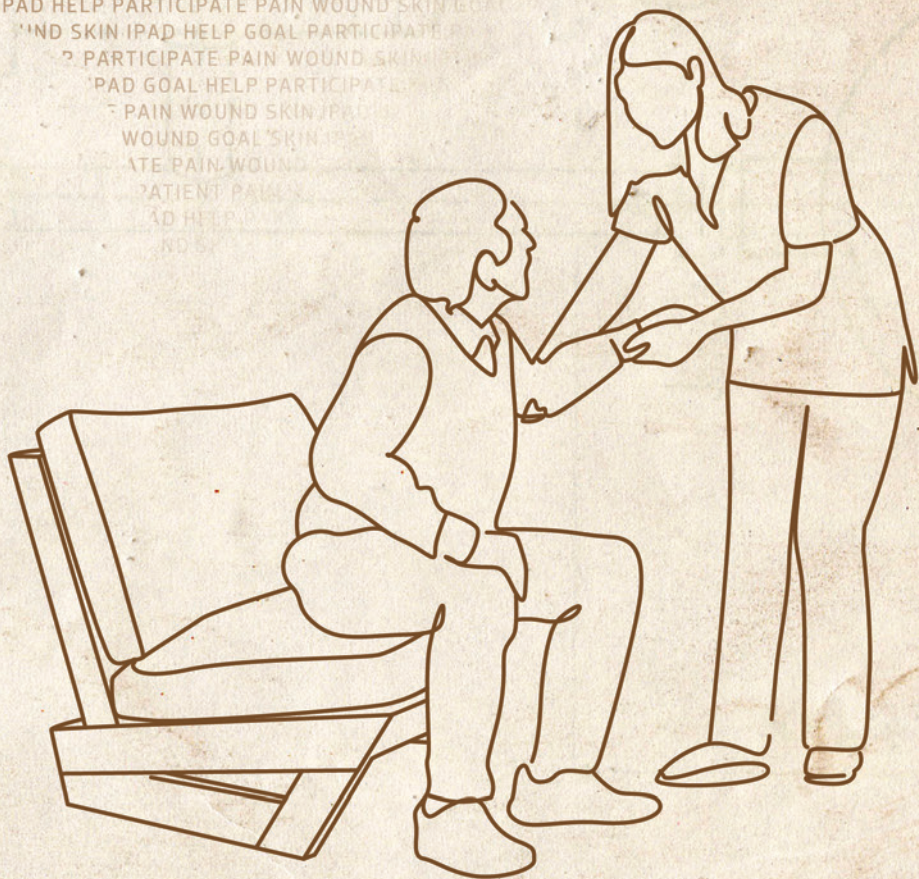# NOTES ON NURSING DOCUMENTATION

Quality criteria and views of nurses and patients

Kim de Groot

Notes on Nursing Documentation

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VRIJE UNIVERSITEIT

NOTES ON NURSING DOCUMENTATION

Quality criteria and views of nurses and patients

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door

Kim de Groot

geboren te Mariekerke

Contents

CHAPTER 1

General introduction

The essence of nursing documentation

The importance of documenting information about nursing care was demonstrated more than one and a half centuries ago by the renowned nursing leader and researcher Florence Nightingale. Her famous work 'Notes on Nursing: What It Is and What It Is Not', published in 1859, is largely based on the data she recorded about patients' conditions and the provision of nursing care during the Crimean War [1]. Since then, various nursing leaders have endorsed the importance of recording the conditions of individual patients and the care provided by nursing staff, i.e. registered nurses and certified nursing assistants. Even though various definitions of nursing documentation exist, a common element is that nursing documentation should be an accurate reflection of the entire process of nursing care for individual patients [2-4].

Nursing documentation is not an aim in itself; it is a means for nursing staff to be able to provide good care for individual patients. It is an important source of information about patients' needs, which can be used by nursing staff to continuously reflect on their choices and the potential effects of their care interventions [3-6]. In this regard, good documentation supports nursing staff's decision-making about care interventions, which has the potential to improve the quality of care and consequently patient outcomes as well [7]. Nursing documentation also impacts patient safety [8]. For instance, adequate documentation of patient characteristics and the care provided can reduce the risks of adverse events, such as falls, injuries and infections, that might result in disability, death or prolonged hospital stays [9-12]. In addition, nursing documentation is essential for effective communication between nursing professionals and other care professionals [5, 9]. All in all, nursing documentation is vital for the patient's safety and the quality of nursing care.

The quality of nursing documentation

Given the evident importance of nursing documentation, it is of the utmost importance that due attention should be paid to the quality of this documentation [2, 13]. Nursing documentation needs to contain complete, readable and adequate information on individual patients. If this is not the case, this might lead to patients not receiving the care they need and to adverse events [12, 14].

There is international consensus that in order to achieve high-quality nursing documentation, the documentation should reflect the nursing process [2, 5, 6]. Since the 1970s and 1980s, international organizations such as the World Health Organization [15], as well as nursing experts (e.g. Koene, Grypdonck [16]; Gordon [17]; Benner [18]) have recommended following the nursing process in daily nursing practice and structuring nursing documentation around this process. Since then the nursing process has broadly been accepted as a foundation for nursing care that enhances critical thinking, clinical judgment and clinical reasoning for care [2, 6, 19]. The circular nursing process consists of

five phases: assessment; nursing diagnoses; planning; implementation; and evaluation plus handovers (if applicable). The process honours the holistic nature of nursing care and emphasizes the need to look at the context of individual patients.

Despite the international consensus on the importance of the nursing process, there are indications that this process is not always reflected in nursing documentation [20-23]. In line with that, several studies indicated that the quality of nursing documentation is often sub-optimal [24-27]. Inadequacies in the documentation were found in multiple phases of the nursing process: the documentation of the care needs assessment [28], nursing diagnoses [29], the planning of nursing interventions [30], and the implementation or evaluation of these interventions [13, 29].

These studies point to a need for improvement in nursing documentation. However to date, we did not have a clear picture of what quality criteria have to be fulfilled to achieve high-quality nursing documentation. Since nursing staff are increasingly documenting their work in electronic health records, we were particularly interested in quality criteria for electronic nursing documentation, which is one of the subjects addressed in this thesis.

Electronic nursing documentation

In the Western world, nursing documentation has switched in the last two decades from mainly handwritten documentation to mainly electronic documentation. This trend has been seen in the Netherlands too. Back in 2014, only about half (49%) of Dutch nursing staff reported mainly or exclusively using electronic health records for documentation. Clear differences between the care settings were visible, since at that time 79% of nurses in hospitals worked with electronic health records and only 31% of nursing staff in home care or nursing homes [31]. Five years later, in 2019, almost all (99%) of Dutch nursing staff reported using electronic health records for documentation. The few nursing staff who were still using paper-based records mainly worked in home care or nursing homes [22].

Nursing experts and researchers have suggested that the rise of electronic health records might improve the quality of nursing documentation [32-34]. Several studies also indicate an enhanced quality of care and greater patient safety following the implementation of electronic health records [35, 36]. In addition, positive effects of electronic documentation for nursing staff themselves are anticipated, e.g. rapid access to information, improved efficiency, reduction in time spent on documentation and more efficient exchange of care-related information between care professionals and settings [37-39]. Lastly, electronic nursing documentation could provide opportunities for re-use of the documented information, for example for nursing research and quality assurance purposes [40, 41].

Despite the anticipated benefits of using electronic health records, there are also signals that these records might not live up to the expectations [42, 43]. There are studies which indicate that the quality of nursing documentation did not improve or even got worse with

the introduction of electronic health records [26, 44]. Specifically in the Dutch context, there are also signals that the current electronic health records are not necessarily associated with high-quality nursing documentation. For instance, an audit study showed that nursing diagnoses were not documented in a standardized manner in the first generation of electronic health records used in hospitals in the Netherlands [23]. Furthermore, qualitative interviews with community nurses and certified nursing assistants working in Dutch home care pointed to frequently inaccurate and incomplete documentation of the evaluation of care [45].

Furthermore, the use of electronic health records might also complicate documentation for nursing staff in some regards. For example, nursing staff can experience difficulties with entering the information into the electronic health records [14]. In addition, the setup for electronic health records might not match how they think and work, resulting in nursing staff relying on paper notes or verbal handovers instead of the electronic health records [46, 47]. Previous studies also indicated that the time that nursing staff spent on documentation might increase with the implementation of electronic health records, e.g. because documentation becomes fragmented when nursing staff continue to use personalized scraps of paper in addition to the electronic health records [48, 49]. In line with that finding, in the early stages of their usage Dutch nursing staff expected that electronic health records would increase their documentation tasks and workload [50]. However, it was not known to date how nursing staff have perceived the usage of electronic health records in later stages. This is another one of the issues addressed in this thesis.

Documentation about organizational aspects

In addition to the nursing documentation about the care for individual patients (also called 'clinical documentation'), nurses also use electronic systems to document organizational aspects, such as the hours worked, data for the scheduling of personnel and accountability data for the Health Inspectorate or for healthcare insurers. There are indications that nurses often perceive documentation activities rather negatively, particularly when the documentation is not directly related to individual patient care [51]. There are also indications that the amount of time spent on documentation of organizational aspects in particular has increased [52]. As a result, organizational documentation might be particularly associated with a high workload for nurses.

Reducing the documentation burden and workload of nurses is a key policy issue at present, for instance of the Dutch Ministry of Health, Welfare and Sports [53]. However, it was unclear so far whether the workload that nurses perceive is associated particularly with the documentation of organizational aspects or also with clinical documentation of the care for individual patients. Therefore, this is another issue that is addressed in this thesis.

Exchange of care-related information

As already said, a potential benefit of electronic nursing documentation concerns facilitating the exchange of care-related information between professionals and care settings [39]. Nursing staff provide care to individuals who often have to deal with various care settings, such as home care, general practitioner care, hospital care and mental health care. Exchange of care-related information is important to the continuity of care.

However, international and Dutch studies indicate that nursing staff often experience problems in the exchange of care-related information [54, 55]. Poor matches between the various electronic systems that nursing staff use can limit the ability to exchange information electronically [54]. In addition, the use of different professional vocabularies to describe nursing care for individual patients can also hinder the exchange of care-related information [56]. The use of an unambiguous professional language is not self-evident; a wide variety of terminologies are used in nursing documentation, especially across settings [57]. These terminologies can be self-developed within an organization or setting, but can also be derived from internationally standardized terminologies, e.g. the Omaha System, NANDA-I or the International Classification for Nursing Practice [58]. In the specific Dutch context, the standardized terminology Omaha System is mostly used by nursing staff working in home care [57]. In contrast, nurses in hospitals and mental health care hardly use the Omaha System at all; Gordon's Functional Health Patterns is most common in those settings [57].

Standardized terminologies and their challenges and benefits for nursing care and nursing documentation have been investigated in various studies, e.g. [41, 59, 60]. However, how the use of these terminologies is perceived by nursing staff was a rather unexplored area of research, in particular when comparing terminologies and care settings. To use standardized terminologies appropriately in nursing documentation, insights are needed into the perspectives and experiences of their users, i.e. nursing staff. That became another issue explored in this thesis.

Patient participation in nursing documentation

The transition to electronic nursing documentation has coincided with a transition in how the core of nursing care is considered. Traditionally, the emphasis was on caring for ill and care-dependant patients. However, in the last decade there has been a shift towards an emphasis on supporting patients in taking control over their own care and lives. This transition is reflected in various professional standards and codes for nursing staff, for example in the USA [61] and the UK [62]. In the Netherlands as well, the professional standard for registered nurses pays considerable attention to the need to give patients an active role in decision-making about their own care [63]. This standard states that registered nurses should organize nursing care with the aim of optimizing the daily functioning of

patients based on clinical reasoning and shared decision-making [63]. The emphasis in today's nursing care on encouraging patients to participate in decision-making about their own care implies that the patient, or a family caregiver who represents the patient, must have opportunities to participate in nursing documentation.

Patient participation in nursing documentation potentially has several benefits. Nursing researchers and experts state that when nursing documentation is completed in consultation with patients, documentation can better address patients' views and their personal wishes [3]. As a result, tailored care plans can be created and the accuracy of documentation might be enhanced [64]. Additionally, patient participation in documentation can also promote participation in other aspects of care, since patients are better able to express their care needs and preferences if nurses ask them what they think is important to document [65].

Dutch laws and regulations promote patient participation in documentation. According to the Medical Treatment Agreement Act (Dutch abbreviation: *WGBO*), patients in the Netherlands have the right to supplement, correct and delete information in health records [66]. Moreover, since July 2020 patients have had the right to access their health records electronically [67]. Taking account of these legal requirements, the new Dutch professional guideline on nursing documentation also states that nurses have to document information about individual patient care in consultation with the patient [68]. Furthermore, this guideline states that patients have the right to access their electronic health records and to supplement, correct and delete information in these records [68]. In some other Western countries too, e.g. the USA and the UK (Northern Ireland), professional guidelines on nursing documentation support patient participation and state that patients must have access to the documentation [69, 70].

Despite the anticipated benefits and the embedding in legislations and professional guidelines, patient participation in nursing documentation in practice is not a given. A focus group study with Dutch patients and family caregivers gave an impression that patients and family caregivers experience limited participation in nursing documentation; documentation often took place totally out of their sight [54]. The focus group study was followed by a nationwide survey among nursing staff in which they pointed to patients' limited access to health records in practice [54].

A possible way to enhance patients' access to electronic health records is the use of patient portals. Patient portals are defined as applications that allow patients, or their representatives, to electronically access the electronic health record that is managed by the care organization in question [71]. Both internationally and in the Netherlands, the use of patient portals has increased over the last years [71, 72].

In recent years another application has been developed that might put patients more in charge of their own health information, namely the personal health environment (in Dutch: *persoonlijke gezondheidsomgeving*). Personal health environments have been defined as a set of computer-based tools that allow people to manage their lifelong health information, add personal health data and make appropriate parts of it available to those who need that information, e.g. care professionals or family [72, 73]. At present stakeholders, e.g. the Dutch government and the Dutch Patient Federation, are committed to making the potential benefits of personal health environments better known to patients. However, the evidence for an association between the use of personal health environments and better patient outcomes is still scarce [74], although some studies indicated that personal health environments can empower patients' self-direction and control over their health information [73]. In addition, as far as we know no research has been done yet regarding Dutch nurses' and/or patients' experiences with patient participation in electronic nursing documentation. Therefore, this thesis also provides more knowledge about this research topic.

The aim and structure of this thesis

The foregoing shows that there were several knowledge gaps regarding nursing documentation. Therefore, this thesis aims to give insight into the quality criteria and views of nurses and patients on nursing documentation. Specific attention is given to topics related to electronic nursing documentation.

Three key research questions are addressed, namely:

1. What quality criteria should nursing documentation meet?

This first question is addressed in **Chapter 2**, which presents a systematic review of systematic reviews on quality criteria for nursing documentation.

2. What are the perspectives and experiences of nursing staff regarding electronic nursing documentation?

Chapters 3 and **4** address this second research question. First, **Chapter 3** assesses whether nursing staff feel supported by the use of electronic health records and whether this is associated with the standardized terminologies that they use in these records. For this, a quantitative survey was conducted among nursing staff working in various settings. **Chapter 4** looks at whether community nurses' perceived workload is associated with either their clinical documentation or the documentation of organizational aspects. To this end, a mixed-methods study was performed consisting of a quantitative survey and qualitative focus groups.

3. What are the perspectives and experiences of nurses and home-care patients regarding patient participation in electronic nursing documentation?

This last research question is addressed in **Chapters 5**, **6** and **7**. **Chapter 5** examines community nurses' views and experiences regarding patient participation in their documentation in the electronic health records, based on a qualitative interview study. Supplementing this, **Chapter 6** describes a qualitative interview study among patients in home care looking at their needs and abilities for participation in the nursing documentation. Furthermore, **Chapter 7** describes a quantitative survey that concerns the attitudes of hospital nurses and community nurses regarding the use of patient portals and personal health environments.

Finally, this thesis ends with a summary and general discussion (**Chapter 8**), presenting reflections on the main findings, methodological considerations, and implications for practice, policy and future research.

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General introduction

CHAPTER 2

Quality criteria, instruments, and requirements for nursing documentation: a systematic review of systematic reviews

Abstract

Aim: To obtain an overview of existing evidence on quality criteria, instruments, and requirements for nursing documentation.

Design: Systematic review of systematic reviews.

Data sources: We systematically searched the databases PubMed and CINAHL for the period 2007–April 2017. We also performed additional searches.

Review methods: Two reviewers independently selected the reviews using a stepwise procedure, assessed the methodological quality of the selected reviews, and extracted the data using a predefined extraction format. We performed descriptive synthesis.

Results: Eleven systematic reviews were included. Several quality criteria were described referring to the importance of following the nursing process and using standardized nursing terminologies. In addition, some evidence-based instruments were described for assessing the quality of nursing documentation, such as the D-Catch. Furthermore, several requirements for formats and systems of electronic nursing documentation were found that refer to the importance of user-friendliness and development in consultation with nursing staff.

Conclusion: Aligning documentation with the nursing process, using standard terminologies, and using user-friendly formats and systems appear to be important for high-quality nursing documentation. The lack of evidence-based quality indicators presents a challenge in the pursuit of high-quality nursing documentation.

Impact:

- There is uncertainty in nursing practice about which criteria have to be met to achieve high-quality documentation.
- Aligning documentation with the nursing process, using standard terminologies, and using user-friendly formats and systems appear to be important.
- These findings can help nursing staff and care organizations enhance the quality of nursing documentation.

Keywords: nurse, nursing documentation, nursing process, nursing terminologies, systematic review

Introduction

High-quality nursing documentation is essential for the quality and continuity of nursing care [1-5]. Nursing documentation can enhance effective communication between healthcare professionals, which makes it vital for the patient's safety [5]. Therefore, the quality of nursing documentation is stressed internationally as being of the utmost importance [1, 6]. However, several studies show that the quality of documentation is moderate to poor [5, 7]. We have conducted a systematic review to obtain an overview of the existing evidence about nursing documentation, and thereby help nursing staff achieve high-quality nursing documentation.

Background

Inadequacies in nursing documentation are frequently found in the documentation of patients' care needs, interventions, and progress reports [8, 9]. These inadequacies are related to the fact that the nursing process is not always used as the point of departure in the documentation [6]. The nursing process is a relational, systematic, problem-solving method that facilitates nurses in problem-solving, critical thinking, and clinical decision-making (Paans et al., 2011). The main elements of the nursing process are: (a) assessment, (b) nursing diagnoses, (c) planning, (d) implementation, and (e) evaluation and—if applicable—handovers [10].

As the use of electronic health records steadily increases, the quality of nursing documentation requires more attention than ever [1]. A recent survey in the Netherlands showed that 90% of the hospital nursing staff and 62% of the nursing staff in long-term older people care already mainly or exclusively used electronic health records for documentation [11]. Other Dutch and international studies show that nurses often experience problems in the digital exchange of information about nursing care [12-14]. These problems are related to the structure of the digital formats and the poor match between the different digital systems that nurses use [12]. Another challenge is that nurses in different healthcare settings use a different professional vocabulary (i.e., words and terms) to describe elements of the nursing process and nursing care [13, 14].

Unambiguous language is an important prerequisite for exchanging electronic information without the risk of misinterpretation. By "unambiguous language" we mean in this regard that documented information is open to only one explanation [15-17]. Consequently, words and terms that healthcare professionals use can be linked with each other in the digital systems [18]. Unambiguous language can facilitate the exchange of electronic information throughout healthcare settings [15]. Besides, using unambiguous language also creates opportunities for the reuse of information in, for instance, nursing research or quality benchmarks.

However, the use of unambiguous language is not self-evident. In nursing practice, a wide variety of terminologies are being used. Various terminologies are being used across and in different care settings, as shown in a recent survey in the Netherlands [19]. These terminologies are often developed locally; others are standard terminologies. The American Nursing Association has recognized 12 standard nursing terminologies (e.g., the Omaha System, North American Nursing Diagnosis Association (NANDA), Nursing Interventions Classification, and Nursing Outcomes Classification) [20]. These terminologies—often known as classification systems—are intended as a guide for documentation and to make sure that the nursing process is documented systematically and unambiguously [21, 22]. However, the words and terms used in the standard terminologies are themselves different, which is particularly challenging in situations where nurses handover information to professionals in other settings using different standard terminologies [15].

So far, there is uncertainty in nursing practice about which criteria must be met to achieve high-quality documentation, particularly about the challenges described.

Review

Aim
The aim of this systematic review was to give insight into existing evidence from systematic reviews of nursing documentation. The review questions guiding this systematic review were:

1. What quality criteria should nursing documentation meet?
   More specifically:
   1a. What quality criteria or indicators apply for aligning the documentation with the nursing process?
   1b. What quality criteria or indicators apply for "unambiguous language"?
2. What instruments are available to give insight into the quality of nursing documentation?
3. What requirements apply for digital formats and electronic nursing documentation systems?

Design
A systematic review of systematic reviews was conducted that followed the methodological recommendations of Smith, Devane, Begley, and Clarke [23]. We chose to review existing systematic reviews, rather than individual studies, since we knew beforehand that there had already been some relevant reviews. We wanted to compare the findings of these reviews so that we could give nursing practice the best evidence available. In line with the recommendations of Smith et al. [23], reporting in this systematic review follows the guidelines in the PRISMA statement [24].

Search methods

In April 2017, searches were performed in the electronic databases PubMed and CINAHL for relevant reviews published in 2007 or later. For 2007 as the start year was chosen as there has been a big rise in the use of electronic health records in the past decade. Because our specific interest is in electronic health records, a longer period therefore seemed inappropriate.

The search strategy was drafted in collaboration with a librarian and included the following terms linked with AND and OR: 'nursing', 'handoffs', 'records', 'documentation', 'quality', 'indicators', and 'accuracy'. For the full search strategies see Supporting Information Data S1.

In addition, searches were performed in the international guideline websites Guidelines International Network, National Institute for Health and Care Excellence, and National Guideline Clearinghouse (www.g-i-n.net; date accessed 24 April 2017, www.nice.org.uk; date accessed 24 April 2017, www.guideline.gov; date accessed 24 April 2017) to identify guidelines involving relevant systematic reviews. Furthermore, free text searches were conducted using Google, the references in the included publications were studied, and experts in the field of nursing documentation were consulted to identify relevant reviews.

The review selection was performed using a stepwise procedure with the aid of the screening tool Covidence (www.covidence.org). First, two authors (AF and KdG) independently reviewed the titles and abstracts of the references identified in PubMed and CINAHL. Any discrepancies concerning the inclusion or exclusion were resolved by discussion.

Secondly, the full texts of the references that remained were independently assessed for eligibility by two authors (MT and KdG). A third author (AF) was consulted in case of disagreement between the two authors.

The following eligibility criteria were used in the selection process. The publication had to:

1. describe quality criteria, quality indicators, or quality measurement instruments for nursing documentation;
2. describe requirements for formats or systems of electronic nursing documentation;
3. concern nursing staff (whether or not combined with other professionals);
4. be published in English or Dutch;
5. be a systematic review, meaning any type of review that includes systematic review processes (i.e., the review describes questions or aims, inclusion criteria, and search strategies and searches are conducted in PubMed and at least one other database); and

6. be published in 2007 or later.

Search outcome

The searches led to 3,088 references, after removing duplicates. Based on the title and abstract screening, 3,044 references were excluded. Based on the full text assessments, a further 33 publications were excluded (see Supporting Information Data S2). Thus, the selection process resulted in 11 systematic reviews for inclusion in this systematic review. The flow chart in Figure 2.1 outlines the selection process.
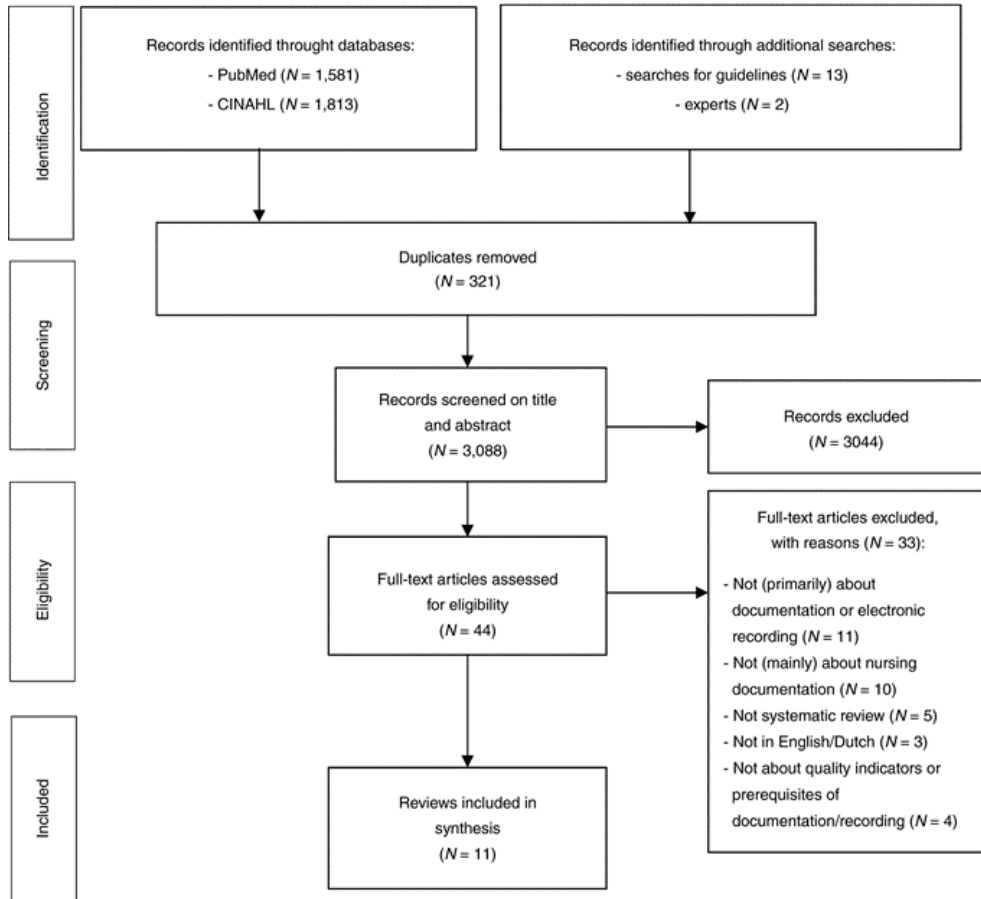
Figure 2.1 PRISMA Flow Diagram

Quality appraisal

Two authors (MT and KdG) independently assessed the methodological quality of all the included reviews using the adapted version of the Assessing the Methodological Quality of Systematic Reviews (AMSTAR) tool [25, 26]. The adaptations were in line with the recommendations of Burda, Holmer, and Norris [27] and concerned improvements for the usability, reliability, and validity of the tool.

Even though the selected reviews mentioned different review designs, they all included systematic review processes. Following the recommendations of Smith et al. [23], the AMSTAR tool was therefore judged as an appropriate tool to use.

Each review received an individual score between 0 and 10. These scores were classified as follows: reviews with scores 0–4 were considered as low methodological quality, scores 5–8 were considered as average quality, and scores 9–11 were considered as high quality. Small discrepancies in the scores of the two authors were easily resolved by means of discussion until consensus was reached.

The assessment of the methodological quality showed that only one review was of a high quality. Six reviews were of average quality and four of low quality (Table 2.1). Most reviews scored poorly on the items of "assessing the risk of bias in each study that was included," "assessing the likelihood of publication bias," "assessing the quality of the body of evidence," and "including relevant grey literature." Five reviews did not report their source of funding and one review received no funding (Table 1). The funding sources for the other five reviews were not likely to be a source of bias in the review's conclusions. Irrespective of the AMSTAR score, all the selected reviews were used for the extraction of data since they all contained relevant data for answering the research questions.

Data abstraction

The selected reviews were divided among two authors (MT and KdG), who independently extracted the data based on a predefined extraction format. The key findings that were extracted were the type of documentation, general quality criteria, quality criteria concerning the nursing process, quality criteria concerning unambiguous language, instruments used to measure the quality of nursing documentation, requirements for electronic nursing documentation, and prerequisites for electronic nursing documentation. Another author (WP) cross-checked the content of the extraction table for accuracy and completeness. Based on this check, only small adjustments had to be made in the extraction table. The extraction table provided the contents for Tables 2.2, 2.3 and 2.4.

Synthesis

Since the reviews concerned studies with heterogeneous study methods, a meta-analysis was not possible. We therefore performed a descriptive synthesis of the results. The findings in the Results section and the Conclusion section are discussed in relation to the methodological quality of the reviews. The conclusions in this systematic review were based on the conclusions and results that were presented in the included reviews. This method of synthesis is the same as that used in other systematic reviews of systematic reviews [28, 29].

Table 2.1 Methodological quality and funding source of the reviews included

Study ID	AMSTAR scores[1]												Total AMSTAR score	Methodological quality	Funding source
	Question 1[2]	Question 2[3]	Question 3[4]	Question 4[5]	Question 5[6]	Question 6[7]	Question 7[8]	Question 8[9]	Question 9[10]	Question 10[11]	Question 11[12]	Question 12[13]			
Blair, W. & Smith, B. (2012)	1	1	0	0	0	0	0	0	1	0	0	0	3	Low	Not reported
Flemming, D. & Hubner, U. (2013)	1	1	0	1	1	1	0	1	1	0	1	0	8	Average	European Regional Development Fund (ERDF) and the Federal State Lower Saxony, Germany
Jefferies, D., Johnson, M., Griffiths, R. (2010)	1	1	1	0	1	1	1	0	0	0	0	c.a.	6	Average	Not reported
Kelley, T. F., Brandon, D. H., Docherty, S. L. (2011)	1	1	0	0	0	1	0	0	0	0	0	c.a.	3	Low	Not reported
Matic, J., Davidson, P. M., Salamonson, Y. (2011)	1	1	1	0	0	0	0	0	0	0	0	c.a.	3	Low	Not reported
Meissner, A. & Schnepp, W. (2014)	1	1	0	0	1	1	0	0	1	0	1	0	6	Average	No funding source from any agency
Paans, W., Nieweg, R. M., van der Schans, C. P., Sermeus, W. (2011)	1	1	0	1	0	1	0	0	1	0	1	c.a.	6	Average	Brink&Research and Development Association, Utrecht, the Netherlands
Riesenberg, L A., Leisch, J., & Cunningham, J. M. (2010)	1	1	0	1	1	1	0	1	1	0	1	c.a.	8	Average	Not reported

Quality criteria nursing documentation

Study ID	AMSTAR scores[1]												Total AMSTAR score	Methodological quality	Funding source
	Question 1[2]	Question 2[3]	Question 3[4]	Question 4[5]	Question 5[6]	Question 6[7]	Question 7[8]	Question 8[9]	Question 9[10]	Question 10[11]	Question 11[12]	Question 12[13]			
Staggers, N., & Blaz, J. W. (2013)	1	1	0	1	0	1	0	1	1	0	0	c.a.	6	Average	Internal research grant from the College of Nursing, University of Utah
Urquhart, C., Currell, R., Grant, M. J., Hardiker, N. R. (2009)	1	1	1	1	1	1	1	1	1	1	1	c.a.	11	High	The Wales Office of Research and Development in Health and Social Care; Department of Health (England) Incentive Scheme for Cochrane reviews and updates
Wang, N., Hailey, D., Yu, P. (2011)	1	1	0	0	0	1	0	0	1	0	0	c.a.	4	Low	Australia Research Council (ARC); Aged and Community Services Australia;

Quality criteria nursing documentation

Study ID	AMSTAR scores[1]													Total AMSTAR score	Methodological quality	Funding source
	Question 1[2]	Question 2[3]	Question 3[4]	Question 4[5]	Question 5[6]	Question 6[7]	Question 7[8]	Question 8[9]	Question 9[10]	Question 10[11]	Question 11[12]	Question 12[13]				
																Illawarra Retirement Trust; RSL Care; Uniting Care Ageing South Eastern Region; Warrigal care

1: AMSTAR scores: 0=no/ 1=yes / c.a.=cannot answer

2: Question 1= Were the review questions and inclusion/exclusion criteria clearly defined prior to executing the search strategy?

3: Question 2= Was a comprehensive literature search performed?

4: Question 3= Was relevant grey literature included in the review?

5: Question 4= Was there duplicate study selection and data extraction?

6: Question 5= Was a list of studies (included and excluded) provided?

7: Question 6= Were the characteristics of the included studies provided?

8: Question 7= Was the risk of bias assessed for each included study, taking into account important potential confounders and other sources of bias relevant to the review question?

9: Question 8= Was the quality of the body of evidence appropriately assessed and considered in formulating the conclusions of the review?

10: Question 9= Were the data appropriately synthesized in a qualitative manner and if applicable, was heterogeneity assessed?

11: Question 10= Was the likelihood of publication bias assessed?

12: Question 11= Were conflicts of interest disclosed for all of the review authors and was the funding source of the review and of each study within the review reported?

13: Question 12= Were relevant subgroups considered in the review process, analysis, and conclusions?

Quality criteria nursing documentation

Table 2.2 Extraction table giving quality criteria for nursing documentation

Study ID and methodological quality	General quality criteria for nursing documentation	Quality criteria concerning the nursing process	Quality criteria concerning nursing terminologies and unambiguous language
Blair, W. & Smith, B. (2012) Low quality	Concise/brief, clear, accurate and useful/ relevant information; structured; no repetitive information; reflecting the nursing process; limited use of abbreviations; legible and legally prudent; not disease-focused but patient-centred; and evidence of clinical decision-making and critical thinking.	Nursing documentation must reflect the observations, actions and outcomes of care.

Evidence of clinical decision-making and critical thinking must be documented.

Use of the focus charting method is recommended.

Several models reflecting (steps in) nursing process are mentioned, viz: VIPS model; SOAP/ SOAPIE; HOAP; Focus charting method (DAR and AIE). | NANDA is mentioned as a tool to enhance the quality of nursing documentation.

The professional challenge of standardizing the language used is mentioned. |
| **Flemming, D. & Hubner, U. (2013) Average quality** | Accurate and up to date; complete, relevant, clinically necessary, congruent, personalized, both quantitative (numbers/facts) and subjective, both retrospective and prospective, with common set of information for various professions.

Containing both factual patient information and detailed personal information on specific items (i.e. reason for admission, clinical condition/active medical problem, medication and other treatments, to-dos and care plan, rationale of task/plan), information on disagreement and anticipatory guidance or recommendations, traceability of decisions. | To-dos and care plan, rationale of plan, traceability of decisions must be documented. | Use of the SBAR method is recommended to structure and systematize information. |

Study ID and methodological quality	General quality criteria for nursing documentation	Quality criteria concerning the nursing process	Quality criteria concerning nursing terminologies and unambiguous language
Jefferies, D., Johnson, M., Griffiths, R. (2010) Average quality	1. nursing documentation should be patient centred; 2. nursing documentation must contain the actual work of nurses including education and psychosocial support; 3. nursing documentation is written to reflect the objective clinical judgement of the nurse; 4. nursing documentation must be presented in a logical and sequential manner; 5. nursing documentation should be written contemporaneously, or as events occur; 6. nursing documentation should record variances in care within and beyond the healthcare record; 7. nursing documentation should fulfil legal requirements	Not defined.	Not defined.
Kelley, T. F., Brandon, D. H., Docherty, S. L. (2011) Low quality	Documentation should be based on the patient information needed to provide safe high-quality care.	Not defined.	Not defined.
Matic, J., Davidson, P. M., Salamonson, Y. (2011) Low quality	Information must be patient-centred and less subjectively documented to inform clinical decision-making.	Not defined.	Not defined.
Meissner, A. & Schnepp, W. (2014) Average quality	Continuous and complete information. Factual and professionally correct. Providing a broad and holistic view of resident. Consistent and legible.	Not defined.	Not defined.

Quality criteria nursing documentation

Study ID and methodological quality	General quality criteria for nursing documentation	Quality criteria concerning the nursing process	Quality criteria concerning nursing terminologies and unambiguous language
Paans, W., Nieweg, R. M., van der Schans, C. P., Sermeus, W. (2011) Average quality	Clear diagnostic language, clinical reasoning, PES structure.	A central element of the nursing process is how nurses derive a nursing diagnosis based on clinical assessments, interviews and observations. Evidence of clinical reasoning must be documented.	Clear diagnostic language is recommended, e.g. by using the NANDA classification. Use of formats such as the PES structure is recommended. Use of standardized nursing care plans is mentioned.
Riesenberg, L. A., Leisch, J., & Cunningham, J. M. (2010) Average quality	Accurate, congruent and complete.	Not defined.	SBAR is mentioned as the most frequently cited mnemonic.
Staggers, N., & Blaz, J. W. (2013) Average quality	Information completeness, accuracy, effectiveness and efficiency.	Not defined.	Use of SBAR is mentioned.
Urquhart, C., Currell, R., Grant, M. J., Hardiker, N. R. (2009) High quality	Quality aspects of nursing documentation: overall quality, legibility and quantity of documentation; number of nursing diagnoses, (vital) signs, interventions and activities documented; time needed for documentation, time spent on logging and validation activities, time needed for shift change, time needed for the reviewing and writing of medical and nurses' notes.	Not defined.	ICIS is mentioned.

Study ID and methodological quality	General quality criteria for nursing documentation	Quality criteria concerning the nursing process	Quality criteria concerning nursing terminologies and unambiguous language
Wang, N., Hailey, D., Yu, P. (2011) Low quality	Three dimensions of nursing documentation: **Format and structure:** quantity of records; completeness; legibility; readability; redundancy; use of abbreviations **Process:** signature; designation; date; timeliness; regularity of documentation; accuracy of documentation content in relation to reality **Content:** - comprehensiveness of data such as nursing history, status, baseline data, discharge summary, care needs and steps nursing process - appropriateness in relation to particular care issue, connected to clinical policies or guidelines, standardized terminologies, diagnostic statement (PES format) and steps in nursing process	Content of nursing documentation should correspond with the five steps of the nursing process: Assessment, Diagnosis, Goal, Intervention, Evaluation.	Use of standardized nursing terminology is recommended, e.g.: International Classification of Nursing Practice (ICNP) International Nursing Diagnoses Classification (NANDA International) NIC: Nursing Intervention Classification NOC: Nursing Outcome Classification Etc. (see Table 3 in Wang *et al.*, 2011). Standardized nursing language is mentioned as an essential requirement for aggregating data from electronic documentation systems.

Quality criteria nursing documentation

Table 2.3 Extraction table giving instruments for measuring the quality of nursing documentation

Study ID and methodological quality	Instruments used for measurement of the quality of nursing documentation
Blair, W. & Smith, B. (2012) Low quality	Not defined.
Flemming, D. & Hubner, U. (2013) Average quality	Structured checklists, mnemonics or minimum data sets derived from SBAR are recommended.
Jefferies, D., Johnson, M., Griffiths, R. (2010) Average quality	Not defined.
Kelley, T. F., Brandon, D. H., Docherty, S. L. (2011) Low quality	Not defined.
Matic, J., Davidson, P. M., Salamonson, Y. (2011) Low quality	Development of minimum datasets is recommended.
Meissner, A. & Schnepp, W. (2014) Average quality	Not defined.
Paans, W., Nieweg, R. M., van der Schans, C. P., Sermeus, W. (2011) Average quality	Several available instruments are described: D-Catch instrument; the Quality of Nursing Diagnoses (QOD); the Scale for Degrees of Accuracy;. and the Quality of Nursing Diagnoses Interventions and Outcomes (Q-DIO)
Riesenberg, L. A., Leisch, J., & Cunningham, J. M. (2010) Average quality	Mnemonics are identified, based on SBAR.
Staggers, N., & Blaz, J. W. (2013) Average quality	Not defined.
Urquhart, C., Currell, R., Grant, M. J., Hardiker, N. R. (2009) High quality	Not defined.
Wang, N., Hailey, D., Yu, P. (2011) Low quality	Four most commonly used instruments: Ehnfors and Smedby's comprehensiveness-in-recording instrument; the Cat-ch-Ing instrument; Q-DIO instrument; and an audit protocol for documentation of the assessment, treatment and prevention of pressure ulcers.

Quality criteria nursing documentation

Table 2.4 Extraction table giving requirements for electronic nursing documentation

Study ID and methodological quality	Requirements for electronic nursing documentation	Preconditions for electronic nursing documentation
Blair, W. & Smith, B. (2012) Low quality	User-friendly clinical systems and tools. Easy access; easy to use, locate and retrieve information; quick and efficient, not time consuming/ little workload; supporting problem solving (encouraging the identification of patient problems and to link those problems to functional health patterns); can be used by many health disciplines/ professionals. [Note: not specifically concerning electronic documentation]	Continuing education should be timely, readily available and particularly focused on diagnostic reasoning and critical thinking. Information technology, electronic record keeping, computer equipment, portable computers. Standardizing the language used. Managing the change from paper to electronic records. Computer experience (staff). Support from staff. Documenting throughout the shift (rather than waiting until the end). Combine with effective (verbal) communication.
Flemming, D. & Hubner, U. (2013) Average quality	Electronic patient record systems play an important role in documenting up-to-date patient information in a structured way (mostly retrospective facts), but lack important pieces of information (prospective and subjective) to support communicating 'the full story' of the patient. Both qualitative (holistic, subjective) information and numbers (facts) are needed for the full 'story' of a patient. There is some evidence for the superiority of electronic handover systems compared to paper-based approaches: 10 out of 16 'pure evaluation studies' (pre-post-design) supported this superiority. With an overall ranking: 1. computerized and discussed, 2. in-person handovers, 3. technology only.	Structured forms and data-sheet-based handovers must not detract clinicians' attention from critical care issues; the structured nature must not be a problem for summarizing the clinical case.
Jefferies, D., Johnson, M., Griffiths, R. (2010) Average quality	Not defined.	Not defined.

Study ID and methodological quality	Requirements for electronic nursing documentation	Preconditions for electronic nursing documentation
Kelley, T. F., Brandon, D. H., Docherty, S. L. (2011) Low quality	Not defined.	Predetermined drop-down menus can be beneficial to some nurses, but potential risks of the structured format and/or electronic documentation are: - make it easy for nurses to not think about the nursing care process; - the copy-and-paste feature increases the risk of pasting data that may no longer be applicable or accurate; - to limit the full description of the patient's health status. Having documentation standards based on the patient information needed to provide safe high-quality care could help in designing and optimizing the use of electronic nursing documentation systems.
Matic, J., Davidson, P. M., Salamonson, Y. (2011) Low quality	Efficacy of electronic tools is dependent on the quality of the program and its design. This review showed some potential advantages of electronic tools.	The less subjective the clinical handover is and the more reliable and valid the information given, the greater the likelihood of a robust handover. There needs to be greater attention to what the integral elements of a nursing handover are from a comprehensive and patient-centred approach. The design of these tools should be informed by communication theory, considering cultural and linguistic factors.
Meissner, A. & Schnepp, W. (2014) Average quality	Easy access to charts and medical information; providing a fast overview; easy to read; readily available; easy to check and monitor information on care, activities, regulatory compliance issues, staff education needs; performance appraisal; easy to enter data; providing automatic alerts to help check plausibility; enabling a quick response to residents' care needs; enabling quicker and easier care decisions; simplifying/ facilitating daily work; saving time.	Helping staff to think about what to assess and to identify problems. Teaching/guidance of staff. Equipment availability, software, technical functionality. This review shows some evidence on promoting and hindering factors for the implementation of electronic nursing documentation systems.

Quality criteria nursing documentation

Study ID and methodological quality	Requirements for electronic nursing documentation	Preconditions for electronic nursing documentation
Paans, W., Nieweg, R. M., van der Schans, C. P., Sermeus, W. (2011) Average quality	Not defined.	<u>Influencing factors</u> (in 4 domains and 18 subthemes): 1) nurse as diagnostician: 1.1 attitude, 1.2 diagnostic experience and expertise, 1.3 knowledge, 1.4 diagnostic reasoning skills; 2) educational or resources related: 2.1 guided clinical reasoning, 2.2 educational background in nursing process application, 2.3 pre-structured record forms, 2.4 classification systems, 2.5 computer-generated care plans and patient records; 3) complexity of a patient's situation: 3.1 cultural differences, 3.2 patients' severe medical diagnosis in specialty areas, 3.3 patients' way of expressing diagnoses; 4) hospital policy and environment: 4.1 number of patients per nurse, 4.2 nurses' workload level and time to spend on diagnostic tasks, 4.3 use of a medical model, 4.4 number of administrative tasks, 4.5 physicians' disposition towards nursing diagnoses, 4.6 information structure used. <u>Other factors:</u> Nursing diagnostic language, support from hospital management, policy on diagnostic tasks, guided clinical reasoning, pre-structured record forms, computer-generated standardized care plans and patient records.
Riesenberg, L. A., Leisch, J., & Cunningham, J. M. (2010) Average quality	Not defined.	Use of standard formats is recommended. These formats have to be adapted for each nursing area. Strategies for effective handoffs: communication skills, standardization strategies, technological solutions, environmental strategies, training and education, staff involvement, leadership.
Staggers, N., & Blaz, J. W. (2013) Average quality	Not defined.	Use of structured, consistent formats is recommended. These formats should be tailored to individual units. Handoffs should be supported and not replaced by technology; a combination of written and verbal reports (minimizing information decrements); using standardized/structured formats or templates

Study ID and methodological quality	Requirements for electronic nursing documentation	Preconditions for electronic nursing documentation
		(improving information completeness, efficiency - decreased average time and costs - and information recall rates); agreement on a specific format; consistency and predictability of information transfer; nurses being amenable to technology-supported handoffs; considering context, with specific content and methods depending on contexts (e.g. patient condition, nurse expertise, handoff method; unit norms, expectations and codes of behaviour); precise content (to support nurses' decision-making, planning for care, and for detecting critical information)
Urquhart, C., Currell, R., Grant, M. J., Hardiker, N. R. (2009) High quality	Not defined. No evidence of any measurable difference in the effects of a computerized nursing record system (vs manual or paper-based; neither effects on nursing practice nor patient outcomes).	Not defined.
Wang, N., Hailey, D., Yu, P. (2011) Low quality	Not defined.	Electronic Health Records (EHRs), education and organizational support for documentation of the nursing process, the use of standardized nursing languages/ classifications (NNN: NANDA diagnosis, NIC, Nursing Intervention Classification, and NOC, Nursing Outcome Classification), and nursing theories (e.g. Eriksson's caring theory) could improve documentation. A proper process of data capture is expected as it enables documentation of valid and reliable information about patients and care.

Quality criteria nursing documentation

Results

Study characteristics
All of the included reviews present relevant information for answering the review questions. The 11 reviews cover a total of more than 450 research publications (with some overlap), mainly from Western Europe and America. Most of the underlying studies concern descriptive qualitative, quantitative, or mixed-method studies.

The reviews aim to give an overview of existing evidence on aspects of nursing documentation in general, or on electronic documentation in particular. The reviews focus on identifying the determinants of effective and safe documentation, giving a better understanding of terminologies or categorizations for documentation and identifying quality requirements and/or the effects of methods for documentation. Three reviews compare different terminologies and categorizations for nursing documentation [4, 6, 30].

Ten reviews focus specifically on nursing documentation. One review concerns general documentation, including documentation by nurses and other professionals [30]. Three reviews focus on documentation in hospitals [3, 31, 32] and one concentrates on long-term care [33]. The remaining seven reviews either cover all care settings or do not specify the care setting.

Eight of the included reviews focus on different forms of nursing documentation, including paper and electronic documentation. Three of these reviews also included studies of verbal handovers [2, 32, 34]. Two reviews looked exclusively at electronic documentation [30, 33] and one review did not specify the documentation method [1].

Quality criteria for nursing documentation in relation to the nursing process and unambiguous language
No detailed quality indicators for nursing documentation with performance norms, numerators, denominators, and measurement instructions were found. Nevertheless, the reviews did mention some more generally formulated quality criteria or requirements (see Table 2.2).

Four reviews state that a quality criterion for nursing documentation is that it must be aligned with the stages of the nursing process [3, 5, 6, 30]. For example, the review by Blair and Smith [6] describes the methodological approach to documentation of considering the observations, interventions, and outcomes of care. They also state that alignment with the nursing process can be achieved through the use of categorizations, that is, a Swedish model describing well-being, integrity, prevention, and safety (the VIPS model), a format describing subjective data, objective data, assessment, plan, intervention, evaluation and revision (SOAP/SOAPIE), a format describing the history, observation, assessment and plan (HOAP), and a focus charting format (see Box 1 in Supporting Information Data S3).

The review by Flemming and Hübner [30] mentions the use of the nursing process in the sense of a care plan that must be present at a handover. This care plan must document the interventions that are being performed, with supporting arguments for the choices that have been made.

Paans et al. [3] also emphasize the documentation of supporting arguments for the choices that have been made, but then specifically in the case of nursing diagnoses as an important step in the nursing process. Nursing diagnoses should be formulated on the basis of assessments and conversations with the patient, and observations of the patient. In this context, the review by Paans et al. [3] recommends applying clinical reasoning and using the problem-aetiology-symptoms (PES) structure.

The review by Wang et al. [5] argues that the content of nursing documentation should correspond to five steps, namely assessment, diagnosis, goal, intervention, and evaluation.

In addition to alignment with the nursing process, seven of the 11 reviews mention the use of standard terminologies as a way of improving the accuracy of documentation [3-6, 30, 32, 34]. Box 1 gives an overview of terminologies and categorizations that are mentioned frequently in the reviews (see Supporting Information Data S3).

The review by Blair and Smith [6] states that the use of electronic documentation involves a professional challenge in standardizing the words and terms used to create a language that can be used by all nurses in all healthcare settings. Wang et al. [5] also stress the importance of a standardized nursing language, given that this uniform, controlled list of terms makes it possible to gather data on patients and the delivery of nursing care.

However, Riesenberg et al. [34] mention in their review that in the specific case of handovers, there is unlikely to be a single standardized format available that will be appropriate for all settings where nurses work. Urquhart et al. [4] also state that the formats for effective nursing documentation are likely to be just as diverse as nursing practice itself.

We also considered the extent to which the existing quality criteria or requirements are evidence-based. As is clear from the above, the 11 reviews make statements about criteria that are important for good documentation. However, the strength of the evidence for these statements depends on two aspects. Firstly, it depends on the methodological quality of the reviews themselves; with the exception of the review by Urquhart et al. [4], the quality of all the reviews was average or poor (see Table 1). Secondly, it depends on the strength of the evidence in the underlying studies. For example, three reviews conclude that there is some evidence (based on underlying studies) that the nursing process should be followed in the documentation [3, 5, 6]. Furthermore, three reviews conclude that there is some evidence (based on the underlying studies) for the use of standard terminologies in nursing documentation [3, 5, 30].

Instruments for measuring quality nursing documentation

This review also focused on measurement instruments that can give insight into the quality of nursing documentation. Five reviews describe evidence-based instruments for measuring the quality of nursing documentation; see Table 3 [2, 3, 5, 30, 34].

The review by Paans et al. [3] describes the Quality of Nursing Diagnosis instrument and the Dutch D-Catch instrument. The D-Catch instrument was originally developed to measure the accuracy of nursing documentation in hospitals [3]. This instrument is based on the Cat-ch-Ing instrument, which is also described in the review by Wang et al. [5]. Specific items in the D-Catch and Cat-ch-Ing instruments focus on the quality of documentation of the nursing process. Other instruments mentioned by Wang et al. [5] include Ehnfors and Smedby's comprehensiveness-in-recording instrument and the Quality of Nursing Diagnoses Interventions and Outcomes (Q-DIO) instrument. Specific items in the Q-DIO instrument concern the documented nursing diagnosis, interventions, outcomes, and their internal relationships. In addition, the reviews mentioned several checklists and minimum datasets that are derived from the Situation, Background, Assessment and Recommendation (SBAR) categorization [2, 30, 34].

Requirements for electronic nursing documentation

The review also considered requirements for formats and systems of electronic nursing documentation (see Table 2.4).

While the Cochrane review by Urquhart et al. [4] did not yet show any evidence of measurable differences between electronic and paper documentation in the effects on nursing care or patient outcomes, the more recent review by Flemming and Hübner [30] did give some evidence of the superiority of electronic documentation compared with documentation on paper.

Two reviews shed light on the specific quality requirements for electronic documentation, particularly with regard to user-friendliness and the investment in terms of time or workload. Matic et al. [2] conclude that the effectiveness of electronic formats for documentation depends on the quality and design of the software. The review by Meissner and Schnepp [33] lists a large number of quality requirements for electronic documentation, such as easy to access, easy to read, and easy to check and monitor information. All quality requirements mentioned by Meissner and Schnepp [33] are presented in Box 2 in Supporting Information Data S3.

Five reviews also give specific preconditions or risks for electronic documentation.

The review by Meissner and Schnepp [33] describes the following conditions: support for staff in determining what and which problems they should record, training for staff, and appropriate hardware, software, and technical functionality.

The reviews by Flemming and Hübner [30], Riesenberg et al. [34] and Staggers and Blaz [32] emphasize the importance of using standard formats for documentation. At the same time, Flemming and Hübner [30] warn that the standard formats must not prevent a comprehensive account from being recorded. Prestructured formats sometimes appear unable to accommodate the important subjective and prospective information that is needed to tell the "whole story". Riesenberg et al. [34] and Staggers and Blaz [32] state that the standard formats must be customized to fit each area of nursing.

The review by Kelley et al. [31] also mentions the advantages of prestructured formats, such as selection options and drop-down menus. At the same time, this review also points to the risks of structured formats, namely that nurses will not consider the actual nursing process so much, that the copy-paste function will encourage the copying of data that is no longer valid or accurate and that nurses will not give a complete description of the patients' situations. For the design and optimization of electronic formats, Kelley et al. [31] propose basing these formats on the patient information that is necessary to ensure the delivery of safe care.

Discussion

This systematic review of systematic reviews is the first to give an overview of the best available evidence about nursing documentation for nursing practice.

Firstly, this systematic review focussed on quality criteria for nursing documentation. The results show that quality indicators with performance norms are lacking. Despite the lack of these indicators, the reviews included do mention quality criteria for nursing documentation. Most reviews point out that nursing documentation needs to be aligned with the nursing process to obtain higher quality documentation [3, 5, 6, 30].

The reviews also describe a wide range of terminologies and categorizations and refer to the importance of using standard terminologies (e.g., the Omaha System or NANDA) and standard categorizations (e.g., SBAR) [3-6, 30, 32, 34]. This wide range is remarkable, although in line with recent survey research identifying a great variety of terminologies and categorizations being used by nurses in different healthcare settings [19]. Often the same terminology or categorization is used in a given setting, but there is much variation between settings [19]. For example, the terminology Omaha System is often used in home care in the Netherlands, but not in hospital settings [19]. Besides, locally developed terminologies or categorizations are frequently used [19].

Though the diversity in terminologies and categorizations is understandable given the diversity of nursing practice itself, it can cause problems in handover situations in particular. Previous research has shown that an unambiguous language is needed for exchanging information between settings without a risk of misinterpretation [13-17]. For a genuine

unambiguous language that applies across settings, the information from the current standard terminologies and categorizations used for nursing documentation has to be linked [18]. In the Netherlands, various national parties (including the Dutch Nurses Association) recently recommended incorporating the standard medical terminology SNOMED CT into the digital systems for nursing documentation. Using SNOMED CT does not mean that other terminologies have to disappear. The standard terminologies currently used by nurses, for example the Omaha System or NANDA, can continue to be used. SNOMED CT forms, as it were, an unambiguous language bridge between the existing systems [15, 18].

This development towards an unambiguous language could be essential for the quality of nursing documentation and for the patient's safety, particularly in handover situations. Besides, an unambiguous language can also help obtain data that can be used for multiple objectives: not only for documentation in nursing practice, but also for nursing research and quality benchmarks [3, 35].

Secondly, this systematic review focussed on evidence-based instruments for measuring the quality of nursing documentation. Several instruments (e.g., the D-Catch instrument and the Q-DIO instrument) were found which tie in with the quality criterion of aligning nursing documentation with the nursing process [3, 5]. These evidence-based instruments could provide a framework for the further development of quality indicators with performance norms that could give a clear indication of the quality of nursing documentation. In this development trajectory, it is important to formulate norms for good-quality documentation that relate to the accuracy and efficiency of documentation, as suggested by the quality criteria that were found in this systematic review [1-6, 30-34]. Recently, some initial steps have been taken in international nursing research towards such quality indicators, including norms for good-quality documentation [36].

Finally, this systematic review also focused on the requirements for electronic nursing documentation formats and systems. The reviews showed that electronic nursing documentation is preferred over documentation on paper, but it must be user-friendly and not require much investment in time [2, 30, 33]. To meet the precondition of user-friendliness, it is recommended that the digital formats and systems are developed in cooperation and discussion with nursing staff [4]. There may be a task here for individual nurses, care organizations, and nurses' professional associations. In addition, the involvement of nurses in determining what should be recorded and training for nurses are important requirements [4, 33].

Besides, this systematic review also indicates that standard formats play an important role in electronic documentation, given that these formats do not prevent nurses from documenting important information that is needed to tell the "whole story" about the

patient. Room should always exist in the records for narrative texts detailing the unique situation of the individual patient [30, 31].

Furthermore, similar to the variation in nursing terminologies or categorizations, the standard formats used in nursing practice also vary. Riesenberg et al. [34] and Urquhart et al. [4] note that there is no single structured format appropriate for the entirety of the diverse nursing practice. The reviews of Riesenberg et al. [34] and Staggers and Blaz [32] recommend that formats for nursing documentation should be tailored for specific nursing settings. This recommendation would increase the diversity in formats and could therefore negatively affect the comparability and linkage of nursing documentation. On the other hand, tailoring could enhance effective communication between nurses in a setting and therefore ensure the quality and safety of nursing care [5]. Following the quality criteria that were found in this systematic review of systematic reviews, it is important that standardized nursing terminologies related to the nursing process remain the point of departure when customizing the digital formats and systems [36].

Limitations
Considerable research has been done to date on nursing documentation, as it became clear from the 11 systematic reviews involving a large number of underlying studies. The strength of this systematic review of systematic reviews is that it presents an overview of the state of the art of research done in this field. However, none of the systematic reviews included covered the last 5 years of research on this topic. This may be an issue, especially in a field in which technology and innovation have evolved quickly in the last years.

Another limitation of this review is that with one exception, the quality of the reviews included was average or low. This means that firm conclusions cannot be drawn. However, the results from this review do point in certain directions. Though quality indicators could not be extracted, the reviews showed various quality criteria, instruments, and requirements for nursing documentation.

Conclusions

In this systematic review of systematic reviews, several quality criteria for nursing documentation were found referring to alignment with the stages in the nursing process and the use of standard terminologies. However, unambiguous language is not yet self-evident in nursing practice, where multiple standard terminologies are being used. SNOMED CT could offer a solution by linking the different terminologies and leading to an unambiguous language.

Furthermore, requirements were identified for formats and systems for electronic nursing documentation. It is important that these formats are user-friendly and are developed in consultation with nursing staff. For providing insight into the quality of nursing

documentation, various evidence-based instruments are available that tie in with the quality criteria found. Despite these conclusions, quality indicators with clear performance norms for nursing documentation are still lacking, which is a challenge for future research.

Authors' contribution

KdG, MT, WP and AF developed the study concept and design. All authors (KdG, MT, WP and AF) carried out the data collection. All authors contributed to the analysis and interpretation of the data. All authors contributed to the drafting and revision of the article. All authors read and approved the final manuscript.

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Supplementary files

Supplementary file 1 – Search strategies

In PubMed:
((((((((("bedside shift report"[Title/Abstract] OR "bedside shift reports"[Title/Abstract]))) OR ((((((("patient handoff"[Title/Abstract] OR "patient handoffs"[Title/Abstract] OR "patient handover"[Title/Abstract] OR "patient handovers"[Title/Abstract] OR "nursing handoff"[Title/Abstract] OR "nursing handoffs"[Title/Abstract] OR "nursing handover"[Title/Abstract] OR "nursing handovers"[Title/Abstract] OR "clinical handoff"[Title/Abstract] OR "clinical handoffs"[Title/Abstract] OR "clinical handover"[Title/Abstract] OR "clinical handovers"[Title/Abstract]))) OR "Patient Handoff"[Mesh])) OR ((((("nursing record"[Title/Abstract] OR "nursing records"[Title/Abstract]))) OR "Nursing Records"[Mesh])))) OR (("nursing documentation" OR "nursing report"[Title/Abstract] OR "nursing reports"[Title/Abstract] OR "bedside nursing report"[Title/Abstract])))) OR "shift to shift report"[Title/Abstract])) AND (influencing[Title/Abstract] OR indicator[Title/Abstract] OR accuracy[Title/Abstract] OR quality[Title/Abstract] OR implementation[Title/Abstract])
In CINAHL:
((MH ("Hand Off (Patient Safety)" OR "Nursing Records" OR "Shift Reports" OR "Documentation") OR AB (handoff OR handoffs OR "hand off" OR "hand offs" OR "hand over" OR "hand overs" OR handover OR handovers OR "nursing record" OR "nursing records" OR "shift report" OR "shift reports" OR documentation) OR TI (handoff OR handoffs OR "hand off" OR "hand offs" OR "hand over" OR "hand overs" OR handover OR handovers OR "nursing record" OR "nursing records" OR "shift report" OR "shift reports" OR documentation))) AND (TI(quality OR influencing OR implementing OR accuracy) OR AB (quality OR influencing OR implementing OR accuracy))) AND nursing

Supplementary file 2 – Excluded studies with reason

	Citation	Reason for exclusion
1	Abraham, J., Kannapmpallil, T., Patel, V.L., 2014. A systematic review of the literature on the evaluation of handoff tools: implications for research and practice. *J Am Med Inform Assoc,* 21 (1), 154-162.	Not (primarily) about documentation or electronic recording
2	Anderson, J., Malone, L., Shanahan, K., Manning, J., 2014. Nursing bedside clinical handover - an integrated review of issues and tools. *J Clin Nurs,* 24 (5-6), 662-671.	Not (primarily) about documentation or electronic recording
3	Braaf, S., Manias, E., Riley, R., 2011. The role of documents and documentation in communication failure across the perioperative pathway. A literature review. *Int J Nurs Stud,* 48 (8), 1024-1038.	Not (mainly) about nursing documentation
4	Buus, N., Hamilton, B.E., 2016. Social science and linguistic text analysis of nurses' records: a systematic review and critique. *Nursing Inquiry,* 23 (1), 64-77.	Not about quality indicators or prerequisites of documentation/recording
5	Colvin, M.O., Eisen, L.A., Gong, M.N., 2016. Improving the patient handoff process in the intensive care unit: keys to reducing errors and improving outcomes. *Seminars in respiratory and critical care medicine*, 37 (1), 96-106.	Not systematic review
6	Davis, J., Riesenberg, L.A., Mardis, M., Donnelly, J., Benningfield, B., Youngstrom, M., Vetter, I., 2015. Evaluating outcomes of electronic tools supporting physician shift-to-shift handoffs: a systematic review. *Journal of Graduate Medical Education*, 7 (2), 174-180.	Not (mainly) about nursing documentation

7	Dickerson, P. S. (2011). Reflective documentation: evidence of quality. *Journal of Continuing Education in Nursing, 42*(12), 533-534.	Not systematic review
8	Foster, S., & Manser, T. (2012). The effects of patient handoff characteristics on subsequent care: a systematic review and areas for future research. *Academic Medicine, 87*(8), 1105-1124.	Not (mainly) about nursing documentation
9	Gardiner, T. M., Marshall, A. P., & Gillespie, B. M. (2015). Clinical handover of the critically ill postoperative patient: an integrative review. *Australian Critical Care, 28*(4), 226-234.	Not (mainly) about nursing documentation
10	Häyrinen, K., Saranto, K., & Nykänen, P. (2008). Definition, structure, content, use and impacts of electronic health records: a review of the research literature. *Int J Med Inform, 77*(5), 291-304.	Not (mainly) about nursing documentation
11	Hesselink, G., Schoonhoven, L., Barach, P., Spijker, A., Gademan, P., Kalkman, C., . . . Wollersheim, H. (2012). Improving patient handovers from hospital to primary care. *Ann Intern Med, 157*(6), 417-428.	Not about quality indicators or prerequisites of documentation/recording
12	Holly, C., & Poletick, E. B. (2013). A systematic review on the transfer of information during nurse transitions in care. *J Clin Nurs, 23*(17-18), 2387-2396.	Not (primarily) about documentation or electronic recording
13	Hypponen, H., Saranto, K., Vuokko, R., Mäkelä-Bengs, P., Doupi, P., Lindqvist, M., & Mäkelä, M. (2014). Impacts of structuring the electronic health record: a systematic review protocol and results of previous reviews. *Int J Med Inform, 83*(3), 159-169.	Not systematic review
14	Kitson, A. L., Muntlin Athlin, A., Elliott, J., & Cant, M. L. (2013). What's my line? A narrative review and synthesis of the literature on registered nurses' communication behaviours between shifts. *J Adv Nurs, 70*(6), 1228-1242.	Not (primarily) about documentation or electronic recording
15	Linch, G. F. D. C., Müller-Staub, M., & Rabelo, E. R. (2010). Quality of nursing records and standardized language: literature review *Online Brazilian Journal of Nursing, 9*(2).	Not in English/Dutch
16	Manser, T., & Foster, S. (2011). Effective handover communication: an overview of research and improvement efforts. *Best Practice & Research Clinical Anaesthesiology, 25*(2), 181-191.	Not systematic review
17	Mardis, T., Mardis, M., Davis, J., Justice, E. M., Riley Holdinsky, S., Donnelly, J., . . . Riesenberg, L. A. (2016). Beside shift-to-shift handoffs: a systematic review of the literature *Journal of Nursing Care Quality, 31*(1), 54-60.	Not (primarily) about documentation or electronic recording
18	Mariani, E., R., C., Vernooij-Dassen, M., Koopmans, R., & Engels, Y. (2017). Care plan improvement in nursing homes: an integrative review. *Journal of Alzheimer's Disease, 55*(4), 1621-1638.	Not (primarily) about documentation or electronic recording
19	Moller, T. P., Madsen, M. D., Fuhrmann, L., & Ostergaard, D. (2013). Postoperative handover: characteristics and considerations on improvement: a systematic review. *Eur J Anaesthesiol, 30*(5), 229-242.	Not (mainly) about nursing documentation
20	Müller-Staub, M. (2009). Evaluation of the implementation of nursing diagnoses, interventions, and outcomes. *International Journal of Nursing Terminologies and Classifications, 20*(1), 9-15.	Not systematic review
21	Müller-Staub, M., Lavin, M. A., Needham, I., & Van Achterberg, T. (2007). Nursing diagnoses, interventions and outcomes - application and impact on nursing practice: a systematic literature review. *Pflege, 20*(6), 352-371.	Not in English/Dutch
22	Ong, M. S., & Coiera, E. (2011). A systematic review of failures in handoff communication during intrahospital transfers. *Joint Commission journal on quality and patient safety, 37*(6), 274-284.	Not (primarily) about documentation or electronic recording

23	Partanen, A., & Kvist, T. (2007). Information technology in acute nursing care - nurses views on use of information systems and computerised documentation. *Sairaanhoitaja, 80*(6-7), 18-21.	Not in English/Dutch
24	Poletick, E. B., & Holly, C. (2010). A systematic review of nurses' inter-shift handoff reports in acute care hospitals. *JBI Library of Systematic Reviews, 8*(4), 121-172.	Not (primarily) about documentation or electronic recording
25	Pucher, P. H., Johnston, M. J., Aggarwal, R., Arora, S., & Darzi, A. (2015). Effectiveness of interventions to improve patient handover in surgery: a systematic review. *Surgery, 158*(1), 185-195.	Not (mainly) about nursing documentation
26	Robertson, E. R., Morgan, L., Bird, S., Catchpole, K., & McCulloch, P. (2014). Interventions employed to improve intrahospital handover: a systematic review. *BMJ Qual Saf, 23*(7), 600-607.	Not (mainly) about nursing documentation
27	Saranto, K., & Kinnunen, U. M. (2009). Evaluating nursing documentation - research designs and methods: systematic review. *J Adv Nurs, 65*(3), 464-476.	Not (primarily) about documentation or electronic recording
28	Segall, N., Bonifacio, A. S., Schroeder, R. A., Barbeito, A., Rogers, D., Thornlow, D. K., . . . Durham, V.A. Patient Safety Center of Inquiry. (2012). Can we make postoperative patient handovers safer? A systematic review of the literature. *Anesthesia and analgesia, 115*(1), 102-115.	Not (mainly) about nursing documentation
29	Smeulers, M., Lucas, C., & Vermeulen, H. (2014). Effectiveness of different nursing handover styles for ensuring continuity of information in hospitalised patients. *Cochrane Database Syst Rev, 24*(6), CD009979.	Not about quality indicators or prerequisites of documentation/recording
30	Strudwick, G., & Hardiker, N. R. (2016). Understanding the use of standardized nursing terminology and classification systems in published research: A case study using the International Classification for Nursing Practice(®). *Int J Med Inform, 94*, 215-221.	Not (primarily) about documentation or electronic recording
31	Vuokko, R., Makela-Bengs, P., Hypponen, H., Lindqvist, M., & Doupi, P. (2017). Impacts of structuring the electronic health record: Results of a systematic literature review from the perspective of secondary use of patient data. *Int J Med Inform, 97*, 293-303.	Not (mainly) about nursing documentation
32	Waneka, R., & Spetz, J. (2010). Hospital information technology systems' impact on nurses and nursing care. *J Nurs Adm, 40*(12), 509-514.	Not about quality indicators or prerequisites of documentation/recording
33	Wood, K., Crouch, R., Rowland, E., & Pope, C. (2015). Clinical handovers between prehospital and hospital staff: literature review. *Emergency Medicine Journal, 32*(7), 577-581.	Not (primarily) about documentation or electronic recording

Supplementary file 3 - Boxes

Box 1 Frequently mentioned terminologies and categorizations

NANDA: Nursing Diagnosis Classification of the North American Nursing Diagnosis Association

NIC: Nursing Intervention Classification

NOC: Nursing Outcome Classification

ICNP: International Classification of Nursing Practice

AIE: Assessment, Implementation, Evaluation

DAR: Data, Actions and Responses

Focus charting: organizing information in an individual's record, focusing on the particular client's concerns/behaviours, change in condition/behaviour, or a significant event in the client's treatment determined during the assessment.

ICIS: Intensive Care Information Systems

PES: P: problem label, a concise term or phrase that represents a pattern of related cues; E: an aetiology or related factors; S: signs/symptoms

SBAR: Situation, Background, Assessment and Recommendation

HOAP: History, Observation, Assessment, Plan

SOAP/ SOAPIER: Subjective data, Objective data, Assessment, Plan, Intervention, Evaluation, Revision

VIPS: abbreviation of Swedish words for well-being, integrity, prevention and safety

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Box 2 Requirements for electronic nursing documentation
- easy access to charts and medical information;
- providing a fast overview;
- easy to read;
- readily available;
- easy to check and monitor information on care, activities, regulatory compliance issues, staff education needs;
- performance appraisal;
- easy to enter data;
- providing automatic alerts to help check plausibility;
- enabling a quick response to residents' care needs;
- enabling quicker and easier care decisions;
- simplifying/ facilitating daily work;
- saving time.

Quality criteria nursing documentation

CHAPTER 3

Use of electronic health records and standardized terminologies:
a nationwide survey of nursing staff experiences

Abstract

Background: Nursing documentation could improve the quality of nursing care by being an important source of information about patients' needs and nursing interventions. Standardized terminologies (e.g. NANDA International and the Omaha System) are expected to enhance the accuracy of nursing documentation. However, it remains unclear whether nursing staff actually feel supported in providing nursing care by the use of electronic health records that include standardized terminologies.

Objectives: a. To explore which standardized terminologies are being used by nursing staff in electronic health records. b. To explore to what extent they feel supported by the use of electronic health records. c. To examine whether the extent to which nursing staff feel supported is associated with the standardized terminologies that they use in electronic health records.

Design: Cross-sectional survey design.

Setting and participants: A representative sample of 667 Dutch registered nurses and certified nursing assistants working with electronic health records. The respondents were working in hospitals, mental health care, home care or nursing homes.

Methods: A web-based questionnaire was used. Descriptive statistics were performed to explore which standardized terminologies were used by nursing staff, and to explore the extent to which nursing staff felt supported by the use of electronic health records. Multiple linear regression analyses examined the association between the extent of the perceived support provided by electronic health records and the use of specific standardized terminologies.

Results: Only half of the respondents used standardized terminologies in their electronic health records. In general, nursing staff felt most supported by the use of electronic health records in their nursing activities during the provision of care. Nursing staff were often not positive about whether the nursing information in the electronic health records was complete, relevant and accurate, and whether the electronic health records were user-friendly. No association was found between the extent to which nursing staff felt supported by the electronic health records and the use of specific standardized terminologies.

Conclusions: More user-friendly designs for electronic health records should be developed. The poor user-friendliness of electronic health records and the variety of ways in which software developers have integrated standardized terminologies might explain why these terminologies had less of an impact on the extent to which nursing staff felt supported by the use of electronic health records.

Keywords: electronic health records, nurses, nursing documentation, standardized nursing terminology.

Introduction

Accurate nursing documentation is not only important for communication between nursing staff, but also has the potential to improve nursing care and patient outcomes by being an important source of information about patients' needs and nursing interventions [1-3]. Various definitions of nursing documentation exist in the professional and research literature. Taking inspiration from Blair and Smith [4] and Jefferies et al. [1], we define nursing documentation as the process of documenting nursing information about nursing care in health records. Nursing documentation in health records is internationally understood to reflect the phases of the nursing process [3-7]. Also in the Netherlands it is a standard practice to document nurses' assessment information, as well as nursing diagnoses, and planning, implementation and evaluation of nursing interventions [8]. Nursing documentation helps nursing staff to continuously reflect on the impact of interventions on their patients, and is therefore vital for the quality and continuity of care [7, 9, 10]. Standardized terminologies are expected to be helpful in achieving more accurate nursing documentation [5, 11-13].

Standardized terminologies can guide nursing staff through the phases of the nursing process, and can improve the accurate formulation of patients' care needs and the planning of concrete interventions [3, 14]. Furthermore, the use of standardized terminologies could improve communication among nursing staff themselves and communication with other healthcare professionals, because recognizable words and distinguishable terms are used [15, 16]. Another benefit of standardized terminologies is that these terminologies provide a certain structure in electronic health records that could facilitate the reuse of documented data, for instance as information sources for scientific research or for quality assurance [17]. Besides, standardized terminologies could facilitate the comparison within and between care organizations of the effect of nursing interventions on patient outcomes [14, 15].

Thus standardized terminologies have potential advantages, but they do not automatically lead to one common nursing language. Nowadays, nursing staff use various standardized terminologies. The frequency of use of standardized terminologies can be influenced by several factors, including governmental policies. For example, the Dutch government decided in 2015 that it would be mandatory by 2017 for home care providers to implement standardized terminologies in their health records [18]. This obligation only applies to the home care setting; nursing staff working in the other Dutch healthcare settings are not obligated to use standardized terminologies in their nursing documentation [18]. Nursing staff use standardized terminologies in particular in electronic health records. Various software developers have incorporated standardized terminologies in the electronic health records. According to an international expert panel, clear linkages between the phases of the nursing process are mostly lacking in the current electronic health records [19]. This results in differences even between electronic health records using the same standardized

terminology. Moreover, these experts estimate that the frequency of use of standardized terminologies would increase if improvements were to be made to the user interfaces of the electronic health records [19].

Standardized terminologies that include a theoretical framework or concept specific to nursing care are often referred to as standardized nursing terminologies or classification systems. The American Nursing Association (ANA) has recognized twelve standardized nursing terminologies, see Table 3.1 [14]. Although the ANA is based in the USA, it is also referred to across Europe and can be seen as a worldwide reference. Within the twelve standardized nursing terminologies, the ANA distinguishes between interface terminologies, reference terminologies and minimum data sets. Interface terminologies include actual words and terms used by nursing staff in their documentation [14]. Reference terminologies can facilitate the electronic exchange of information from various electronic health records [14]. Even though the reference terminologies are not based on concepts specific to nursing care, they are still recognized as standardized nursing terminologies. Minimum data sets are sets of data elements intended for the collection of essential nursing care data [20]. The theoretical frameworks of these twelve standardized nursing terminologies differ. For instance, the Omaha System contains components for all steps of the nursing process, whereas NANDA-I is used only for the first steps of the nursing process [21, 22].

In addition to the twelve standardized nursing terminologies, nursing staff also use standardized terminologies which are not recognized by the ANA, see Table 3.1. These terminologies are not recognized by the ANA because either they are not based on a theoretical framework or they are not specific to nursing care.

In spite of the available research on the benefits of standardized terminologies (e.g. [13]), there have been fewer studies of how nursing staff experience the use of electronic health records that include standardized terminologies and their perceptions of the accuracy of nursing documentation in such electronic health records [23]. Therefore, it remains unclear whether nursing staff actually feel supported in providing good-quality nursing care by the different aspects of the electronic health records. For instance, it is unknown whether the nursing information within electronic health records is sufficient for nursing staff to evaluate their interventions and to contribute to care decision-making. Given the wide diversity in standardized terminologies it can also be questioned whether the support that nursing staff feel they get from electronic health records is associated with the standardized terminologies used in these records. However, to our knowledge no research is available that compares the experiences of nursing staff with electronic health records that include different standardized terminologies. For this reasons, this study explored the experiences of Dutch nursing staff working with different electronic health records that include standardized terminologies.

The following research questions were addressed:

1. Which standardized terminologies do nursing staff use in the electronic health records?
2. To what extent do nursing staff feel supported in their documentation by the use of electronic health records, and in which aspects?
3. Is there an association between the extent to which nursing staff feel supported by the use of electronic health records and the specific standardized terminologies that they use in these records?

Table 3.1 Standardized terminologies used in electronic health records

Standardized terminology	Description	Recognized by the ANA
NANDA International (NANDA-I)[a]	A classification of nursing diagnoses, used to form a clinical judgment about the actual or potential reactions of an individual, (family) system or society to health problems or life processes [21].	Yes
Nursing Interventions Classification (NIC)[a]	A classification of nursing interventions, used to formulate any intervention performed by nurses based on their expert judgment and clinical knowledge [41].	Yes
Nursing Outcomes Classification (NOC)[a]	A classification of nursing care outcomes, used to assess the situation and monitor the progress of patients, informal caregivers, families or communities [42].	Yes
Omaha System[a]	A standardized healthcare terminology that consists of a patients' needs component, an intervention component, and an evaluation component. This terminology is used by nursing staff and other professionals such as physical therapists [22].	Yes
Clinical Care Classification (CCC) System[a]	A nursing terminology that provides a standard framework for assessing, documenting and evaluating nursing care [43].	Yes
International Classification for Nursing Practice (ICNP)[a]	A nursing terminology that includes nursing diagnoses, nursing-sensitive patient outcomes and nursing interventions [44].	Yes
Perioperative Nursing Data Set (PNDS)[a]	A standardized language for documenting perioperative patient care that describes the nursing diagnoses, interventions and patient outcomes [45].	Yes
Alternative Billing Concepts (ABC) Codes[a]	Codes that were designed for documentation and measurement of non-physician and alternative medicine health services [14].	Yes
Nursing Minimum Data Set (NMDS)[b]	A set of items with uniform definitions for nursing care, patient demographics and service elements [14].	Yes
Nursing Management Minimum Data Set (NMMDS)[b]	A set of items that identify variables relevant to nursing administrators for decision-making about nursing care effectiveness [46].	Yes

Standardized terminology	Description	Recognized by the ANA
International Classification of Functioning, Disability and Health (ICF)	A classification of the health components of functioning and disability. This terminology is of interdisciplinary origin [47].	No
Gordon's Functional Health Patterns (Gordon)	A method used by nursing staff to provide a comprehensive nursing assessment of the patient [48].	No
Resident Assessment Instrument (RAI)	An instrument for needs assessment and care screening for nursing-home residents. This terminology is of interdisciplinary origin [49].	No
SNOMED Clinical Terms (SNOMED CT)[c]	A comprehensive, multilingual clinical healthcare terminology that enables exchange of data. This terminology is of interdisciplinary origin [50].	Yes
Logical Observation Identifiers Names and Codes (LOINC)[c]	A comprehensive clinical terminology that includes terms for laboratory tests, clinical measurements and patient observations. This terminology is of interdisciplinary origin [51].	Yes

[a] Interface terminology = actual words and terms used by nursing staff in their documentation.
[b] Minimum data set = a set of data elements with standardized definitions and codes.
[c] Reference terminology = a terminology that can be linked to multiple interface terminologies.

Method

Design
A cross-sectional survey design was used.

Setting and participants
An online survey was conducted with data collection in December 2016 and January 2017 among nursing staff who were members of a pre-existing research panel known as the Nursing Staff Panel. The Nursing Staff Panel is a nationwide, representative group of nursing staff who deliver direct nursing care to patients in various healthcare settings. Certified nursing assistants as well as registered nurses participate in the Nursing Staff Panel.

In the Netherlands, certified nursing assistants receive three years of vocational education and training. Dutch registered nurses are educated to two different levels, namely to the secondary vocational level (a nursing qualification after completing senior secondary vocational education) and to the bachelor's level (a degree in nursing after education at a university of applied sciences).

Members of the Nursing Staff Panel are recruited through a random sample of Dutch healthcare employees, provided by two pension funds. Together, these pension funds register all employees in the Dutch healthcare sector. The employees in the random sample were asked to participate in healthcare research for various purposes. Nursing staff who

agreed to this request and who deliver direct nursing care to patients were asked to join the Nursing Staff Panel. This recruitment method ensures the representativeness of the panel for the general population of Dutch nursing staff in terms of age, gender, region and healthcare settings [24].

Data sources

A web-based questionnaire was used. The questionnaire was sent by email to 1609 panel members (all registered nurses or certified nursing assistants) who worked in one of the main healthcare settings, i.e. hospitals, mental health care, home care and nursing homes. To increase the response rate, electronic reminders were sent after one week and after three weeks to nursing staff who had not yet responded.

Questionnaire

In the questionnaire it was explained that questions were focused on the process of documenting nursing information about nursing care in health records. Moreover, we explained that nursing documentation is related to the nursing process, and we explained the phases of the nursing process. Documentation by and relating to other professionals or lab results was not covered by the questionnaire. Besides questions relevant to this paper, the questionnaire also included questions related to other aspects of nursing documentation (e.g. patients' involvement in nursing documentation). In total, the questionnaire contained 35 self-developed questions, of which seven questions were relevant for this paper. Most questions had pre-structured response options. After establishing a first draft, the questionnaire was tested for comprehensibility and completeness by nine registered nurses and three certified nursing assistants. Based on their comments, the questionnaire was modified where necessary to produce the final version. The part of the questionnaire with questions relevant for this paper can be found at: https://nivel.nl/nl/pdf/nursing-documentation-questionnaire.pdf.

Variables

Data were collected on the following characteristics of nursing staff: age (continuous), gender (male or female), level of education (certified nursing assistant, registered nurse at secondary vocational level or registered nurse with bachelor's degree) and healthcare setting (hospital, mental health care, home care or nursing home).

We asked for the standardized terminologies that nursing staff used in their electronic health records. The fixed response options were the Omaha System, Gordon, ICF, RAI, the combination of NANDA-I, NIC and NOC, and a Dutch terminology called 'Four Domains'. Besides these predefined options, respondents could also fill in their own answer.

The extent to which nursing staff felt supported by different aspects of the electronic health records was measured by their agreement with a set of eight statements on a five-point scale (1 = completely disagree to 5 = completely agree). The statements were based on

relevant international and Dutch literature about nursing documentation (e.g. research on aligning documentation with the nursing process [3, 4, 6, 7], and research on handovers [25] and consultation with six experts on nursing documentation and/or nursing care. The internal consistency of the eight statements was high (Cronbach's alpha 0.92), indicating that these statements reflected one concept, namely the extent to which nursing staff felt supported by the use of electronic health records. A mean score over the eight statements was calculated, ranging from 1 (completely disagree) to 5 (completely agree), whereby higher scores indicated that nursing staff felt more supported by the use of electronic health records.

Statistical methods

Descriptive statistics were performed to describe the characteristics of the respondents and to answer the first and second research questions. Furthermore, the potential relationships between the use of standardized terminologies and the respondent's healthcare setting were examined using Pearson's chi-square test. A one-way ANOVA test was also used to examine the potential differences between the respondents' healthcare settings in the extent to which respondents felt supported by the use of electronic health records.

To answer the third research question, first a multiple linear regression analysis was conducted in which the experienced support provided by electronic health records was the dependent variable, and the use of a standardized terminology (0 = no, 1 = yes) and the socio-demographic characteristics (gender, age, educational level, healthcare setting) were the independent variables. Next, a multiple linear regression analysis was conducted to determine whether there was a difference between different standardized terminologies. In this analysis, we included the experienced support provided by electronic health records as the dependent variable, and the specific standardized terminologies and socio-demographic characteristics as independent variables. The level for determining statistical significance was 0.05. All analyses were conducted using STATA, version 15.0.

Ethical considerations

The study was conducted in accordance with the Dutch Personal Data Protection Act, by strictly safeguarding the anonymity of the participants [26]. All participants were competent individuals, were not subjected to procedures and were not required to follow rules of behaviour. For these reasons, further ethical approval of this study was not required under the applicable Dutch legislation.

Results

Participants

A total of 745 nursing staff working in one of the main healthcare settings completed the questionnaire (response 46.3%). This study focussed on the use of various standardized terminologies in electronic health records. Therefore, we excluded from the analysis nursing

staff working exclusively with paper-based health records (n = 78), leaving 667 respondents who worked with electronic health records.

As seen in Table 3.2, the mean age of these respondents was 49 years. This mean age was higher than the mean age of employees working in hospitals, mental health care, home care or nursing homes in the Netherlands, which varied per sector from 41 to 45 years [27]. In our sample 88.8% was female, which is similar to the Dutch nursing staff population [27].

In our study, the three groups of nursing staff with different educational levels were approximately equal in size. The largest group in the sample in terms of the healthcare setting was the group of respondents working in home care (45.7%). This means there was an overrepresentation of home care nursing staff, since only 13.5% of the overall Dutch nursing staff population work in the home care setting [27]. Nursing staff working in nursing homes are underrepresented in our study, with a share of 18.4% compared to 46.3% in the overall population.

Table 3.2 Respondents' characteristics

Characteristics	Total (n = 667)	
Age (mean (standard deviation), [range])	49 (10.6)	[22-67]
Gender (n, %)		
female	592	88.8
male	75	11.2
Level of education (n, %)		
certified nursing assistant	187	28.0
registered nurse secondary vocational qualification	233	34.9
registered nurse bachelor's degree	247	37.0
Healthcare setting (n, %)		
hospitals	156	23.4
mental health care	83	12.4
home care	305	45.7
nursing homes	123	18.4

Given that the content and structure of electronic health records might vary across the four healthcare settings, we present further findings for each of the healthcare settings separately.

Standardized terminologies

Only half of the respondents (56.4%) used a standardized terminology in the electronic health records. The most frequently used terminologies were the Omaha System (31.5%) and Gordon (15.1%), see Table 3.3. The Omaha System was mostly used by respondents working in home care, and Gordon mostly within hospitals and mental health care. In addition, nursing staff also used ICF, RAI, and the combination of NANDA-I, NIC and NOC. Respondents did not mention other standardized terminologies that are recognized by the ANA. How often a specific kind of standardized terminology was used was associated with

the healthcare setting in which respondents were working; see Table 3.3. Other respondents did not recognize the use of a standardized terminology. They either answered that they did not know whether they used a standardized terminology (18.4%), or they answered that they used a structure in the electronic health records that was not a standardized terminology (12.0%). It is notable that most respondents in nursing homes answered that they did not know if they used standardized terminologies. Furthermore, one group of nursing staff (13.2%) gave open-ended answers that pointed to the name or software developer of the electronic health records. Some of these electronic health records might also include standardized terminologies. However, it was not possible to work out which specific standardized terminology was used from the answers given by this group of respondents.

Table 3.3 Use of standardized terminologies in electronic health records as reported by nursing staff (n = 667)

Standardized terminologies (in %)	Hospitals (n = 156)	Mental health care (n = 83)	Home care (n = 305)	Nursing homes (n = 123)	Total (n = 667)
Gordon (%)	39.1	26.5	3.0	7.3	15.1
NANDA-I, NIC and NOC (%)	10.3	10.8	9.8	4.9	9.2
Omaha System (%)	0.6	0	65.3	8.1	31.5
ICF (%)	1.3	0	0	0.8	0.5
RAI (%)	0	1.2	0	0	0.2
I don't know (%)	22.4	21.7	8.5	35.8	18.4
No standardized terminology (%)	17.3	24.1	2.0	22.0	12.0
No standardized terminology mentioned by respondent[a] (%)	9.0	15.7	11.5	21.1	13.2
Total (%)	100	100	100	100	100

[a] = we were not able to determine from the open-ended answers of these respondents whether they used a standardized terminology.

Experienced support from electronic health records

The extent to which nursing staff felt supported in their documentation by the use of electronic health records varied across healthcare settings. Mental health care nurses felt significantly less supported compared to home care nursing staff (mean score 3.54, SD 0.61 vs mean score 3.87, SD 0.65; $p < 0.00$). Nursing staff working in hospitals and nursing homes felt moderately supported, with a mean score of 3.73 (SD 0.58) for hospitals and 3.73 (SD 0.61) for nursing homes. The scores of respondents working in hospitals or nursing homes did not differ significantly from those of nursing staff working in the other two healthcare settings.

Overall nursing staff gave the most positive scores for the statement that the information from the health records supported their activities during the provision of care (mean 3.98). Respondents gave the lowest scores for the statement that the information in the health

records was complete, relevant and accurate (mean 3.47), and the statement about the user-friendliness of the health records (mean 3.63), see Table 3.4.

Table 3.4 Statements about the extent to which nursing staff felt supported by the use of electronic health records (n = 666, range 1-5)

Statements	Mean	SD	95% CI
The health record that I am working with is user-friendly	3.62	0.95	3.54 to 3.69
The information in the health records gives me sufficient insight into the actual and potential problems/diagnoses/needs of the patient	3.86	0.78	3.80 to 3.92
The information in the health records supports my activities during the provision of care	3.98	0.68	3.93 to 4.04
The information in the health records gives me sufficient information for the evaluation of care	3.87	0.73	3.81 to 3.92
I can easily use the information in the health records to make an adequate handover	3.89	0.73	3.83 to 3.94
The information in the health records is complete, relevant and accurate	3.47	0.84	3.40 to 3.53
The health record that I am working with supports me in adequate documentation of the choices I make during the provision of care	3.73	0.78	3.67 to 3.79
The health record that I am working with supports me in adequate documentation of the nursing process	3.74	0.80	3.68 to3.80
Mean score (Cronbach's alpha = 0.92)	3.76[a]	0.63	3.72 to 3.82

[a] = mean scores varied across respondents working in different healthcare settings.

Association between perceived support and use of standardized terminologies

To estimate differences in the perceived support from electronic health records between nursing staff who did use a standardized terminology and nursing staff who did not, respondents were divided into two groups. First, all respondents who used one of the standardized terminologies were merged to form one group (n = 376, 64.9%). Next, respondents who did not recognize the use of a standardized terminology (n = 123) and respondents who did not use a standardized terminology (n = 80) were merged, resulting in a group of 203 respondents (35.1%). The use of standardized terminologies was unclear when respondents only mentioned the name or software developer of the electronic health records, so these respondents (n = 88) were excluded from this analysis.

The first multiple linear regression analysis showed no significant differences in the perceived support provided by electronic health records between respondents who did use a standardized terminology and respondents who did not (p = 0.48). Also gender, age and educational level had no significant effect on the support that respondents experienced. However, we did find that nursing staff working in home care felt significantly more supported by their electronic health records than nursing staff working in hospitals (mean 3.87 (SD 0.65) vs mean 3.73 (SD 0.59); p < 0.05).

To examine whether there was an association between the extent to which nursing staff felt supported by the use of electronic health records and the use of specific standardized terminologies, a second multiple linear regression analysis was conducted. Respondents using ICF and RAI were excluded due to their small numbers, resulting in a further analysis of the data of 574 respondents.

No statistically significant differences were found in the extent to which nursing staff felt supported by the use of electronic health records, see Table 3.5. Only weak differences were found at the 10% significance level. Nursing staff using the Omaha System tended to feel somewhat more supported by the electronic health records than nursing staff using Gordon (p = 0.067) and nursing staff not using a standardized terminology (p = 0.074). The variables 'healthcare setting' and 'level of education' were not associated with the extent to which nursing staff felt supported by the use of electronic health records. The explained variance was low as well, namely 2.5%.

Table 3.5 Regression model to examine the association between perceived support from electronic health records and use of standardized terminologies (n = 574)

Self-reported experienced support (range 1-5, higher scores indicate more support was experienced)	Coef.	Std. Err.	P-value
Gender (0=male; 1=female)	0.081	0.091	0.378
Age (continuous)	-0.001	0.003	0.819
Level of education			
certified nursing assistant	Ref	Ref	Ref
registered nurse secondary vocational level	0.011	0.078	0.891
registered nurse bachelor's degree	0.041	0.080	0.604
Healthcare setting			
hospitals	Ref	Ref	Ref
mental health care	-0.161	0.097	0.097
home care	0.032	0.100	0.748
nursing homes	-0.000	0.100	0.999
Standardized terminology			
Omaha System	Ref	Ref	Ref
Gordon	-0.197	0.107	0.067
NANDA-I, NIC and NOC	-0.137	0.100	0.169
no standardized terminology	-0.162	0.090	0.074
Constant	3.826	0.205	0.000
Adjusted R-square		0.025	

Discussion

This study sought to gain insight into the frequency of use of standardized terminologies in the electronic health records, the extent to which nursing staff feel supported by the use of electronic health records, and whether this perceived support is associated with the use of specific standardized terminologies.

The first main finding from this study was that only half of nursing staff (56%) were actually using a standardized terminology in their electronic health records. The most frequently used terminologies were the Omaha System and Gordon. These findings differ from other research, which showed that nurses in the USA were most familiar with NANDA-I [16]. However, it should be noted that most nurses in the USA reported using NANDA-I during nursing school, but not since.

The use of a specific kind of standardized terminology was related to the healthcare setting in which nursing staff were working. This association is understandable given the variation in nursing care itself between healthcare settings. Furthermore, governmental policies may also influence the frequency of use of standardized terminologies within specific healthcare settings. For instance, the relatively high frequency of the use of a standardized terminology (mostly Omaha System) in the home care setting might partly be explained by the obligation imposed by the Dutch government specifically on home care providers to implement a standardized terminology in their health records [18].

Besides, in our study there was a large group of nursing staff (30%) who did not recognize the use of standardized terminologies. This finding is in line with results from a survey in the USA, in which a large proportion of respondents also had no knowledge of or experience with standardized terminologies [16]. Literature research also showed gaps in both the knowledge of standardized terminologies and their use [23].

A second main finding of this study was that nursing staff felt moderately supported by the use of electronic health records. They experienced most support from the use of electronic health records in their nursing activities during the provision of care. However, our study also showed points for concern.

First, nursing staff were often not positive about the user-friendliness of the electronic health records. This finding is in line with other research, which indicated that the poor user-friendliness of electronic health records seemed to be a prominent source of time pressure and psychological distress among registered nurses [28]. Likewise, other studies reported that nursing staff commented that the electronic health records were too long, lacked links between the different phases of the nursing process and increased their workload [19, 29, 30]. The current structure of the electronic health records may not always match the routines of nurses in their daily practice [31]. A review of systematic reviews also showed that user-friendly health records are an important precondition for high-quality electronic nursing documentation [5]. Therefore, user-friendly electronic health records are much needed in healthcare. To improve this user-friendliness, nursing staff should be more involved in the further development of electronic health records [2, 5].

Second, nursing staff were least positive about the completeness, relevance and accuracy of the nursing information in the electronic health records. This is a notable finding.

Evidence for the effect of using standardized terminologies on the quality of nursing documentation is limited to date, but several recent studies do show a positive association between the accuracy of documentation and the use of standardized terminologies [32-36]. Even though using standardized terminologies is just one criteria for accurate nursing documentation, it can be assumed as an important criteria [5, 12, 13]. In consequence, the misuse of a standardized terminology could result in inaccurate nursing documentation. Research did show that nursing staff need to understand a standardized terminology for it to be used correctly [23]. For instance, nursing staff should know how to apply standardized terminologies within the nursing process and how to fit the standardized words and terms to a specific patient situation. Our study showed a large group of nursing staff who did not recognize the use of standardized terminologies. Given that nursing care is mostly performed by teams, if one person within a team is using the standardized terminology incorrectly, this could result in the experience for other team members that nursing information in electronic health records is incomplete, irrelevant and inaccurate.

The third main finding from our study was that there was no association between the extent to which nursing staff felt supported by the use of electronic health records and the use of specific standardized terminologies. This is a remarkable finding since standardized terminologies are expected to help nursing staff achieve accurate documentation [5, 12, 13]. However, it should be noted that the explained variance in the regression model was low, namely 2.5%. This low percentage suggests that factors other than the variables included in our study explain the extent to which nursing staff feel supported by the use of electronic health records.

A factor that could be related to the perceived support from electronic health records is that nursing staff in the Netherlands are currently in a transition from paper-based records to electronic health records [37]. Therefore, nursing staff are still adjusting their own routines so that they can work with electronic health records. For instance, a previous survey among Dutch nursing staff indicated some negative attitudes among nursing staff to working with electronic health records [38].

Another factor that could be associated with the extent to which nursing staff felt supported by the use of electronic health records is the variety in health records that have been developed by software developers. For instance, the health records lack links between the different phases of the nursing process [19]. In addition, research showed that nursing diagnoses are not documented in a standardized manner in the present Dutch electronic health records [39]. This suggests that current generation of electronic health records might not provide a structure that meets the expectations and needs of nursing staff [31].

What is more, in our study some respondents answered with the name of an electronic health record or software developer instead of the standardized terminology they used.

These answers suggest that nursing staff find it difficult to distinguish between standardized terminologies (e.g. words and terms) and applications from software developers.

Furthermore, it should be noted that the standardized terminologies used by nursing staff within our study were difficult to compare with one another, given that their theoretical frameworks differ. For instance, Gordon is used only for the first step of the nursing process, namely the assessment of patients' needs. In contrast, the Omaha System and the combination of NANDA-I, NIC and NOC contain components for all steps of the nursing process. This difference in theoretical frameworks could be a possible explanation for the slightly greater support that nursing staff using the Omaha System experienced from the use of electronic health records compared with nursing staff using Gordon.

Limitations and strengths

Some limitations to this study need to be acknowledged. First, a non-validated questionnaire was used since no validated questionnaire exists for the support nursing staff experience from the use of electronic health records. However, questions were developed based on the relevant literature and in consultation with experts on this topic. Moreover, nursing staff pilot-tested the questionnaire for comprehensibility. For this reason, the questionnaire is expected to have content validity.

Second, the average age of our respondents (49 years) was somewhat higher than the national mean age of Dutch nursing staff working in hospitals, mental health care, home care and nursing homes, which varied from 41 to 45 years [27]. Nevertheless, the variable 'age' was included in the multiple linear regression analysis and was found not to be associated with the extent to which nursing staff felt supported by the use of electronic health records.

Third, there was an overrepresentation of home care nursing staff in the sample (45.7%), since only 13.5% of the overall Dutch nursing staff population work in the home care setting [27]. This overrepresentation might be explained by the present composition of the Nursing Staff Panel, in which home care nursing staff are also slightly overrepresented. However, we presented the findings for each of the sub-samples working in different healthcare settings separately. Moreover, in the multiple linear regression analysis the variable 'healthcare setting' was included, but was found not to be associated with the extent to which nursing staff felt supported by the use of electronic health records.

Notwithstanding these limitations, our research adds some interesting knowledge to an area of research and nursing practice that is relatively new and unfamiliar. A strength of this study is that it was the first study to compare the experiences of nursing staff who were all working directly with patients, and who worked in the four main healthcare settings. Another strength is that our study compared the use of various standardized terminologies with each other, instead of focusing on the use of one standardized terminology.

Conclusion

Only half of Dutch nursing staff used a standardized terminology in electronic health records. That standardized terminology was generally either Gordon's Functional Health Patterns, the combination of NANDA-I, NIC and NOC, or the Omaha System. The specific kind of standardized terminology used by nursing staff was associated with the healthcare setting. In general, nursing staff only felt moderately supported by the use of electronic health records. They experienced most support from the use of electronic health records in their nursing activities during the provision of care. However, nursing staff were often not positive about whether the nursing information in the electronic health records was complete, relevant and accurate, and whether the electronic health records were user-friendly. No association was found between the extent to which nursing staff felt supported by the use of electronic health records and the use of particular standardized terminologies. In the Netherlands, standardized terminologies are integrated in electronic health records by various software developers in various ways, resulting in considerable diversity between electronic health records. Clear linkages between phases of the nursing process are mostly lacking in current electronic health records, according to an international expert panel [19]. Therefore, the variety of ways in which software developers have integrated standardized terminologies might explain why these terminologies had less of an impact on the extent to which nursing staff felt supported by the use of electronic health records.

Implications for research

Further research is needed into whether nursing documentation in general and the use of standardized terminologies in particular are associated with the perceived quality of care for patients. Furthermore, our study showed that nursing staff were often not positive about the user-friendliness of their electronic health records. Comparable findings have been mentioned in a Finnish survey study, which also showed that poor user-friendliness of electronic health records is a prominent source of time pressure among registered nurses [28]. However, in-depth knowledge about the relation between the user-friendliness of electronic health records and the time pressure experienced in relation to nursing documentation is lacking. Further research is recommended on this topic. In addition, our study shows that half of nursing staff used standardized terminologies in the electronic health records. There could be tension between documenting information in standardized terminologies, which include words and terms familiar to nursing staff, and documenting information in a way that is understandable for patients. For instance, it is known that information at hospital discharge is often not comprehensible for patients [40]. Patients' involvement in nursing documentation therefore requires further investigation.

Implications for practice

The results of our study show that nursing staff were often not positive about the user-friendliness of their electronic health records. To increase the extent to which nursing staff

feel supported by their electronic health records, user-friendly designs for these health records should be developed. Therefore, nursing staff, nursing associations, healthcare organisations, government and software developers need to work together. For instance, they should work towards electronic health records that include links between the different phases of the nursing process.

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Authors' contribution

KdG, AdV, WP and AF developed the study concept and design. KdG, WP and AF carried out the data collection. All authors (KdG, AdV, WP, AF) contributed to the analysis and interpretation of the data. All authors contributed to the drafting and revision of the article. All authors read and approved the final manuscript.

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CHAPTER 4

Nursing documentation and its relationship with p
nursing workload: a mixed-methods study among comn

Abstract

Background: The time that nurses spent on documentation can be substantial and burdensome. To date it was unknown if documentation activities are related to the workload that nurses perceive. A distinction between clinical documentation and organizational documentation seems relevant. This study aims to gain insight into community nurses' views on a potential relationship between their clinical and organizational documentation activities and their perceived nursing workload.

Methods: A convergent mixed-methods design was used. A quantitative survey was completed by 195 Dutch community nurses and a further 28 community nurses participated in qualitative focus groups. For the survey an online questionnaire was used. Descriptive statistics, Wilcoxon signed-ranked tests, Spearman's rank correlations and Wilcoxon rank-sum tests were used to analyse the survey data. Next, four qualitative focus groups were conducted in an iterative process of data collection - data analysis - more data collection, until data saturation was reached. In the qualitative analysis, the six steps of thematic analysis were followed.

Results: The majority of the community nurses perceived a high workload due to documentation activities. Although survey data showed that nurses estimated that they spent twice as much time on clinical documentation as on organizational documentation, the workload they perceived from these two types of documentation was comparable. Focus-group participants found organizational documentation particularly redundant. Furthermore, the survey indicated that a perceived high workload was not related to actual time spent on clinical documentation, while actual time spent on organizational documentation *was* related to the perceived workload. In addition, the survey showed no associations between community nurses' perceived workload and the user-friendliness of electronic health records. Yet focus-group participants did point towards the impact of limited user-friendliness on their perceived workload. Lastly, there was no association between the perceived workload and whether the nursing process was central in the electronic health records.

Conclusions: Community nurses often perceive a high workload due to clinical and organizational documentation activities. Decreasing the time nurses have to spend specifically on organizational documentation and improving the user-friendliness and intercommunicability of electronic health records appear to be important ways of reducing the workload that community nurses perceive.

Keywords: documentation burden, electronic health record, home care, mixed-methods research, nursing documentation, nursing process, nursing workload, user-friendliness

Background

Clinical nursing documentation is essential in letting nurses continuously reflect on their choice of interventions for patients and the effects of their interventions. Therefore, it is vital to the quality and continuity of nursing care [1, 2]. Nursing documentation can be described as a reflection of the entire process of providing direct nursing care to patients [3-5]. Consequently, there is international consensus that clinical nursing documentation has to reflect the phases of the nursing process, namely assessment, diagnosis, care planning, implementation of interventions and evaluation of care or – if relevant – handover of care [2, 3, 6-8].

Despite the evident importance of nursing documentation, time spent on documentation can be substantial and therefore it can be experienced as onerous for nurses. Research indicates documentation time has reached an extreme form [9-11]. Even though the actual time spent by nurses on documentation varies internationally, it is a substantial part of the work of nurses [12, 13]. For example, in Canada nurses spend about 26% of their time on documentation [14], in Great Britain 17% [15] and in the USA percentages vary from 25% to as much as 41% [16, 17]. In the Netherlands, nursing staff reported spending an average of 10.5 hours a week on documentation [18], which means they spend about 40% of their time on documentation.

The variation between countries in nurses' time spent on documentation may be related to differences in electronic health records and the way in which handovers are organized. However, the variation may also be the result of a lack of clarity about what qualifies as documentation [19, 20]. Some studies used the term 'documentation' for activities that were directly related to individual patient care, e.g. drawing up a care plan or writing progress reports [16, 17]. Other studies used 'documentation' as an umbrella term that included 'nonpatient-care-related' documentation as well, such as recording hours worked or recording data for the planning of personnel [18, 20].

A conceptual overview from the Organisation for Economic Cooperation and Development (OECD) provides more conceptual clarity in the various types of documentation [12]. The OECD states that documentation generally can be divided into clinical documentation and documentation regarding organizational and financial issues. Clinical documentation refers to documentation in the electronic health records of individual patients, e.g. about the patient's medical condition and about the care provided by healthcare professionals. The OECD uses the term 'organizational documentation' to refer to the documentation of issues regarding personnel planning and coordinating different shifts, for instance. Documentation such as recording hours worked for the purpose of billing and insurance are categorized by the OECD as financial documentation [12].

There are indications that organizational and financial documentation in particular has increased in the last decade, which might be explained by the rising demand for accountability and efficiency of care [21]. Since documenting organizational and financial issues is not directly related to patient care, these aspects of documentation might be perceived negatively by nurses [22]. In contrast, nurses might be more open to clinical documentation since this documentation is essential to high-quality nursing care [1, 2, 23]. Moreover, according to professional standards and guidelines, clinical documentation should be considered as an integral part of providing nursing care [24-26].

Still, lengthy clinical documentation might be challenging for nurses as well. According to Baumann, Baker [27], Moore, Tolley [28] the implementation of electronic health records for individual patients appeared to increase the observed time that nurses spend on clinical documentation. Yet their findings were inconclusive, since long-term follow-up studies indicated decreasing documentation time once nurses became familiar with the electronic health records [27]. However, other studies indicated that the setup for the electronic health records does not always match nurses' routines and can therefore be a potential source of perceived time pressure among nurses [29, 30]. Yet when the electronic health records follow the phases of the nursing process, this might be supportive for nurses' clinical documentation [31].

Nurses' time pressure and nursing workload have received significant interest, in part because nursing shortages are a problem internationally [32]. Research often focusses only on the objective nursing workload, measured and expressed in actual time spent caring for a patient and/or staffing ratios [33]. However, nurses' emotional or perceived workload might not always correspond to their objective workload [34]. But the perceived workload of nurses and the related factors is a rather unexplored area. For instance, it was unknown to date if perceived workload is associated with specific types of documentation activities and the actual time spent on these activities.

In line with the above-mentioned conceptual overview from the OECD [12] and from a nursing perspective, it seems relevant to make a distinction between different types of documentation activities. On the one hand, there is clinical documentation, which directly concerns the nursing care for individual patients. On the other hand, there is organizational and financial documentation; this is documentation that is mainly relevant for care organizations, management, policymakers and/or health insurers. In the Dutch context, clinical documentation often includes care needs assessment information, a care plan structured according to the phases of the nursing process, daily evaluation reports concerning the care given, and the handover of care. Organizational and financial documentation often concerns records of hours worked, expense claims for medical aids, reports on incidents with patients and/or employees, internal audits, and measurements of employee satisfaction and/or patient satisfaction.

To date it was unclear whether specific types of documentation are associated with a high perceived nursing workload. Distinguishing between types of documentation may provide more insight into the possible relationship between documentation and perceived nursing workload.

Furthermore, we used a mixed-methods approach to gain a deeper understanding, with a quantitative survey followed by qualitative focus groups. The quantitative data provided a broad and representative picture of the possible presence of a relationship between perceived workload and documentation activities. However, the reasons *why* community nurses felt the specific documentation activities increased their workload became clearer from the qualitative data. Combining the findings from these two methods resulted in a credible and in-depth picture of the relationship between documentation activities and perceived nursing workload. This enabled specific recommendations to be made that can help reduce the workload of nurses.

Such insights are relevant in particular for the home-care setting, since a previous survey showed that community nurses reported spending even more time on documentation compared with nurses working in other settings [18]. In addition, most studies on the documentation burden focus solely on the hospital setting, e.g. the studies of Collins, Couture [35] and Wisner, Lyndon [30].

Therefore, the study presented here aimed to gain insight into community nurses' views on a potential relationship between clinical and organizational documentation and the perceived nursing workload (in this study, 'organizational documentation' includes financial documentation). The research questions guiding the present study were:

1. (a) Do community nurses perceive a high workload due to clinical and/or organizational documentation? (*survey and focus groups*), (b) If so, is their perceived workload related to the time they spent on clinical and/or organizational documentation? (*survey*).
2. Is there a relationship between the extent to which community nurses perceive a high workload and (a) the user-friendliness of electronic health records (*survey and focus groups*), and (b) whether the nursing process is central in the electronic health records (*survey and focus groups*)?

Methods

Design
A convergent mixed-methods design was used, in which a quantitative survey with qualitative focus groups were combined to develop in-depth understanding of the relationship between documentation activities and perceived nursing workload [36, 37]. This design has been proven to be particularly useful for achieving a deep understanding of

relationships [36, 38]. First, the quantitative survey was performed and findings from this quantitative component were subsequently enriched by the findings of the qualitative focus groups [37, 38].

Participants

Survey participants

The nurses who were sent the online survey were participants drawn from a Dutch nationwide research panel known as the Nursing Staff Panel (https://www.nivel.nl/en/panel-verpleging-verzorging/nursing-staffpanel). Members of the Nursing Staff Panel are primarily recruited through a random sample of the population of Dutch healthcare employees provided by two pension funds [4]. In addition, members are recruited through snowball sampling and open calls on social media. All members had given permission to be approached regularly to answer questions about their experiences in nursing practice. For this study, the survey was sent by email to all 508 community nurses who were members of the Nursing Staff Panel. Since this is a nationwide panel, respondents worked in a variety of organizations across the Netherlands. To increase the response rate, two electronic reminders were sent to nurses who had not yet responded.

This paper focusses on community nurses and electronic nursing documentation; therefore only respondent nurses who met the following criteria were included in the analysis: 1) being a registered nurse with a bachelor's degree or a secondary vocational qualification in nursing; 2) working in home care; 3) using electronic health records. We excluded 24 respondents who did not meet these criteria.

Focus-groups participants

Focus-group participants were recruited through the professional network of two authors (KdG and AM), open calls on social media (LinkedIn and Facebook), and through snowball sampling. Nurses were eligible to participate in a focus group if they met the same inclusion criteria as used for the survey participants. Purposive sampling was applied to obtain variation among participants regarding the educational level, age and standardized terminology used in the electronic health records. None of the participants of the focus groups had also participated in the survey.

Since the focus groups were in addition to the survey, we expected a priori that four focus groups would be enough to reach data saturation. This expectation was met, as the last focus group produced no new insights that were relevant for answering the research questions.

Data collection

The survey

The survey data were collected from June to July 2019. We used an online survey questionnaire that mostly consisted of self-developed questions as, to our knowledge, no instrument was available that included questions on both clinical documentation and organizational documentation. The extent to which nurses perceived a high workload was measured using a five-point scale (1 = 'never' to 5 = 'always'). We distinguished between a high workload due to clinical documentation and a high workload due to organizational documentation. We included financial documentation in our definition of organizational documentation. In the questionnaire we explained the content of the two types of documentation. Respondents were then asked to estimate the time they spent on the two types of documentation.

Next, two questions focussed specifically on clinical documentation, namely whether the electronic health record of individual patients was user-friendly and whether the nursing process was central in this record. These questions were derived from the 'Nursing Process-Clinical Decision Support Systems Standard', an internationally accepted and valid standard for guiding the further development of electronic health records [31].

The entire questionnaire was pre-tested for comprehensibility, clarity and content validity by nine nursing staff members. Based on their comments, the questionnaire was modified, and a final version produced. A translation of the part of the questionnaire with the 11 questions relevant for this paper can be found at:

https://documenten.nivel.nl/translated_questionnaire.pdf.

Focus groups

After the survey, we conducted four qualitative focus groups from February to May 2020. Each group consisted of six or eight community nurses, with a total of 28 community nurses. These focus groups were performed in order to deepen and refine the insights gained from the survey data.

The focus groups were led by two authors (KdG and AM) and supported by an interview guide with open questions, see Table 4.1. The questions were inspired by the results of the survey data, e.g. they addressed how community nurses perceived clinical and organizational documentation in relation to their workload, or how community nurses experienced the user-friendliness of electronic health records.

Initially, we aimed to conduct all the focus groups face-to-face at the care organizations' offices. However, after one face-to-face focus group we had to switch to online focus groups due to the COVID-19 pandemic. Online focus groups in which participants post written responses in a secure online discussion site have been proven to be an appropriate

alternative for face-to-face focus groups [39–41]. In fact, the online focus groups had several advantages, such as providing participants with the ability to access, read and respond to posts at a place and time most convenient to them [40, 41]. This was particularly advantageous for nurses during the pandemic.

Each online focus group was conducted within a set period of 2 weeks. Two authors (KdG and AM) acted as moderators by regularly checking the responses and posting new questions every 2 days, except in the weekend. The analysis of the transcripts has shown that the findings from the online focus groups were comparable to those from the face-to-face focus group.

Table 4.1 Interview guide

1.	Do you experience a relationship between workload and documentation activities? If so, can you explain?
2.	What do you think about the amount of time you spent on documentation activities?
3.	Can you tell us about your experiences with organizational documentation activities related to your perceived workload? By organizational documentation activities we mean documentation that is mostly relevant for care organizations, managers and policymakers, such as records of hours worked, expense claims, or reports on incidents.
4.	Can you tell us about your experiences with clinical documentation activities related to your perceived workload? By clinical documentation activities we mean documentation which directly concerns the nursing care for individual patients, such as drawing up a care plan, documenting daily evaluation reports or the handover of care.
5.	How do you experience documentation in the electronic health record?
6.	How do you experience the user-friendliness of the electronic health record that you work with?
7.	How do you experience the use of various electronic systems for your documentation activities? By electronic systems you can think of electronic health records, systems for records of hours worked, and/or systems for expense claims.
8.	How do you experience the documented handover of care to other healthcare professionals, such as general practitioners and hospital nurses? Can you think of improvements regarding these documentation activities?

Data analysis

Analysis of the survey

Descriptive statistics were used to describe the background characteristics of the respondents and to answer the first and second research questions. Wilcoxon signed-ranked tests were conducted to answer the first research question (1a), since the two variables measuring the perceived workload were ordinal and the two variables measuring the estimated time spent on documentation were not normally distributed. Next, the potential relationships between perceived workload and time spent on documentation (research question 1b) were examined using Spearman's rank correlations. Wilcoxon rank-sum tests were conducted to examine associations between perceived workload and user-friendliness (research question 2a) and the nursing process (research question 2b). The level

for determining statistical significance was 0.05. Analyses were conducted using STATA, version 16.1.

Analysis of the focus groups

The audio recording of the face-to-face focus group was transcribed verbatim. Transcripts from the online focus groups were taken directly from the discussion site.

The focus-group transcripts were analysed using an iterative process of data collection - data analysis - more data collection. Within this process, the six steps of thematic analysis were followed, namely becoming familiar with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and reporting [42].

The transcripts of all the focus groups were analysed by two authors (KdG and AM). They refined their analyses in discussions together and with two other authors (AF and WP), which ultimate led to consensus about the main themes. This triangulation of researchers was used to increase the quality and trustworthiness of the analysis [43]. Moreover, 'peer debriefing' was applied with a group of peer researchers who were not involved in the study. In addition, confirmability of the findings was enhanced by including verbatim statements made by participants in the results section of this paper. Furthermore, the quality of the reporting was ensured by following the guidelines in 'Good Reporting of A Mixed Methods Study' [44].

Data integration

By integrating data from the quantitative and qualitative components, an in-depth and credible picture was obtained of the relationship between specific documentation activities and perceived nursing workload [36, 37]. The data were integrated using two integration approaches. Firstly, we compared the data from the survey and focus groups in the analysis process, in discussions among the authors, and in the 'Discussion' section of this article. This is referred to as the 'merging' approach [37]. For instance, the survey result on how many nurses perceived a high workload from clinical documentation activities was compared to the focus groups results on nurses' views as to why they did or did not perceive a high workload from these activities. Secondly, integration through narratives was performed when reporting the results. Hereby we used a 'weaving' approach in which we brought the findings from the quantitative survey and qualitative focus groups together on a thematic basis and arranged them according to the research questions [37].

Ethical considerations

The study was conducted in compliance with the principles of the General Data Protection Regulation, by strictly safeguarding the anonymity of the participants. Formal approval from an ethics committee was not required under the applicable Dutch legislation on medical scientific research as participants were not subjected to procedures and were not required

to follow rules of behaviour (see https://english.ccmo.nl/investigators/legalframework-for-medical-scientific-research/yourresearch-is-it-subject-to-the-wmo-or-not).

Participants in the survey had all consented to being sent and completing surveys on a regular basis on topics directly related to their work when they signed up as members of the Nursing Staff Panel. Potential participants of the focus groups were informed about the study in an information letter. If desired, they could obtain additional verbal information. All participants signed an informed consent form before the focus groups started. All methods were applied in accordance with relevant guidelines and regulations.

Results

Participants

A total of 195 community nurses completed the questionnaire (response rate 38.4%). Since a substantial group did not respond, we conducted non-response analyses. We found no statistically significant differences between the respondents and non-respondents regarding gender, level of education and number of hours employed. We did however see a difference in age: the respondents were somewhat older (mean age 49.8 years) than the non-respondents (mean age 44.3 years). We reflect on the relatively high age of the survey respondents in 'Limitations and strengths' section.

A total of 28 community nurses participated in the four focus groups. The characteristics of the participants are presented in Tables 4.2 and 4.3.

Table 4.2 Survey participants' characteristics

Characteristics	Survey participants (n = 195)
Age [mean (SD)]	50.1 (11.5)
Gender [n (%)]	
Female	182 (93.3%)
Male	13 (6.7%)
Level of education [n (%)]	
Registered nurse secondary vocational qualification	86 (44.1%)
Registered nurse bachelor's degree	109 (55.9%)
Standardized terminology [n (%)]#	
Omaha System	164 (84.1%)
NANDA-I NIC NOC	21 (10.8%)
Other standardized nursing terminologies	13 (6.7%)
No standardized terminology	6 (3.1%)
I don't know	7 (3.6%)
Number of hours employed [mean (SD)]	25.3 (7.1)

#Multiple answers possible

Table 4.3 Focus-groups participants' characteristics

Characteristics	Focus group participants (n = 28)
Age [mean (SD)]	33.7 (11.3)
Gender [n (%)]	
Female	26 (92.8%)
Male	2 (7.2%)
Level of education [n (%)]	
Registered nurse secondary vocational qualification	6 (21.4%)
Registered nurse bachelor's degree	22 (78.6%)
Standardized terminology [n (%)]	
Omaha System	27 (96.4%)
NANDA-I NIC NOC	1 (3.6%)

Perceived workload due to documentation and time spent documenting

More than half of the community nurses in the survey said that they perceived a high workload due to clinical and/or organizational documentation, see Table 4.4. A majority (52.4%) said that they regularly to always experienced a high workload due to clinical documentation. Regarding organizational documentation, 58% of the nurses reported a high perceived workload. No statistically significant differences in perceived workload were found between the two types of documentation (Wilcoxon signed-ranked test: p = 0.124). In other words, nurses were just as likely to experience a high workload due to clinical documentation as due to organizational documentation.

Community nurses in the survey estimated that they spent on average 8.0 (SD 6.0; median 6.0) hours a week on clinical documentation. They estimated that they spent significantly less time on organizational documentation, namely on average 3.6 (SD 4.0; median 2.0) hours a week (Wilcoxon signed-ranked test: p < 0.000).

Looking at clinical documentation, no statistically significant correlation was found between nurses' estimated time spent on this type of documentation and their perceived high workload (Spearman's rank correlation 0.135; p = 0.058). However, looking at organizational documentation, a statistically significant moderate correlation was found between time spent on documentation and perceived high workload (Spearman's rank correlation 0.375; p < 0.000). This showed that nurses who spent more time on organizational documentation were more likely to perceive a high workload.

Table 4.4 Community nurses' perceived workload due to documentation and estimated time spent on documentation

Variables	Clinical documentation (n =195)	Organizational documentation (n = 195)	*p* value
Perceived high workload [n (%)]			0.124
Never	8 (4.1%)	10 (5.1%)	
Rarely	85 (43.6%)	72 (36.9%)	
Regularly	68 (34.9%)	75 (38.5%)	
Often	27 (13.9%)	31 (15.9%)	
Always	7 (3.6%)	7 (3.6%)	
Estimated time per week spent on documentation [Mean (SD; median)]	8.0 (6.0; 6.0)	3.6 (4.0; 2.0)	<0.000

In general, the community nurses participating in the qualitative focus groups experienced a high workload due to documentation as well. They described organizational documentation in particular as cumbersome, redundant and too repetitive in nature. Even though nurses believed that a high workload in general is common among community nurses, they did see documentation as one of the causes for their high workload.

"You are already busy sorting out all the shifts, all the patients who are starting and stopping home care etc. There's already a high workload. And on top of all that, there are the documentation activities. In our organization, they also want everyone to do refresher courses to keep their registration as a nurse, so you need to register that too. That is another extra documentation burden, and that takes up extra time too."
(Focus group 1, face-to-face).

A general picture that emerged from the focus groups is that organizational documentation was a key reason for community nurses' perceived workload, while this was less so for clinical documentation. Community nurses in the focus groups said that they often failed to see the added value of organizational documentation for their patients and themselves. Therefore they had a feeling of frustration with the organizational documentation, associated with a high perceived workload.

"I think the frustration comes much more from the organizational side. From powerlessness because of all the pointless things you don't really have time for."
(Focus group 1, face-to-face).

Focus-group participants mentioned that various rules and regulations imposed by their employers and/or national organizations, such as health insurers, also affected the amount of organizational documentation. They perceived a high workload when they had to register information only for the sake of these rules and regulations.

"Whenever someone in the organization starts talking about reducing the documentation burden, my blood pressure starts to rise. Then I know for certain that it'll come back in spades some other way: someone else's documentation burden will be reduced, but not mine." (Focus group 1, face-to-face).

Community nurses in the focus groups were more positive about their clinical documentation activities. They found clinical documentation necessary and useful for providing good nursing care. For them it was evident that this documentation was an important part of their work. Because they saw clinical documentation as directly connected to individual patient care, they were less negative about the time they had to spend on clinical documentation compared with organizational documentation. Some nurses did however mention that documenting the formal care needs assessment (which is a requirement for home care financed by health insurers in the Netherlands) consumed a lot of their time. Still, nurses did not find this kind of documentation burdensome due to the perceived relevance and usefulness of the documentation of the care needs assessment. This was also the case for clinical documentation relating to individual patient care in general.

"The documentation activities I carry out for my patients are appropriate for my job and the documentation is not an additional burden. On the contrary, that documentation helps me and my fellow nurses to give our patients good, appropriate care."
(Focus group 4, online).

Perceived workload and features of electronic health records
Elaborating further on clinical documentation specifically, we explored the perceived workload in relation to two features of the electronic health records, namely user-friendliness and whether the record matches with the nursing process.

User-friendliness of electronic health records in relation to workload
Most of the community nurses in the survey agreed that the electronic health records in which they documented information about the nursing care for individual patients were user-friendly (78.8%). A smaller group disagreed (17.6%) and a few did not know (3.6%). The survey participants who answered 'don't know' were excluded from the analysis of the association between user-friendliness and the perceived workload. No statistically significant association was found between how often the nurses perceived a high workload and the user-friendliness of electronic health records (Wilcoxon rank-sum test: p = 0.166), see Table 4.5.

Table 4.5 Association between perceived workload and the user-friendliness of electronic health records

Perceived high workload	The electronic health record I work with is user-friendly		
	Agree (n = 152)	Disagree (n = 34)	*p* value
Never	6 (4.0%)	2 (5.9%)	0.166
Rarely	72 (47.4%)	12 (35.3%)	
Regularly	51 (33.6%)	11 (32.4%)	
Often	21 (13.8%)	5 (14.7%)	
Always	2 (1.3%)	4 (12.8%)	

As for the user-friendliness of electronic health records the opinions and experiences of the community nurses in the qualitative focus groups were divided. While several community nurses were positive about the user-friendliness of the electronic health records, others were less positive. The latter group said that the limited user-friendliness was one reason why they spent so much time on documentation and experienced a high workload. Elaborating on the limited user-friendliness, nurses in the focus groups explained that some mandatory sections or headings in the electronic health records, e.g. about wound care, cost them too much time. They did not always see the added value of filling in those sections, making this a burdensome activity. Furthermore, nurses stated that the fact that they often had to switch between different sections of the electronic health record was time-consuming and burdensome for them as well.

"I also find it a pain that you need to search in different sections for a lot of things. The care plan describes that you have to perform wound care according to the wound policy, but the wound policy itself is under a different heading than the care plan. Then the reports about the wound are under the care plan again. And if the patient also needs help with ADL, you have to go back via the care plan again. It all costs extra time and you have to do a lot of clicking." (Focus group 3, online).

Focus-group participants also addressed another issue regarding the limited user-friendliness of the electronic health records in relation to their workload. This is the large diversity in electronic systems used within and across care organizations and professionals. For instance, nurses said that they used different systems for documenting wound care and for documenting the medication check. Furthermore, other healthcare professionals, such as general practitioners or pharmacists, often use different electronic systems for their clinical documentation. Community nurses stated that these systems are often not linked to one another, resulting in duplicate documentation activities for nurses and increasing their workload.

"We have at least a dozen systems and only a few are linked to each other. [...] The systems for communicating with other disciplines and medication systems aren't linked to one another. Despite the positive discussions, you're still dependent on the preferences of

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the pharmacist or GP as to what systems are used. That can lead to you having three different medication systems in one team, for example." (Focus group 4, online).

Nursing process in electronic health records in relation to workload
In the survey, the majority of community nurses agreed that the nursing process was central in their electronic health records (78.7%). Some nurses disagreed (17.2%) and a few did not know (4.2%). To examine a possible association with workload, survey participants who answered 'don't know' were excluded from this analysis. No statistically significant association was found between a perceived high workload and whether the nursing process was central in the records (Wilcoxon rank-sum test: p = 0.542), see Table 4.6.

Table 4.6 Association between perceived workload and whether the nursing process is central in electronic health records

Perceived high workload	The nursing process is central in the electronic health record		
	Agree (n = 151)	Disagree (n = 33)	*p* value
Never	6 (4.0%)	2 (6.1%)	0.542
Rarely	63 (41.7%)	16 (48.5%)	
Regularly	55 (36.4%)	8 (24.2%)	
Often	21 (13.9%)	6 (18.2%)	
Always	6 (4.0%)	1 (3.0%)	

Like the survey respondents, virtually all community nurses in the focus groups were positive about how the nursing process was integrated in the electronic health records they worked with.

"I think we have a very nice system that functions well. [...] I also get sufficient support from this system in my task as a community nurse monitoring the nursing process." (Focus group 4, online).

Hence, this feature of the electronic health records was not associated with the workload of the community nurses.

Discussion

The present study revealed that the majority of community nurses participating in the survey and focus groups perceived documentation as a cause of their high workload. These findings are in line with previous research that indicated that documentation can be burdensome to nurses [9, 10]. Although community nurses spent twice as much time on clinical documentation compared to organizational documentation, the survey showed that community nurses were just as likely to perceive a high workload due to clinical documentation as to organizational documentation. In the focus groups, nurses indicated that organizational documentation in particular was a cause of their high workload. They were more positive about clinical documentation since they experienced that as a

meaningful and integral part of the care for individual patients. This view is in line with professional guidelines that describe clinical nursing documentation as an integral part of nursing care for individuals [24-26].

Nevertheless, the survey in particular showed that community nurses often did perceive a high workload due to clinical documentation as well. In the focus groups participants had more opportunity to reflect on and to discuss the value of clinical documentation versus organizational documentation, and this may have resulted in more positive views on clinical documentation.

Still, it is rather surprising that particularly in the survey clinical documentation was associated with a high workload by so many community nurses. Previous research by Fraczkowski, Matson [45];Michel, Waelli [20]; Moy, Schwartz [46];Vishwanath, Singh [47];Wisner, Lyndon [30] indicated that electronic clinical documentation is associated with documentation burden by health care professionals. It seems important that all nurses are made aware that clinical nursing documentation is important for providing good patient care. This awareness might reduce nurses' perceived workload associated with documentation activities. On top of that, further integrating clinical documentation in individual patient care and improvements in the electronic health records are needed [45, 48].

For optimal integration of clinical documentation in patient care, it is important that the electronic health records reflect the phases of the nursing process [6, 31]. However, our study showed no association between the extent of nurses' perceived workload and whether the electronic health records was following the nursing process. A possible explanation is that most community nurses (78.7%) already found that the nursing process was central in their electronic health records.

A key recommendation for care organizations and software developers is to improve electronic health records in terms of their user-friendliness [4, 31]. Other recent studies also linked the limited usability or user-friendliness of electronic health records to nurses' perceived time pressure [29, 49]. The community nurses participating in the focus groups also recommended improvements in the user-friendliness of electronic health records and stated that that would reduce their workload. Examples would be removing mandatory sections in electronic health records and working on better communication between systems within and across care organizations and healthcare professionals.

Furthermore, focus-group participants recommended linking the content of the different electronic systems for clinical and organizational documentation so that relevant information only has to be documented once. Other research also indicated that duplication in documentation is a problem for nurses and is accompanied with negative views on documentation [11]. Moreover, studies showed a poor match between different electronic

health records both in the digital formats that are used and in the professional vocabulary and standard terminologies used [50, 51]. Improvements in electronic health records, linkages between different electronic systems and more uniformity in language could facilitate information sharing with other healthcare professionals and interdisciplinary care [48, 52].

Another finding in our study was that although clinical documentation was also associated with a high workload, time spent on organizational documentation was considered even more problematic. Unlike clinical documentation, organizational documentation was often seen as pointless. Spending a great deal of time on organizational documentation gave feelings of frustration and a high perceived workload. Our study did not differentiate between different kinds of organizational documentation in terms of the aims of the documentation, e.g. financial accountability for insurers, quality indicators for the Health Inspectorate, safety and quality management for the nurse's own care organization, etcetera. The association between the specific aims of organizational documentation and nurses' perceived workload could be a subject for future research. In addition, further research should focus on the integration of clinical documentation in patient care and the user-friendliness of electronic health records.

Limitations and strengths
A limitation of this mixed-methods study is that the survey participants and focus-group participants differed in age: the focus-group participants were on average younger than the survey participants. We looked at the survey data for a possible correlation between age and perceived workload but did not find statistically significant differences.

A second limitation is that we used a self-developed survey questionnaire. However, we based the questionnaire on relevant literature, including the 'Nursing Process-Clinical Decision Support Systems Standard' [12, 31]. Furthermore, we tested the questionnaire in a pilot study for comprehensibility among nursing staff. Hence, we consider the questionnaire to be a comprehensive and content valid instrument to assess nurses' experiences with documentation in relation to their perceived workload.

A strength of this study was the use of mixed-methods research, which provided a deeper understanding of community nurses' documentation activities in relation with their perceived workload. The focus groups that were organized after the survey gave additional and more in-depth insights, particularly regarding nurses' views on the two types of documentation and the user-friendliness of electronic health records.

Conclusions

The majority of community nurses regularly perceived a high workload due to documentation activities. Although nurses spent twice as much time on clinical documentation as on organizational documentation, the workload they perceived from these types of documentation was comparable. The extent to which nurses perceived a high workload was related to time spent on organizational documentation in particular. Nurses believed spending substantial time on clinical documentation was worthwhile, while spending a great deal of time on organizational documentation led to frustration. Therefore, a reduction in the time needed specifically for organizational documentation is important.

Particularly in the focus groups, nurses highlighted the importance of user-friendly electronic health records in relation to perceived workload. Improving the user-friendliness of electronic health records, improving the intercommunicability of different electronic systems, and further integrating clinical documentation in individual patient care are also recommended as measures to reduce the workload that community nurses perceive from documentation activities.

Authors' contributions
KdG, AdV, AF and WP developed the study concept and design. KdG, AdV and AM carried out the data collection. All authors (KdG, AdV, AM, AF, WP) contributed to the analysis and interpretation of the data. All authors contributed to the drafting and revision of the article. All authors read and approved the final manuscript.

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CHAPTER 5

Patient participation in electronic nursing documentation:
an interview study among community nurses

Abstract

Background: Patient participation in nursing documentation has several benefits like including patients' personal wishes in tailor-made care plans and facilitating shared decision-making. However, the rise of electronic health records may not automatically lead to greater patient participation in nursing documentation. This study aims to gain insight into community nurses' experiences regarding patient participation in electronic nursing documentation, and to explore the challenges nurses face and the strategies they use for dealing with challenges regarding patient participation in electronic nursing documentation.

Methods: A qualitative descriptive design was used, based on the principles of reflexive thematic analysis. Nineteen community nurses working in home care and using electronic health records were recruited using purposive sampling. Interviews guided by an interview guide were conducted face-to-face or by phone in 2019. The interviews were inductively analysed in an iterative process of data collection–data analysis–more data collection until data saturation was achieved. The steps of thematic analysis were followed, namely familiarization with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and reporting.

Results: Community nurses believed patient participation in nursing documentation has to be tailored to each patient. Actual participation depended on the phase of the nursing process that was being documented and was facilitated by patients' trust in the accuracy of the documentation. Nurses came across challenges in three domains: those related to electronic health records (i.e. technical problems), to work (e.g. time pressure) and to the patients (e.g. the medical condition). Because of these challenges, nurses frequently did the documentation outside the patient's home. Nurses still tried to achieve patient participation by verbally discussing patients' views on the nursing care provided and then documenting those views at a later moment.

Conclusions: Although community nurses consider patient participation in electronic nursing documentation important, they perceive various challenges relating to electronic health records, work and the patients to realize patient participation. In dealing with these challenges, nurses often fall back on verbal communication about the documentation. These insights can help nurses and policy makers improve electronic health records and develop efficient strategies for improving patient participation in electronic nursing documentation.

Keywords: patient participation, nursing documentation, electronic health record, home care

Background

Accurate and complete nursing documentation is known to promote the quality and continuity of care [1-3]. Nursing documentation is defined as: 'the process of documenting nursing information about nursing care in health records' [4]. Documentation needs to be efficient and logically arranged, and therefore structured according to the phases of the nursing process, namely assessment, nursing diagnosis, care planning, implementation of interventions, and evaluation of care or - if relevant - handover of care [1, 5, 6].

According to Jefferies et al., another criterion for nursing documentation is that it should include the patients' views on their condition and their response to nursing care [7]. When nursing documentation is completed in consultation with patients and includes their personal wishes, this is a form of patient participation.

Patient participation in nursing documentation is not only a form of patient participation in its own right, but it also promotes patient participation in other aspects of nursing care. A study by Vestala and Frisman showed that when nurses discuss matters with patients that patients perceive to be important to have documented, patients are better able to express their thoughts about the care directly [8]. This can therefore facilitate shared decision-making about the nursing care. Moreover, this decision process can, in turn, result in better tailored care plans, in which the personal wishes of patients are addressed.

On top of that, patient participation in nursing documentation can also improve the accuracy of the documentation. Several studies have reported inconsistencies between the content of nursing documentation and the nursing care provided, showing that further improvement in the accuracy of the documentation is urgently needed [9-11].

The aforementioned benefits from patient participation are also reflected in laws and regulations. Today, legal requirements in many Western countries (e.g. Canada, Norway, the USA and the Netherlands) support patient participation in nursing documentation and state that patients must have access to health care professionals' documentation [12-15]. Moreover, Dutch legislation states that patients' access to their health records should be arranged electronically [16]. Furthermore, this legislation states that patients have the right to supplement, correct and delete information in the health records [15].

Additionally, several professional quality standards and guidelines refer to the importance of patient participation in nursing documentation [17, 18]. For instance, the Dutch national guideline for nursing documentation recommends that all phases of the nursing process should be documented in consultation with the patient [19].

The rise of electronic patient portals could in theory make it easier to achieve patient participation in nursing documentation [20-22]. Electronic patient portals are applications that allow patients to electronically access health records managed by a care organization.

With these applications, patients can access their health records independently of their health care professionals and at their own preferred time. Electronic patient portals are being used across various health care sectors, but in the Netherlands the home care sector in particular is leading the way in the use of such portals. A recent survey among Dutch nursing staff showed that 81 % of community nurses said that their organization worked with an electronic patient portal [22].

However, the rise of electronic health records and electronic patient portals may not automatically lead to more patient participation in nursing documentation. In the past, the paper-based health records of home care organizations remained in the patient's home and were in principle easily accessible for the patient. Using electronic patient portals, however, requires some digital skills to access the electronic health records, which can be challenging for some patients [23-25]. One Dutch study, consisting of a survey among nursing staff and a focus group with patients and family caregivers, indicated that some patients feel they have limited participation in nursing documentation [26]. Until now, however, there has hardly been any empirical research addressing community nurses' experiences of patient participation in nursing documentation.

The objectives of the present study were therefore (a) to gain insight into community nurses' experiences regarding patient participation in electronic nursing documentation; (b) to explore what challenges community nurses face, and what strategies they use to deal with the challenges regarding patient participation in electronic nursing documentation.

Methods

Design
A qualitative descriptive design was used, following the steps of reflexive, inductive thematic analysis [27, 28]. Thematic analysis aims to identify meaningful themes across a dataset [27], in this case transcripts of semi-structured interviews.

Participants and setting
Nurses were eligible to participate in this study if they met all of the following inclusion criteria:

1. Being a registered nurse with a bachelor's degree or a secondary vocational qualification in nursing;
2. Currently working in home care;
3. Using electronic health records.

Dutch community nurses either have a secondary vocational qualification (after a four-year nursing training programme at a regional centre for secondary vocational education) or a bachelor's degree (after a four-year nursing training programme at a university of applied sciences). We included nurses from both educational levels.

Participants were recruited through the nationwide network of the Dutch College of Community Nurses (Nederlands Wijkverpleegkundigen Genootschap) and the professional network of two of the authors (ES and KdG). Additionally, snowball sampling was used by asking participants whether they knew other community nurses who would like to participate in the present study. Furthermore, purposive sampling was applied so that there would be variation between participants in terms of:

1. The standardized terminology used in the electronic health records, taking into account the fact that Dutch home care providers are obligated to implement standardized terminologies in their health records [29], and that the Omaha System - a standardized terminology originally developed for the public domain - is the most common terminology used in Dutch home care [4, 30];
2. The software package for the electronic health records, taking into account that the software package supplied by the developer Nedap is the most common package used in home care in the Netherlands;
3. Working experience as a nurse (in years).

These characteristics were expected to influence community nurses' experiences with patient participation in electronic nursing documentation.

Participants were recruited for interviews until data saturation was reached. No new information relevant to the objectives of the study was obtained in the 17th interview. Two more interviews were held to confirm data saturation, giving 19 interviews in total.

Data collection
The 19 interviews were conducted between February 2019 and December 2019. Each interview was conducted by one of the authors, namely ES or KdG. The interviews were based on an interview guide, including open questions relevant to the objectives of the study (Table 5.1). The questions in the interview guide were inspired by relevant Dutch legislation [15], the draft of the revised Dutch professional guideline on nursing documentation [19], and the outcomes of a recent survey among nursing staff and focus groups with patients and family caregivers [26].

The interview guide was adjusted after 12 interviews because an interim analysis showed that we had acquired considerable information about experiences regarding patient participation in electronic nursing documentation (objective a), but relatively little information on strategies to address the challenges that nurses face (objective b). For enrichment of the data, we therefore added more in-depth questions to the interview guide regarding strategies for dealing with the challenges nurses encountered.

Seventeen interviews were conducted face-to-face and two by phone. The interviews were scheduled at a place (often the care organization's office) and time convenient for the

participants. All interviews were audio-recorded and transcribed verbatim. The interviews lasted between 18 and 67 min, with an average of 32 min.

Table 5.1 Interview guide

1.	In general, do patients participate in nursing documentation in your experience? If not, why not? If so, how?
2.	Do patients understand what is written in electronic health records?
3.	Are there differences between patients in how you let them participate in nursing documentation? If so, which differences do you see?
4.	Under which circumstances do you let patients participate and in which circumstances not?
5.	To what extent is it possible to let patients participate in documentation during all phases of the nursing process? In which phases is it possible, and in which phases is it not possible?
6.	Does the electronic health record that you work with influence the patients participation? If so, how?
7.	If you use an electronic patient portal, what do you gain from using such a portal? And what do you believe patients gain from using an electronic patient portal?
8.	Have you come across challenges in patient participation in nursing documentation? If so, which challenges do you perceive?
9.	How do you deal with the challenges you experience for patient participation in nursing documentation?
10.	How do you think that patient participation in nursing documentation can be made easier for you?
11.	Do you feel that there are differences between the paper-based records and electronic health records regarding patient participation in the nursing documentation?

Data analysis

Thematic analysis was performed, using an iterative process of data collection–data analysis–more data collection until data saturation was reached [27]. Within this process, the following six steps of reflexive, inductive thematic analysis were performed: (1) familiarization with the data; (2) generating initial codes; (3) searching for themes; (4) reviewing themes; (5) defining and naming themes; (6) reporting [27].

The transcripts of all 19 interviews were analysed by one author, KdG, and also analysed independently by at least one of the other three authors (ES, WP or AF). All authors had both a nursing background and a scientific background (in nursing science, health science or sociology). The authors compared the codes, themes and interpretations from their analysis; this revealed a high degree of consensus.

Trustworthiness of the study

The four key criteria of trustworthiness are credibility, generalizability, dependability and confirmability [31]. Credibility concerns the 'fit' between participants' views and the researchers' representation of those views [31]. One way in which credibility was enhanced was by using triangulation of researchers who interviewed and independently analysed the interview transcripts (see previous section). Another element used to boost credibility was a discussion of the interim and final analysis by the whole team of authors. We also enhanced credibility by carrying out 'peer debriefing' with a group of peer researchers who were not involved in the study. The fact that we carried out member checks with the

participants also helped the credibility of the study: each participant was presented with a summary of the main themes resulting from the analysis and was invited to give feedback. Member checks were performed after 12 interviews and after data collection had ended. Feedback received from the member checks was discussed within the team of authors. In these discussions the themes were refined until consensus was reached, resulting in the definitive themes.

Another criterion of trustworthiness concerns the generalizability of the inquiry [31]. We have enhanced trustworthiness in this regard by giving descriptions in this article of the setting and the professional backgrounds of the Dutch community nurses (see sections 'Participants and setting' and 'Characteristics of participants'). These descriptions will help those interested in using the findings to judge the transferability of the results to their own situation.

Dependability is another criterion of the trustworthiness of a study. This means that researchers have ensured that the research process is logical, traceable and clearly documented [31]. The dependability of our study is enhanced by the fact that we followed the 'Standards for reporting qualitative research' and made sure that the process of coding and analysis was reported in detail [32].

Lastly, confirmability is a key criterion of trustworthiness [31]. For confirmability the researcher's interpretations, findings and conclusions have to be clearly derived from the data. One of the ways we have increased confirmability is by including verbatim statements made by participants in the 'Results' section. The fact that we drew various mind maps to visualize the main themes and their interrelatedness also helps the confirmability. The final mind maps are shown in Figs. 5.1 and 5.2 of this article.

Ethical considerations
The study protocol was approved by the Medical Research Ethics Committee of the Amsterdam University Medical Centre (file number 2019-026). Written informed consent was obtained from all participants. All interviews were audio-recorded, with the approval of the participants. All methods were applied in accordance with relevant guidelines and regulations.

Results

Characteristics of participants
Interviews were conducted with 19 participants, 17 of whom were female (Table 5.2). The participants had between 1 and 39 years of working experience as a registered nurse. Most of the participants worked with the Omaha System (n = 16). Participants used electronic health record packages developed by Nedap (n = 11), Ecare (n = 6) or Unit4 (n = 2).

Table 5.2 Characteristics of the participants

Characteristics	N (%)
Gender	
Male	2 (10.5)
Female	17 (89.5)
Educational level	
Bachelor's degree	10 (52.6)
Secondary vocational qualification	9 (47.4)
Age (years), mean, range	Mean = 35.8, range = 23-56
Working experience as a nurse	
0-10 years	13 (68.4)
11-20 years	3 (15.8)
21-30 years	1 (5.3)
31-40 years	2 (10.5)
Standardized nursing terminology	
Omaha System	16 (84.2)
NANDA-I NIC NOC	3 (15.8)
Software developer	
Nedap	11 (57.9)
Ecare	6 (31.6)
Unit 4	2 (10.5)
Use of Electronic Patient Portal	
Yes	18 (94.7)
No	1 (5.3)

Patient participation in nursing documentation

The interviews revealed three main themes in nurses' experiences of patient participation in electronic nursing documentation. These are: (1) tailored participation; (2) trust in the accuracy of documentation; (3) association with the phase in the nursing process (Figure 5.1).
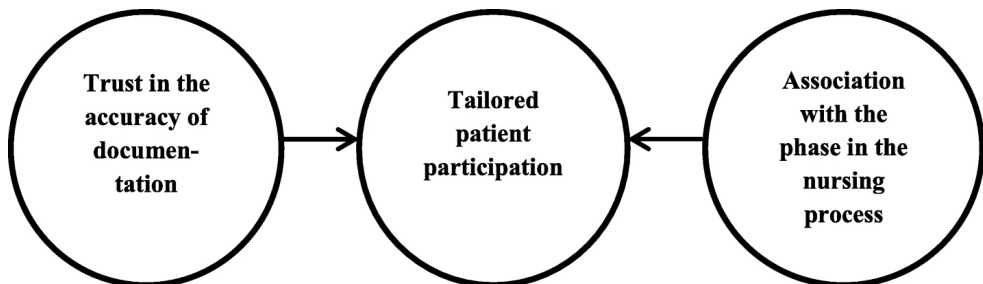

Figure 5.1 Nurses' experiences with patient participation in nursing documentation

Nurses' perspective on patient participation

Tailored patient participation

Nurses reported that patient participation in electronic nursing documentation is tailored to the individual situation of patients. For example, in patients with complex care situations (e.g. patients in a terminal stage), nurses often just tell the patient (verbally) what they have documented, while in less complex situations nurses formulated their documentation together with the patient. By telling the patient what they have documented, nurses tried to achieve a passive form of patient participation. Nurses also sometimes deliberately choose not to let very ill patients participate actively in nursing documentation to avoid burdening the patients or giving them more worries.

> *"Right, if someone is really sick, I don't always want to burden them with what I write down or what you hand over to your colleagues. So I don't always involve them in the documenting then." (Community nurse 5)*

Trust in the accuracy of the documentation

Virtually all nurses found that tailored patient participation is facilitated when patients trust the accuracy of the documentation in electronic health records. Nurses felt that many patients easily trust them to document the right information, just because of their professional relationship. As a result, these patients tend to assume that nursing documentation adequately describes their care needs and the care provided, and therefore they have no wish to participate actively in the documentation process.

> *"Then I went and made care agreements with this blind client. So I asked her, 'How can I leave this behind with you? I mean, I've told you everything, but I can't leave it behind for you to read. [...] Then the client said, 'No, but you work for [organization] so I can assume that whatever's written there will be the truth.' [...] So she signed the care plan in complete trust." (Community nurse 6)*

However, some nurses stated that a few patients, often those with a psychiatric condition, have less trust in the accuracy of nurses' documentation. Because these patients tend to be more suspicious about the accuracy, patient participation in these cases was perceived as challenging by nurses. They differed in how they addressed this challenge. A few nurses engaged in a conversation about the documentation with the patient, while others documented information in less detail.

Association with the phases in the nursing process

In addition to trust, nurses stated that tailored patient participation also depends on which phase of the nursing process they are documenting. Active patient participation, in the sense of formulating documentation together, is limited in the first three phases of the nursing process (i.e. *assessment*, *nursing diagnosis* and *care planning*). Almost all nurses documented the care needs assessment and drew up the care plan at their office, not in the patient's home. The nurses interviewed said that this was with good reason, because it

takes a lot of time to document the information accurately. After drawing up the care plan, nurses still tried to achieve patient participation by discussing the plan verbally with the patient in their home. Adjustments were then made until the patient fully agreed with the care plan.

"What I usually do is that I work the assessment out at the office and then give it to the patient and ask them to read it through. Because you've just had a long talk with the patient, that's taken you an hour, and then you can work it out a little more calmly at the office, because otherwise you're just sitting there typing in front of a patient, and that's not good when you're having a talk. It goes quiet. Then I feel you are actually going to miss information." (Community nurse 18)

Similarly to the documentation in the first three phases of the nursing process, nurses quite often wrote the progress reports about the *implementation of interventions* in the car or at the office. Nurses often only noted down information on paper in the patient's home and they then added the information to the electronic health record at a time that was convenient for them. As a result, active participation, in the sense of formulating documentation together, was often limited. Nevertheless, several nurses did say that they discuss the content of the progress reports with patients immediately after giving care and thereby provided an opportunity for active patient participation.

Regarding the *evaluation of care*, the last phase of the nursing process, nurses documented the agreements from the evaluation conversation with patients. Sometimes nurses let patients read the summary in the electronic health records, while in other cases nurses only gave a verbal summary of the agreements made.

All nurses experienced challenges in realizing patient participation during the *handover of care*. Handovers from home care to hospital care in acute situations made patient participation in documentation challenging, if not impossible. The underlying medical condition (e.g. dementia) also made patient participation in documentation challenging in planned handovers, e.g. from home care to nursing homes. Nurses then tried to let patients participate in ways suited to them.

"You can't really involve most of the patients who are admitted to nursing homes because of their dementia. So you take a different approach, saying, 'OK, we'll make a note so that the nurses there know that you don't like getting your hair wet in the shower'. But we don't sit down with them to prepare a handover." (Community nurse 9)

Challenges and strategies in patient participation
Nurses came across various challenges regarding patient participation in nursing documentation (Figure 5.2). These challenges were subdivided into three groups, namely those related to electronic health records, work and patients. For each of these groups

nurses gave several strategies for dealing with the challenges. Those challenges and strategies are discussed further in the following paragraphs.
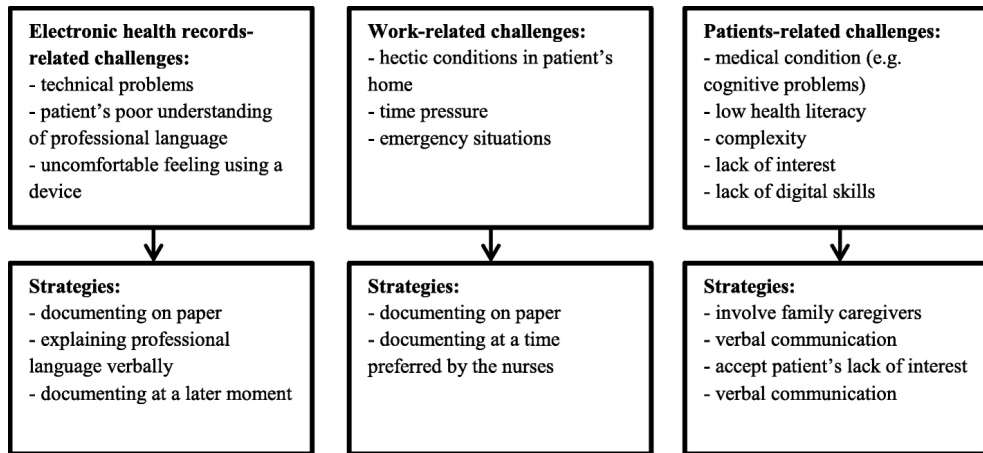
Electronic health records-related challenges:	Work-related challenges:	Patients-related challenges:
- technical problems - patient's poor understanding of professional language - uncomfortable feeling using a device	- hectic conditions in patient's home - time pressure - emergency situations	- medical condition (e.g. cognitive problems) - low health literacy - complexity - lack of interest - lack of digital skills
↓	↓	↓
Strategies: - documenting on paper - explaining professional language verbally - documenting at a later moment	Strategies: - documenting on paper - documenting at a time preferred by the nurses	Strategies: - involve family caregivers - verbal communication - accept patient's lack of interest - verbal communication

Figure 5.2 Challenges and strategies regarding patient participation in nursing documentation

Electronic health records-related challenges and strategies for them

Some nurses stated that working with electronic health records enabled them to get patients to participate in documentation more often. They noticed that patients were more inclined to give directions about what they wanted to be documented. The nurses believed that using electronic patient portals helped their patients in this respect. However, other nurses found that electronic health records made patient participation in nursing documentation more difficult compared to paper-based health records.

"Of course, in the past we used the files and you had to write up your reports immediately while at the patient's home. So at that time, you were forced to do it that way; now you can do it afterwards, but then you haven't involved your patient in the documenting."
(Community nurse 5)

Technical problems (e.g. poor internet connections or failures in electronic health records) were noted most frequently by nurses as a challenge for achieving patient participation. These problems often limited nurses' ability to document information when in the patient's home, and as result they lost an opportunity to consult patients during documentation. Nurses addressed this challenge by documenting information on paper and adding the information to the electronic health records at a later moment.

In addition to technical problems, two nurses said that the professional language, e.g. derived from the Omaha System or other standardized terminologies, was a challenge for

patient participation in documentation. Patients often did not understand certain terms. As a solution, these nurses tried to explain verbally to patients what the terms meant.

"For example, if you write in the assessment that a patient has pressure ulcers and you've started up various actions for that, and the patient kind of feels, 'OK, but what does this say exactly, this might as well be Greek to me', then you explain it." (Community nurse 18)

Furthermore, more than half of the participants found documenting information on an electronic device (tablet or phone) in the patient's home to be challenging. It made them feel uncomfortable because the conversation with the patient was interrupted while they typed information into the device. Therefore, some nurses read aloud what they were documenting, while others decided to document information on their tablet or phone at a later moment.

Work-related challenges and strategies for them

Nurses often reported that the hectic conditions in the patient's home, e.g. with the presence of family caregivers or other care professionals, formed a barrier for them to document information there. The same applied to emergency situations, which made patient participation in documentation challenging, if not impossible. Additionally, perceived time pressure frequently prevented nurses from documenting information straight away in the patient's home.

"Now we often see colleagues coming to work on their reports at the office because they have a computer there, it's all a bit bigger, they can do everything at their leisure and they don't get disturbed. [...] When you're at the patient's, you have to boot up the tablet, do the report, and the patient either sits there in silence staring into the distance while you're typing or you get disturbed. And the pressure of, right, I've been sitting here for ten minutes now working on my report and I could have already been ten minutes with someone else." (Community nurse 14)

Patients-related challenges and strategies for them

Nurses felt that the ways for achieving patient participation in electronic nursing documentation were influenced by several patient-related challenges as well.

Firstly, nurses said the patient's medical condition played a role in the realization of participation. For instance, they reported that patients with dementia or patients in a terminal stage were barely able to participate in nursing documentation. Nurses then tried to involve family caregivers in the documentation process.

Secondly, nurses felt patient participation was a challenge in situations where the patient had low health literacy. Addressing this challenge, they tried to explain verbally to the patient what information they had documented.

Nurses' perspective on patient participation

Thirdly, in complex or vulnerable patient situations, e.g. situations with domestic violence, nurses found patient participation more difficult as well. They were highly conscious of what they were writing and took more time to formulate what was being sad, especially when the patient could read what was recorded through an electronic patient portal.

"That happens when you're in a situation where there has been maltreatment, for example, or some other form of violence. […] Sometimes things happen that are absolutely not acceptable, and you do need to report what's going on. I mean, otherwise you have nothing anywhere to refer to later. But you do need to consider how to word it, because a patient might read what you write down. Yet at the same time you need to stay transparent. So it's a real case of figuring out how you are going to document that."
(Community nurse 10)

Fourthly, nurses felt that whether patients participated also depended on the individual interest of the patient. Nurses thought that patients often find receiving good nursing care most important, while they attach less importance to participation in documentation. Nurses noted that patients therefore often said that they had no interest in participating. The few patients who nurses remembered as being interested were mostly young, highly educated, or with psychiatric conditions.

In contrast to the limited interest from patients, several nurses had noticed increased interest from family caregivers in nursing documentation since the rise of electronic health records. Family caregivers often read nursing documentation via the electronic patient portal. Even though most nurses were very positive about this trend, others found it somewhat challenging. As a result they were more aware of the phrasing used.

"We do notice now that the children are far more likely to read it as well, compared with when we had the paper files lying on the table. There really has been a change with the family caregivers being much more active in reading the report and much more active in taking action if there's anything in the report that draws attention. […] As a result, you start choosing your words even more carefully; you focus more on 'OK, how should I describe this?' Because it needs to be clear for everybody, it has to remain respectful and must also still be appropriate for the situation." (Community nurse 16)

Lastly, nurses found patient participation to be challenging when patients had limited or no digital skills. Many patients older than about 75 did not have access to a device with an internet connection, let alone know how to use such a device. Nurses believed that participation in electronic nursing documentation is not achievable for many of these patients. However, they did see potential for future generations with more digital skills.

Discussion

The present study revealed that community nurses felt that patient participation in electronic nursing documentation requires a tailored approach. The extent to which patient participation was realized was influenced by patients' trust in the accuracy of documentation by nurses, and was associated with the phase of the nursing process that was being documented. Nurses were faced with various challenges relating to electronic health records, the work and the patients. Because of these challenges, nurses often tried to achieve patient participation through verbal communication about what they had documented.

Community nurses considered patient participation in electronic nursing documentation important. This is in line with the current Dutch legislation, which states that patients have the right to supplement, correct and delete information in health records [15].

The finding that patient participation requires a tailored approach is in line with previous studies about patient participation in health care. Patient participation should be tailored to patients' preferences [33-35]. Active participation is sometimes not preferred by patients as it can be felt to be a burden [33-35]. This corresponds with our finding that community nurses sometimes deliberately choose to let patients participate in nursing documentation passively rather than actively.

Besides a tailored approach, community nurses felt that patient's trust in the accuracy of the nurses' documentation is an important aspect facilitating patient participation. The importance of trust between nurses and patients regarding patients' health information has been underlined in previous research as well [36, 37]. However, a survey study among hospital nurses indicated that electronic health records can put a trusting nurse-patient relationship under pressure [38]. These nurses felt that the computer disrupted their communication with patients [38]. Our study showed similar results, given that community nurses found that doing the documentation in the patient's home interrupts the conversation with the patient and acts as a barrier.

At the same time, several community nurses in our study stated that patient participation in nursing documentation had improved since the increased use of electronic health records. Electronic patient portals in particular allow patients and family caregivers to read what nurses document and thereby help patients to express what they feel it is important to document. Patients' input can help to improve the accuracy of nursing documentation, which is of great importance as this accuracy seems to be an issue [5, 9].

A point of particular interest with the use of electronic patient portals, however, is how these portals are arranged. If patient portals are arranged logically according to the phases of the nursing process, they can improve patients' understanding of nursing documentation

and thereby further enhance patient participation in nursing documentation and nursing care. Given that the community nurses felt there were challenges where patients did not understand their documentation, this point deserves some attention.

Arranging the electronic patient portals according to the phases of the nursing process seems to be beneficial, as this provides a logical structure that helps nurses in a methodological approach to working [1, 5]. As a result, such patient portals can improve patients' understanding of the nurses' methodological reasoning behind the nursing care provided. Furthermore, if electronic patient portals follow the nursing process, it might also help electronic health records themselves to become better structured according to the same process. Research shows that this is often not the case for the current generation of electronic health records [4, 39].

Moreover, it should be noted that our study and previous research found that many patients older than about 75 lacked the skills required to access and use electronic patient portals [25]. However, community nurses in our study did see potential for patient participation in electronic nursing documentation for the coming generations, who will have better digital skills.

Furthermore, patients' limited understanding of the professional language used in nursing documentation (e.g. derived from the Omaha System or NANDA-I NIC NOC) was also observed to be a challenge for patient participation. Previous research indicated that written documentation should be supplemented with verbal communication in plain language to ensure patients can understand the information [40]. The nurses who were interviewed also said that written documentation must be combined with verbal communication and explanations.

Strengths and limitations
A strength of this study is that data saturation was reached, as the last two interviews produced no new aspects that were relevant for our objectives.

A limitation of our study is that we only focused on nurses' experiences of patient participation in electronic nursing documentation. As a result, it is not yet known how patients perceive their own participation. Future research should focus on gaining a better understanding of patients' views. Combining these insights with the results of our study will provide a broad perspective on patient participation in electronic nursing documentation. That knowledge will let community nurses and policymakers take action to improve electronic health records and develop efficient strategies for improving patient participation in electronic nursing documentation.

Conclusions

Community nurses think that patient participation in electronic nursing documentation is important and believe that it requires a tailored approach. Tailored patient participation is facilitated by patients' trust in the accuracy of the documentation, and associated with the phase of the nursing process that is being documented. Nurses face various challenges relating to electronic health records, the work and the patients (e.g. failures in electronic health records, time pressure and patients' lack of digital skills). In dealing with these challenges, nurses often fall back on verbal communication with the patient about what was documented in the electronic health records.

Authors' contribution

KdG, WP and AF developed the study concept and design. KdG and ES carried out the data collection. All authors (KdG, ES, WP, AF) contributed to the analysis and interpretation of the data. All authors contributed to the drafting and revision of the article. All authors read and approved the final manuscript.

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CHAPTER 6

Patient participation in electronic nursing documentation:
an interview study among home-care patients

Abstract

Background: Patients are increasingly expected to take an active role in their own care. Participation in nursing documentation can support patients to take this active role, since it provides opportunities to express care needs and preferences. Yet, patient participation in electronic nursing documentation is not self-evident.

Objective: To explore how home-care patients perceive their participation in electronic nursing documentation.

Methods: Semi-structured interviews were conducted with 21 home-care patients. Interview transcripts were analysed in an iterative process based on the principles of reflexive inductive thematic analysis.

Results: We identified a typology with four patient types: 'high need, high ability', 'high need, low ability', 'low need, high ability' and 'low need, low ability'. Several patients felt a need for participation because of personal interest in health information. Others did not feel such a need, since they trusted nurses to document the information that is important. Patients' ability to participate increased when they could read the documentation and when nurses helped them by talking about the documentation. Barriers to patients' ability to participate were having no electronic devices or lacking digital skills, a lack of support from nurses and the poor usability of electronic patient portals.

Conclusion: Patient participation in electronic nursing documentation varies between patients, since home-care patients differ in their need and ability to participate. Nurses should tailor their encouragement of patient participation to individual patients' needs and abilities. Furthermore, they should be aware of their own role and help patients to participate in documentation.

Patient or public contribution: Home-care patients were involved in the interviews.

Keywords: patient participation, patient involvement, nursing documentation, electronic health record, home care

Introduction

In today's healthcare system, value is attached to patient participation. We define patient participation, in line with the definition of Castro et al., as: "the individual's engagement in the decision making about his care through a dialogue attuned to his preferences, potential and a combination of his experiential and the professional's expert knowledge" [1]. Given the current attention in healthcare for patient participation, patients are expected to take an active role in their own care. When taking such an active role, this will enhance shared decision-making of patients and professionals involved about the care, and about how needs and preferences of the patient have to be met [2, 3]. A growing body of evidence demonstrates that both patient participation and shared decision-making can contribute to improved quality of life, better health outcomes and greater patient satisfaction [4-7].

Patient participation and shared decision-making are easier to achieve when patients also participate in the care-related documentation in their individual electronic health record [8-10]. With patient participation in nursing documentation we mean in this paper that a patient is consulted by nurses during the documentation process, is involved in making the individual care plan, is involved in the actual documentation in the electronic health record, and/or reviews, corrects and supplements the information documented. Patients will be better able to express their preferences about nursing care when nurses ask them which information they believe is important to document [11], leading to care plans tailored to the needs of patients [12]. Particularly when electronic health records are linked with electronic patient portals, this provides opportunities for patients to have control over their care and related decision-making [13-17]. Electronic patient portals are applications maintained by healthcare organizations that allow patients independent access to their individual health record [16].

Yet patient participation in electronic nursing documentation is not self-evident. In a qualitative interview study, Dutch community nurses mentioned various barriers for patient participation in documentation, such as poor internet connections, technical failures in the electronic health records, and time pressure [18]. These barriers made that nurses not always documented in the presence of patients and thereby limited patients to participate in the documentation [18]. In addition, a focus group with four Dutch patients and four family caregivers indicated that patients often felt not involved in nursing documentation, e.g. because documentation often occurred out of their sight, and they often could not access their individual health record [19]. However, this focus group only involved patients who all were interested in nursing documentation, and more in-depth insight were needed into patients' experiences and perspectives regarding participation in electronic nursing documentation. We chose to focus on the home-care setting, given that in the Dutch context this setting is in a leading position in this regard: in 2019 81% of nurses in home care used electronic patient portals, compared to 42% of nurses working in general

practitioner practices and 67% of the hospital nurses [17]. Moreover, home-care patients often have a long lasting care relationship with community nurses [20], which might make their participation in nursing documentation more important and feasible compared to patients in acute or short-during care settings.

Therefore the following research questions are addressed in this article:

1. What are the reasons why home-care patients do or do not participate in electronic nursing documentation?
2. In what ways do home-care patients participate in electronic nursing documentation?

Methods

Design

A qualitative descriptive design was used, based on principles of reflexive inductive thematic analysis [21, 22]. We conducted semi-structured interviews with 21 home-care patients.

Sampling and setting

This study was conducted in the home-care setting in the Netherlands. In this country, home care is provided by registered nurses and certified nursing assistants and involves personal physical care, technical care, preventive care and psychosocial care [23].

We used purposive sampling to recruit patients who met the following inclusion criteria: (1) receiving home care from a care organization that uses electronic health records; (2) Dutch-speaking and (3) having no severe cognitive impairments.

The participants were recruited with the assistance of community nurses from the professional networks of two of the authors (KdG and JD) who both combined their position as researchers with their employment as community nurses. No patients with which these authors had a nurse-patient relationship were interviewed by these authors.

The authors instructed nurses to search for patients meeting the inclusion criteria, but also with some variation in age, gender, educational level, cultural background, living alone or with a spouse, and the type of home care used. This variation was pursued, because we assumed that these background characteristics were associated with the perspectives and experiences regarding patient participation in nursing documentation.

The community nurses provided the patients with an information letter and passed on the phone numbers of the patients who were willing to take part in the study. Recruitment stopped when analyses of the last two interviews showed that data saturation had been reached.

Data collection

Twenty-one interviews were conducted between April 2019 and April 2021. Each interview was conducted by either one author (KdG or JD) or by pairs of nursing students who were trained in interview techniques. The authors used insights from prior research [19], relevant Dutch legislation [24], and a Dutch professional guideline on nursing documentation [25] to create the interview guide that structured the interviews (Table 6.1). We refined questions of the interview guide during the cyclic process of data collection and analysis, to ensure that we were given in-depth information needed to answer the research questions.

Initially, we aimed to conduct all interviews face-to-face at patient's homes or another place convenient for patients. We were able to do this for the first 13 interviews. However, because of the COVID-19 pandemic the last eight interviews were conducted by phone. All interviews were audio-recorded. In three interviews, the patient's spouse attended the interview and, although the interview was focused on the patient, the spouse sometimes gave a reaction as well. In the analysis, we only included the patient's remarks and not those of the spouse, because of the interview focus on the patient.

Table 6.1 Interview guide

1. Can you tell me what kind of home care you receive from the community nurses and how long you have been receiving this care?
2. Do you participate in what the community nurses document about the care you receive? If not, why not and how do you experience this? If so, how do you participate and how do you experience this? Which parts of the documentation can you participate in?
3. How important do you perceive participation in nursing documentation? If not, why isn't this important to you? If so, why do you think this is important?
4. Do you use an electronic patient portal? If not, why not? If so, what is your experience of this?
5. Can your family caregivers participate in nursing documentation? What do you think about that?
6. How do you think it could be made easier for you as a patient to participate in nursing documentation?

Data analysis

The recordings of the interviews were transcribed verbatim. The interview transcripts were analysed in an iterative cyclic process of 'data collection-data analysis-additional data collection'. This process implied that shortly after conducting two to four interviews, the transcripts were analysed and findings from this interim analysis steered questions for the following interviews. The cyclic process of data collection and data analysis continued until data saturation was reached, which was indicated by the fact that the analysis of the last two interviews produced no new aspects relevant for answering the research questions. The interviews were analysed following the steps of thematic analysis: becoming familiar with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and reporting [21, 22]. The program MAXQDA 2020 supported the analysis process [26].

To enhance the trustworthiness of the study, researcher triangulation was applied: one author (JD) analysed all 21 interview transcripts while 14 of the 21 transcripts were also analysed by at least one or more of the other authors (KdG, WP or AF) [27]. The whole team of authors discussed the interim and final analyses to further increase the trustworthiness and to make sure that the final themes presented in this paper clearly reflected the interview data [27].

In the inductive analysis and related discussions we identified four types of patients, distinguished by whether or not patients expressed a need to participate and whether or not patients expressed they were able to participate in nursing documentation. Analysing data by identifying types is a practically applicable and proven method, e.g. in research on patient involvement and engagement [28,29].

We further enhanced the trustworthiness of the study by 'peer debriefing' [27]. This implied that we discussed a draft of this paper, also including the results sections, in an academic meeting with a group of peer researchers who were not involved in the study. Based on this peer debriefing, some small adjustments were made in the draft paper, in particular to write down the findings even more clearly.

Furthermore, we have provided descriptions of the setting and patient characteristics to help others judge the transferability of the results to other situations. In addition, the study is reported according to the 'Standards for reporting qualitative research' to boost the dependability of the study [30].

Ethical considerations
The study protocol was approved by the Medical Research Ethics Committee of the Amsterdam University Medical Centre (file number 2019-026). Patients signed a written informed consent form before the face-to-face interviews. Patients who were interviewed by phone provided their verbal, recorded informed consent.

The first author (KdG) confirmed that all patient identifiers were removed from the transcripts so that the patients are not identifiable and cannot be identified through the details in their stories. The audio recordings were deleted as soon as the interviews had been transcribed.

Results

Patient characteristics
In total, 21 patients took part in the study, of whom 15 were female (Table 6.2). The interviewed patients were between 24 and 88 years old and lived in various regions across the Netherlands. Over half of the participants (n=13) received personal nursing care only (e.g. help with showering), while some patients received technical nursing care (e.g. care for a tracheostomy tube) or a combination (e.g. help with washing and infusion therapy).

Table 6.2 Characteristics of the patients (n=21)

Characteristics	N	Missing
Age (Mean; range)	69; 24-88	2
Gender		-
Male	6	
Female	15	
Educational level		2
Low	7	
Medium	8	
High		
Kind of home care		2
Personal nursing care	13	
Technical nursing care	5	
Combination of personal and technical nursing care	1	

Typology with four patient types

The analysis process resulted in the identification of a typology with four different patient types based on the individual patient's perceived need and ability to participate in electronic nursing documentation. The four types are illustrated by the following case narratives, which use fictitious names and are a composite of information on multiple patients.

High need, high ability: Mrs Peters is 35 years old, has a high educational level, and she receives home care every day for connecting her total parenteral nutrition. She actively participates in her own care and talks with nurses about the information they document in the electronic health record. When she has a check-up with her physician, she brings along her iPad to show the observations documented by the nurses.

High need, low ability: Mrs De Boer is 73 years old, has a medium educational level, and she receives help with washing and dressing and for negative pressure wound therapy. She is interested in the nurses' observations during care moments. Yet most nurses do not tell her what is documented and she cannot read the information in the health record since she does not have an digital device and therefore she has no access to the electronic patient portal.

Low need, high ability: Mr Dijkstra, aged 62 with a low educational level, receives home care for the application of eczema ointment. He has full confidence in the nurses, who have been helping him for a number of years now. He feels no need to read or talk about the nurses' documentation. He has the ability to access the electronic patient portal on his iPad, but he has never looked at it.

Low need, low ability: Mrs Visser, aged 84 with a medium educational level, receives home care every day for putting on and taking off her compression stockings. The care she receives has been the same for quite some years now. She has no interest in what nurses document in her electronic health record. Besides, she does not own a digital device and she feels no need to buy a device to get access to her health record.

Even though a patient's position in the typology was not set in stone, participants could broadly be divided into these types. Eight patients were classified as 'high need, high ability'. Four patients were assigned to each of the types 'high need, low ability' and 'low need, high ability'. Lastly, five patients were classified as 'low need, low ability'.

In general, we noticed some differences in the characteristics of the patients in the four types. Younger or more highly educated patients who received technical nursing care tended to fall in the type 'high need, high ability', whereas most elderly patients or less educated patients who received personal nursing care were assigned to the type 'low need, low ability'.

Need to participate
The typology illustrated that the interviewed home-care patients differed in their perceived need for participation in electronic nursing documentation. Virtually all patients in the types 'high need, high ability' and 'high need, low ability' stated some kind of personal interest as a reason for their need to participate. According to these patients, participation provided them with relevant information about their health situation and gave them insights into the nurses' assessment of their health situation. At the same time, some patients believed that the information in the nurses' documentation could be of interest for other healthcare professionals.

> *"Well, if I've gone downhill a bit, I would want to know how they interpret that. (...) That would give me some information about myself and that would be a kind of sign that I should contact my neurologist or my Parkinson's specialist." (Patient 19)*

Patients who were classified as 'high need, high ability' indicated additional reasons for their need for participation. For instance, participation gave these patients opportunities to correct the nurses' documentation if they disagreed or if they found the documentation to be incomplete. Additionally, these patients saw the benefits of accurate nursing documentation. They noticed that nurses were well aware of their situation after reading the health records. As a result, the patients did not have to explain their situation repeatedly to different nurses. This was particularly important for patients whose health situation was not stable and for patients who received complex technical nursing care.

> *"They ask whether anything's wrong, for instance to do with my health, and then I tell them that and I know they'll put that in the report. So the next one who comes along knows all about my situation, and I really like that." (Patient 18)*

In contrast to patients who felt a need to participate in nursing documentation, several patients said they felt no need for participation. These patients were classified in the types 'low need, high ability' and 'low need, low ability'. They often said they had complete trust in nurses' documentation about what is important for their care, giving this as a reason for not feeling a need to participate. Furthermore, patients explained they did not want to be seen as meddling. Some patients felt that nursing documentation was more important for nurses than for themselves.

"When they get here, they open up their laptop and take a look first at what's been written there and all the things the person before them did. (...) I don't need to check that. That's how it works and they don't need to tell me exactly what everyone's written down; I don't need to know all that. (...) As I always say, they're the experts, not me." (Patient 7)

Additionally, some patients felt less need to participate since they had no personal interest in nursing documentation. This was mostly indicated by patients who belonged to the type 'low need, high ability'. Particularly in situations where nursing care was not complex, patients did not see any reason for participation. Yet patients stated that their need for participation did change over time, depending on their situation.

"Well, there wasn't that much to report and I was there myself so I don't really see the need. It's all so simple. Look, the hospital reports are a different matter — I'd like to read them again sometime." (Patient 17)

Ability to participate

Patients not only varied in whether or not they felt a need to participate but they also differed in their ability to participate in electronic nursing documentation. Most patients who indicated being able to participate said they could read the documentation through the electronic patient portal. This applied to patients assigned to the types 'high need, high ability' and 'low need, high ability', and especially to patients who were young or middle aged. Some patients explained that electronic documentation had improved their ability to participate since electronic devices were easier to handle compared to paper-based files.

"I control my computer digitally by my eye movements, so now I'm also scrolling through the patient portal. (...) I love it because now I can just look it all up on the computer." (Patient 11).

Patients' ability to participate increased if nurses verbally guided them through documentation, during or directly after care. Several patients told that they felt encouraged to reflect on the documented information. This was mentioned by patients in both the types 'high need, high ability' and 'low need, high ability'.

While some patients felt sufficiently able to participate, others felt less able to participate in the documentation. Most of these patients were of advanced age and belonged to the

type 'low need, low ability'. They said that they did not have any electronic devices or they lacked the digital skills to use electronic devices. These patients were therefore not able to read the documentation.

"I have got those things, those computers, but I don't understand them. (...) There's lots of things I can't do on the computer and then I think they should sort it out — that's fine by me."(Patient 19)

Patients in the type 'high need, low ability' mentioned other reasons why they felt less able to participate, including limitations in the usability of the electronic patient portal. An example was not receiving responses to their messages. Moreover, two patients said that it was not possible to supplement or correct the nurses' documentation via the electronic patient portal.

"That system is the problem. (...) Once, they wrote that I was angry (...) and it's not possible to delete that so it still says I got angry even though I didn't. Yes, I did find that annoying, actually." (Patient 14)

Another barrier indicated by patients in the 'high need, low ability' type concerned the nurses' working methods. Several patients felt that some nurses spend insufficient time on guiding them through the documentation. Besides, some patients felt they had no opportunity to participate if nurses carried out their documentation outside of their home.

"Not all of them. One takes the time to document it and reads it out too. But most do their documentation in the car." (Patient 9)

Lastly, participants of the types 'high need, low ability' and 'low need, low ability' often explained that physical disabilities limited their ability to participate. Patients indicated they were either too sick or worn out, or lacked the concentration to actively participate in the documentation.

"I don't look at it. (...) Well, I've been pretty poorly. And then that kind of thing basically gets less of a priority at a time like that." (Patient 4)

In some of these cases patients mentioned that a spouse or another family caregiver stepped in. Yet others described not wanting to burden their family caregiver by asking them to participate in the documentation.

Ways to participate
We also asked patients about the ways in which they might ideally participate in electronic nursing documentation. Virtually all participants in the two types with a need for participation indicated that they preferred verbal communication with nurses about the documentation.

Interviewed patients who used an electronic patient portal also preferred to read the documentation via these portals. This was especially the case for patients belonging to the type 'high need, high ability'. Besides, several patients talked positively about the possibility for family caregivers to read the documentation via the portal. These patients would then discuss the documentation together with their family caregivers. Mostly patients of the type 'high need, low ability' mentioned this way of participation.

Regarding which parts of the documentation patients particularly preferred to participate in, these were the parts related to the performing and evaluation of nursing interventions.

"Simultaneously she tells me what she writes down about the care that she has provided and what she has noticed during this care moment. For instance, a small wound on the leg to which she has stuck a plaster." (Patient 12)

Participation in the documentation of the nursing assessment, diagnosis and care planning seemed to be less of a priority for most patients. It is interesting to note that some patients did not even know what was documented in these parts of the documentation.

"I believe I've got it written down, in that folder. I must have read that sheet of paper but if you ask me to tell you what it was about, well, I don't remember much. (...) That's their thing." (Patient 2)

Discussion

In this study a typology was identified with the following patient types: 'high need, high ability', 'high need, low ability', 'low need, high ability' and 'low need, low ability'. The typology showed that patients differ in their perceived need and ability to participate in electronic nursing documentation.

A number of patients perceived their participation in nursing documentation to be important (those of the types 'high need, high ability' and 'high need, low ability'). These patients had interest in the documented information about their own health, the nurses' observations, and the nurses' views toward their health and care needs. This finding is in line with previous research on patient participation and shared decision-making [4-7], as well as with current legislation and professional guidelines that support patient participation, e.g. by stating that patients must have access to the documentation about their health and care [24, 25, 31-33].

However, other patients (of the types 'low need, high ability' and 'low need, low ability') said they felt no need for participation. Some of these patients explained this lack of interest by stating that the nursing care they received was not complex and therefore the nursing documentation was not significant for them. Yet, other patients who did not feel a need to participate, explained that they considered participation to be a burden. These patients

should not be pressured to participate in documentation, given that would be contrasting with the principle of need-driven care, as was also indicated in previous research [34-37]. Nevertheless, in a qualitative interview study nurses indicated they still could involve patients to some extent, via verbal communication about the nursing care [18].

At the same time, patients in the type 'high need, low ability' indicated that although they felt a need for participation, they did not always feel able to participate, for instance because they could not read the electronic nursing documentation. There seem to be opportunities to enhance patient participation in nursing documentation for patients of this type, as these patients pointed to the importance of nurses helping them to reflect on nurses' documentation. If nurses failed to meet these needs, patients felt less able to participate. The importance of support from care professionals in achieving patient participation in nurses' or physicians' documentation was also indicated in other studies [10,38].

Furthermore, the poor usability of electronic patient portals was mentioned as a barrier for participation in nursing documentation by patients who used these portals. This seems in accordance with findings from previous studies [39,40]. Some participants in our study were not able at all to access electronic patient portals, since they had no electronic devices or lacked the digital skills to use such devices. These patients were virtually all of advanced age, which is consistent with previous studies pointing to the limited use and usability of electronic patient portals for elderly persons [41,42].

In addition, previous studies indicated that low health literacy is associated with limited abilities to get access to information in electronic health records, e.g. through patient portals [43,44]. Health literacy concerns the individual's cognitive and social skills that determine the ability to gain access, understand and use information to promote one's own health [45]. Furthermore, previous studies indicated that a low educational level and old age (both determinants of low health literacy) were related to a limited ability to access and understand health information [46,47]. In our study patients with a low educational level and/or advanced age also seemed to have less needs and abilities for participation in documentation, compared to younger or more highly educated patients.

In addition, some patients highlighted that their spouse or another family caregiver participated in nursing documentation, e.g. by reading along and communicating with the nurses through the electronic patient portals. While patients were positive about this involvement of their family caregivers, they also told that the family caregiver's contribution to what is documented is limited. This is in line with a review on family engagement in electronic health records of hospital patients.9 This review reported that the participation of family caregivers in documentation rarely extended updating the patient information in electronic health records [9].

Regarding our study, the fact that some of the interviews were conducted during the COVID-19 pandemic needs to be taken into account. At that time there were restrictive measures for community nurses who only could visit a patient at home, when phone or online consultations were not appropriate. Yet we had no indications from the interviews that the pandemic and restrictive measures influenced patients' experiences with participation in nursing documentation.

Furthermore, it must be taken into account that we did not include participants who did not speak Dutch (which is relatively often seen in older patients with a non-western migration background). Therefore, the results of this study are not transferable to non-Dutch speaking people.

Conclusion

Home-care patients differ in their need for participation in electronic nursing documentation. If patients perceive a need to participate, this is mostly based on an interest in documented information about their own health, and because they see the benefits of accurate documentation. If patients do not feel a need to participate, this is because they have complete trust in the nurses or feel a lack of interest since the nursing documentation was not significant for them.

The ability to participate in electronic nursing documentation differs between patients as well. Some patients are less able to participate since they have no electronic devices or lack the digital skills to access electronic health records. In addition, lack of support from nurses, the poor usability of electronic patient portals and poor health also limit patients' ability to participate.

Home-care patients who want to participate prefer verbal communication with the community nurses and reading the documentation as ways to participate in electronic nursing documentation.

Practice implications
Whereas some patients expressed a need for participation in electronic nursing documentation, others do not. Therefore nurses should tailor their approach in encouraging patient participation to each individual patient. Moreover, needs for participation can change over time. This implies that nurses should verify the needs of home-care patients not once, but continuously. Furthermore, some patients reported that they felt unable to participate because of a lack of support from nurses, e.g. in reflecting on the documented information. Since most patients prefer verbal, direct communication about the content of the documentation, nurses should devote sufficient time in this. However, this can be challenging since community nurses cited time pressure as a barrier to achieving patient participation [18]. Yet, patient participation might eventually save nurses time: if a patient

participates in the documentation, there will be a greater chance of shared decision-making about the care. This will ultimately lead to appropriate care that best suits patients' needs and which maybe also efficient and time-saving.

Lastly, a comment regarding the fact that we only had Dutch-speaking patients in the sample. It is likely that the ability to participate in documentation will be limited if the patient cannot read the language used in the health records. In those cases, a patient will often be dependent on the translation by a family caregiver who does speak the language. This means that a community nurse will have to pay extra attention to communication about the documentation through the translating relative.

Authors' contribution
KdG, WP and AF developed the study concept and design. KdG and JD carried out the data collection. All authors (KdG, JD, WP, AF) contributed to the analysis and interpretation of the data. All authors contributed to the drafting and revision of the article. All authors read and approved the final manuscript.

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CHAPTER 7

Attitudes of hospital and community nurses towards patient portals
and personal health environments: a nationwide survey

Reference:
Bemelmans, W.J.E., De Groot, K., De Veer, A.J.E., Van Tuyl, L., Francke, A.L.
Attitudes of hospital and community nurses towards patient portals and personal
health environments: a nationwide survey. (under review).

Abstract

Background: Personal health environments may have additional value when compared with patient portals since patients can add and combine lifelong health information. Nurses may have an important role in promoting their use among patients. Therefore, we investigated nurses' views regarding patient portals and personal health environments in hospitals and home care and whether attitudes differ between nurses working in these settings.

Design: A cross-sectional survey design.

Methods: An online questionnaire was completed by a nationwide sample of 155 hospital nurses and 179 community nurses in the Netherlands (response rate 38%). Chi-square tests were performed to determine differences between nurses.

Results: Most nurses (90%) report that patients use patient portals. 58% of community nurses and 21% of hospital nurses (p<0.01) actively promote their use among patients. With regard to personal health environments, 11% of nurses (both settings) report that some patients use it. About 14% of nurses (both settings) consider a personal health environment of additional value for most patients, while 23% of community nurses and 7% of hospital nurses consider it of additional value for some of their patients (p<0.01).

Conclusion: Use of personal health environments is far less widespread than use of patient portals. Most nurses do not perceive any additional value from personal health environments for their patients. The attitudes of community nurses are slightly more positive than those of hospital nurses.

Clinical Relevance: For parties that want to promote the use of personal health environments, a lot of work is needed to achieve sufficient support among nurses given their sceptical attitudes.

Keywords: patient portals, personal health environments, nurses, home care, hospital

Introduction

Many countries have large-scale digital health strategies and encourage greater patient interaction with healthcare professionals through the use of patient portals (1-4). Patient portals are defined as a class of applications that primarily allow a patient to get access to the clinical documentation of healthcare professionals in their electronic health records (5). The portal may additionally offer other functions, e.g. scheduling appointments or secure e-messaging. These portals offer patients opportunities to become informed about their health and the care provided. This might empower patients to participate in decisions about their care.

The use of patient portals, both in ambulatory and inpatient setting, has increasingly been investigated in research since the beginning of this millennium (5, 6). Yet evidence on the effects of patient portals on patient outcomes is still scarce (7). For instance, little evidence exists for the association between portal use and changes to patient empowerment and self-efficacy scores (5, 8, 9), which are assumed to be encouraged by patient portals (10). Furthermore, a potential disadvantage of patient portals is that patients who transfer from one setting to another can be confronted with multiple portals for various healthcare organizations, since these portals are connected to the software of specific organizations.

In recent years, technical developments have allowed the implementation not only of patient portals, but also of personal health environments (also known as 'personal health records') (10-13). These environments have been defined as a set of computer-based tools that allow people to manage their lifelong health information, add personal health data and make appropriate parts of it available to those who need that information, e.g. healthcare professionals or family (14). Hence, the additional value of personal health environments compared with patient portals is that patients only have to use one application. Moreover, patients can be even more in control of their health data and can make decisions about sharing this data with healthcare professionals (15).

As can be expected given the limited evidence for patient portals, which have been in use for a longer period, we found also little evidence on the effects of the relatively new phenomenon of the personal health environment. The lack of evidence is illustrated by the fact that in a recent scoping review on 'patient-accessible health records', no studies were included that concerned personal health environments (16).

For patient portals and personal health environments to be embraced, as with other eHealth technologies, healthcare professionals need to be convinced of the advantages (17, 18). In particular, nurses can play a key role in introducing the application to patients and instructing them on its use, since they form a large group of healthcare professionals who have intensive contact with patients (19, 20). Therefore, it is of relevance to obtain a better understanding of nurses' attitudes to patient portals and personal health environments,

and their experiences with this technology. We focused on two healthcare settings, namely hospitals and home care, since we were interested in whether differences in nursing care were also reflected in differences in the attitudes of nurses. Our a priori expectation was a more favourable attitude of community nurses toward personal health environments because of the long-lasting care relationship between many patients and family caregivers and nurses in the home-care setting. In addition, a substantial proportion of hospital admissions have an acute character in which patients and their family, and also nurses, may not give priority to the use or promotion of patient portals and personal health environments.

The present study focused firstly on nurses' experiences with patient portals and personal health environments in two healthcare settings, namely hospitals and home care, in 2021 in the Netherlands. Secondly, we investigated the attitudes of nurses, and whether they differ between these two settings.

Design

A cross-sectional survey design was used.

Materials & Methods

Sample
The sample consisted of nurses participating in a nationally representative Dutch research sample, the Nursing Staff Panel (https://www.nivel.nl/en/panel-verpleging-verzorging/nursing-staff-panel). Members of the Nursing Staff Panel have declared that they are prepared to fill in a questionnaire twice a year on average and they have given their consent to this. Recruitment procedures have been described elsewhere (21, 22).

The Nursing Staff Panel consists of nursing staff who work in various healthcare settings. For the study presented here, only nurses were included who were working in a university or general hospital or in home care. An online survey was sent in March 2021 by email to 891 nurses who work in hospitals (n=419) or home care (n=472). Two reminders were sent about 7 days and 21 days later to increase the response rate. A total of 334 nurses completed the questionnaire (response rate 37.5%).

Data collection
An online 31-item self-developed questionnaire was used that focused on nurses' perspectives on a variety of eHealth technologies. The questionnaire was part of an annual nationwide monitor study on eHealth technologies that has been conducted since 2014.

For the purpose of this paper, we only analysed the questions concerning patient portals and personal health environments. The relevant questions started with a general

description of patient portals and personal health environments and had pre-structured, forced-choice answers.

A patient portal was described in the questionnaire as "a web-based opportunity for patients (or their family caregivers) to have access to their electronic health records and (possibly) the opportunity to add information". Respondents could indicate which of nine functionalities were available in the patient portals they worked with. Subsequently, respondents could select the statements they agreed with from a list of seven possible advantages and seven possible disadvantages of patient portals. Also, they could mention other perceived advantages or disadvantages in an open text field or select the option "I don't have positive (or negative) experiences".

A personal health environment was described as "a personal digital environment where patients can collect their data from different healthcare professionals, and can share it with other professionals or family caregivers. Furthermore, patients can add personal health data. A personal health environment aims to support patients' self-direction and self-management. The personal health environment is still in development".

The first question covered the use of personal health environments with four separate items: 1. the number of patients using a personal health environment; 2. the number of patients interested in using a personal health environment; 3. the number of patients for whom nurses think that a personal health environment is suitable; 4. the number of patients for whom nurses think that a personal health environment is of added value. Respondents could choose from six options ('no patients', 'some patients', 'most patients', 'almost all patients', 'not relevant, no personal health environment offered by my organization' or 'I don't know').

In addition, respondents were asked about the frequency with which they recommended patient portals and personal health environments to their patients, with five categories of answers: 1. 'never'; 2. 'sometimes'; 3. 'often'; 4. 'always'; 5. 'not relevant, not applicable'.

Statistical analysis
Stata 16.1 was used to calculate descriptive statistics. Chi-square tests were performed to assess the statistical significance ($p<0.05$) of the differences in background characteristics and opinions between the nurses in the two healthcare settings.

Ethics
Under the applicable Dutch legislation (Medical Research Involving Human Subjects Act), formal approval from an ethics committee was not required since participants were not subjected to actions and no rules of behaviour were imposed on them (https://english.ccmo.nl/investigators/legal-framework-for-medical-scientific-research/your-research-is-it-subject-to-the-wmo-or-not). Participants had all consented to

being sent and completing surveys when they signed up as members of the Nursing Staff Panel. The questionnaire data were stored and analysed anonymously, in accordance with the General Data Protection Regulation.

Results

Sample characteristics

Table 7.1 shows that background characteristics of the two groups of nurses do not differ between participants, except for the educational level. In addition, differences exist in the types of patients the two groups primarily take care of. A substantial larger proportion of the hospital nurses (40%) take care of patients who have physical problems of short duration than community nurses (p<0.01). The majority of community nurses primarily take care of patients with general frailty (70.8%) and dementia (60.2%), while both types of patients are taken care of less frequently by hospital nurses (p<0.01). A substantial proportion of both hospital and community nurses care for patients with chronic diseases (44.4% and 37.2%, respectively). Both groups of participants rate their own digital skills and the organizational support regarding technical problems and eHealth possibilities as high.

Table 7.1 Background characteristics of the participants (n=334)

Background characteristics	Hospitals	Home care
Gender - female, n (%)	137 (88.4%)	165 (92.2%)
Age, mean (SD)	51.5 (11.2)	50.4 (11.7)
Educational level, n (%)		
Bachelor's degree	74 (48.7%)	114 (64.4%)**
Secondary vocational qualification	78 (51.3%)	63 (35.6%)
Number of hours employed, mean (SD), (n=292)	28.4 (6.1)	26.0 (7.0)
Working experience as a nurse in years, mean (SD), (n=186)	25.7 (12.1)	23.0 (11.7)
Characterization of patients[1], n (%)		
Dementia	9 (10.0%)	68 (60.2%)**
Cancer	31 (34.4%)	49 (43.4%)
Chronic diseases (other than cancer)	40 (44.4%)	42 (37.2%)
General frailty	20 (22.2%)	80 (70.8%)**
Physical problems of short duration	36 (40.0%)	21 (18.6%)**
Other[2]	24 (26.7%)	0**
Digital skills[3], n (%)	131 (89.7%)	161 (91.5%)
Organizational support[3], n (%)		
Knowing where to go in case of technical problems	139 (97.9%)	162 (95.3%)
Knowing which eHealth possibilities are available within my organization	122 (85.3%)	150 (86.7%)

[1]Nurses were presented with 12 types of patients and could select a maximum of 3 types of patients that they care for primarily. Results are presented if a category was ticked by at least 20%; [2] First aid department, obstetrics, intensive care unit; [3]Percentage agree/completely agree.
** p<0.01 Chi-square test for difference between the two settings.

Use of patient portals and personal health environments

In total, 89.8% of nurses report that a patient portal is used in their organization. The functionalities of patient portals differ between the settings (Table 7.2). Hospital nurses mostly report that patients have access to information about prescribed medication (54.4%), laboratory results (88.4%), and radiology results (57.3%), and have an option to schedule appointments with healthcare professionals (52.4%), while these functionalities are reported significantly less often by community nurses (p<0.01). In addition, 82.4% of community nurses report that patient portals provide access to the care plan and goals, while this is mentioned significantly less often by hospital nurses (p<0.01).

In contrast with patient portals, the use of personal health environments is not widespread in either setting (Table 7.2). In total, a small group of nurses report the use of personal health environments by some patients (6.1%) or by most patients (4.9%).

Table 7.2 Use of patient portals and personal health environments as reported by nurses (n=254)

	Hospitals	Home care
A patient portal is provided by the organization, n (%)	98 (90.7%)	130 (89.0%)
Functionalities of the patient portal[1], n (%)	n=103	n=131
- Access to prescribed medication	56 (54.4%)	23 (17.6%)**
- Access to laboratory results	91 (88.4%)	14 (10.7%)**
- Access to results of physical measurements	57 (55.3%)	55 (42.0%)*
- Access to radiology results (X-ray, echography)	59 (57.3%)	5 (3.8%)**
- Access to care plan and care goals	49 (47.6%)	108 (82.4%)**
- Requesting a repeat medication prescription	18 (17.5%)	4 (3.1%)**
- Scheduling appointments	54 (52.4%)	21 (16.0%)**
- eMessaging (asking questions)	41 (39.8%)	36 (27.5%)*
- Conversation with healthcare professionals on screen	21 (20.4%)	20 (15.3%)
Proportion of patients using a personal health environment, n (%)	n=114	n=149
- Not available / I don't know / no patients use it	103 (90.4%)	131 (87.9%)
- Some patients	7 (6.1%)	9 (6.0%)
- Most or all patients	4 (3.5%)	9 (6.0%)

[1] Nurses could indicate which of these pre-structured options was applicable.
*p<0.05, **p<0.01 Chi-square test for difference between the two settings.

Attitudes of nurses towards patient portals and personal health environments

Hospital and community nurses do not differ in the perceived disadvantages of patient portals (Table 7.3). Overall, almost half of nurses think that a patient portal is difficult to use for patients and/or their family caregivers (45.8%). About one tenth perceive disadvantages connected with technical issues or extra time for professionals and/or patients. In terms of advantages, hospital nurses are more likely to think that patient portals stimulate self-reliance in patients (61.1% and 44.2%, respectively; p<0.01) and that they decrease the nursing workload (15% and 6.8%, respectively; p<0.05). A larger proportion of community

nurses (58.2%) than of hospital nurses (20.8%; p<0.01) make an active effort to promote the use of patient portals among patients.

Table 7.3 Attitudes of nurses towards patient portals (n=260)

	Hospitals (n=113)	Home care (n=147)
Perceived advantages, n (%)		
- Helps patients in decision making about their care	63 (55.8%)	90 (61.2%)
- Stimulates self-reliance in patients	69 (61.1%)	65 (44.2%)**
- Improves quality of care	45 (39.8%)	74 (50.3%)
- Saves time for patients and/or family caregivers	38 (33.6%)	39 (26.5%)
- Saves time for healthcare professionals	29 (25.7%)	37 (25.2%)
- Improves quality of life of patients	20 (17.7%)	34 (23.1%)
- Decreases workload	17 (15.0%)	10 (6.8%)*
- None	13 (11.5%)	3 (2.0%)**
Perceived disadvantages, n (%)		
- Patients and/or family caregivers have difficulty using it	53 (46.9%)	66 (44.9%)
- None	32 (28.3%)	40 (27.2%)
- Technical issues	15 (13.3%)	16 (10.9%)
- Costs extra time for healthcare professionals	12 (10.6%)	18 (12.2%)
- Costs extra time for patients and/or family caregivers	12 (10.6%)	17 (11.6%)
- Increases workload	9 (8.0%)	9 (6.1%)
- Application is not safe	7 (6.2%)	3 (2.0%)
- Quality of care is worse	3 (2.7%)	2 (1.4%)
Recommending patient portals to patients and/or family caregivers, n (%)		
- Never/not applicable	43 (42.6%)	26 (17.8%)
- Sometimes	37 (36.6%)	35 (24.0%)
- Often/always	21 (20.8%)	85 (58.2%)**

*p<0.05, ** p<0.01 Chi-square test for difference between the two settings.

Only 13-14% of the nurses think a personal health environment has added value for most of their patients (Table 7.4). This proportion does not differ significantly between the two healthcare settings. However, concerning the perceived additional value for some patients, more community nurses consider this to be the case (22.8%) than hospital nurses (7%; p<0.01). Also, with respect to the perceived suitability, more community nurses than hospital nurses think that personal health environments are suitable for some patients (22.8% and 8.8%, respectively; p<0.01).

A personal health environment is recommended to patients much less frequently than a patient portal: only 4.6% of hospital nurses and 11.0% of community nurses recommend the use of a personal health environment often or always (difference between settings not statistically significant).

Table 7.4 Attitudes of nurses towards personal health environments (n=263)

	Hospital n=114	Home care n=149
Perceived number of patients willing to use a personal health environment, n (%)		
- Not available/I don't know/no patients	100 (87.7%)	118 (79.2%)
- Some patients	10 (8.8%)	19 (12.8%)
- Most or all patients	4 (3.5%)	12 (8.1%)
Number of patients for whom a personal health environment is perceived to be suitable, n (%)		
- Not available/I don't know/no patients	89 (78.1%)	95(63.8%)
- Some patients	10 (8.8%)	34 (22.8%)**
- Most or all patients	15 (13.2%)	20 (13.4%)
Number of patients for whom a personal health environment is perceived to be of additional value, n (%)		
- Not available/I don't know/no patients	90 (79.0%)	95 (63.8%)
- Some patients	8 (7.0%)	34 (22.8%)**
- Most or all patients	16 (14.0%)	20 (13.4%)
Recommending personal health environment to patients and/or family caregivers, n (%)	n=108	n=145
- Never/not applicable	85 (78.7%)	105 (72.4%)
- Sometimes	18 (16.7%)	24 (16.6%)
- Often/always	5 (4.6%)	16 (11.0%)

*p<0.05, ** p<0.01 Chi-square test for difference between the two settings.

Discussion

This study indicates that whereas patient portals are widely used for patients in Dutch hospitals and home care, the use of personal health environments seems far less widespread. Moreover, most nurses do not perceive an added value of personal health environments for their patients. However, the attitudes of community nurses are slightly more positive than hospital nurses' attitudes: about one third of the community nurses and one in five hospital nurses think personal health environments would have additional value for most or some of their patients. Also, community nurses are more likely to believe that a personal health environment is suitable for some patients than hospital nurses. The finding that community nurses are slightly more positive than hospital nurses is in line with our prior expectation. The often long-lasting care relationship between patients and family caregivers and community nurses seems to foster the adoption of diverse eHealth technologies as well (23).

Even so, the vast majority of community nurses do not perceive an added value of personal health environments for their patients. This may be explained by the large proportion of old persons with general frailty and patients with dementia who they take care of. Previous research shows that these patients are in general less willing and/or able to adopt technological innovations (16). Furthermore, a personal health environment aims to

support patients' self-direction and control over their health data, but the use depends on patients' digital skills and access to electronic devices. A previous interview study indicated that a substantial proportion of home-care patients lack the digital skills or have no interest in reading the documentation compiled by nurses (24). The finding that nurses often do not perceive additional value for most of their patients could explain the low intention of nurses to recommend personal health environments to patients. Moreover, our results show that most community nurses (about 80%) do not think that patients are willing to use them. This is in line with previous research, showing rates for the adoption of patient portals and personal health environments of up to 30% of patients at most (25, 26). A recent Dutch study showed an adoption rate of 15%, which was far below the target of 80% as established by the Dutch government (13).

The sceptical attitudes of nurses contrast with national and international healthcare policies advocating personal health environments because of their potential to support patients' self-direction and control over their own health and care (3, 27-29). The results of the present study provide a clear picture that there is still a lot of work to be done to achieve sufficient support among nurses for the implementation of personal health environments. In general, it is known that poor user-friendliness often negatively influences the attitude of patients and professionals towards new technology (30-32). Hence, user-friendliness could be considered as an important conditional factor. Further research is necessary to focus on this and other aspects of the personal health environments.

Lastly, some limitations and strengths of the present study need to be addressed. As was explicitly mentioned in the questionnaire for nurses, the development of personal health environments in the Netherlands is still in its infancy. The knowledge of and experiences with personal health environments may have been too limited among the participating nurses to give experience-based answers on, for instance, the items about the perceived added value. Nonetheless, a definition and important characteristics of personal health environments were mentioned in the questionnaire so that even respondents with limited knowledge about personal health environments were able to answer questions about this new functionality. Finally, this study indicates that a large majority of our respondents perceive their own digital skills to be high. This may not be completely representative for Dutch hospital and community nurses as a whole, since it can be expected that respondents with considerable digital skills are more likely to be interested in completing a questionnaire about eHealth applications.

A strength of this study is that we used a nationwide sample, the Nursing Staff Panel, that is representative for the Dutch nursing population with regard to age, gender, working experience and region. Comparisons between the two healthcare settings are strengthened because of the comparable background characteristics, e.g. regarding the age, gender and digital skills of the respondents. Overall the results provide a topical insight into the

attitudes of hospital and community nurses towards patient portals and personal health environments.

Conclusion

The use of personal health environments is far less widespread than the use of patient portals. Hospital nurses and community nurses in the Netherlands are in general positive about the use of patient portals, while the advantages of personal health environments seem to be rather unclear. At the moment, only one third of the community nurses and one in five hospital nurses consider them to be of added value for some of their patients. For national and international parties promoting the use of personal health environments, there is a lot of work to be done to achieve sufficient support among nurses given their sceptical attitudes.

Authors' contribution
WB, KDG, ADV, AF developed the study concept and design. KDG, ADV and LVT carried out the data collection. WB and KDG conducted the data analysis. All authors (WB, KDG, ADV, LVT, AF) contributed to the drafting and revision of the article. All authors read and approved the final manuscript.

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CHAPTER 8

Summary and general discussion

Summary of the main findings

Nursing documentation has to be an accurate reflection of the entire process of nursing care for individual patients [1-3]. Nursing documentation is not an aim in itself; it is a vital source of information for nursing staff and essential for the patient's safety and the quality of nursing care [4-8]. However, there are indications that the quality of nursing documentation is often sub-optimal [9-12]. How this quality can be improved was not clear and little was known about the challenges nursing staff and patients face in the use of electronic nursing documentation. Therefore, this PhD thesis aims to give a better understanding of the quality criteria and the views of nursing staff and patients on nursing documentation, with a specific focus on electronic nursing documentation.

In this final chapter, first the main findings are summarized with respect to the key research questions.

The first key research question was: **What quality criteria should nursing documentation meet?**

This question was answered using a systematic review of systematic reviews, presented in **Chapter 2**. Eleven relevant systematic literature reviews were found in the international literature databases PubMed and CINAHL that cover a total of more than 450 research publications. Four of the eleven reviews indicate that alignment of the documentation with the phases of the nursing process is a criterion for high-quality nursing documentation. Furthermore, seven reviews report that the use of standardized terminologies improves the quality of nursing documentation. These reviews mention a wide range of terminologies, such as the Omaha System and NANDA-I. In addition, three of the eleven reviews show that electronic documentation is preferred over paper-based documentation and that the user-friendliness of electronic health records is an important quality criterion. Two reviews report that electronic health records have to be developed in cooperation with nursing staff in order to improve user-friendliness.

The second key research question was: **What are the perspectives and experiences of nursing staff regarding electronic nursing documentation?**

Nursing staff only feel moderately supported in their documentation by the use of electronic health records. This finding was outlined in **Chapter 3**, based on a nationwide survey among 667 registered nurses and certified nursing assistants working in Dutch hospitals, mental health care, home care or nursing homes. Only half of these nursing staff actually used a standardized terminology in their electronic health records and one in five was unaware of using a terminology. The specific kind of standardized terminology was associated with the care setting, e.g. the Omaha System was mostly used in home care, while Gordon's Functional Health Patterns was often used in hospitals. The extent to which

nursing staff felt supported in their documentation by the use of electronic health records was not associated with the use of a specific standardized terminology. Furthermore, the survey showed that information in the electronic health records supported most nursing staff in their nursing care activities. Nursing staff were less positive about whether the information in the electronic health records was complete, relevant and accurate, and whether the electronic health records were user-friendly.

Chapter 4 concerns the perceived workload of nurses in relation to documentation and is based on a mixed-methods study that consisted of a quantitative survey among 195 community nurses and four qualitative focus groups with 28 community nurses in total. The community nurses in the survey estimated that they spent twice as much time on clinical documentation of the care for individual patients as on organizational documentation, concerning personnel or financial aspects for instance. In addition, the survey indicated that the time spent on organizational documentation was related to nurses' perceived workload, while the time spent on clinical documentation was not. In the survey 79% of the community nurses agreed that the nursing process was central in the electronic health records. No association was found between the nursing workload and whether the records were in alignment with the nursing process. In the focus groups, community nurses reported that organizational documentation in particular often did not serve a useful purpose, resulting in a high workload. Still, the focus-group participants also felt clinical documentation added to their workload, particularly because of the limited user-friendliness of the electronic health records they worked with.

The third and final key research question was: **What are the perspectives and experiences of nurses and home-care patients regarding patient participation in electronic nursing documentation?**

Community nurses consider patient participation in electronic nursing documentation to be important, as is described in **Chapter 5**. Thematic analysis of qualitative interviews with nineteen community nurses revealed that these nurses tailored the extent and ways in which they promoted patient participation in their documentation to the individual situation of patients. This tailoring also depended on patients' trust in nurses to document accurate information, and on which phase of the nursing process was being documented. In addition, the interviews showed that community nurses perceived various challenges in patient participation in documentation. These challenges were often related to technical problems and limited user-friendliness of the electronic health records and the patient portals that allow patients to electronically access their health records. Community nurses also mentioned work-related challenges, such as hectic conditions in patients' homes and time pressure. Furthermore, the interviewed nurses mentioned patient-related challenges. These include severe, complex and vulnerable conditions, low health literacy, limited interest in documentation and limited digital skills among patients. In dealing with these

challenges, nurses often fell back on verbal communication with patients or their family caregivers about what they documented, in order to achieve at least some form of patient participation in their documentation.

To achieve a broader understanding of patient participation in electronic nursing documentation, a qualitative interview study among patients was performed as well. This study, described in **Chapter 6**, focussed on the perspectives and experiences of 21 home-care patients. Thematic analysis revealed that home-care patients differed in their need and ability to participate in the documentation by community nurses. Four patient types were identified: 1. 'high need, high ability'; 2. 'high need, low ability'; 3. 'low need, high ability'; and 4. 'low need, low ability' to participate in nursing documentation. Patients in the first two types felt a need for participation because they were interested in what community nurses documented about their health and care. Patients in the last two types did not feel such a need, since they had complete trust that the nurses would perform the documentation well or because they thought that nursing documentation was not important for them. Patients in the first and third types felt highly able to participate because they could access the documentation and community nurses encouraged their participation, mostly via verbal communication. In contrast, patients in the second and fourth types felt less able to participate in the documentation, because they did not have any electronic devices, lacked digital skills, lacked support from nurses and/or because they did not find the electronic patient portal user-friendly.

Next, in a study described in **Chapter 7**, patient participation in nursing documentation is further explored from the perspective of nurses. The specific focus is on nurses' attitudes towards the use of patient portals and personal health environments. In this chapter personal health environments (in Dutch: *persoonlijke gezondheidsomgevingen*) are described as a set of computer-based tools that allow people to manage their lifelong health information, add personal health data and make appropriate parts of it available to those who need that information, e.g. care professionals or family. An online survey was conducted among a nationwide sample of 334 nurses working in Dutch hospitals or home care. Most of these nurses reported that their organization had a patient portal to give patients access to their records, yet the functionalities differed between home care and hospitals. Furthermore, more community nurses (58%) actively promoted the use of patient portals than hospital nurses (21%). According to the responding nurses, personal health environments were used much less often than patient portals. Only one tenth of the nurses stated that some patients used a personal health environment. Moreover, nurses were critical of the benefits since only 14% believed that personal health environments had additional value for their patients. The attitudes of community nurses were slightly more positive than those of hospital nurses.

Reflections on the main findings

Nursing process as the foundation for electronic nursing documentation

One way to achieve high-quality nursing documentation is to align the nursing documentation with the phases of the nursing process, as is shown in **Chapters 1 and 2**. The new Dutch professional guideline on nursing documentation [13] and guidelines on nursing documentation in other countries [14, 15] endorse the view that electronic nursing documentation should reflect the nursing process. Yet the nursing process is not always reflected in current electronic nursing documentation. In the survey part of the mixed-methods study presented in **Chapter 4**, a majority of community nurses agreed that the nursing process was central in the electronic health records, while one in five nurses disagreed. Still, Dutch community nurses appear to be relatively positive about the alignment of the documentation with the nursing process. In a survey among a sample of nursing staff working in various settings, only 62% agreed that the nursing process was central in the electronic health records [16]. Hence this difference suggests that staff and software developers involved in other settings, for instance nursing homes, might learn from some of the electronic health records used in the home-care setting.

It is remarkable that the nursing process is not always used as the basis in electronic nursing documentation (**Chapter 4**), given that this was already a criterion in the development of electronic health records back in the 1990s [17], and since nursing professionals broadly accept this process as the foundation of nursing care. However, previous studies have indicated that not all nursing staff have sufficient competences for using the nursing process in their documentation [18, 19]. Other research indicates that some nursing staff do not have enough knowledge and skills to use a methodical approach in their work in general [20]. In the Netherlands, particularly certified nursing assistants and older nurses with a vocational training seem to have more difficulties with following the nursing process [18, 20]. Since the beginning of this millennium, working methodically has had a prominent place within the educational programmes for nurses [21, 22], and therefore it might be expected that the nursing process will increasingly be used by nurses in their documentation in the coming years.

Integration of standardized terminologies into electronic nursing documentation

One finding of the systematic review of reviews (**Chapter 2**) concerns the positive association between high-quality nursing documentation and the use of standardized terminologies. A comparable association is found in studies published after our review [23-28]. Yet the nationwide survey presented in **Chapter 3** shows that not all Dutch nursing staff are positive about the accuracy of the nursing information in their electronic health records, even when using standardized terminologies. This suggests that the full potential of standardized terminologies is not reached in current electronic health records, which might

be related to differences between software developers in how they incorporate the standardized terminologies. As indicated by an international expert panel, software developers without a nursing background can misunderstand standardized terminologies, resulting in sub-optimal integration within electronic health records [29]. Consequently, variations in nursing professionals' use of the terminologies in their documentation will increase [30].

Another explanation for the finding that nursing staff are not always positive about the quality of documentation even when they use standardized terminologies might be that some nursing staff have insufficient competences to use these terminologies. The lack of competences is indicated in a survey among Dutch nursing staff from various settings [18]. The finding presented in **Chapter 3** that some nursing staff are unaware of whether they use a standardized terminology in their documentation is problematic as well, since previous research indicates that nursing staff must understand a standardized terminology before they can use it correctly [31].

A third explanation why standardized terminologies do not automatically lead to high-quality nursing documentation is related to the fact that different standardized terminologies are being used. **Chapter 3** shows that Dutch nursing staff in various settings use a variety of terminologies in their electronic health records and that whether they feel supported by the use of electronic health records does not depend on the standardized terminology used. This finding is in line with an earlier systematic review, which concluded that there is no evidence that any particular standardized terminology is more strongly associated with high-quality documentation than other terminologies [32]. Also, two reviews included in our systematic review of reviews (**Chapter 2**) state that it is unlikely that one single terminology will be appropriate for all settings, given the diversity of nursing practice itself [3, 33]. Therefore, it seems wise to choose a terminology for nursing documentation that is relevant for the setting in which nursing staff work.

Standardized terminologies versus unambiguous language

However, a disadvantage of using different terminologies for different settings (**Chapter 3**) is that this hampers communication between professionals, e.g. when a patient is transferred from hospital to home care. Partly due to the variation in standardized terminologies, nurses sometimes have to manually re-enter information for the handover of care. According to research by the Dutch Nurses Association V&VN, nurses have to retype information on average seven times for one single handover [34]. As shown in the mixed-methods study in **Chapter 4**, duplicate documentation leads to a high perceived workload among community nurses, and it is likely that this will apply to nurses in other settings as well.

To save nurses from duplicate documentation and to promote an unambiguous language in various settings, the new Dutch guideline on nursing documentation recommends using the so-called 'eOverdracht' (e-transfer) [13]. The eOverdracht is a nationally established agreement by stakeholder parties (including V&VN) on which care-related information should be documented in the handover and how this should be built into the electronic health records in a standardized way [35]. A pilot in Amsterdam indicates that the use of the eOverdracht reduces the number of times that nurses have to manually retype information from seven to two [34]. However, some nursing experts are critical of the eOverdracht, for example because this standardized format might not make it possible to tell the 'whole story' of a patient. Since its use in nursing practice is still in its infancy, further implementation will need to show whether the eOverdracht can improve the process of the handover of care. If not, the eOverdracht might only add to the bureaucracy that hinders nurses.

The eOverdracht is based on SNOMED CT, which is a reference terminology that can be mapped to other international standardized terminologies [36]. Cross-mapping involves associations between particular terms in one standardized terminology and terms in another standardized terminology that have the same meaning. This means that at least some of the terms used in a specific terminology can be connected 'behind the scenes' of the electronic health record to terms in SNOMED CT. This makes SNOMED CT a potential bridge between the various standardized terminologies used by professionals [36]. Still, the use of SNOMED CT will not eliminate all problems with the exchange of care-related information. More about this issue is written in the section 'Implications for practice and policy'.

Poor user-friendliness of electronic systems

Another main finding is that many Dutch nursing staff do not find their electronic health record to be user-friendly (**Chapter 3** and **Chapter 4**). At the same time, the user-friendliness of electronic health records is an important criterion for high-quality nursing documentation, as became apparent in the systematic review (**Chapter 2**). Studies performed in the United States and Scandinavia also pointed to poor user-friendliness of electronic health records [37-41].

The focus groups in the mixed-methods study (**Chapter 4**) provided more in-depth information on the reasons why community nurses perceive their electronic health records to be user-unfriendly. Having to fill in mandatory sections and continuously switching between sections of the electronic health record are considered time-consuming and burdensome.

To improve the user-friendliness, nursing staff need to be involved in the development process of electronic health records, as shown in the systematic review (**Chapter 2**).

Involvement of end-users was recommended back in the 1990s as an important requirement for the development of electronic health records [17]. However, there are indications from practice that even now electronic health records are often developed by software developers in consultation with managers and quality or financial departments within care organizations, but with limited or no input from nursing staff. This might be related to the fact that when the first generation of electronic records appeared in the 1970s and 1980s, the primary focus was on organizational documentation regarding financial and logistic matters [42]. It was not until the 1990s that care-related information was added in electronic records, and it took until the 2000s for clinical documentation to be incorporated [42]. The fact that care-related information was only a secondary point of focus might still be problematic for at least some of the electronic health records currently being used. Moreover, it might also partially explain the fact that the nursing process is not always central in the electronic health records (**Chapter 4**), the poor user-friendliness of the records (**Chapter 3** and **Chapter 4**), and the associated workload for nursing staff (**Chapter 4**).

Community nurses perceive organizational documentation in particular as cumbersome and a cause of their high workload (**Chapter 4**). This finding is in line with a study from the USA that indicates that nursing staff are particularly negative about documentation that is not directly related to individual patient care [43]. Therefore, it is promising that reducing the documentation burden of care professionals is a key policy aim for the Dutch Ministry of Health, Welfare and Sports and the Dutch Nurses Association V&VN, among others [44].

Patient participation in electronic nursing documentation

The last topic addressed in this thesis was patient participation in electronic nursing documentation. This participation is a main point of departure in the new Dutch professional guideline on nursing documentation, which states that nurses have to discuss the documentation with the patient (or their representatives) in all phases of the nursing process [13]. The guideline also states that nurses have to discuss with patients whether the care plan matches their wishes [13].

However, the interview study described in **Chapter 6** shows that not all home-care patients feel a need to participate in nursing documentation. Therefore, patients should not be pressured into participating. Nurses should tailor their encouragement to let individual patients participate in documentation according to their individual needs and abilities, as is also reported by community nurses themselves (**Chapter 5**). Although it requires a tailored approach, patient participation in nursing documentation is still an ambition worth striving for, not only because this concerns the patient's legal rights, but also because other research points towards various benefits for patients and for the quality of nursing documentation [2, 45-47].

Patient portals through which patients can access their electronic health records can be considered as important applications for enhancing patient participation in documentation that relates to their own health and care. However, home-care patients can experience technical problems and problems with the user-friendliness of electronic patient portals (**Chapter 6**). Also community and hospital nurses report that the use of patient portals is difficult for some patients, e.g. those with limited digital skills (**Chapter 7**). In line with that, previous research also indicates that in particular older people often experience such barriers to the adoption of these applications [48, 49]. Nevertheless, having access to your own health records is a legal right in the Netherlands for all citizens [50], and patient portals are increasingly used in practice [51].

From practice it is known that patient portals often vary between settings, and therefore patients who are transferred between settings are confronted with multiple portals for various care organizations. The rise of personal health environments in the Netherlands could help reduce this problem [52], because they provide lifelong and cross-setting access to health information. In personal health environments, patients can also add health information themselves. For example, data such as blood pressure or blood glucose can be documented by the patient in the personal health environment, regardless of the setting where the patient is at that moment. However, nurses working in hospitals and home care have critical attitudes towards personal health environments; in 2021 only 14% believed these tools had added value for their patients (**Chapter 7**). A recent study performed in Switzerland shows that negative attitudes of nurses towards digital technologies often originate from technologies not meeting nurses' expectations and a lack of involvement of nurses in the development [53]. Given that positive attitudes are important for a successful adoption of digital innovations, there is a lot of work to be done e.g. by managers and nursing associations to generate sufficient support among nurses. Furthermore, the future will show to what extent personal health environments are important in achieving patient participation in documentation and whether these environments have added value compared with the patient portals that have been around longer. It seems plausible that, as with patient portals, personal health environments will not be useful for every patient. Here too, there is a chance that patients who are in a very vulnerable condition and/or who have limited digital skills will find it difficult to make use of the personal health environments.

Methodological considerations

Strengths and limitations of this thesis

A first strength of this thesis is the variety of research methods and data sources that were used. The combination of a literature review, quantitative, qualitative and mixed-methods empirical research, and the involvement of nursing staff has resulted in in-depth understanding of quality criteria and professionals' experiences and views on electronic

nursing documentation. Moreover, it was important to involve patients as research subjects as well, since patient participation in nursing documentation is a topic that cannot properly be studied without including the views of patients themselves.

Another strength is that the perspectives were investigated of nursing staff working in various settings, resulting in knowledge about the variation between settings, e.g. with regard to the experiences and perspectives on electronic nursing documentation, patient portals and personal health environments. In this regard, the use of the Nursing Staff Panel offered advantages in particular in the quantitative studies. This Panel concerns a large, diverse and nationwide sample of nursing staff, which enables sound statistical research that distinguishes between subgroups of nursing staff, e.g. with regard to settings. Besides, it is an advantage that members of this Panel have previously committed to participating in surveys on various subjects, limiting the chance of selection bias compared to samples recruited exclusively for a specific research topic [54]. This might be a strength particularly with a much-debated topic like workload related to documentation.

Some limitations of this thesis should also be noted. Firstly, the systematic review was performed in 2017 and only includes systematic reviews published by that date. These reviews all concern empirical research performed before 2013, and therefore the systematic review of reviews misses recent research on nursing documentation. Yet the empirical research presented in this thesis was mostly performed in 2019-2020 and addresses topical subjects such as personal health environments, which can be considered a relatively new phenomenon.

Another limitation is that the survey research and interviews only concern subjective perspectives rather than actual behaviour. For instance, the time that nurses spend on documentation was not observed in practice, but estimated by nurses. This may have resulted in a biased picture, since research indicates that nurses tend to overestimate their time spent on documentation [55].

Lastly, it should be noted that no family caregivers were involved in the various studies, although it is known from practice and research [56, 57] that partners, adult children or other relatives often represent the patient and therefore read and respond to nursing documentation about the care of their loved one. Moreover, good nursing care includes the support of family caregivers [58, 59]. Therefore the views of family caregivers on nursing documentation should be investigated in future research.

Implications for practice and policy

Align electronic health records with the nursing process

An important finding is that the nursing process is not always reflected in electronic nursing documentation in the Netherlands (**Chapter 3** and **Chapter 4**). There are opportunities here to improve the quality of documentation, since alignment with the nursing process is an important criterion for high-quality nursing documentation (**Chapter 2**). The international standard 'Nursing Process-Clinical Decision Support System' can be helpful in this regard, since this standard shows how to integrate the nursing process into electronic health records [29]. Rather than minor improvements, a thorough revision is needed of at least part of the current generation of electronic health records. At the same time, sufficient attention should be paid to the user-friendliness of electronic health records, since this is also important for the quality of documentation (**Chapter 2**), as well as for the reduction of nurses' workload (**Chapter 4**).

Some examples of electronic health records are known from nursing practice that do align with the nursing process, particularly from the home-care setting (**Chapter 4**). Nursing staff, nursing associations, care organizations and software developers need to work together to achieve a better fit with the nursing process across settings and to make electronic health records user-friendly. In this regard, nurses need to take the lead and claim a prominent say in how electronic health records have to be adapted. To support nurses in this, the new Dutch guideline on nursing documentation includes several relevant recommendations for nursing staff, for example *"Make sure that you have influence in the choice for or the development of an electronic health record that is user-friendly and efficient"* and *"Use a format for documentation that is relevant for the specific care setting in which you work"* [13]. Particularly nursing staff who participate in software developer user groups or in nursing advisory councils (in Dutch: *VARs*), as well as nurses in other influential functions, like the Chief Nursing Information Officers, can influence decisions about the choice for an electronic health record or the design or redesign of electronic health records. In addition, it is important to involve nursing staff who actually work hands-on with patients since they are the main end-users who have to document information in the records on a daily basis.

Limit the amount of organizational documentation

In addition to the electronic health records for clinical documentation, nurses often use various electronic systems for documentation of organizational aspects, e.g. financial or logistic matters. In particular directors and managers of care organizations have a responsibility to choose user-friendly electronic systems for organizational documentation that are aligned with one another to avoid duplicate documentation. Directors and managers of care organizations should also critically assess the necessity of their own rules if they result in too many documentation activities for nurses.

Moreover, given that the time spent on organizational documentation is associated with a high workload among community nurses (**Chapter 4**), national parties, e.g. the government and V&VN, should continue their policy to reduce the documentation burden. They should be critical regarding new policies that could increase nurses' documentation activities. For instance, the new model for home care funding includes a questionnaire about patient characteristics that community nurses need to fill in merely for the financial justification of home care [60]. This kind of extra organizational documentation is likely to result in an increased nursing workload (**Chapter 4**), and should therefore be avoided.

Improve the exchange of care-related information

This thesis also provides relevant insights that can help to improve the exchange of care-related information across settings and between various professionals. An example is the finding that standardized terminologies used in electronic health records often vary between settings (**Chapter 3**). To improve information exchange between settings, the Dutch Nurses Association V&VN, the government and other national stakeholder parties are promoting the implementation of the eOverdracht mentioned above, based on the standardized reference terminology SNOMED CT. Lessons can be learned from other countries, e.g. the USA and Canada, with experiences in implementing SNOMED CT [61-64]. However, the incorporation of SNOMED CT into electronic health records will not eliminate all the problems regarding the use of different terminologies across settings, since Kieft et al. found that only a small number of SNOMED CT terms map onto nursing diagnoses described in the Omaha System, NANDA-I, and the ICF [65]. Therefore, strategies in addition to SNOMED CT will be needed to reduce problems with exchanging care-related information across settings. For example, other requirements for the electronic exchange of information have to be met, such as process agreements between organizations to exchange information at the right time [66]. Besides, national stakeholder parties, e.g. the Dutch Ministry of Health, Welfare and Sports, are promoting the development of a 'care network environment' in which clinical documentation by various professionals is displayed in one online dashboard and can be exchanged between all professionals involved in the care for an individual patient [67]. According to an international study, developing and implementing care network environments could and should go hand in hand with the development and implementation of tools that improve patient participation in clinical documentation, such as personal health environments [68].

Tailor patient participation in electronic nursing documentation

Patient participation in electronic nursing documentation should be tailored to the needs and abilities of individual patients (**Chapter 5** and **Chapter 6**). For instance, if patients do not feel a need or are not able to participate because of severe or acute medical conditions, it is recommended to involve a family caregiver as a proxy of the patient. If patients want

to participate, it is important that nurses document the information in the presence of the patient and discuss the content of the documentation with the patient. Nurses should devote sufficient time for this. In addition, some patients might need encouragement and practical support to use a patient portal and get access to their electronic health records.

It is also important that patient portals are user-friendly. However, studies presented in this thesis suggest that this is not always the case (**Chapter 6** and **Chapter 7**). Therefore, policymakers, patients' representatives, nurses and software developers must pay attention to the improvement of the user-friendliness of patient portals, where needed.

One challenge is that patients who receive care from multiple organizations have to deal with multiple patient portals. Therefore, the personal health environment, in which a complete overview of a patients' health information and the care received is displayed, might be a step forward. However, the critical attitudes of nurses towards personal health environments (**Chapter 7**) indicate that policymakers and managers of care organizations must show nurses the advantages for patients and for nursing practice. Otherwise, nurses are not likely to actively promote the use of personal health environments among their patients.

Implications for education

This thesis indicates that improving the quality of nursing documentation is a challenge that has to be tackled by multiple parties. That includes parties involved in basic and continuing nursing education. At present not all nursing staff feel competent to document information in alignment with the nursing process [18, 19]. Therefore, nursing schools and organizations offering continuing education should train nursing staff and students to follow the steps of the nursing process in electronic nursing documentation.

In addition, educational programmes should also teach nursing staff and students about the content, usage and advantages of using standardized terminologies. Terminologies should be taught that best align with the specific setting in which nursing staff work. Besides, nursing staff should learn about the importance of using unambiguous language for the handover of care and the role that information standards can have. As at the beginning of 2022, the eOverdracht is the only available information standard in the Netherlands and the new guideline on nursing documentation recommends its use [13]. It is therefore important that nursing staff and students are introduced to the eOverdracht.

Moreover, basic and continuing education programmes for nurses must also pay attention, in a general sense, to the importance of nursing documentation as a precondition for the good quality and safety of nursing care.

Implications for further research

Firstly, future research is recommended on the effects of nursing documentation on patient outcomes. While there may be no doubt in practice and policy that high-quality nursing documentation is important for providing good care, evidence about the effects of nursing documentation on patient outcomes is limited to date. Some studies, mostly performed in hospital settings, do indicate a positive association between the quality of nursing documentation and patient safety, e.g. in the sense of reducing adverse events [7], infections and patient injuries [4-6]. It would be valuable to gain more insight into how nursing documentation is related to outcomes concerning patient safety. In addition, associations with other nurse-sensitive patient outcomes seem relevant as well, such as patients' satisfaction with nursing care or whether patients are able to make decisions regarding the provision of care [69].

Secondly, it is recommended that in future research, data that are 'routinely' documented by nurses in electronic health records are re-used — if possible — to answer research questions. As was already shown back in 1859 by Florence Nightingale, nursing documentation can be an important source of data for scientific research, especially when documentation is standardized [70]. In line with Nightingale's legacy, a recent systematic review indicates that secondary analysis of standardized nursing data from electronic health records is useful in demonstrating the content, impact and effectiveness of nursing care on patient outcomes [71]. Reuse of such data for scientific research can prevent extra documentation or a research burden among professionals and patients.

Thirdly, future research is recommended regarding the user-friendliness of electronic health records. This thesis provides indications for areas where current electronic health records have to be improved, e.g. to create a better connection with the nursing process and to reduce duplicate documentation. Yet it is important to gain more in-depth insights into how these points for improvements can best be addressed, including by exploring how appropriate interfaces for electronic health records can be developed for and with nursing staff.

Lastly, future research is recommended on family caregivers' views and experiences regarding electronic nursing documentation. This thesis focused on nurses' and patients' views on electronic nursing documentation. Yet family caregivers often represent patients, for instance when patients are very sick. Family caregivers often function as the patients' proxies and as intermediaries for patient participation in nursing documentation. Future research should provide more insight into family caregivers' desired and actual roles in participation in nursing documentation.

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NEDERLANDSE SAMENVATTING

Samenvatting van de voornaamste bevindingen

Verslaglegging door verpleegkundigen of verzorgenden moet een accurate reflectie zijn van het gehele proces van de zorgverlening aan individuele cliënten. Verslaglegging is geen doel op zichzelf, maar een belangrijke bron van informatie voor verpleegkundigen en verzorgenden. Het is essentieel voor de patiëntveiligheid en de kwaliteit van zorg. Er zijn echter indicaties dat de kwaliteit van de verslaglegging vaak suboptimaal is. Hoe deze kwaliteit verbeterd kan worden was onduidelijk. Daarnaast was weinig bekend over de uitdagingen waar verpleegkundigen, verzorgenden en cliënten mee te maken hebben bij elektronische verslaglegging. Daarom is het doel van dit proefschrift inzicht te verschaffen in kwaliteitscriteria voor verslaglegging en in de perspectieven en ervaringen van verpleegkundigen, verzorgenden en cliënten met verslaglegging. Daarbij wordt specifiek aandacht besteed aan elektronische verslaglegging. Hierna volgen de belangrijkste inzichten aan de hand van de hoofdvragen uit dit proefschrift.

De eerste hoofdvraag luidde: **Aan welke kwaliteitscriteria moet verpleegkundige en verzorgende verslaglegging voldoen?**

Deze vraag stond centraal in een systematische literatuurstudie van systematische literatuurstudies, gepresenteerd in **Hoofdstuk 2**. Er werden elf relevante systematische literatuurstudies gevonden in de internationale literatuurcatalogi PubMed en CINAHL. Deze omvatten gezamenlijk meer dan 450 onderzoekpublicaties. Van de elf literatuurstudies wijzen er vier op dat voor verslaglegging van hoge kwaliteit deze verslaglegging moet aansluiten op de fasen van het verpleegkundig proces. Verder beschrijven zeven literatuurstudies dat het gebruik van gestandaardiseerde terminologieën, oftewel classificatiesystemen, de kwaliteit van de verslaglegging verbetert. In deze literatuurstudies wordt een breed scala aan terminologieën genoemd, waaronder het Omaha System en NANDA-I. Daarnaast laten drie van de elf literatuurstudies zien dat elektronische verslaglegging de voorkeur heeft boven papieren verslaglegging en dat gebruiksvriendelijkheid van elektronische zorgdossiers een belangrijk kwaliteitscriterium is. Twee literatuurstudies benoemen dat voor het realiseren van gebruiksvriendelijke elektronische zorgdossiers, verpleegkundigen en verzorgenden betrokken moeten zijn bij de ontwikkeling.

De tweede hoofdvraag luidde: **Wat zijn de perspectieven en ervaringen van verpleegkundigen en verzorgenden met betrekking tot elektronische verslaglegging?**

Verpleegkundigen en verzorgenden voelen zich slechts matig ondersteund in hun verslaglegging door het gebruik van elektronische zorgdossiers, zo blijkt uit de studie in **Hoofdstuk 3**. Deze bevinding is gebaseerd op een landelijk vragenlijstonderzoek onder 667 verpleegkundigen en verzorgenden uit ziekenhuizen, de geestelijke gezondheidszorg, de wijkverpleging of verpleeghuizen. De helft van hen gebruikt een gestandaardiseerde terminologie in het elektronische zorgdossier. Daarnaast is één op de vijf zich er niet van bewust of men met een gestandaardiseerde terminologie werkt. Welke specifieke terminologie verpleegkundigen of verzorgenden gebruiken hangt samen met de zorgsector. Het Omaha System wordt bijvoorbeeld het vaakst gebruikt in de wijkverpleging, terwijl de functionele gezondheidspatronen van Gordon vooral in de ziekenhuizen worden gebruikt. De mate waarin verpleegkundigen en verzorgenden zich ondersteund voelen in hun verslaglegging door het gebruik van elektronische zorgdossiers, hangt niet samen met de specifieke terminologie die zij gebruiken. Verder laat dit onderzoek zien dat de meeste verpleegkundigen en verzorgenden vinden dat de gegevens in de elektronische zorgdossiers hun activiteiten in de zorgverlening ondersteunen. Zij zijn echter minder positief over de mate waarin de gegevens in het dossier volledig, relevant en nauwkeurig zijn en over de gebruiksvriendelijkheid van de dossiers.

Hoofdstuk 4 gaat over de werkdruk die verpleegkundigen ervaren in relatie tot hun documentatie. Dit hoofdstuk beschrijft een studie met gecombineerde methoden: een kwantitatief vragenlijstonderzoek onder 195 wijkverpleegkundigen en vier kwalitatieve focusgroepen met in totaal 28 wijkverpleegkundigen. In de vragenlijst schatten wijkverpleegkundigen dat ze twee keer zoveel tijd besteden aan klinische documentatie over de zorgverlening aan individuele cliënten dan aan documentatie over organisatorische aspecten zoals personeels- en financiële zaken. Daarnaast wijst het vragenlijstonderzoek erop dat de tijd die wijkverpleegkundigen besteden aan documentatie over organisatorische aspecten samenhangt met de ervaren werkdruk, terwijl de tijd die zij besteden aan klinische documentatie niet samenhangt met de ervaren werkdruk. Verder geeft 79% van de wijkverpleegkundigen aan dat het verpleegkundig proces centraal staat in de elektronische zorgdossiers. Er is geen verband tussen de werkdruk van wijkverpleegkundigen en de mate waarin de dossiers aansluiten bij het verpleegkundig proces. In de focusgroepen geven wijkverpleegkundigen ook aan dat ze met name de documentatie over organisatorische aspecten vaak overbodig vinden en dat dat resulteert in een hoge werkdruk. De deelnemers van de focusgroepen brengen echter ook de klinische documentatie in verband met werkdruk, vooral door de weinig gebruiksvriendelijke elektronische zorgdossiers waarin ze moeten documenteren.

De derde en laatste onderzoeksvraag luidde: **Wat zijn de perspectieven en ervaringen van verpleegkundigen en cliënten die wijkverpleging ontvangen met cliëntenparticipatie in elektronische verslaglegging?**

Wijkverpleegkundigen vinden cliëntenparticipatie in elektronische verslaglegging belangrijk, zo blijkt uit de studie in **Hoofdstuk 5**. Uit de thematische analyse van kwalitatieve interviews met negentien wijkverpleegkundigen bleek dat deze verpleegkundigen de mate waarin en wijze waarop zij cliëntenparticipatie in hun documentatie bevorderen, afstemmen op de individuele situatie van cliënten. Verder is dit afhankelijk van het vertrouwen van cliënten in dat de verpleegkundigen de correcte informatie documenteren en welke fase van het verpleegkundig proces wordt vastgelegd.

Bovendien bleek uit de interviews dat wijkverpleegkundigen verschillende uitdagingen ervaren bij cliëntenparticipatie in verslaglegging. Deze uitdagingen hangen vaak samen met technische problemen en met beperkte gebruiksvriendelijkheid van de elektronische zorgdossiers en van de cliëntportalen die cliënten elektronische toegang tot hun dossiers bieden. Wijkverpleegkundigen noemden ook werkgerelateerde uitdagingen, zoals hectische omstandigheden bij cliënten thuis en tijdsdruk. Ten slotte noemden de geïnterviewde verpleegkundigen cliëntgerelateerde uitdagingen, zoals complexe zorgproblemen en kwetsbaarheid, lage gezondheidsvaardigheden, beperkte interesse en beperkte digitale vaardigheden van cliënten. Bij de omgang met deze uitdagingen vallen wijkverpleegkundigen vaak terug op verbale communicatie met cliënten of hun mantelzorgers over wat zij vastleggen. Op die manier proberen zij toch een vorm van cliëntenparticipatie in de verslaglegging te realiseren.

Om een breder begrip te krijgen van cliëntenparticipatie in elektronische verslaglegging, zijn ook kwalitatieve interviews gehouden met cliënten. **Hoofdstuk 6** beschrijft de studie naar de perspectieven en ervaringen van 21 cliënten die wijkverpleging ontvangen. Uit de thematische analyse bleek dat die cliënten verschillen in hun behoefte en vermogen om te participeren in de verslaglegging van wijkverpleegkundigen. Er zijn vier cliënttypes geïdentificeerd: 1. 'grote behoefte, hoog vermogen', 2. 'grote behoefte, laag vermogen', 3. 'weinig behoefte, hoog vermogen' en 4. 'weinig behoefte, laag vermogen'. Cliënten van de eerste twee types hebben behoefte aan participatie, omdat ze geïnteresseerd zijn in wat wijkverpleegkundigen documenteren over hun gezondheid en zorg. Cliënten van de laatste twee types hebben deze behoefte niet, aangezien ze er volledig op vertrouwen dat de verpleegkundigen goed documenteren of omdat ze de verslaglegging niet belangrijk vinden voor zichzelf. Cliënten van het eerste of derde type voelen zich in staat om te participeren, omdat ze kunnen meelezen en omdat de verpleegkundigen hun participatie aanmoedigen, vooral door verbale communicatie. Cliënten van het tweede of vierde type voelen zich minder in staat om te participeren. Redenen daarvoor zijn dat ze geen computer of ander geschikt elektronisch apparaat hebben, beperkte digitale vaardigheden, beperkte ondersteuning van de verpleegkundigen of gebruiksonvriendelijkheid van het cliëntportaal.

Vervolgens beschrijft **Hoofdstuk 7** een vragenlijstonderzoek over cliëntenparticipatie in verslaglegging vanuit het perspectief van verpleegkundigen. De focus van deze studie ligt op de houding van verpleegkundigen tegenover het gebruik van cliëntportalen en persoonlijke gezondheidsomgevingen. Persoonlijke gezondheidsomgevingen zijn elektronische hulpmiddelen waarmee mensen levenslange informatie over hun gezondheid kunnen beheren, gegevens over hun gezondheid kunnen toevoegen en delen van deze informatie beschikbaar kunnen stellen aan bijvoorbeeld zorgprofessionals of familieleden. In het online vragenlijstonderzoek participeerde een landelijke steekproef van 334 verpleegkundigen die werken in ziekenhuizen of in de wijkverpleging. De meesten gaven aan dat hun organisatie een cliëntportaal heeft om cliënten toegang te geven tot hun dossier. Het bleek dat de functionaliteiten van de portalen van de wijkverpleging en ziekenhuizen onderling verschillen. Verder bleek dat meer wijkverpleegkundigen (58%) dan ziekenhuisverpleegkundigen (21%) het gebruik van cliëntportalen actief promoten. Volgens de respondenten worden persoonlijke gezondheidsomgevingen beduidend minder vaak gebruikt dan cliëntportalen. Zo gaf slechts een tiende van de verpleegkundigen aan dat sommige cliënten gebruik maken van een persoonlijke gezondheidsomgeving. Bovendien zijn verpleegkundigen hier kritisch over, aangezien slechts 14% van hen vindt dat persoonlijke gezondheidsomgevingen van toegevoegde waarde zijn voor cliënten. De houding van wijkverpleegkundigen ten opzichte van persoonlijke gezondheidsomgevingen is iets positiever dan die van ziekenhuisverpleegkundigen.

Het afsluitende **Hoofdstuk 8** presenteert de belangrijkste bevindingen en inhoudelijke reflecties daarop. Daarnaast staan in dit hoofdstuk methodologische reflecties en aanbevelingen voor praktijk, beleid en toekomstig onderzoek.

Op basis van de resultaten uit dit proefschrift wordt aanbevolen om waar nodig de huidige elektronische zorgdossiers aan te passen, zodat de dossiers aansluiten op het verpleegkundig proces en gebruiksvriendelijk zijn. Hiervoor is het belangrijk dat verpleegkundigen leiderschap tonen en een prominente stem claimen in de ontwikkeling van dossiers.

Een andere belangrijke aanbeveling betreft het verminderen van de werkdruk van verpleegkundigen door de documentatie over organisatorische aspecten te beperken.

Verder zijn er aanbevelingen om cliëntenparticipatie in elektronische verslaglegging te bevorderen. Verpleegkundigen en verzorgenden moeten de wijze waarop en de mate waarin zij cliëntparticipatie aanmoedigen afstemmen op de behoeften en vermogens van individuele cliënten. Cliëntportalen en persoonlijke gezondheidsomgevingen kunnen ondersteunen bij cliëntparticipatie in de verslaglegging. Hierbij is het van belang om aandacht te hebben voor gebruiksvriendelijkheid van die applicaties. Om de gebruiksvriendelijkheid te bevorderen is het belangrijk dat verpleegkundigen en

verzorgenden betrokken zijn bij de (door)ontwikkeling van cliëntportalen en gezondheidsomgevingen.

In toekomstig onderzoek is het relevant na te gaan wat het effect is van verslaglegging door verpleegkundigen en verzorgenden op uitkomsten van cliënten, zoals of cliënten meer betrokken zijn bij besluitvorming over hun zorg. Daarnaast is het aan te bevelen om waar mogelijk de documentatie van verpleegkundigen en verzorgenden in elektronische dossiers ook te gebruiken als gegevensbron in onderzoek. Hergebruik van gegevens uit elektronische dossiers reduceert extra registratielast en onderzoekbelasting van zorgprofessionals en cliënten.

LIST OF PUBLICATIONS

List of publications

Hereafter, a selection of publications is presented. For a full list of publications, visit www.nivel.nl/kim-de-groot.

Included in this thesis:

De Groot, K., Douma, J., Paans, W., Francke, A.L. Patient participation in electronic nursing documentation: an interview study among home-care patients. Health Expectations, 2022, 1-9, doi: 10.1111/hex.13492.

De Groot, K., De Veer, A.J.E., Munster, A.M., Francke, A.L., Paans, W. Nursing documentation and its relationship with perceived nursing workload: a mixed-methods study among community nurses. BMC Nursing, 2022, 21(34), doi: 10.1186/s12912-022-00811-7.

De Groot, K., Sneep, E.B., Paans, W., Francke, A.L. Patient participation in electronic nursing documentation: an interview study among community nurses. BMC Nursing, 2021, 20(1), doi: 10.1186/s12912-021-00590-7.

De Groot, K., De Veer, A.J.E., Paans, W., Francke, A.L. Use of electronic health records in relation to standardized terminologies: a nationwide survey of nursing staff experiences. International Journal of Nursing Studies, 2020, 104:103523, doi:10.1016/j.ijnurstu.2020.103523.

De Groot, K., Triemstra, M., Paans, W., Francke, A.L. Quality criteria, instruments and requirements for nursing documentation: a systematic review of systematic reviews. Journal of Advanced Nursing, 2019, 75(7):1379-1393, doi: 10.1111/jan.13919.

Bemelmans, W.J.E., **De Groot, K.,** De Veer, A.J.E., Van Tuyl, L., Francke, A.L. Attitudes of hospital and community nurses towards patient portals and personal health environments: a nationwide survey. *Under review.*

Other international publications:

De Veer, A.J.E., **De Groot, K.,** Verkaik, R. Home care for patients with dirty homes: a qualitative study of the problems experienced by nurses and possible solutions. BMC Health Services Research, 2022, 22(592), doi: 10.1186/s12913-022-07988-2.

Joren, C.Y., De Veer, A.J.E., **De Groot, K.**, Francke, A.L. Home care nurses more positive about the palliative care that is provided and their own competence than hospital nurses: a nationwide survey. BMC Palliative Care, 2021, 20(170), doi: 10.1186/s12904-021-00866-4.

Brabers, A.E.M., **De Groot, K.**, Groenewegen, P.P., De Jong, J.D. To what extent do home care nurses feel free to assess the care that is needed for their patients? A nationwide survey in the Netherlands. Health Science Reports, 2021, 4(4):e420, doi: 10.1002/hsr2.420.

Brabers, A.E.M., **De Groot, K.**, Groenewegen, P.P. Practice variation among home care nurses. Primary Health Care Research & Development, 2019, 20:e136, doi:10.1017/S1463423619000707.

De Groot, K., Maurits, E.E.M., Francke, A.L. Attractiveness of working in home care: An online focus group study among nurses. Health and Social Care in the Community, 2018, 26(1):e94-e101, doi: 10.1111/hsc.12481.

Publications in Dutch:

Veer, A. de & **Groot, K. de**. Herkenbare en aanspreekbare wijkverpleging: ervaringen en wensen van professionals in de wijkverpleging en van verwijzers. Utrecht: Nivel, 2022.

Veer, A. de, Aalten, M. van, **Groot, K. de**, Verkaik, R. Aandachtspunten bij een vervuild huishouden. Nursing Academy O&T: 2022, 14(1):24-27.

Groot, K. de, Veer, A. de, Francke, A. Documenten en intercollegiale toetsing voor indicatiestelling wijkverpleging: ervaringen van indicerende verpleegkundigen. Factsheet. Utrecht: Nivel, 2021.

Veer, A. de, **Groot, K. de**, Francke, A. Meer draagvlak voor het Kwaliteitskader Wijkverpleging. Factsheet. Utrecht: Nivel, 2021.

Heijmans, M., Knottnerus, B., **Groot, K. de**, Francke, A. Mondzorg voor thuiswonende kwetsbare ouderen: probleemanalyse, knelpunten en oplossingsrichtingen. Utrecht: Nivel, 2021.

Veer, A. de, Schlinkert, C., **Groot, K. de**, Wagner, C. Coronacrisis biedt mogelijkheden voor veiligere zorg. Utrecht: Nivel, 2021.

Groot, K. de, Zuidema, R., Francke, A., Bleijenberg, N. Landelijke richtlijnen voor de wijkverpleging. TvZ Verpleegkunde in praktijk en wetenschap, 2021, 131(5):30-31.

Joren, C., **Groot, K. de**, Francke, A. Infographic. Verpleging en verzorging bij compressietechnieken: een knelpuntenanalyse. Utrecht: Nivel, 2021.

Groot, K. de & Francke, A. Inventarisatie kwaliteitsstandaarden voor verpleegkundigen en verzorgenden: Stand van zaken en lacunes. Utrecht: Nivel, 2021.

Veer, A. de, **Groot, K. de**, Francke, A. Indicatiestelling in de wijkverpleging: tevredenheid overheerst. TvZ Verpleegkunde in praktijk en wetenschap: 2020, 130(3), 34-35.

Groot, K. de, Brabers, A., Jong, J. de. Verschillen indicatiestelling wijkverpleging: Gewenst of ongewenst? V&VN Tijdschrift Maatschappij & Gezondheid: 2020, 20(1):6-7.

Groot, K. de, Verest, W., Veer, A. de, Paans, W., Francke, A. Registratielast: waar komt het vandaan? TvZ Verpleegkunde in praktijk en wetenschap, 2019, 129(6):34-35.

Groot, K. de, Veerbeek, M., Willemse, B., Francke, A. Communiceren bij dementie. Knelpunten volgens verpleegkundigen en verzorgenden. Denkbeeld, 2019, 31(6):16-17.

Verest, W. Veer, A. de, **Groot, K. de**, Francke, A. Kwaliteit en veiligheid van zorg aan cliënten. Verpleegkundigen, verzorgenden, begeleiders en praktijkondersteuners over wat ze nodig hebben voor goede zorg. Utrecht: Nivel, 2019.

Groot, K. de, Verest, W., Donker, G., Francke, A. Verpleging en verzorging bij mensen met osteoporose en fractuurrisico: een knelpuntenanalyse. Utrecht: Nivel, 2019.

Steen, D. van der, Huijben-Schoenmakers, M., **Groot, K. de**. Evalueren van zorg is niet eenvoudig. TvZ verpleegkunde in praktijk en wetenschap, 2019, 129(4):40-43.

Boeije, H., Verkaik, R., **Groot, K. de**, Kappen, H., Korevaar, J. Kwaliteit van leven van langer thuiswonende ouderen. Utrecht: Nivel, 2019.

Swinkels, I., **Groot, K. de**, Brabers, A., Wouters, M., Veer, A. de. Patiëntportalen: meer overzicht zorg. TvZ verpleegkunde in praktijk en wetenschap, 2019, 129(1):34-35.

Groot, K. de, Heinen, M., Huis, A., Veer, A. de, Francke, A. Geen herziening, wel implementatie richtlijn smetten nodig. TvZ verpleegkunde in praktijk en wetenschap, 2018, 128(5):34-35.

Groot, K. de, Veer, A. de, Francke, A. Invloed van hervorming van langdurige zorg. TPO De Praktijk, 2018, 13(4):14-16.

Groot, K. de, Maurits, E., Francke, A. Aantrekkelijkheid van het werken in de wijkverpleging: een online focusgroepstudie onder verpleegkundigen. Verpleegkunde, 2018, 33(2):14-20.

Dijk, L. van, Huis, A., **Groot, K. de**, Vervloet, M. Signaleren en begeleiden bij medicatie-ontrouw: knelpunten en oplossingsrichtingen. TvZ verpleegkunde in praktijk en wetenschap, 2018, 128(1):54-55.

Groot, K. de, Paans, W., Veer, A. de, Francke, A. Knelpunten bij verslaglegging door verpleegkundigen en verzorgenden. TvZ: Tijdschrift voor Verpleegkundigen, 2017, 127(6):34-36.

Francke, A., Rijken, M., **Groot, K. de**, Veer, A. de, Verkleij, K., Boeije, H. Evaluatie van de wijkverpleging: ervaringen van cliënten, mantelzorgers en zorgprofessionals. Utrecht: Nivel, 2017.

Rooden, S.M. van, **Groot, K. de**, Francke, A.L., Bakker, D.H. de, Schoenmakers, T.M., Verheij, R.A. Routine zorggegevens uit de wijkverpleging in NIVEL zorgregistraties: een haalbaarheidsstudie. Utrecht: Nivel, 2017.

Groot, K. de, Veer, A. de, Paans, W., Francke, A. Verpleegkundige verslaglegging: hbo'ers meest positief. TvZ: Tijdschrift voor Verpleegkundigen, 2017, 127(3):40-41.

Other published materials in Dutch:

Richtlijn Verpleegkundige en Verzorgende Verslaglegging (V&VN). Available at:
https://www.venvn.nl/richtlijnen/alle-richtlijnen/richtlijn-verslaglegging/

Handreiking Communicatie bij dementie (V&VN). Available at:
https://www.venvn.nl/richtlijnen/alle-richtlijnen/handreiking-communicatie-bij-dementie/

PORTFOLIO

NAME COURSE, TRAINING, ACTIVITY	ORGANISER	EC	COMPLETED
MANDATORY COURSES (VU/VUmc specific)			
Course Research integrity	Amsterdam UMC	2.0	2 & 17 December 2020
Conference participation '13th biannual conference supporting and advancing nursing practice' (two oral presentations)	The Association for Common European Nursing Diagnoses, Interventions and Outcomes (ACENDIO)	2.0	19-20 March 2021
Course 'Basiscursus Regelgeving en Organisatie voor Klinische Onderzoekers (BROK)'	Nederlandse Federatie van Universitair Medische Centra (NFU)	1.5	21 January 2022
		5.5	
ELECTIVE MANDATORY COURSES (APH specific)			
Advanced (methodological) research skills:			
Starters course STATA	Nivel	0.5	13 & 16 June 2016
Advanced course STATA	Nivel	0.5	26 & 30 January 2017
Course Qualitative research	Nivel	0.5	20 September - 11 October 2018
Year One and Year Two of three-year programme of the EANS Summer Schools for Doctoral Studies	European Academy of Nursing Science (EANS)	6.0	July 2019 & July 2021
		7.5	
Transferable skills:			
Course English Writing for Academic Purposes	Babel	2.1	15 March - 10 May 2017
Participation in PhD intervision group	Nivel	0.5	2018 - 2022
Peer review of four scientific papers	Nivel	1.0	2019 - 2022
		3.6	
Research meetings, expert meetings, seminars:			
Academic meetings 'Wetenschappelijk Overleg (WO)'	Nivel	2.0	2016 - 2022
		2.0	

ELECTIVE COURSES				
Courses & workshops:				
Course 'Kwaliteitssysteem Nivel en het verrichten van interne audits'	Nivel	0.5	4 October 2017	
Workshop 'Professioneel netwerken'	Nivel	0.1	28 November 2017	
Course 'Omgaan met je stakeholders'	Boertien Vergouwen Overduin	0.3	26 February 2018	
Workshop 'Persoonlijke effectiviteit'	Boertien Vergouwen Overduin	0.4	26 November 2018	
Workshop 'Time Management'	Nivel	0.1	9 September 2019	
		1.4		
Transferable skills:				
Supervision Master of Science student - Nursing Science	Nivel	1.0	September 2018 - July 2019	
Supervision four bachelor students - Bachelor of Nursing	Hanzehogeschool Groningen/Nivel	1.0	February 2019 - July 2019	
Tutoring Master of Science student - Advanced Nursing Practice	Regionale Ambulance Voorziening/Fontys Hogeschool	1.0	September 2017 - July 2020	
Supervision Master of Science student - Nursing Science	Nivel	1.0	September 2019 - July 2020	
Supervision Master of Science student - Nursing Science	Nivel	1.0	September 2019 - July 2020	
Webinar Grant Proposal Writing	European Academy of Nursing Science (EANS)	0.1	14 October 2021	
		5.1		
Conference and symposia attendances:				
Conference attendance 'Het Grote Omaha System Congres' (oral presentation)	Stichting Omaha System Support	1.0	30 November 2016	
Conference attendance 'A key to practice, documentation, and information management' (poster presentation)	Omaha System International Conference	2.0	21-22 April 2017	
Conference attendance 'CaRe days 2018' (oral presentation)	CaRe research school	1.0	16-17 May 2018	
Conference attendance 'Nursing Science: Connecting the Dots' (oral presentation)	European Doctoral Conference in Nursing Science (EDCNS)	2.0	22-23 June 2018	

Conference attendance 'Laten wij het vandaag hebben over…, wat maak jij bespreekbaar?" (oral presentation)	Universitair Kennisnetwerk Ouderenzorg Nijmegen (UKON)	1.0	9 April 2019
Conference attendance 'CaRe days 2019'	CaRe research school	1.0	8-9 May 2019
Seminar attendance 'Meaningful Use of the Omaha System to Support Practice, Research, and Policy in the Netherlands' (oral presentation)	Stichting Omaha System Support	1.0	2-5 September 2019
Conference attendance 'CaRe days 2021'	CaRe research school	1.0	26-27 May 2021
		10.0	
	Total:	**35.1**	

DANKWOORD

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De leden van de leescommissie: prof. dr. Martine de Bruijne, prof. dr. Sandra Zwakhalen, prof. dr. Hester Vermeulen, dr. William Goossen en dr. Nienke Bleijenberg, wil ik hartelijk danken voor het lezen en beoordelen van dit proefschrift. Daarnaast wil ik prof. dr. Jany Rademakers en dr. Irene Jongerden bedanken dat zij zitting willen nemen in de oppositie.

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De leuke, behulpzame collega's en gezellige uitjes maken het Nivel een fijne plek om te werken. Alle collega's die meeleefden, bedankt voor jullie interesse in mijn promotieonderzoek. Een speciaal dankjewel aan alle (oud-)collega's van het VNV-themagebied voor de gezellige gesprekken, lunches en etentjes! Het is fijn werken met jullie en hopelijk volgen er mooie onderzoeken voor de verpleging, verzorging en ouderenzorg. Collega's van het cluster, dankzij de fijne samenwerking met jullie staan er mooie artikelen vanuit het panel V&V in mijn proefschrift. Bedankt daarvoor. Clare, jij hebt dit boekje heel goed gelezen. Dank voor de correcties van het Engels. Özlem, dank voor jouw hulp bij het opmaken van het boekje. Jany, veel dank voor de ruimte die jij en Anneke gaven om in de pandemie het Nivel-werk op pauze te zetten, zodat ik op de corona-afdeling bij Thebe kon werken. Dit betekende veel voor mij!

De afgelopen jaren heb ik geluk gehad met fijne kamer-/ganggenootjes die het harde werken een stuk leuker maken. Bedankt daarvoor! Karin, wat was het gezellig als Zeeuwse zusters op de kamer en daarbuiten. Wim, met een broeder als overbuurman hadden we goede gesprekken en kregen we veel werk gedaan, a je to! Chantal, ook wij werkten fijn samen als verpleegkundige-onderzoekers. Succes met jouw promotieonderzoek! Marjon, ook jij droeg bij aan de Kwaliteit2020! van dit proefschrift. Dat is absoluut geen Onzin1234! Soms dachten we daar Gaanweweer6!, maar nu is HetEinde2022 in zicht. Suzanne, wat hebben wij fijne gesprekken over de ouderenzorg en 'de brug'. Veel succes met jouw laatste loodjes. Hille, wij konden fijn kletsen over de raakvlakken in ons werk. Dankjewel daarvoor. Anne, wat bof ik met een gezellig treinmaatje zoals jij. Dankjewel voor de vele behulpzame adviezen tijdens het reizen naar het Nivel. Ik ben blij dat we nu ook kamergenootjes zijn!

Het tijdperk van de '1.12 en 1.13 clan' is tot een eind gekomen. In het bijzonder Marieke en Femke, wat was het fijn om alle hoogte- en dieptepunten vanaf het begin met elkaar te kunnen delen! De wijntjes om publicaties te vieren, de paaseitjes als we vastliepen en ook de vele koffierondjes en lunchwandelingen deden mij veel goed. Marieke, ik hoop dat we ook snel op jouw boekje kunnen proosten. Dankjewel dat je mijn paranimf wilt zijn!

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om dit boekje vorm te geven. Dankjewel voor het prachtige resultaat.

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ABOUT THE
AUTHOR

About the author

Kim de Groot was born on the 12th of April 1991 in Mariekerke, the Netherlands. After finishing secondary school (vwo) she obtained her bachelor's degree in Nursing in 2013, at Avans University of Applied Sciences in Breda. During her bachelor's course, she participated in a two-year honours programme. In 2012 she started working part-time as a community nurse at the home-care organization Thebe. Kim continued her education with the premaster's and master's Clinical Health Sciences course (Nursing Science programme) in part-time at Utrecht University in Utrecht, from which she graduated in July 2016. In 2017 Kim received the 'Johanna Diepeveen-Speekenbrink Wetenschapsprijs' for her master's thesis focused on the attractiveness of working as a nurse in home care.

In June 2016, Kim started working as a nursing-researcher at the Netherlands Institute for Health Services Research (Nivel) in Utrecht. In 2018 she started the research described in this thesis. She combined her PhD research with several other research projects on the work of nursing staff. Alongside her research activities, Kim continues to work part-time as a community nurse at Thebe. Furthermore, she became a member of the European Academy of Nursing Science (EANS), the Association for Common European Nursing Diagnoses, Interventions and Outcomes (ACENDIO), and the Dutch Scientific Table for Community Nurses. In 2022 Kim completed her PhD-thesis under supervision of Prof. dr. Anneke Francke, dr. Wolter Paans and dr. Anke de Veer.

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