning, Disability and Health. Icf.*, revised ed, World Health Organization, Geneva, 2017.
43. H.A. Stallinga, *Human functioning in health care : application of the International Classification of Functioning, Disability and Health (ICF)*, University of Groningen, 2015. [https://www.rug.nl/research/portal/publications/human-functioning-in-health-care\(95409a1c-a924-43b4-88dd-5dd3fd81cb9\)/export.html](https://www.rug.nl/research/portal/publications/human-functioning-in-health-care(95409a1c-a924-43b4-88dd-5dd3fd81cb9)/export.html) (accessed June 5, 2019).
44. P.M. Kearney, J. Pryor, The International Classification of Functioning, Disability and Health (ICF) and nursing, *J. Adv. Nurs.* (2004). <https://doi.org/10.1111/j.1365-2648.2003.02976.x>.
45. A. Cieza, T. Ewert, T.B. Üstün, S. Chatterji, N. Kostanjsek, G. Stucki, Development of ICF Core Sets for patients with chronic conditions, *J. Rehabil. Med. Suppl.* (2004) 9–11. <https://doi.org/10.1080/1553118X.2014.882338>.
46. J. Ruof, A. Cieza, B. Wolff, F. Angst, D. Ergeletzis, Z. Omar, N. Kostanjsek, G. Stucki, ICF Core Sets for diabetes mellitus, *J. Rehabil. Med. Suppl.* (2004). <https://doi.org/10.1080/16501960410016802>.
47. World Health Organization., *International Statistical Classification of Diseases and Related Problems, 11th Revision (ICD-11)*. 11th ed. Geneva: World Health Organization, 2019, WHO. (2019). <https://icd.who.int/en/> (accessed June 11, 2019).
48. A.M. Stiggelbout, A.H. Pieterse, J.C.J.M. De Haes, Shared decision making: Concepts, evidence, and practice, *Patient Educ. Couns.* (2015). <https://doi.org/10.1016/j.pec.2015.06.022>.
49. H. Bomhof-Roordink, F.R. Gärtner, A.M. Stiggelbout, A.H. Pieterse, Key components of shared decision making models: A systematic review, *BMJ Open.* (2019). <https://doi.org/10.1136/bmjopen-2019-031763>.
50. M. Saheb Kashaf, E.T. McGill, Z.D. Berger, Shared decision-making and outcomes in type 2 diabetes: A systematic review and meta-analysis, *Patient Educ. Couns.* (2017). <https://doi.org/10.1016/j.pec.2017.06.030>.
51. H. Den Ouden, R.C. Vos, G.E.H.M. Rutten, Effectiveness of shared goal setting and decision making to achieve treatment targets in type 2 diabetes patients: A cluster-randomized trial (OPTIMAL), *Heal. Expect.* 20 (2017) 1172–1180. <https://doi.org/10.1111/hex.12563>.
52. J. de Hulst, F. van der Meijer, M., Holst, L., Brabers, A., Jong, Mate waarin arts en patiënt samen beslissen over een behandeling nauwelijks veranderd tussen 2016-2020. Gezamenlijke besluitvorming. Utrecht, 2021. www.nivel.nl/publicaties.
53. D. Stacey, F. Légaré, K. Lewis, M.J. Barry, C.L. Bennett, K.B. Eden, M. Holmes-Rovner, H. Llewellyn-Thomas, A. Lyddiatt, R. Thomson, L. Trevena, Decision aids for people facing health treatment or

- screening decisions, *Cochrane Database Syst. Rev.* (2017). <https://doi.org/10.1002/14651858.CD001431.pub5>.
54. P. Denig, J. Schuling, F. Haaijer-Ruskamp, J. Voorham, Effects of a patient oriented decision aid for prioritising treatment goals in diabetes: Pragmatic randomised controlled trial, *BMJ.* (2014). <https://doi.org/10.1136/bmj.g5651>.
 55. R. Caruso, A. Magon, I. Baroni, F. Dellafiore, C. Arrigoni, F. Pittella, D. Ausili, Health literacy in type 2 diabetes patients: a systematic review of systematic reviews, *Acta Diabetol.* 55 (2018) 1–12. <https://doi.org/10.1007/s00592-017-1071-1>.
 56. K. Sørensen, S. Van den Broucke, J. Fullam, G. Doyle, J. Pelikan, Z. Slonska, H. Brand, Health literacy and public health: A systematic review and integration of definitions and models, *BMC Public Health.* (2012). <https://doi.org/10.1186/1471-2458-12-80>.
 57. T.H. Nguyen, M.K. Paasche-Orlow, L.A. McCormack, The State of the Science of Health Literacy Measurement, *Stud. Health Technol. Inform.* (2017). <https://doi.org/10.3233/978-1-61499-790-0-17>.
 58. M.S. Wolf, M. V. Williams, R.M. Parker, N.S. Parikh, A.W. Nowlan, D.W. Baker, Patients' shame and attitudes toward discussing the results of literacy screening, *J. Health Commun.* (2007). <https://doi.org/10.1080/10810730701672173>.
 59. P.A. Kelly, P. Haidet, Physician overestimation of patient literacy: A potential source of health care disparities, *Patient Educ. Couns.* (2007). <https://doi.org/10.1016/j.pec.2006.10.007>.
 60. Monique Heijmans & Jany Rademakers, *Gezondheidsvaardigheden en de mismatch tussen de patient en de zorgomgeving*, Den Haag; The Netherlands, 2020. <https://oefenen.nl/kennisbank/leren-in-de-educatie/>.
 61. B. Babitsch, D. Gohl, T. von Lengerke, Re-visiting Andersen's Behavioral Model of Health Services Use: a systematic review of studies from 1998-2011., *Psychosoc. Med.* (2012). <https://doi.org/10.3205/psm000089>.
 62. I. van der Heide, M. Heijmans, A.J. Schuit, E. Uiters, J. Rademakers, Functional, interactive and critical health literacy: Varying relationships with control over care and number of GP visits, *Patient Educ. Couns.* (2015). <https://doi.org/10.1016/j.pec.2015.04.006>.
 63. F.D. Welzel, J. Stein, A. Hajek, H.H. König, S.G. Riedel-Heller, Frequent attenders in late life in primary care: A systematic review of European studies, *BMC Fam. Pract.* (2017). <https://doi.org/10.1186/s12875-017-0700-7>.
 64. Ronald M. Andersen, Revisiting the Behavioral Model and Access to Medical Care: Does it Matter?, *J. Health Soc. Behav.* 36 (1995) 1–10.
 65. T. Bodenheimer, K. MacGregor, N. Stothart, Nurses as leaders in chronic care, *BMJ.* 330 (2005) 612–613. <https://doi.org/10.1136/bmj.330.7492.612>.
 66. J. Barlow, C. Wright, J. Sheasby, A. Turner, J. Hainsworth, Self-management approaches for people with chronic conditions: A review, *Patient Educ. Couns.* (2002). [https://doi.org/10.1016/S0738-3991\(02\)00032-0](https://doi.org/10.1016/S0738-3991(02)00032-0).
 67. J. Greene, J.H. Hibbard, Why does patient activation matter? An examination of the relationships between patient activation and health-related outcomes, *J. Gen. Intern. Med.* (2012). <https://doi.org/10.1007/s11606-011-1931-2>.
 68. J.H. Hibbard, J. Greene, Y. Shi, J. Mittler, D. Scanlon, Taking the Long View: How Well Do Patient Activation Scores Predict Outcomes Four Years Later?, *Med. Care Res. Rev.* (2015). <https://doi.org/10.1177/1077558715573871>.
 69. J.H. Hibbard, J. Stockard, E.R. Mahoney, M. Tusler, Development of the Patient Activation Measure (PAM): Conceptualizing and Measuring Activation in Patients and Consumers, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1361049/pdf/hesr_269.pdf
 70. J.H. Hibbard, E.R. Mahoney, J. Stockard, M. Tusler, Development and testing of a short form of the patient activation measure, *Health Serv. Res.* (2005). <https://doi.org/10.1111/j.1475-6773.2005.00438.x>.

71. J. Trappenburg, N. Jonkman, T. Jaarsma, H. van Os-Medendorp, H. Kort, N. de Wit, A. Hoes, M. Schuurmans, Self-management: One size does not fit all, *Patient Educ. Couns.* 92 (2013) 134–137. <https://doi.org/10.1016/j.pec.2013.02.009>.
72. T.C. Skinner, L. Joensen, T. Parkin, PSAD Special Issue Paper Twenty-five years of diabetes distress research, *Diabet. Med.* (2020).
73. W.H. Polonsky, B.J. Anderson, P.A. Lohrer, G. Welch, A.M. Jacobson, J.E. Aponte, C.E. Schwartz, Assessment of diabetes-related distress, *Diabetes Care.* (1995). <https://doi.org/10.2337/diacare.18.6.754>.
74. N.E. Perrin, M.J. Davies, N. Robertson, F.J. Snoek, K. Khunti, The prevalence of diabetes-specific emotional distress in people with Type 2 diabetes: a systematic review and meta-analysis, *Diabet. Med.* (2017). <https://doi.org/10.1111/dme.13448>.
75. J.S. Gonzalez, E. Shreck, C. Psaros, S.A. Safren, Distress and type 2 diabetes-treatment adherence: A mediating role for perceived control, *Heal. Psychol.* (2015). <https://doi.org/10.1037/hea0000131>.
76. J.M.J. Been-Dahmen, J. Dwarswaard, J.M.W. Hazes, A. van Staa, E. Ista, Nurses' views on patient self-management: A qualitative study, *J. Adv. Nurs.* 71 (2015) 2834–2845. <https://doi.org/10.1111/jan.12767>.
77. E. Litterbach, E. Holmes-Truscott, F. Pouwer, J. Speight, C. Hendrieckx, "I wish my health professionals understood that it's not just all about your HbA1c!". Qualitative responses from the second Diabetes MILES – Australia (MILES-2) study, *Diabet. Med.* (2020). <https://doi.org/10.1111/dme.14199>.
78. P. C, The Delphi Technique: Myths and Realities - Methodological Issues in Nursing Research, *J. Adv. Nurs.* 41 (2003) 376–382.
79. L.D. Chew, K.A. Bradley, E.J. Boyko, Brief questions to identify patients with inadequate health literacy, *Fam. Med.* (2004).
80. B.E. McGuire, T.G. Morrison, N. Hermanns, S. Skovlund, E. Eldrup, J. Gagliardino, A. Kokoszka, D. Matthews, M. Pibernik-Okanović, J. Rodríguez-Saldaña, M. De Wit, F.J. Snoek, Short-form measures of diabetes-related emotional distress: The Problem Areas in Diabetes Scale (PAID)-5 and PAID-1, *Diabetologia.* (2010). <https://doi.org/10.1007/s00125-009-1559-5>.

