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Exploring nurse-sensitive patient outcomes in Dutch district nursing care: A survey study

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Abstract

There is a lack of evidence to guide district nurses in using nurse-sensitive patient outcomes as it is unclear how these outcomes are currently used in daily district nursing practice. Therefore, we aimed to explore (1) which nurse-sensitive patient outcomes are measured and how these outcomes are measured, (2) how district nurses use the outcomes to learn from and improve current practice and (3) the barriers and facilitators to using outcomes in current district nursing practice. An exploratory cross-sectional survey study was conducted. The survey was distributed online among nurses working for various district nursing care organisations across the Netherlands. The responses from 132 nurses were analysed, demonstrating that different instruments or questionnaires are available and used in district nursing care as outcome measures. The nurse-sensitive patient outcomes most often measured with validated instruments are pain using the Numeric Rating Scale or Visual Analogue Scale, delirium using the Delirium Observation Scale, weight loss using the Short Nutritional Assessment Questionnaire and caregiver burden using the Caregiver Strain Index or a Dutch equivalent. Falls and client satisfaction with delivered care are most often measured using unvalidated outcome measures. The other nurse-sensitive outcomes are measured in different ways. Outcomes are measured, reported and fed back to the nursing team multiple times and in various ways to learn from and improve current practice. In general, nurses have a positive attitude towards using nurse-sensitive outcomes in practice, but there is a lack of facilitation to support them. Because insight into how nurses can and should be supported is still lacking, exploring their needs in further research is desirable. Additionally, due to the high variation in the utilisation of outcomes in current practice, it is recommended to create more uniformity by developing (inter)national guidelines on using nurse-sensitive patient outcomes in district nursing care.

KEYWORDS
community health nursing, district nursing care, home care, nurse-sensitive outcomes, nursing research, patient outcome assessment

1 | INTRODUCTION

Measuring patient outcomes in district nursing care is crucial for quality control, quality improvements as well as research regarding (cost) effectiveness of care (Boyce et al., 2014; Mant, 2001; Moorhead et al., 2018; World Health Organization, 2006). Insight into patient outcomes is needed to guide nurses in learning from their care deliverance and subsequently improving the quality of the delivered care (Moorhead et al., 2018). Additionally, outcomes provide optimal information to assess the effectiveness and efficiency of care (Moorhead et al., 2018). Insights in outcomes can be supportive in decision-making regarding the provision and organisation of nursing care, including the funding of care at home, and are therefore relevant for patients, care providers, health insurers and healthcare inspectorates. For nursing care in general, the focus should be on nurse-sensitive patient outcomes (hereinafter referred to as nurse-sensitive outcomes). Nurse-sensitive outcomes are patient outcomes that are *relevant* based on the nurses' scope and domain of practice, and where nursing inputs and interventions have an *influence* on the patient outcomes (Doran, 2011; Moorhead et al., 2018). The relevance and influence-ability are vital for nurse-sensitive outcomes to account for the actions of the district nurse. Since the demands on district nursing care in many European countries are rising due to the ageing population, the increasing care complexity and the shortage of district nursing care professionals (Carrera et al., 2013; Jarrín et al., 2019; MacLean et al., 2014), insight into nurse-sensitive outcomes is needed.

In nursing, outcomes are often developed for the acute care or hospital setting (Burston et al., 2014; Myers et al., 2018; Oner et al., 2021). These outcomes may not be relevant to the scope of district nursing care. For district nursing care, there is a lack of evidence to guide district nurses in using outcomes to measure and learn (Jarrín et al., 2019; Joling et al., 2018). A potential reason for this absence of evidence is the worldwide variation in the organisation, delivery and funding of district nursing care (Genet et al., 2012; Jarrín et al., 2019; Van Eenoo et al., 2016). A recent Delphi study was conducted to identify what nurse-sensitive outcomes are relevant for district nursing care (Veldhuizen, van den Bulck, et al., 2021). The Delphi study identified 46 potentially nurse-sensitive patient outcomes for district nursing care in the literature, of which 26 were assessed as nurse sensitive by various experts in district nursing care (Veldhuizen, van den Bulck, et al., 2021). However, it is unclear which of these 26 nurse-sensitive outcomes are currently being measured in district nursing care and how these outcomes are used to learn from and improve district nursing practice.

Using outcome data is part of a learning healthcare system, which focuses on collecting data to generate knowledge and applying it to learn from and improve practice (Foley & Fairmichael, 2015). In the most recent report, the cycle relies on three main steps: data being derived from practice (i.e. practice to data), knowledge being generated from the data (i.e. data to knowledge) and knowledge being transferred back into practice (i.e. knowledge to practice) (Foley et al., 2021). In a learning healthcare system, outcomes and experience are continually improved by 'applying science, informatics, incentives and culture to generate and use knowledge in the delivery of care' (Foley et al., 2021).

What is known about this topic and what this paper adds

- Nurse-sensitive patient outcomes are vital to improving the quality and (cost)effectiveness of care. However, it is unclear how nurses use outcomes in current district nursing practice.
- The study revealed that uniform measures are used only for a small number of outcomes. Outcomes are used in various ways to measure and learn from.
- In general, nurses have a positive attitude regarding using outcomes but lack knowledge, support and facilitation on an organisational and national level.
- The variation in using outcomes in current district nursing practice is high, and more uniformity is vital to ease comparisons across district nursing organisations to learn from and improve practice.

The learning healthcare system provides tools, models and frameworks to guide healthcare systems, and therefore fits district nursing care. It coincides with the widely used, stepwise cyclical nursing process, which includes assessing needed care, nursing diagnosis, planning of care, outcome setting, implementation of interventions and evaluating care (Herdman et al., 2017; Toney-Butler & Thayer, 2022).

To decide how district nursing care should measure nurse-sensitive outcomes and use these outcomes to learn and improve, a better understanding of current practice should be gained. Analysing current practice is a necessary step in successfully implementing change (Grol et al., 2013; Van Achterberg et al., 2008). Therefore, this study aims to explore the use of nurse-sensitive outcomes in current district nursing practice. This is the first step to selecting appropriate solutions and facilitation to help district nursing care implement nurse-sensitive outcomes. The following research questions guided this study:

1. Which of the 26 nurse-sensitive outcomes, previously identified by experts (Veldhuizen, van den Bulck, et al., 2021), are currently measured in Dutch district nursing practice, and how are these outcomes measured?
2. How are nurse-sensitive outcomes used to learn and improve current practice?
3. What are the barriers and facilitators of using nurse-sensitive outcomes in district nursing care?

2 | MATERIALS AND METHODS

2.1 | Study design

This exploratory survey study employed a cross-sectional design to explore the use of nurse-sensitive outcomes in current district nursing practice in the Netherlands.

2.2 | Participants and setting

A survey was developed and distributed among Dutch nurses working in district nursing care nationwide in the Netherlands. The organisation, delivery and funding of district nursing care vary worldwide (Genet et al., 2012; Jarrín et al., 2019; Van Eenoo et al., 2016). In this study, district nursing care is referred to as all technical, medical, supportive and rehabilitative nursing care interventions or assistance with personal care for (older) people living at home (Van Eenoo et al., 2016). This definition reflects district nursing care in the Netherlands (Maurits, 2019) and aligns with the definition used for community-care nursing in Europe (Tarricone & Tsouros, 2008; Van Eenoo et al., 2016). District nursing care in the Netherlands comprises district nurses, vocational nurses, nurse assistants and basic care assistants. In 2018, 28,508 nurses worked in district nursing care in the Netherlands, of which 16,108 as a vocational nurse (vocationally trained registered nurse, Dutch Qualification Framework [NLQF] and European Qualification Framework [EQF] level 4) and 12,400 as a district nurse (bachelor prepared registered nurse, NLQF/EQF level 6) (Grijpstra et al., 2020). Next to nurses, 41,799 nurse assistants (NLQF/EQF level 3) and 4759 basic care assistants (NLQF/EQF level 1 and 2) provided care at home to people in need of district nursing care (Grijpstra et al., 2020). Because this study focuses on measuring outcomes in district nursing care, which is mostly done by the district nurse or vocational nurse, the target population of this study included all 28,508 nurses working in district nursing care. Nurse assistants and basic care assistants were excluded. Convenience sampling was used to approach all nurses working in district nursing care at various organisations across the Netherlands.

2.3 | The Dutch district nursing outcomes (DDNO) survey

The Dutch district nursing outcomes (DDNO) survey was developed and validated for this study and consisted of four parts: (1) background characteristics; (2) measuring nurse-sensitive outcomes in current practice; (3) learning from nurse-sensitive outcomes in current practice; (4) barriers and facilitators of using nurses-sensitive outcomes in general (Supporting Information). In the survey introduction, an explanation of the used terminology was provided. In this study, *using outcomes* in daily district nursing practice was operationalised by dividing it into two main parts, which comprehend the three main steps of the learning healthcare system. The first part is *measuring* outcomes, which focuses on collecting data by measuring outcomes ('Practice to Data' step of the learning healthcare system). In this, outcomes can be measured by the patient, by a (lay-)observer or by a professional in clinical practice ('Clinical Outcome Assessment (COA)', 2020). Outcome measures are the tools or instruments to measure outcomes (Weldring & Smith, 2013). The second part is *learning* from the measured outcomes, which includes

analysing and feeding back the measured outcomes to change and improve daily practice ('Data to Knowledge' and 'Knowledge to Practice' steps of the learning healthcare system). In the survey explanation to the nurses, the steps of the learning healthcare system were not explicitly mentioned.

2.3.1 | The development of DDNO survey

Background characteristics: The following background information was collected: age, sex, education, job title in district nursing care, total hours working in district nursing care per week, years of working experience in district nursing care and other job positions in addition to working in district nursing care, and the geographical area (province) they are working.

Measuring nurse-sensitive outcomes in current practice: To describe the current practice, we focused on gaining insight into which of the 26 relevant nurse-sensitive outcomes are measured in district nursing practice and how these are measured. The 26 nurse-sensitive outcomes were derived from a previous study (Veldhuizen, van den Bulck, et al., 2021) and were arranged into the following categories based on the Nursing Outcome Classification (Moorhead et al., 2018): functional health, physiologic health, psychosocial health, health knowledge and behaviour, perceived health and family health. The Nursing Outcome Classification is a widely applied classification system in nursing (Tastan et al., 2014), using standardised nursing terminology to describe patient outcomes sensitive to nursing interventions (Moorhead et al., 2018). The categories of death and healthcare consumption were added following previous research (Akpan et al., 2018). Of each of the 26 outcomes was asked if this outcome is measured in current district nursing practice (yes; no). If yes, respondents were asked via an open question how the outcome is measured, using what questionnaire, instrument or method. If no, an open question was asked about why the outcome is not measured. Subsequently, two closed questions were asked about when nurse-sensitive outcomes, in general, are measured and where this information is recorded. In addition, two open-ended questions were asked concerning the (potential) barriers and facilitators of measuring outcomes in district nursing practice.

Learning from nurse-sensitive outcomes to improve current practice: To identify how nurses learn from nurse-sensitive outcomes to improve current practice, respondents were asked if measured outcomes are fed back to the district nursing team and, if yes, how the results are fed back. In addition, two open-ended questions were asked about the (potential) barriers and facilitators of learning from outcomes in district nursing practice.

Barriers and facilitators to using nurses-sensitive outcomes in general: To identify the barriers and facilitators of using nurse-sensitive outcomes in district nursing care, 16 statements concerning potential barriers and facilitators were presented. These statements were derived from two validated questionnaires regarding barriers and facilitators (Huijg et al., 2014; Peters et al., 2003). Only relevant statements to identify the barriers and facilitators

among district nurses were selected from these questionnaires, following other research (Van Peppen et al., 2008). Statements regarding prevention and the implementation of interventions were removed because these were not applicable. For other statements, slight changes in wording were made to fit with the district nursing context in the Netherlands (e.g. 'using outcomes can easily be abused in medical disciplinary law' was changed to 'using outcomes can easily be abused or misused in the funding of district nursing care'). In some cases, multiple statements focusing on the same subject were combined into one statement. The statements focus on the following domains from the Theoretical Domain Framework (Atkins et al., 2017): knowledge, skills, attitude and role of the professional, beliefs about capabilities and consequences, intentions to use outcomes and environmental context and resources. The nurses had to indicate to what extent they agreed or disagreed with the statement on a five-point Likert scale, ranging from completely disagree (1 point) to completely agree (5 points).

2.3.2 | Validation of the DDNO survey

The first version of the DDNO survey was provided with feedback by Dutch Nurses' Association in The Netherlands (V&VN) and by stakeholders from the Dutch Patient Federation, Utrecht University and Tilburg University. The DDNO survey was then distributed to five district nurses and three last-year nursing students (NLQF level 6) to assess its readability, usability and face validity. To assess readability and usability, telephone interviews were conducted, in which a number of questions were asked about the wording used in the introduction, instruction and questions of the DDNO survey, the length of the sentences and the structure of the survey. They were also asked about the time investment and its acceptability. All questions to test readability and usability were based on the methodology of prior research (de Man-van Ginkel et al., 2012; Dikken et al., 2015). To assess the face validity, the nurses and nursing students were asked whether they thought the test was appropriate to measure the experiences of using outcomes in district nursing care ('Do you think the DDNO survey is suitable for measuring the experiences or expectations of using outcomes in district nursing care?') using a 10-point Likert scale (1 = not appropriate at all; 10 = completely appropriate). A mean score of 5.5 or higher was deemed acceptable.

The eight participants who assessed the survey were generally positive. Based on their comments, minor changes were made regarding the DDNO instructions ($n = 6$), punctuation ($n = 1$), answer options ($n = 4$), unclear terminology ($n = 1$), sentence structure ($n = 1$) and layout ($n = 2$). The face validity was deemed acceptable, with a mean score of 7.75 (range 6–10).

2.3.3 | Pilot testing

Before the nationwide distribution, the DDNO survey was pilot tested within one district nursing care organisation in the province of South Holland. The DDNO was distributed online via Qualtrics, an online survey platform (Qualtrics, 2021). It was sent to 92 nurses, of which 24 nurses (26.1%) opened the survey. Of these, six nurses (25%) finished the survey completely and one nurse partially. The remaining 17 nurses (70.8%) only completed the background information questions. Because data were collected anonymously, we were unable to identify the reasons for dropout. The DDNO survey was shortened and made more user-friendly to improve the response rate by removing irrelevant information in the instructions and changing the questions' order. Additionally, the readability of the survey was further enhanced by letting a Dutch language specialist examine and adjust it on wording level, sentence level and text level. This led to minor changes.

2.4 | Data collection

The DDNO survey was distributed nationwide using Qualtrics, an online survey platform. The DDNO survey was openly available for all district nurses working for various organisations in the Netherlands. Convenience sampling was used to approach nurses. To reach a large population of district nurses across the Netherlands, a link to the survey was published in the newsletter of the subdivision 'public health' of the Dutch Nurses' Association (V&VN) and spread via e-mail to the members of the National scientific collaboration for district nursing care (in Dutch: Wetenschappelijke Tafel Wijkverpleging), via the intranet of various large district nursing care organisations, via the researchers' network and social media (Twitter and LinkedIn). Data were collected between 1 July and 19 October 2020.

2.5 | Data analysis

Descriptive statistics (absolute numbers and percentages) were calculated for all quantitative data. A median and interquartile range were calculated to describe non-normal distributed baseline characteristics. Following prior research (Lugtenberg et al., 2011; Peters et al., 2003), a mean and standard deviation were calculated to represent the 16 statements concerning potential barriers and facilitators. All quantitative data were analysed using IBM SPSS Statistic version 27. Because of the explorative nature of his study, no sample size calculations or significance tests were conducted. Instead, the baseline characteristics (age and sex) were compared to available data on the district nursing workforce (Grijpstra et al., 2020). The open-ended questions, in which the nurses filled in the outcome measures they use to measure the nurse-sensitive outcomes, were summarised and arranged into subcategories. To decide whether the outcome measures mentioned by the nurses were validated instruments, the literature was searched using the name of the assessment tool or its abbreviation and search terms as 'validation'. All open-ended questions were analysed following a thematic analysis (Braun & Clarke, 2012).

2.6 | Ethics statement

Participation in the study was voluntary. The survey's introduction provided information on the study's reason, goals and content. Because the nurses were not subjected to any actions, no ethical approval was needed under the Dutch law on medical research (WMO). Consent to participate in this study was provided by the nurses by ticking a corresponding box which was included in the survey. The data were stored and analysed per the Dutch personal data protection act (AVG). Any personal details were removed from the survey data to assure anonymity of the data.

3 | RESULTS

3.1 | Baseline characteristics

In total, 302 district nurses responded to the online survey, which is 1% of the total population of district nurses (Table 1) (Grijpstra et al., 2020). Of the 302 district nurses who started the DDNO survey, 170 (56.3%) had stopped the survey after finishing the baseline characteristics. The remaining 132 nurses continued the survey; only the results of these nurses were included in this study. The nurses who continued the questionnaire were mostly district nurses (59.8%) and female (92.4%). The background characteristics of those continuing the survey concerning sex and age were similar to the available population characteristics (Grijpstra et al., 2020). The years of experience in district nursing care ranged from 1 to 44, with a median of 10 years. With between 1 and 29 nurses per province, all 12 provinces of the Netherlands were represented.

3.2 | Nurse-sensitive outcomes measured in district nursing care

The nurse-sensitive outcomes that were measured most frequently (≥70%) were pain, satisfaction with delivered district nursing care, unintentional weight loss, informal caregiver burden, falls and delirium (Table 2). The least often measured outcomes (≤30%) were emergency department or service use, unplanned hospital (re)admission, fatigue, decision-making and meaningful life. Of the nurses who answered positive about measuring the outcome, 53–77% responded about how they measured it.

The nurse-sensitive outcomes were measured using validated instruments (310 times in 19 outcomes) or unvalidated outcome measures (349 times in 23 outcomes) (Table 3). Other methods to measure and report outcomes that were mentioned were observations of the client or conversation and collaboration with the client, colleagues or other professionals (112 times in all 26 outcomes), intake and evaluation assessments (127 times in 24 outcomes), through care-planning and reporting in the electronic health record (121 times in 24 outcomes), and by using a classification system,

TABLE 1 Baseline characteristics of nurses (self-reported)

	Total, N = 132
Age	
Median (IQR)	50 (23)
Min–max	21–67
Missing, n (%)	2 (1.5)
Gender	
Male, n (%)	8 (6.1)
Female, n (%)	122 (92.4)
Other, n (%)	1 (0.8)
Missing, n (%)	1 (0.8)
Years of experience working in district nursing care	
Median (IQR)	10 (14.25)
Min–max	1–44
Missing, n (%)	2 (1.5)
Education	
In-service education[a], n (%)	8 (6.1)
Secondary vocational education, n (%)	14 (10.6)
Bachelor at university of applied sciences, n (%)	88 (66.7)
Bachelor at university, n (%)	9 (6.8)
Master at university of applied sciences or university, n (%)	12 (9.1)
Missing, n (%)	1 (0.8)
Job title in district nursing care	
Vocationally trained registered district nurse (EQF lv 4), n (%)	27 (20.5)
Bachelor prepared registered district nurse (EQF lv 5/6), n (%)	79 (59.8)
Specialised nurse (EQF lv 6), n (%)	6 (4.5)
Advanced nurse practitioner (EQF lv 7), n (%)	0 (0)
Other (e.g. nursing student, teacher, researcher), n (%)	19 (14.4)
Missing, n (%)	1 (0.8)
Contract size (in hours per week) working in district nursing care	
Median (IQR)	25 (12)
Min–max	1–40
Missing, n (%)	2 (1.5)
Other job position, in addition to working in district nursing care	
No, n (%)	71 (53.8)
Yes, teaching, n (%)	6 (4.5)
Yes, research, n (%)	2 (1.5)
Yes, policy, quality and/or safety, n (%)	18 (13.6)
Other (e.g. extra tasks or roles within the organisation, working as a nurse in a different setting, functions other than working as a nurse), n (%)	35 (26.5)
Missing, n (%)	1 (0.8)

Abbreviations: EQFm European qualification framework.

[a]In-service education was the education for nurses in the Netherlands until 1997, in which people were trained as nurses within one practice (e.g. hospital, nursing home). Since 1972, this education has been replaced by secondary vocational and bachelor education (Van Kraaij et al., 2022).

TABLE 2 An overview of nurse-sensitive patient outcomes currently measured in district nursing care; total N = 132 (self-reported)

	Outcome is not measured, n (%)	Outcome is measured, n (%)	Description provided how outcome is measured, n (%)[a]	Missing, n (%)
Functional health				
Activities of daily living	66 (50)	62 (47.0)	46 (74.2)	4 (3)
Frailty	55 (41.7)	71 (53.8)	50 (70.4)	6 (4.5)
Mobility	65 (49.2)	61 (46.2)	44 (72.1)	6 (4.5)
Physiological health, including neurocognitive health				
Decision-making	86 (65.2)	35 (26.5)	27 (77.1)	11 (8.3)
Decubitus	35 (26.5)	91 (68.9)	66 (72.5)	6 (4.5)
Dehydration	73 (55.3)	51 (38.6)	35 (68.6)	8 (6.1)
Delirium	29 (22)	95 (72)	70 (73.7)	8 (6.1)
Fatigue	98 (74.2)	27 (20.5)	19 (70.4)	7 (5.3)
Pain	10 (7.6)	117 (88.6)	88 (75.2)	5 (3.8)
Unintentional weight loss	17 (12.9)	106 (80.3)	81 (76.4)	9 (6.8)
Psychosocial health				
Anxiety	76 (57.6)	48 (36.4)	33 (68.8)	8 (6.1)
Participation in social activities	71 (53.8)	50 (37.9)	34 (68.0)	11 (8.3)
Autonomy	78 (59.1)	43 (32.6)	33 (76.7)	11 (8.3)
Compliance	71 (53.8)	51 (38.6)	36 (70.6)	10 (7.6)
Falls	29 (22)	98 (74.2)	73 (74.5)	5 (3.8)
Perceived health				
Quality of life	78 (59.1)	44 (33.3)	28 (63.6)	10 (7.6)
Satisfaction with delivered care	10 (7.6)	112 (84.8)	85 (75.9)	10 (7.6)
Meaningful life	80 (60.6)	39 (29.5)	28 (71.8)	13 (9.8)
Family health				
Informal caregiver burden	25 (18.9)	98 (74.2)	71 (72.4)	9 (6.8)
Death				
Preferred place of death	71 (53.8)	53 (40.2)	35 (66.0)	8 (6.1)
Quality of dying and death	74 (56.1)	49 (37.1)	32 (65.3)	9 (6.8)
Healthcare consumption				
Emergency department or service use	104 (78.8)	15 (11.4)	8 (53.3)	13 (9.8)
Unplanned hospital admission	102 (77.3)	18 (13.6)	10 (55.6)	12 (9.1)
Unplanned hospital readmission	102 (77.3)	18 (13.6)	11 (61.1)	12 (9.1)
Duration of district nursing care	56 (42.4)	66 (50)	48 (72.7)	10 (7.6)
Intensity of district nursing care	49 (37.1)	71 (53.8)	53 (74.6)	12 (9.1)

[a]Percentage is calculated from the group of people who measure the outcome.

information system or the internet (178 times in all 26 outcomes) (Table S1). In these other methods, questionnaires or other measures could be used, but the nurse did not specify these. The nurses gave unclear answers 41 times related to 18 outcomes (e.g. the nurse did not answer the question of how the outcomes were measured but instead described when the outcomes were measured, stated that the outcome was not applicable, or asked questions and/or additional comments related to the outcome).

The following validated instruments were used most often to measure the outcomes: Delirium Observation Scale (DOS) to measure delirium (n = 53), Numeric Rating Scale (NRS) or Visual Analogue Scale (VAS)

to measure pain (n = 45), Short Nutritional Assessment Questionnaire (SNAQ[65]) to measure weight loss (n = 39), the Caregiver Strain Index (CSI) (n = 26) and the self-perceived burden from informal care questionnaire (in Dutch: Ervaren Druk door Informele Zorg; EDIZ) (n = 14) to measure informal caregiver burden, Groninger Frailty Index (GFI) to measure frailty (n = 21), the Dutch Self-Reliance Matrix (SRM) (n = 16) or the Utrecht Symptom Diary (USD) (n = 10) to measure multiple outcomes simultaneously, and the Braden scale to measure decubitus (n = 12) (Table 3). Validated instruments were often used to measure outcomes in the domains of functional health, physiological health, including neurocognitive health, and family health.

TABLE 3 An overview of validated and unvalidated outcome measures in district nursing care. Total N = 132 (self-reported)

	Validated instruments	Unvalidated or unspecified outcome measures	Other[a]
Functional health			
Activities of daily living; *n*	9; SRM = 3; Barthel =2; GFI = 2; Katz = 1; GARS = 1	9; NOC = 1; TRAZAG = 1; Risk analysis = 1; Other = 6	32
Frailty; *n*	28; GFI = 21; TFI = 5; SRM = 2	11; Risk analysis = 4; TRAZAG = 3; NOC = 1; Other = 3	14
Mobility; *n*	7; GFI = 4; Barthel = 1; GARS = 1; SRM = 1	17; Risk analysis = 5; NOC = 1; Other = 11	22
Physiological health, including neurocognitive health			
Decision-making; *n*	1; USD = 1	0	26
Decubitus; *n*	14; Bradenscale = 12; GFI = 1; Time model = 1	31; Risk analysis = 11; Unspecified = 3; Other = 17	25
Dehydration; *n*	1; USD = 1	23; Water intake list = 22; Skinfold measure = 1	15
Delirium; *n*	54; DOS = 53; DASS = 1	10; Risk analysis = 2; NOC = 1; Unspecified = 1; Other = 6	8
Fatigue; *n*	3; USD = 3;	4; NOC = 1; TRAZAG = 1; Other = 2	13
Pain; *n*	52; NRS/VAS = 45; PACSLAC = 5; REPOS = 2;	35; Non-specified pain score = 27; Risk analysis = 3; NOC = 1; Other = 4	11
Unintentional weight loss; *n*	40; SNAQ(65) = 39; GFI = 1	41; Weighting scale/list/curve = 20; Unspecified = 10; Risk analysis = 9; Intake list = 2	12
Psychosocial health			
Anxiety; *n*	9; USD = 3; 4DSQ = 2; DASS = 1; GDS = 1; SCEGS = 1; GFI = 1	13; Risk analysis = 6; Unspecified = 6; NOC = 1	16
Participation in social activities; *n*	5; SRM = 3; ACIS = 1; GFI = 1	6; Risk analysis = 1; Other = 5	27
Autonomy; *n*	6; SRM = 6;	3; Other = 3	25
Compliance; *n*	0	19; BEM = 12; Risk analysis = 2; NOC = 1; Other = 4	22
Falls; *n*	2; GFI = 2	58; MIC/VIM = 29; Risk analysis = 23; Unspecified = 5; NOC = 1	24
Perceived health			
Quality of life; *n*	5; SRM = 1; GFI = 1; EQ5D = 1; USD = 1; PREM = 1	7; Positive health = 3; Risk analysis = 1; Other = 3	20
Satisfaction with delivered care; *n*	27; PREM = 27	30; Unspecified = 26; Kiwa questionnaire = 2; CQI = 2	37
Meaningful life; *n*	1; GDS-15 = 1	5; Positive health = 2; Other = 3	22
Family health			
Informal caregiver burden; *n*	45; CSI = 26; EDIZ = 14; SRB = 4; GFI = 1	10; Unspecified = 9; Risk analysis = 1	23
Death			
Preferred place of death; *n*	0	6; Care path = 2; Other = 4	30
Quality of dying and death; *n*	1; USD = 1	7; Care path = 5; Other = 2	28
Healthcare consumption			
Emergency department or service use; *n*	0	1	7
Unplanned hospital admission; *n*	0	0	10
Unplanned hospital readmission; *n*	0	0	11
Duration of district nursing care; *n*	0	2	47
Intensity of district nursing care; *n*	0	1	53

Abbreviations: 4DSQ, four-dimensional symptom questionnaire; ACIS, assessment of communication and interaction skills; Barthel, barthel index; BEM, Beoordeling Eigen beheer Medicatie (assessment of self-management in medication); CQI, consumer quality index; CSI, caregiver strain index; DASS, depression anxiety stress scale; DOS, delirium observation screening scale; EDIZ, Ervaren Druk door Informele Zorg (self-perceived burden from informal care); EQ5D, European Quality of life index 5D; GARS, *Groningen Activity Restriction Scale*; GDS, Geriatric Depression Scale; GFI, groninger frailty index; Katz, Katz index of independence in (instrumental) activities of daily living; MIC, Meldingen Incidenten Cliënten (reports of incidents to clients questionnaire); NOC, nursing outcome classification; NRS, numeric rating scale; PACSLAC, pain assessment checklist for seniors with limited ability to communicate; PREM, patient reported experience measure; REPOS, Rotterdam elderly pain observation scale; SCEGS, somatisch, cognitief, emotioneel, gedragsmatig, sociaal (somatic, cognitive, emotional, behaviour, social); SNAQ, short nutritional assessment questionnaire; SRB, self-rated burden; SRM, self-reliance matrix; TFI, tilburg frailty index; TRAZAG, TRAnsmurale Zorg Assessment Geriatrie (Transmural Care Assessment Geriatrics); USD, Utrecht symptom diary; VAS, visual analogue scale; VIM, veilig incidenten melden (report incidents safely).

[a]A complete overview of the other methods used to measure outcomes can be found in Table S1.

The most often used unvalidated instruments were the reports of incidents to clients questionnaire (in Dutch: Meldingen Incidenten Cliënten, MIC) (n = 29) to measure falls or other incidents, the Dutch Patient-Reported Experience Measure (PREM) to measure satisfaction with delivered care (n = 26), assessment of self-management in medication (in Dutch: Beoordeling Eigen beheer Medicatie, BEM) to measure compliance in medication use (n = 12).

Outcomes were measured at multiple moments during the care delivery: at the start of the care delivery (n = 103), when care is evaluated during care delivery (n = 114), at the end of the care delivery (n = 95), and whenever it is needed during care delivery at no fixed moment (n = 111) (Table S2). The outcomes were reported in various ways: in the care plan (n = 93), in the daily care reports (n = 90) or elsewhere in the electronic care report (n = 109).

3.3 | Learning from outcomes in district nursing care

To contribute to learning and development in district nursing care, the outcomes measured were always fed back (at fixed moments) (n = 35, 26.5%) or partly fed back (only when needed) (n = 62, 47%) (Table S3). In 16.7%, outcomes measured were not fed back to the team. Outcomes were most often fed back during team meetings (n = 90), via an online dashboard (n = 32) or by e-mail (n = 24). The outcomes were fed back in various ways: orally (n = 59), via text (n = 55), via graphs, figures or diagrams (n = 49) or tables with numbers (n = 36).

3.4 | Barriers and facilitators for using nurse-sensitive outcomes in district nursing care

The statements that have the highest scores were 'using outcomes is part of my work as a district nurse', 'I am confident that I am able to use outcomes', 'I have a positive attitude towards using outcomes', 'I find it important to use outcomes' and 'as a district nurse, it is my responsibility to use outcomes' (Table 4). The statements with the lowest scores were: 'I am trained to use outcomes correctly', 'there were good networks between the parties involved to support using outcomes', and 'using outcomes is facilitated within my team and/or organisation'.

The results of the four open-ended questions focusing on barriers and facilitators of measuring and learning from nurse-sensitive outcomes revealed various influencing factors, such as motivation, knowledge and skills, work pressure, supporting information systems and the support by health insurers and organisations.

4 | DISCUSSION

This study is the first, to the best of the authors' knowledge, which explored how the 26 relevant nurse-sensitive outcomes are currently used in daily district nursing practice and what barriers and facilitators are experienced in using outcomes in Dutch district nursing care. Different instruments or questionnaires are available and used in district nursing care as outcome measures. Of the 26 previously identified nurse-sensitive outcomes for district nursing care, the most measured outcomes using validated outcome measures were pain using the NRS or VAS, delirium using DOS, weight loss using the SNAQ/SNAQ-65 and caregiver burden using the CSI or Dutch EDIZ. Falls and satisfaction are other often measured outcomes using unvalidated outcome measures. For the other outcomes, there is a high variation in outcome measures used. The outcomes are measured multiple times and reported in various ways. The outcomes are most often partly fed back to the district nursing teams (i.e. only when needed). Regarding the facilitators of using outcomes in daily district nursing care practice, most nurses see using outcomes as their responsibility and an important part of their work, are confident that they can use outcomes and have a positive attitude towards outcomes. Barriers are the lack of training to using outcomes, the lack of networks between parties involved to support using outcomes and the lack of facilitation within the team and/or organisation.

The results of our study show that different instruments or questionnaires are available and used in district nursing care as outcome measures. Often, multiple outcome measures were reported to measure the same outcome: Four or more instruments were used to measure ADL, frailty, mobility, pain, anxiety, quality of life and informal caregiver burden. A systematic review focusing on evidence-based interventions and outcomes in district nursing care showed similar variation in outcome measures to measure nurse-sensitive outcomes in intervention trials in district nursing care (Veldhuizen, Hafsteinsdóttir, et al., 2021). The availability of health-related questionnaires could explain the variation: In the Netherlands, 446 validated Dutch questionnaires are available in the healthcare sector. There are no national agreements about which instrument to use, and organisations or nurses are free to decide what outcome measure to use. This could potentially explain the variation. Next to the variation in nurse-sensitive outcome measures, there is variation in how outcomes are fed back to the team to learn from. This identified variation in the use of outcome measures and how to learn from them can be explained by the organisation of district nursing practice in the Netherlands, which is fragmented over more than 3070 different care organisations ('Factsheet Wijkverpleging', 2020). At the time of this study, every organisation can decide what they measure, how they measure and what information is fed back to the professionals. They often use different electronic health records and information systems to record and view outcome measures. The lack of uniformity in outcome measurements has been seen in other healthcare-related systematic reviews as well (Buurman et al., 2011; Fattah et al., 2015; Tsichlaki et al., 2018; Wallace et al., 2014). Achieving a standardised collection of outcome measurements in practice is challenging (Duncan & Murray, 2012). Internationally, there is a call to action to standardise outcome measurements, as this standardisation allows care providers to collect and share data efficiently, providing comparisons to accelerate care improvements (Porter

TABLE 4 Barriers and facilitators for using outcomes in district nursing care (n = 132)

Statements	Answers, in percentage[a]	Mean score (SD)[b]	Missing
Knowledge			
I am familiar with using outcomes		3.7 (0.9)	17
I would like to learn more about using outcomes before I decide to implement it		3.7 (1.1)	17
Skills			
I am trained to use outcomes correctly		2.8 (1.2)	17
I have the skills to use outcomes		3.4 (1.1)	18
Attitude			
I have a positive attitude towards using outcomes		4.0 (0.9)	18
I find it important to use outcomes		4.0 (1.0)	17
Social/professional role and identify			
Using outcomes is a part of my work as a district nurse		4.2 (0.9)	17
As a district nurse, it is my responsibility to use outcomes		4.0 (0.9)	17
Beliefs about capabilities			
I am confident that I am able to use outcomes		4.1 (0.9)	18
Beliefs about consequences			
There is a risk that the use of outcomes will be abused in the funding of district nursing care		3.5 (1.0)	17
Intentions			
I will definitely use outcomes in 2020		3.6 (0.9)	17
Work environment			
Using outcomes is facilitated within my team and/or organisation		3.2 (1.1)	17

TABLE 4 (Continued)

Statements	Answers, in percentage[a]	Mean score (SD)[b]	Missing
Patient			
Using outcomes helps me to provide better care to clients in community nursing		3.8 (1.0)	18
Resources			
There are good networks between the parties involved to support using outcomes.		2.9 (0.9)	17
Using outcomes is too time-consuming		3.5 (1.1)	17
The system (e.g. EHR) in which I work makes using outcomes convenient for use.		3.4 (1.1)	18

Abbreviation: EHR, electronic health record.

[a] ▢ = completely disagree, ▢ = (partly) disagree, ▨ = do not agree nor disagree, ▨ = (partly) agree, ■ = completely agree.

[b] Total range: 1 point (completely disagree) to 5 points (completely agree).

et al., 2016). For research, standardised outcome measurements are a necessity in clinical trials and systematic reviews to make adequate comparisons (Clarke, 2007).

The nurses included in this study often have a positive attitude regarding using nurse-sensitive outcomes. This is in line with previous research, which identified using outcomes as one of the top three most desired themes to further develop within district nursing care in the Netherlands (Bleijenberg et al., 2019). Our study revealed that most of the participating nurses are willing to use outcomes in their work. Still, they are insufficiently prepared to do so and insufficiently supported by the organisation and other parties involved. Two systematic reviews focusing on (allied health) professionals' experiences on outcome measures in healthcare also identified the lack of knowledge, education and support as important barriers (Boyce et al., 2014; Duncan & Murray, 2012). Both systematic reviews focused on a mixture of healthcare professionals in different settings, which did not include nurses or district nursing care. While we identified current barriers and facilitators towards using outcomes in district nursing care, it remains unclear what is needed to prepare and support nurses to follow the steps of the learning healthcare system in their daily practice. Further exploration of the identified influencing factors following the open questions is required. The answers provided by the nurses were very brief and not detailed enough, causing an insufficient understanding of the barriers and facilitators. To gain a better understanding of the barriers and facilitators, a different research method with qualitative design is needed, for example, by using in-depth (group) interviews with nurses.

4.1 | Strengths and limitations

To our knowledge, this is the first study exploring the current practice regarding using nurse-sensitive outcomes in Dutch district nursing care. The participating nurses provided detailed information. Another strength of this study was that the survey was developed thoroughly; the DDNO survey was based on previous research regarding nurse-sensitive outcomes in district nursing care, used validated instruments to identify barriers and facilitators and was developed with the help of district nurses, nursing students and Dutch specialists, and pilot tested in a district nursing care organisation. While the response number is in line with other surveys distributed among district nurses and nursing assistants (Maurits et al., 2016, 2017), the low response rate and high dropout rate are significant limitations. The 302 district nurses who started the survey represent 1% of the total Dutch population of nurses. While the DDNO survey was thoroughly developed and tested, the dropout rate was high. A possible explanation for this could be the length of the DDNO, which was relatively long, in combination with little time available in district nursing care due to COVID-19 pandemic and pressing workforce shortages (Jarrín et al., 2019; Maybin et al., 2016; Veldhuizen, Zwakhalen, et al., 2021). It may be helpful for the next study with a lengthy survey to use (financial) incentives for participation, which effectively improves the response rate (Deutskens et al., 2004).

Another solution is splitting the survey into two separate surveys. The background characteristics of those continuing the survey concerning sex and age are similar to the available population characteristics (Grijpstra et al., 2020) and comparable to a recent survey including 1007 district nurses (van den Bulck et al., 2019). In general, selection bias might be an issue, in which only those interested in outcomes filled in the questionnaire. Furthermore, because the study was self-reported and anonymous, there was unfortunately no space to ask further questions about their responses. The overlap and sometimes unclear reactions in the open questions of the survey may give an incomplete overview of the outcome measures. It may be relevant to view the available registered data in, for example, care plans and see what is recorded in terms of outcome measurements.

4.2 | Recommendations

The results of this study underline the importance of measuring nurse-sensitive patient outcomes in district nursing care. Using outcomes is a crucial building block in a learning healthcare system, which focuses on collecting data to generate knowledge and applying it to improve practice (Foley & Fairmichael, 2015). Outcomes are also essential to the nursing process to assess and evaluate the nursing care provided (Herdman et al., 2017; Toney-Butler & Thayer, 2022). However, this study identified important barriers and variations in how the outcomes are used to learn and improve. This underlines that further investments to prepare and support nurses are highly needed. First, it is necessary to create more uniformity nationwide in the measuring and reporting outcomes to make comparisons between and within organisations possible (Porter et al., 2016). In this, attention to a feasible collection of relevant data is needed (Jones, 2016). Next to measuring new data, it should be considered to use data already available in district nursing care. A lot of data are available on long-term care in the Netherlands, but it is insufficiently used (Aarts et al., 2020). Because of the high proportion of unvalidated outcome measures, it is recommended to develop and implement validated outcome measures. The need for (inter)national uniformity in measuring outcomes, using existing data and using validated outcome measures is in line with the key recommendations by the Organisation for Economic Co-operation and Development (OECD) (Berwick et al., 2017). Looking at important barriers to use outcomes, the results of our study showed a lack of organisational and national networks and that the nurses are insufficiently facilitated to use nurse-sensitive outcomes in district nursing care. Therefore, it is needed to support nurses and organisations in using these outcomes. Because it remains unclear what is specifically needed to prepare and support nurses to follow the steps of the learning healthcare system in their daily practice, additional research is required to gain a better understanding of the factors influencing the implementation of the learning healthcare system and to identify what nurses need towards using nurse-sensitive outcomes in district nursing care. Subsequently, implementing the steps of the learning healthcare system to facilitate greater use and reporting of outcome measures are highly recommended. To support nurses and organisations, (inter)

national guidelines regarding the use of outcomes in district nursing care are desirable to achieve a greater uniformity on an (inter)national level. These insights could potentially be relevant on an international level as well, as this study is the first to the best of the authors' knowledge to focus on using outcomes in district nursing care.

5 | CONCLUSION

This study is the first that identified current Dutch practice regarding the use of nurse-sensitive outcomes in district nursing care. Most participating nurses have a positive attitude towards using outcomes, but there is a lack of facilitation to support nurses in doing so. The high variation in the use of nurse-sensitive outcomes shows a lack of uniformity. Therefore, it is recommended to create more uniformity by developing guidelines regarding the use of nurse-sensitive outcomes in district nursing care. Insight into how nurses should be supported to use the outcomes within all steps of the learning healthcare system is still lacking. Further research on the barriers, facilitators and needs of nurses and nurse assistants in using nurse-sensitive outcomes in district nursing care is needed to create practical guidelines and (inter)national policy.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.