Nurses' care planning and documentation processes in electronic health records of patients living with dementia

Lene Baagøe Laukvik

UiA University of Agder

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Abstract

Background: Communication and coordination of patient information are central to achieving continuity and safety for patients in health services. Electronic health records (EHRs) are utilized in large parts of the world, including Norway, in daily clinical practice to plan and document healthcare. As the workload and transition of patients increase in health services, including in nursing homes, nurses and other healthcare professionals increasingly rely on patient information from the EHR to support their daily planning and management of high-quality nursing care for patients. In dementia care, the need to plan and document patient information in a safe and secure way is important for patient safety and a person-centered approach and follow-up of the patient. Little is known about the care planning and documentation process of nurses in long-term dementia care settings.

Aim: The overall aim was to gain knowledge and understanding of the care planning and documentation processes of nurses in EHRs in the dementia nursing home setting.

Methods: A qualitative descriptive design was utilized in this PhD project. Multiple approaches to elicit the perspectives and experiences of nurses were chosen to understand their everyday world of planning and documenting nursing care in the dementia care setting. The project comprises three substudies. In Substudy 1, a retrospective chart review was conducted utilizing content analysis with a deductive approach to describe the content and comprehensiveness of the nursing documentation of patients living with dementia in Norwegian nursing homes. The content was described in relation to person-centered care (PCC) and the nursing process (NP). Comprehensiveness was measured with the Comprehensiveness In Nursing Documentation (CIND) scale. In Substudy 2, a think-aloud (TA) study was conducted utilizing a stepwise verbal protocol analysis to explore and describe nurse’s clinical reasoning during care planning and documentation of nursing in the EHR of patients living in special dementia care units in Norwegian nursing homes. In Substudy 3, a one-on-one interview study was conducted utilizing a semi-structured interview guide. Following a deductive orientation, reflexive thematic analysis was utilized to generate patterns of shared views and meanings among the participants.

Findings: Substudy 1 revealed that PCC-related content in the nursing documentation varied and was identified in 104 (86%) of 121 records. The patient’s life story was registered in only 19 (15.7%) of the reviewed records. The identified nursing diagnoses (NDs) across the PCC categories—*identity, comfort, inclusion, attachment, and occupation*—were commonly written without proper descriptions of signs and symptoms, and related to pain, behavior, activity, and family matters. The *identity* category (35%) was most frequently documented, while the *inclusion* category (7%) was infrequently documented. The comprehensiveness of the identified PCC content varied, showing that most of the identified NDs received CIND scores of 3 or 4. Three (0.8%) of the identified NDs received the highest CIND score, meaning that all the NP elements were documented. Furthermore, the analysis revealed that evaluations of delivered care were seldom recorded based on the patient’s perceptions and experiences.

Substudy 2 showed that the nurses moved in a non-linear way between the elements of the NP, utilizing a variety of cognitive processes when reasoning about planning and documenting care in the EHR. The most focused NP elements were *assessment*, *interventions*, and *evaluation*, *focusing on information exchange*. *Diagnosis* (nursing problems) and *planning* (of goals or outcomes) were the least focused NP elements. Further, the analysis showed that the most frequently used attributes were *information processing, awareness and perception*, and *inference*. Moreover, the utilization of different combinations of NP elements and clinical reasoning attributes was revealed during the analysis. The three most frequently used NP combinations were *assessment and intervention*, *assessment and evaluation*, and *intervention and evaluation*.

The overall analysis in Substudy 3 generated four themes: *knowledge*, *skills, and attitude of the system user*; *management and organization of documentation work*; *usability issues of the EHR*; and *nursing standards in EHR contributing to the development of documentation practices*.

Conclusion: This PhD project provides valuable insights into understanding the complexity of nurses’ care planning and documentation processes in dementia care settings. Furthermore, the PhD project increased insights into the interaction between nurses and the EHR and the interrelationships between nurses, the EHR, and patients. Furthermore, nursing standards promote continuity, improve decision-making, and increase the accuracy of nursing language in nursing documentation, which in turn can minimize errors and more accurately track patient care planning.

Sammendrag

Bakgrunn: Kommunikasjon og overføring av pasientinformasjon er helt sentralt for å oppnå kontinuitet og trygghet for pasienter i helsetjenesten. Elektroniske pasient journal (EPJ) brukes i daglig klinisk praksis for å planlegge og dokumentere helsehjelpen i store deler av verden, inkludert Norge. Etter hvert som arbeidsmengden og overføringer av pasienter øker i helsetjenestene, inkludert i sykehjem, stoler sykepleiere og annet helsepersonell i økende grad på pasientinformasjon fra EPJ for å støtte deres daglige planlegging og ledelse av sykepleie av høy kvalitet. I demensomsorgen er behovet for å planlegge og dokumentere pasientinformasjon på en trygg og sikker måte viktig for pasientsikkerheten og for en personsentrert tilnærming og oppfølging av pasienten. Det er lite kunnskap om planleggings- og dokumentasjonsprosessen til sykepleiere i langtids-demensomsorg.

Mål: Det overordnede målet var å få kunnskap og forståelse for planleggings- og dokumentasjonsprosesser til sykepleiere i sykehjem med tilrettelagt tilbud for pasienter med demens.

Metoder: Et kvalitativt beskrivende design ble brukt i Ph.d.-prosjektet. Flere metodiske tilnærminger ble valgt i tre delstudier for å få frem perspektiver og erfaringer fra sykepleiere i deres planlegging og dokumentering av sykepleie i demensomsorgen. I delstudie 1 ble det gjennomført en retrospektiv journalgjennomgang ved bruk av innholdsanalyse med en deduktiv tilnærming for å beskrive innholdet og sammenheng i sykepleiedokumentasjonen til pasienter som lever med demens i norske sykehjem. Innholdet ble beskrevet ut fra personsentrert omsorg og sykepleieprosessen. Sammenhengen ble målt med skalaen Comprehensiveness In Nursing Documentation (CIND). I delstudie 2 ble det gjennomført en think-aloud (TA) studie. En trinnvis verbal protokollanalyse ble brukt for å utforske og beskrive sykepleiers kliniske resonnering under planlegging og dokumentasjon av sykepleie i EPJ til pasienter som bor i demensavdelinger i norske sykehjem. I delstudie 3 ble det gjennomført individuelle intervju ved bruk av en semistrukturert intervjuguide. Refleksiv tematisk analyse, med en deduktiv orientering, ble brukt til å utforske felles synspunkter og meninger blant deltagerne.

Funn: Delstudie 1 viste at personsentrert innhold i sykepleiedokumentasjonen varierte og at slikt innhold ble identifisert i 104 (86 %) av 121 journaler. Pasientens livshistorie var kun registrert i 19 (15,7 %) av de gjennomgåtte

journalene. De identifiserte sykepleiediagnosene på tvers av de personsentrert kategoriene: *identitet, trøst, inkludering, tilknytning* og *beskjeftigelse*, ble ofte skrevet uten tilhørende beskrivelser av tegn og symptomer. De identifiserte sykepleiediagnosene var oftest relatert til smerte, atferd, aktivitet og familieforhold. *Identitetskategorien* (35 %) ble hyppigst dokumentert, mens *inklusjonskategorien* (7 %) var sjelden dokumentert. Sammenhengen av det identifiserte personsentrerte innholdet varierte. De fleste av de identifiserte sykepleiediagnosene fikk CIND-skår 3 eller 4. Tre (0,8 %) av de identifiserte sykepleiediagnosene fikk den høyeste CIND-skåren, som betyr at alle elementene i sykepleieprosessen ble dokumentert. Videre viste analysen at evalueringer av gitt sykepleie sjelden ble dokumentert basert på pasientens oppfatninger og erfaringer. Delstudie 2 viste at sykepleierne beveget seg på en ikke-lineær måte mellom elementene i sykepleieprosessen og de benyttet en rekke kognitive prosesser når de resonnerte om planlegging og dokumentasjon av sykepleie i EPJ. De mest fokuserte elementene i sykepleieprosessen var *vurdering*, *intervensjoner (tiltak)* og *evaluering* med mest fokus på informasjonsutveksling. *Diagnose* (sykepleieproblem) og *planlegging* (av mål eller utfall) var de minst fokuserte elementene. Videre viste analysen at de mest brukte egenskapene ved klinisk resonnering var *informasjonsbehandling, bevissthet og persepsjon,* samt *konklusjon*. Dessuten avslørte analysen at sykepleierne brukte forskjellige kombinasjoner av sykepleieprosess-elementer og egenskaper ved kliniske resonnering. De tre mest brukte kombinasjonene av sykepleieprosess-elementer var *vurdering og intervensjon*, *vurdering og evaluering,* samt *intervensjon og evaluering*. I den overordnede analysen i delstudie 3 ble det funnet fire temaer; *kunnskap, ferdigheter og holdninger hos systembrukeren*, *ledelse og organisering av dokumentasjonsarbeid*, *brukervennlighet av EPJ*, og *sykepleiestandarder i EPJ bidrar til utvikling av dokumentasjonspraksis*.

Konklusjon: Ph.d.-prosjektet gir viktig innsikt i å forstå kompleksiteten i sykepleieres planleggings- og dokumentasjonsprosess i demensomsorgen. Videre gir ph.d.-prosjektet innsikt i samspillet mellom sykepleiere og EPJ, og relasjonene mellom sykepleiere, EPJ og pasienten. Videre argumenteres det for at sykepleiestandarder fremmer kontinuitet, forbedrer beslutningstaking og øker nøyaktigheten av språket i sykepleiedokumentasjonen som igjen kan begrense feil og gi en mer nøyaktig dokumentasjon av planlegging og oppfølging av pasienten.

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Paper 2
Laukvik, L. B.; Rotegård, A. K.; Lyngstad, M.; Slettebø, Å.; Fossum, M. (2022). Registered nurses' reasoning process during care planning and documentation in the electronic health records: A concurrent think-aloud study. *Journal of Clinical Nursing*. ISSN: 0962-1067. https://doi.org/10.1111/jocn.16210

Paper 3
Laukvik, L. B.; Lyngstad, M.; Rotegård, A. K.; Fossum, M. (2023). Utilizing nursing standards in electronic health records: A descriptive qualitative study (Submitted).

Abbreviations

CIND = Comprehensiveness In Nursing Documentation

EHR = electronic health record

ICNP = international classification of nursing practice

IPT = information processing theory

LTC = long-term care

NA = nursing aids

NCP = nursing care plan

ND = nursing diagnoses

NI = nursing informatics

NIV = nursing intervention

NP = nursing process

NPS = neuropsychiatric symptoms

PCC = person-centered care

PN = progress notes

PO = patient outcome

RN = registered nurse

SNCP = standardized nursing care plan

SNL = standardized nursing language

SNOMED – CT = systemized nomenclature of medicine – clinical terms

STS = socio-technical system

TA = think-aloud

VIPS = well-being, integrity, prevention, and safety

WHO = world health organization

Tables and figures

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1 Introduction

In modern healthcare organizations, the quality and coordination of care depend on the communication between different caregivers about their patients. Health information technologies, such as electronic health records (EHRs), are increasingly being developed and implemented around the globe to collect, store, organize, and distribute clinical data as a part of modern healthcare. International research shows that approximately 90% of healthcare professionals use digital information systems, such as EHRs, in daily clinical practice (De Groot et al., 2019; Lintern & Motavalli, 2018).

Information retrieved from EHRs represents an important data source for healthcare professionals, including nurses, to continually update their individual and shared perceptual understandings of clinical situations (Kutney-Lee et al., 2019; Wisner et al., 2019). Benefits, such as a reduction in documentation load and more time available for patient interaction, have been reported after implementation of EHRs in clinical practice (Boonstra et al., 2021; Tolentino & Gephart, 2021). However, the non-adoption and abandonment of EHRs by healthcare professionals have been increasingly evidenced, leading to limited success in attempts to scale up and sustain EHR utilization (European Commission. Directorate-General for Communications Networks Content Technology, 2021; Greenhalgh et al., 2017).

Nurses constitute one of the largest groups in the healthcare workforce across the globe, and they are the primary caregivers for many patients. The responsibility of nurses to provide professional, ethical, and legal nursing care to patients includes quality care planning and documentation of nursing in EHRs. As patient caseload continues to grow, nurses and other healthcare professionals increasingly rely on chart-based patient information to support clinical reasoning and decision-making (Lintern & Motavalli, 2018; Varpio et al., 2015a). However, the dissatisfaction with EHRs shown by nurses and other healthcare professionals suggests that many efforts in computerizing healthcare information have not fulfilled their potential, at least in the realm of nursing care (Lee & Kang, 2021). Unintended consequences, such as cognitive overload, loss of overview, and shared understanding of the patient, have been reported by nurses utilizing EHRs in clinical practice (Wisner et al., 2019).

In recent years, healthcare has become more complex, involving multiple caregivers and professions at different care levels, providing care for patients with complex medical, psychological, and social needs. The growing aged population in the world raises demands concerning long-term care (LTC) services, such as nursing homes. A systematic review from 2018 reported that frailty, including dementia, is one of the most strongly associated factors with nursing home admission (Kojima, 2018). The prevalence of dementia is expected to double within 2040, due to the fact that people are living longer (World Health Organization, 2017). Furthermore, estimates show that nearly 80% of patients living in nursing homes in Norway suffer from some form of dementia (Gjøra et al., 2021).

Currently, ineffective communication and problems with information exchange between healthcare providers are major contributors to a lack of continuity in care and patient safety incidents (Sittig et al., 2020). Such problems particularly affect patients with communication disabilities, which include those with cognitive impairment affecting communication (Gilster et al., 2018). Thus, health care services need to develop new solutions for organizing, planning, communicating, and delivering healthcare (Ministry of Healthcare, 2020). Therefore, there is a need for knowledge and understanding of nurses’ care planning and documentation processes in the EHR of patients living with dementia as presented in this PhD project.

2 Background

This chapter presents an overview of the relevant literature and the rationale for this PhD project. First, the chapter briefly summarizes care planning and documentation of nursing and existing challenges. Then it elaborates on the concepts of care planning and the nursing process, clinical reasoning and critical thinking, the EHR, health data standards, and nursing informatics, as these concepts were found to be essential in previous research relevant to this project. Furthermore, in Chapter 2.6, care planning and documentation of nursing in the dementia care context will be elaborated on, and in Chapter 2.7, gaps of knowledge will be outlined. In this thesis the terms patient and resident are being used interchangeably.

2.1 Care planning and documentation of nursing

Care planning in nursing is a systematic process that involves the development of a comprehensive and individualized plan of nursing care for a patient. Planning of nursing care plays a vital role in ensuring that patients receive high-quality, holistic care that meet the unique needs of the patients and promotes their well-being (Toney-Butler & Thayer, 2022; Toney-Butler & Unison-Pace, 2023).

Care planning in nursing can be characterized as a complex process, involving problem-solving, reflective judgment, and decision-making, based on a unique understanding of the interdependent relationships between the patient and the environment (Bender, 2018; Nibbelink et al., 2018). However, health assets have emerged as a concept in nursing care to foster the well-being of the patient as balanced against the problem-oriented view of care. Health assets reflect individuality, subjectivity, and emotional and psychosocial input (Feo & Kitson, 2016; Rotegaard & Ruland, 2010). According to Bender (2018), the aim of nursing care is to skillfully access the relationality between the nurse, patient, health, and environment as the basis for action and reflection to produce knowledge and positive health trajectories for the patient. What exists for nursing is interdependent relations that dynamically constitute people in their health or environment circumstances, which comprises nursing’s unique, fundamental point of access in the world (Bender, 2018). The holistic approach in nursing means that the physical, psychological, social, cultural, and spiritual needs of the patient must be addressed and met in order to obtain the health and well-being of the patient. By approaching the patient holistically, the nurse can gain a deeper understanding of the patient as an entity with a body, mind, soul, and spirit (Papathanasiou et al., 2013).

Written or electronically generated records are central in nursing because they support nurses’ professional integrity and accountability and are closely associated with nurses’ professional expertise (McCarthy et al., 2019). Nurses generate clinical documents to achieve numerous goals, including: to create narrative reports of their observations, impressions, and actions related to patient care; to communicate with collaborating healthcare providers; to create a legal record in case of litigation; and to provide data to support clinical research and quality-assessment programs (Buus & Hamilton, 2016; Jefferies et al., 2010). Nurses’ documentation is also used for storing and communicating clinical knowledge; therefore, nursing documentation is viewed as crucial for care planning, patient outcomes, safety, and continuity of care (De Groot et al., 2019). However, data produced by health systems are mostly based on medical diagnoses and procedures (e.g., diagnosis-related groups and DRGs), although nursing care represents the largest portion of costs in the healthcare setting (Sanson et al., 2017).

Nursing documentation occurs within a dynamic social context involving many actors and agendas, and the relationship between nurses’ documentation and nursing practice is complex. Through recording in the patient’s health record, nurses communicate nursing care in an attempt to show what happens in the nursing process and what decision-making is based on. To achieve such purposes, nursing documentation needs to hold valid and reliable information, and comply with established standards (McCarthy et al., 2019; Törnvall & Jansson, 2017).

The quality of information in patient records includes accuracy, completeness, and comprehensiveness as essential characteristics (De Groot et al., 2019; Wang et al., 2011). The accuracy and comprehensiveness of nursing documentation in relation to patients’ actual conditions and the care given are important process features of patient safety. The accuracy of nursing documentation pertains to the correspondence between the data and reality, whereas completeness refers to pertinent information (Thoroddsen et al., 2013). Comprehensiveness relates to documentation of the elements or phases of the nursing process (NP) (De Groot et al., 2019). Inaccuracies in the nursing documentation, such as omissions or gaps of essential information, can lead to misunderstandings and assumptions regarding the care delivered, putting patient safety at risk (Charalambous & Goldberg, 2016; Varpio et al., 2015a).

The process of care planning and documentation in nursing can range from nurse's assessment of subjective and objective patient data, analysis of the patient situation, planning, implementation, and evaluation of care (De Groot et al., 2019). Patient assessment data are commonly populated in the patient's record as data collection and facilitate the development of the nursing care plan (NCP). The NCP is a tool that facilitates patient, family, or community care by outlining the nursing care to be provided. Moreover, NCP plays a key role in supporting continuity of care and reducing omission errors that can occur during patient handoffs (Bail et al., 2021; Matney et al., 2016). Progress notes (PNs) are often recorded after daily clinical contact with the patient, and such notes often contain detailed day-to-day information. Nurses, and other healthcare professionals make use of PNs to access and contribute information about the patient's clinical status and progress, allowing data to be shared over time (Steel et al., 2019).

The NCP is fundamental to professional nursing practice as a rich data source of information for understanding the patient and the nursing care provided, and it is utilized by nursing students, faculty, and clinical staff. Furthermore, the NCP provides a course of direction for personalized care tailored to the patient's unique needs (Ballantyne, 2016; Macieira et al., 2019). By developing NCPs, nurses can effectively collaborate and communicate with other team members. Moreover, the NCP can be helpful in anticipating and addressing potential complications, and in ensuring a holistic approach throughout the clinical workflow (De Groot et al., 2019; Lee et al., 2019). However, recent studies show that NCP practice is lacking and that negative attitudes toward writing NCPs exist in clinical practice (Drummond & Simpson, 2017; Reinke et al., 2018; Tajabadi et al., 2020).

2.2 Care planning and nursing processes

Care planning is a critical aspect of the NP in securing high-quality care. The NP is the most common way to provide and document nursing activities (De Groot et al., 2019). The NP can be characterized as an organized, systematic, and dynamic approach designed to meet the individualized healthcare needs of patients (Toney-Butler & Thayer, 2022; Zamanzadeh et al., 2015). The NP is important because it demonstrates the cycle of decision-making that nurses use to capture and assess patient information, identify what care should occur, and create plans within their teams and patients to deliver that care. Moreover, the NP contributes to making evaluations of whether the care was effective or not (Lee et al., 2016).

The NP comprises five interrelated elements or phases: assessment, diagnosis, planning, implementation, and evaluation. Assessment is the phase in which data are gathered about the patient, family, or community. Data obtained during assessments may be indicators for the second phase of the nursing process: diagnosis. The nursing diagnosis (ND) is the nurse's clinical judgment regarding the patient's response to actual or potential health conditions. The ND represents the core element of the NP because the ND is the basis for selecting effective interventions. The ND should be expressed as a brief declaration describing what nurses deem relevant about the responses of an individual, family, group, or community to actual or potential health problems or life processes (Sanson et al., 2017). Planning includes identifying priorities and setting patient goals based on assessments and diagnoses. In this phase, nursing interventions (NIVs) are identified. During the implementation phase, the interventions are performed. The final phase is evaluation, which includes the nurse's critical re-assessment of the gathered and planned information to evaluate whether desired patient outcomes have been achieved (Toney-Butler & Thayer, 2022). Data obtained during the NP are commonly stored in the NCP (Hants et al., 2023; Matney et al., 2016).

The NP was introduced by Orlando in the 1960s and continues to be utilized as a framework within the nursing profession to assess a patient's need for care and to plan, implement, and evaluate nursing care, including within digital health systems (Gaudet & Howett, 2018; Hants et al., 2023). According to Orlando, the nurse discovers or determines the patient's immediate needs for nursing based on the patient's verbal or non-verbal behaviors. Subsequently, through perception, thought, and feeling, the nurse reacts. The next action by the nurse is the activity planned or carried out by the nurse. Furthermore, the nurse validates their reactions by communicating with the patient concerning the determination of whether the nurse has appropriately reacted to the patient's needs. If the nurse carries out an action without validating the unmet need or distress, then the action is considered automatic. If validation does occur, then the action is deliberate. If the patient's behavior is improved, then the action is considered an improvement in nursing care, and the nurse has contributed to the patient’s well-being (Gaudet, 2016; Orlando, 1990). Thus, the NP can be seen both as an interpersonal and a problem-solving process in that the dynamic nurse–patient interaction is of critical importance to meet and solve the patient’s basic needs (Gaudet, 2016).

The NP guides communication during handovers, whereby the oncoming shift nurse receives information regarding the patient’s needs for nursing (e.g., pain), planned outcomes (e.g., well-being), and interventions (e.g., pain care). Studies have shown that handover effectiveness, interdisciplinary communication, and intra- and interinstitutional patient information rely on comprehensive and accurate documentation of nursing processes (Bail et al., 2021; Müller-Staub et al., 2016). Although the NP is a central and widely accepted concept for both nursing care planning and documentation, previous studies have shown that the practice application of the NP can be challenging. Nurses either do not follow the necessary steps (assessment, diagnosis, planning, implementation, and evaluation) or show a poor ability to grasp core concepts of the NP (Akhu-Zaheya et al., 2018; Wang et al., 2011).

A Swedish model describing overall nursing goals or values, such as well-being, integrity, prevention, and safety (VIPS model), was developed to support and assist nurses in care planning and documentation processes. The VIPS model structures nursing content in two levels of keywords, where the first level accords with the elements of the NP, and the second level with specific keywords for nursing history, nursing status, and nursing interventions (NIVs) (Ehrenberg et al., 1996; Florin et al., 2013). The VIPS model aligns well with the NP, and it is estimated that it has a positive effect on understanding and assessing nursing documentation (Akhu-Zaheya et al., 2018; De Groot et al., 2019). Table 1 displays the NP as noted by Toney-Butler and Thayer (2022) and the VIPS model explained by Ehrenberg et al. (1996).

Table 1. The nursing process and the VIPS-model with descriptions, (Ehrenberg et al., 1996; Toney-Butler & Thayer, 2022)

Nursing process	Description	VIPS model	Description
Assessment	A systematic and dynamic collection of patient data involving critical thinking skills. Data collection is based on physical and psychosocial factors. Both subjective data, such as verbal statements from the patient or their next of kin, and objective data, such as vital signs, intake and output, height, and weight, are collected directly from the patient, primary caregiver, or next of kin.	Nursing history	Gathering data or information. The patient's or significant other's descriptions of reason for care, expectations of care and treatment, current health situation, and living conditions as the basis for assessment and nursing care planning.
		Nursing status	Patient's health situation and conditions influencing present nursing care at the time of contact and continuing during the care episode. Choice of keyword based on how the problem, need, or resources affect the patient's functional ability.

Diagnosis	Identification and formulation of a nursing diagnosis employing clinical judgement. The diagnosis is based on the patient’s response to actual or potential health conditions or needs. Nursing diagnosis assists in the planning and implementation of nursing care.	Nursing diagnoses	Identified and prioritized needs, problems, or risks; possible causes and symptoms influencing functioning in daily life and needs to maintain or strengthen resources and functions. The patient’s need for nursing care can be formulated at three levels; basic description of problem or need, problem description based on closer analysis or observed behavior. Includes descriptions of etiology or related factors and possible consequences for or responses from the resident.

Planning	Measurable and achievable short- and long-term goals or expected outcomes for the patient's health and wellbeing are planned and set. Patient-specific goals and the attainment of such goals assist in ensuring a positive outcome. How to attain these goals is outlined in the planning phase by selecting and determining nursing interventions.	Nursing goal	Goal and expected outcome in measurable terms: prognosis. Expectations and priorities agreed upon with the patient or significant other. Goals can be related to functional ability and health status, management of health promotion, self-care, disease, lifestyle alterations, patient's satisfaction and well-being, and long- and short-term.
Imple-mentation	This step involves action or doing and the actual carrying out of the nursing interventions outlined in the planning phase.	Nursing inter-ventions	Planned or implemented nursing interventions. Specify what, when, where, how, and by whom. The intention behind interventions is to promote health and prevent illness, maintain or retain health and well-being, and promote a peaceful death. This can be done by different approaches, such as facilitating, limiting, or protecting; motivating or distracting; supporting or assisting; doing things for the patient; and awaiting or withdrawing.

Evaluation	In this stage planned and implemented nursing interventions are reassessed or evaluated to ensure that the desired outcome has been met.	Nursing outcome	Evaluation of the nursing care, signs of change, stability or achieved patient outcomes or coals, the nursing care's effect on the resident.
		Discharge notes	Discharge note or note in connection with transfer. Summary of the nursing care and the patient's progress during the care episode. Patient's health situation, nursing diagnosis, and nursing care plan when relevant, including communication problems, if any. Information and contacts made prior to discharge. Information about to whom the nursing discharge note has been given.
		Progress notes (information exchange).	Ongoing assessments and updates, transfer summaries, certain events. Notes from rounds. Notes from planning conferences.

2.3 Clinical reasoning in nursing

The fundamental principles of clinical reasoning, including critical thinking, are recognized and upheld as central components of safe nursing practice. Nursing practice requires not only accurate nursing skills but also complex thinking processes to analyze and integrate a large amount of subjective and objective data. Understanding how nurses process information to make appropriate decisions in relation to patient care is important to improve the quality of care as well as to inform nurses' education and training (Gerber et al., 2015; Smith et al., 2022).

Clinical reasoning is a complex, multidimensional and recursive cognitive process important for nurses' development of strategies to determine nursing practices appropriate for individual patient circumstances. Both formal and informal thinking strategies are utilized during clinical reasoning, guiding nurses in assessing, assimilating, retrieving, or discarding components of information to make decisions about patient care (Lee et al., 2016; Simmons, 2010). According to Wihlborg et al. (2019), the clinical reasoning process strengthens nurses' professional competence by raising their personal awareness of knowledge, skills, actions, and attitudes. Furthermore, the clinical reasoning process has been shown to promote nurses' sense-making of cues and information about the patient, enabling effective care planning processes and, in turn, positive patient outcomes (Gerber et al., 2015; Holder, 2018).

An analytical approach to clinical reasoning assumes that rational analytical thinking precedes action, while interpretive reasoning presumes that understanding relies on intuitive judgment to make appropriate action (Simmons, 2010). Furthermore, clinical reasoning, described as a cognitive continuum, assumes that reasoning moves between cognitive analysis and intuition as anchors (Gerber et al., 2015; Smith et al., 2022).

Diagnostic reasoning is a component of clinical reasoning that focuses on integrating multiple data sources and thinking strategies during patient encounters. Diagnostic reasoning is a complex and contextualized process of collecting and synthesizing a patient's symptoms, exam findings, and diagnostics to determine the most likely diagnosis (Griffith et al., 2023). In nursing, diagnostic reasoning can be understood as specific to the cognitive processes of synthesizing and assimilating elements of the bio-psychosocial assessment of the patient's health status into conclusions. Diagnostic reasoning is utilized in nursing to accurately identify the ND and implement appropriate care plans (LaManna et al., 2019; Smith et al., 2022).

The complexity and ever-changing nature of clinical practice, along with the need for patient-centered care and evidence-based practice, highlight critical thinking as a core competence for the clinical reasoning process (Falcó-Pegueroles et al., 2021; Zuriguel Pérez et al., 2015). Critical thinking has been described as an intellectual process that consciously, deliberately, and in a self-regulated manner tries to arrive at a reasonable judgment or conclusion (Lee et al., 2017). Critical thinking is associated with dispositions, skills, and mindsets, and it stems from an individual's knowledge. Critical thinking includes the ability to be reflective upon reasoning itself with the aim of maximizing positive outcomes and minimizing errors during decision-making (Falcó-Pegueroles et al., 2021; Holder, 2018).

It is essential for nurses to have a high level of clinical reasoning skills, including critical thinking, to provide effective, safe, and high-quality nursing care in clinical practice (Falcó-Pegueroles et al., 2021). The Model of Skill Acquisition in Nursing developed by Benner (1984) can be used in the context of clinical reasoning, describing nursing skills at different levels of practice, ranging from limited cue recognition and analytic thinking (novice) to comprehensive understanding and intuition (expert). Increased experience at the expert level increases the nurse's ability to reevaluate data and employ more informal thinking strategies to reason about complex patient issues, resulting in more holistic thinking (Cappelletti et al., 2014; Tanner, 2006).

2.4 The Electronic health records

The EHR has been considered as a safety intervention in nursing practice for several purposes, including to assist in care planning and documentation processes by promoting continuity of care (McCarthy et al., 2019; Wang et al., 2011). Moreover, the EHR can contribute to decrease the amount of time nurses spend on administrative tasks and increase the amount of time the nurse can be bedside (Tolentino & Gephart, 2021; Tsai et al., 2020).

Electronic health record systems are referred to as a type of software that electronically captures, retrieves, informs, and stores patient data and information. According to the International Organization for Standardization (ISO) (ISO/TR20514 2005), the EHR is a repository of retrospective, concurrent, and prospective information regarding the health status of a patient, in computer-processable form. These systems aim to facilitate effective communication among all healthcare professionals involved in patient care to reduce errors and increase the ability to make effective decisions based on evaluating the data gathered (Yu, 2021).

Previous research show that EHRs have the potential to promote efficiency, patient-centered care, safety, and equity in clinical practice. Moreover, EHRs can promote more complete, accurate, legible, and up-to-date patient data (Akhu-Zaheya et al., 2018; Tsai et al., 2020). Nurses rely on EHR systems for a range of procedures, such as drug management, clinical monitoring, and coordination of patient care. Electronic health record systems have significant implications for nurses and their work, including increased visibility of nursing care, legibility of nursing information, and access to the patient's healthcare information (Jedwab et al., 2022).

The introduction of electronic documentation systems into care practice has led to the transformation of nursing record-keeping. It has been acknowledged that replacing paper-based documents with electronic databases allows nurses and other staff members within healthcare settings to improve the processing and structuring of documentation as well as increase accessibility and reuse of data (Macieira et al., 2019).

Several methods for documenting nursing in EHRs are provided, including both structured data fields and free-text narrative formats. Because the NP can improve patient care provided by nurses, this model is increasingly combined with EHRs as a structure for the development and incorporation of planned care in the patient's record (Hants et al., 2023). By visualizing in the EHR how the patient's condition is understood, and how decisions are made and performed, nurses can secure continuity of care and significantly improve patient outcomes (Tuinman et al., 2017). In this regard, the presentation of nursing in EHRs, organized and structured in alignment with the NP, can enable a holistic, accurate, and comprehensive externalization of nurses' clinical awareness, knowledge, and decision-making (Buus & Hamilton, 2016).

Despite contemporary EHR's opportunities to enhance planning, communication, and exchange of patient information, challenges have been reported regarding EHRs in clinical practice. Baumann et al. (2018) found that the average time spent on documentation increased from 9% to 23% for nurses and from 16% to 28% for physicians within a year after EHR implementation. Lee and Kang (2021) found unintended consequences, such as sudden stops or logouts during the utilization of the EHR, difficulties in finding important information, considerable time spent educating new nurses, and reduced interactions with patients. Moreover, the unavailability of complete clinical information at the point of care and mismatches between nurses' working practices and what the EHR allows or directs them to do have been reported (Misto et al., 2019; Wilbanks & McMullan, 2018).

2.4.1 Health data standards in EHRs

Whereas paper-based records have their roots in largely textual representation, the digital nature of computers lends itself more readily to the structuring and organization of data (de Oliveira et al., 2021). Health data standards can be described as agreed-upon ways to structure and organize data within EHR systems (Sensmeier, 2022). Health data standards can increase interoperability and information exchange between systems and people. Moreover, such standards provide a means for producing consistent and understandable health data that can be shared, compared, and merged (Macieira et al., 2019; Sittig et al., 2020).

Interoperability is key to the successful communication and exchange of information across EHR systems and the continuum of care. Interoperability refers to the ability of two or more systems to share information and to use the information that has been shared (Lehne et al., 2019). The interoperability of information systems provides seamless access to the right information needed for a comprehensive understanding of the health and well-being of patients (Sensmeier, 2022). There are several levels of interoperability, including technical interoperability (moving data from A to B, e.g., from a USB stick to the computer), syntactic interoperability (specifying the format and structure of the data), semantic interoperability (the ability of computer systems to exchange data with unambiguous meaning), and organizational interoperability (common business processes and workflows that enable seamless provision of healthcare across institutions) (Lehne et al., 2019).

The rapid development and implementation of EHRs have resulted in an unprecedented volume of electronic patient data available in data repositories. The reuse of such clinical health data is essential to fulfill the promises for high-quality healthcare, improved healthcare management, reduced healthcare costs, population health management, and effective clinical research (Meystre et al., 2017). This amount of healthcare data available in EHRs holds huge potential for large-scale data processing across systems that can improve diagnostics, personalized treatments, and early disease prevention. The incorporation of health data standards into information systems facilitates big data analysis and artificial intelligence development (Lehne et al., 2019).

Standards and terminologies are often mentioned as two key terms regarding interoperability, whereas terminologies are often used for semantic interoperability (Moreno-Conde et al., 2015). To describe the health data standards landscape, five broad categories are presented in the following, in which terminologies are included as one of several health data standards.

Clinical information models generally encompass all technical specifications that define how clinical information is organized and described in an EHR system. The adoption of a commonly agreed-upon logical information model, independent of the EHR system, can provide the basic characteristics and attributes needed to represent relevant data instances for a domain. Such models are commonly referred to as reference models (Hovenga & Grain, 2013; Moreno-Conde et al., 2015). In healthcare environments, the reference model Health Level Seven (HL7) has been used as a reference model for designing information systems. It provides a structure for organizing and thinking about health information (Seyyedi & Maghsoudloo, 2018).

Exchange standards primarily address the format of a message. Such standards are necessary to achieve compatibility between systems, making the receiving system able to divide the incoming message into discrete data elements that reflect what the sending system wishes to communicate. Exchange standards include clinical templates, the user interface (communication between humans and computers), and patient data linkage (combines data from different sources that relate to the same person) (Sensmeier, 2022).

Content or structure standards define the structure and data of electronic documents. In addition, they define a “package” of content standards, which, when grouped together, make up the syntax of a message. Such standards are used to share clinical information in terms of clinical summaries or structured electronic documents (Sensmeier, 2022).

Vocabulary, *code sets*, and *terminology* are standards that structure language. Terminology standards generally refer to computer- and human-readable and processable representations of concepts that are precise and have detailed specifications of the meaning of each concept (Sensmeier, 2022). Terminologies can be seen as interface and reference terminology. Interface terminology is often specific to clinical disciplines, such as nursing, and comprises the actual terms used to document at the point of care. Reference terminologies, on the other hand, typically serve as behind-the-scene glue that makes it possible for different interface terminologies to talk to each other (Kim et al., 2020).

Despite the recommendations for increasing the interoperability and exchange of information, most EHR data are registered in an unstructured form, often utilizing free text writing represented by ambiguous language. Additionally, EHR systems operate with a variety of data formats and custom specifications (de Oliveira et al., 2021; Lehne et al., 2019). Such challenges affect the processing, use, and reuse of patient data for both humans and machines in healthcare and medicine (Macieira et al., 2019; Vuokko et al., 2017).

2.4.2 EHRs in the Norwegian healthcare system

Norwegian health policies support and facilitate the development and implementation of EHRs in Norwegian healthcare services. The EHR is highlighted as an essential tool for healthcare professionals, including nurses, to effectively plan, document, and exchange patient information. According to Norwegian health authorities, EHRs provide rapid access to patient information, which quickly provides an overview of the patient's health situation and creates opportunities to start treatment and care at an early stage of hospitalization (Meld. St. 9, 2012–2013). A report from the Directorate of Health in 2014 showed that approximately 90% of Norwegian municipalities utilized EHRs in daily practice. Only two municipalities reported that they did not utilize EHR to a large degree in daily work (Norwegian Directorate of Health, 2014).

Multiple EHR systems are utilized in Norwegian healthcare services. Currently, there are separate and multiple EHR systems for hospitals, physicians in community healthcare, and municipality healthcare, including nursing homes. A recent report from the Norwegian Directorate of eHealth (2023) shows that there are 41 different EHR systems from 29 vendors utilized in Norwegian healthcare services. The EHRs often cover multiple user groups, either by different EHR systems or EHR systems adjusted to multiple user-groups (Norwegian Directorate of eHealth, 2023). This could lead to different information practices and challenges concerning the exchange of information between EHR systems and the coordination of proper treatment and care across levels in healthcare services (Norwegian Directorate of eHealth, 2017 [updated 2019]; Østensen et al., 2019).

Currently, Norwegian health authorities are working toward the development and implementation of common national health data standards for EHR systems (Meld. St. 27, 2015–2016; Norwegian Directorate of eHealth, 2018a, 2018b). In regard to nursing, the International Classification for Nursing Practice (ICNP) has been recommended as a standardized nursing language (SNL) for documentation of nursing care in clinical practice in Norway (Norwegian Directorate of eHealth, 2018b). Health data standards for EHRs are explained more thoroughly in Chapter 1.4.

As a contribution to national standards in nursing in the EHR, the Norwegian Nurses Organization initiated the development of standardized nursing care plans (SNCPs) enabled by ICNP. Nurses from clinical practice and research with knowledge and experience related to planning and documentation of nursing care in the EHR were involved in the work process. The content of the SNCPs was validated based on national guidelines, professional procedures, reference work, and systematic knowledge summaries (Stensvold et al., 2017). Standardized nursing care plans are only partially implemented in Norway, and little research exists on user experiences and how health data standards are utilized in clinical practice in the Norwegian context (Norwegian Directorate of eHealth, 2018a; Østensen et al., 2020).

2.5 Nursing informatics

Given the ubiquitous use of information technology within healthcare settings, there has been an increased focus on ensuring that nurses have digital and informatics competencies that enable them to function effectively in direct care roles (Brown et al., 2020; Strudwick et al., 2019). The world health organization (WHO) considers competence in digitalization as a part of human capital which requires perpetual education to keep existing skills in line with technical development and new knowledge (World Health Organization, 2016). A holistic combination of the knowledge, performance, skills, values, and attitudes relating to modern technology, including EHRs, is needed for nurses to manage health information more effectively at the point of care (Konttila et al., 2019).

Nursing informatics (NI) has been predicted to be one of the most essential skill sets for nurses in the utilization of technology in the approaching decade (Kunkel et al., 2023). It has been referred to as a specialized field that focuses on the integration of nursing science, computer science, and information science to manage and communicate data, information, and knowledge in nursing practice (Al-Hawamdih & Ahmad, 2018).

The processing of data is central to NI to make data meaningful. Central concepts, as noted by Wilson and Obasanya (2022), are: *data*, representing simple symbols, isolated facts, and measurements; *information* represents processed, organized, or structured data that provide context and meaning; *knowledg*e represents information that is justifiably considered true, while *wisdom* represents the critical use of knowledge to make decisions. Because data inputted by nurses become information and then knowledge (evidence-based), they provide the opportunities of being delivered (output) as wisdom in clinical practice, often through the application of additional technology or digital means (Kunkel et al., 2023).

Nursing informatics competencies no longer focus on whether a nurse can use a computer; rather, the focus has been expanded to how a nurse uses these skills to incorporate knowledge into practice. Specific competencies required for NI include the relevant knowledge, behavior, and skills needed for nurses to collect, store, retrieve, process, and use information in EHRs (Al-Hawamdih & Ahmad, 2018). The core areas of NI work are the development of concept representation and standards to support evidence-based practice, communication, information presentation, and retrieval approaches. Such work is important for building an interoperable global data infrastructure that will support safe patient-centered care (Wilson & Obasanya, 2022).

2.5.1 Nursing standards

As part of a concrete effort to integrate nursing data accurately and comprehensively into clinical data repositories, several nursing standards organized and structured to mirror the elements of the NP have been developed (Fennelly et al., 2021; Johnson et al., 2018). In the mid-1970s, nursing researchers began developing SNLs and SNCPs to help bedside nurses document diagnoses as well as the care they provided to patients and families (Matney et al., 2016).

Standardized nursing care plans are preformulated evidence-based documents that provide communication of evidence-based NDs, patient care goals, interventions, and evaluations. According to Olsson et al. (2009), SNCPs state which current ND, problem area, examination, or treatment are referred to, goals for the diagnoses are described, what interventions are to be carried out, and when the plan was completed and implemented. Further, the plan must contain an updated compilation of scientific facts and reliable experience. Finally, the plan should have clear references concerning the sources from which the knowledge was collected, information about the persons who have written the summary, and information about when the summary was produced (Olsson et al., 2009; Schumacher et al., 2019).

Standardized nursing languages are often referred to as standardized professional languages, providing a framework for specific data about nursing practice across settings (Kim et al., 2020). According to the International Council of Nurses, SNL is a compilation of terms used in the clinical assessment, management, and care of patients, which includes agreed definitions that adequately represent the knowledge behind these terms, and link with standardized coding and classification systems (Executive Board, 2006).

Over time, SNLs have evolved from alphabetical lists to conceptual systems that guide the decision-making process of nursing care at the individual and community levels. The ICNP, the Omaha System, and the American Nursing Diagnosis International (NANDA) are examples of SNLs that have been accepted and implemented in clinical practice to assist nurses in care planning and documentation of nursing in EHRs (Macieira et al., 2019; Strudwick & Hardiker, 2016). Standardized nursing languages systematically group, define, and encode nursing care as NDs, outcomes, and interventions, and have the potential to link NDs with evidence-based interventions and outcomes (Fennelly et al., 2021). As with ICNP, SNLs accommodate both interface properties (to facilitate use at the point of care) and reference properties (to facilitate secondary use of data and harmonization with other terminologies) (International Council of Nurses, 2021).

In recent years, several SNLs, including ICNP, have been mapped into the Systemized Nomenclature of Medicine Clinical Terms (SNOMED CT) to facilitate a better comparison of nursing data across settings and exchange of patient information between settings (Kim et al., 2020). SNOMED CT is a standardized multilingual vocabulary of clinical terminology used by healthcare professionals for the electronic exchange of clinical health information (SNOMED International, n.d.). It provides a global common health language facilitating accurate, comprehensive, and scientifically validated clinical content that enables the consistent representation of clinical information, including nursing, in EHRs (Kim et al., 2020; Sensmeier, 2022). However, for the purpose of interoperability in the exchange of meaningful nursing information between information systems, ISO 18104:2014 recommends specific characteristics with respect to NDs and NIVs for the development of SNLs (ISO/TC 215 Health Informatics, 2014).

In recent years, the development and implementation of SNCPs with SNL in EHRs have increased to support the documentation processes of nurses in terms of communication of nursing observations, actions, and outcomes. This standardized and structured documentation allows accurate and complete records, in addition to the possibilities of re-using nursing care data (Lee et al., 2019; Macieira et al., 2019).

2.6 Planning and documentation of care in the dementia care context

Planning and documentation of nursing care for patients living with dementia in nursing homes is an ongoing process involving the complex medical and social care needs of the patient. Dementia is an illness that causes various impairments, such as decreased physical health, impaired communication, disorientation, confusion, and behavioral changes. The most prominent symptoms of dementia are neuropsychiatric symptoms (NPS), such as delusions, depression, anxiety, aggression, motor disturbance, and apathy (Kolanowski et al., 2017; Leung et al., 2021).

Despite the increasingly complex care needs of nursing home patients, there is a shortage of staff due to difficulties recruiting nurses and other healthcare professionals. Moreover, high employee turnover is common (Gautun, 2021; Song et al., 2020). Added to these pressures is a growing demand for documentation of planned and delivered care in the EHR of patients living in nursing homes (Meißner & Schnepp, 2014; Shiells et al., 2020). Consequently, these pressures lead to challenges, including increased workload, lack of competence, more difficult and complex prioritization, and difficulties in communication and coordination of high-quality care (Song et al., 2020).

Nursing home patients suffering from dementia need continuous psychosocial and functional support and care in their everyday lives from a multi-disciplinary healthcare team, including licensed nurses and nursing aides (Gilster et al., 2018; Molony et al., 2018). Through their close contact with persons with dementia, nurses and nursing aides often gain important knowledge of patients' preferences, behaviors, and functioning. Moreover, they are often the first to notice changes in patients, such as signs of illness, pain, or decline (Gilster et al., 2018).

2.6.1 Person-centered care

Person-centered care (PCC) is considered the cornerstone of high-quality nursing for patients living with dementia in nursing homes (Kitwood, 1997). The goal of PCC is to guide changes in care from a traditional biomedical model to a more humanistic approach that advocates for the choice, dignity, respect, and self-determination of patients suffering from dementia. Furthermore, PCC emphasizes interpersonal care that affirms personhood and promotes the well-being of the patient (Fazio et al., 2018; Kitwood & Bredin, 1992). A person-centered approach to care puts patients at the center with their context, history, family, and individual strengths and weaknesses. It also means a shift from viewing the patient as a passive target of a healthcare system to another model in which the patient is an active part in his or her care and decision-making (Fazio et al., 2018; Håkansson Eklund et al., 2019).

Based on a non-pharmacological and sociopsychological treatment approach, PCC recognizes the need to personalize and tailor care to the recipient's needs and preferences to guide care provision (Mohr et al., 2021). Person-centered care planning in dementia care emphasizes the patient's subjective preferences and experiences throughout the care planning process, supporting the patient in communicating personal goals (Molony et al., 2018). The NCP should reflect both the strengths and needs of the patient, allow use of personal possessions, accommodate individual preferences, and offer a variety of activities to support the patient's well-being and quality of life (Fazio et al., 2018; Sjögren et al., 2013). Specific goals included in the NCP should include strategies to build on the patient's strengths, promote success, honor personhood, and support functions (physical, cognitive, psychosocial, and spiritual). Furthermore, the NCP should specifically address family well-being and the needs of caregivers and incorporate their choices about the goals of care and end-of-life wishes (Kolanowski et al., 2015; Molony et al., 2018).

Person-centered care planning promotes purposeful living for patients living with dementia in nursing homes by encouraging the active role of the patient and voicing the patient's preferences (Fazio et al., 2018). Regular attention to individualized and personalized information based on the patient's unique needs, history, and present situation is considered vital for the effective planning and delivery of care to patients living with dementia (Kolanowski et al., 2015; Molony et al., 2018).

Life stories about patients living with dementia may be a means by which to enable the voice of the patient, enable relatives to see and understand the patient as a whole person, and educate care staff about patients. Life stories can also be used as a part of reminiscence work with a person’s life reviews, which are often supported by photographs, narratives, or music (Elfrink et al., 2018; Grøndahl et al., 2017). Life story work or a biographical approach involves interviewing an individual about their life, recording such information, and arranging such information into a coherent narrative about an individual’s experiences, values, interests, or pursuits. Life stories can be written on paper, recorded digitally, or on films (Dennerstein et al., 2018; Elfrink et al., 2018). Previous research shows that knowing the history of persons living with dementia contributes to promoting a continuation of self and normality and supporting staff in proactively preventing and responding to NPS (Dennerstein et al., 2018; Edvardsson et al., 2010; Kolanowski et al., 2015).

2.6.2 EHRs in the nursing home setting

The implementation of EHRs in nursing homes has offered the opportunity to contemporaneously capture care delivery, streamline documentation, and support point-of-care-informed decision-making to optimize holistic PCC (Bail et al., 2022; Meißner & Schnepp, 2014). Moreover, EHRs provide opportunities to systematically communicate and share person-centered information important for further planning and delivery of high-quality care (Kolanowski et al., 2015; Sefcik et al., 2020).

Electronic health records in nursing homes have the potential to enhance the collection of longitudinal information, and rapidly access patient information securely (Shiells et al., 2019). However, the implementation of EHR systems in nursing homes is challenging due to cultural care processes and governance structures. Moreover, such implementations are compounded by limited input from frontline nurses (Bail et al., 2022).

2.7 Knowledge gaps

Despite positive developments and the incorporation of supportive models and tools, effective care planning and documentation in LTC settings, including nursing homes, remain problematic. Several previous studies have demonstrated challenges in the care planning and documentation process in the nursing home setting.

Drummond and Simpson (2017), found that LTC staff experienced conflicts with time spent attempting to write NCPs alongside delivering good quality care. Østensen et al. (2019), found that nurses' information practice in Norwegian municipality care is characterized by the utilization of a variety of information sources in their daily practice and that the EHR system often created compensatory workarounds (Østensen et al., 2019). Puustinen et al. (2021), found that the content of NCPs in Finnish home healthcare services adopted a task-oriented view that focused on mechanical daily activities and provided a narrow view of individual and comprehensive care planning. Other recent qualitative studies from European countries, such as those from Shiells et al. (2020) and De Groot et al. (2020), show that nurses in nursing home settings perceive a lack of user-friendliness of EHRs in their daily clinical practice. Additionally, challenges relating to incomplete or missing documentation (Charalambous & Goldberg, 2016; Hertzum, 2021; Høgsnes et al., 2016) and inaccuracies in documentation (Tuinman et al., 2017; Wang et al., 2015) have been reported in nursing homes.

Recent research shows that even though EHRs are considered capable of improving care, whether electronic care planning and documentation improve the quality of care for nursing home patients living with dementia remains unknown (McCarthy et al., 2019). A possible reason for this research gap has been suggested to be different views and understanding of the NP, lack of awareness and knowledge among nurses related to the execution of processes, lack of support systems, and problems related to recording the NP (Zamanzadeh et al., 2015).

Previous research has shown that the implementation of EHRs can impact the daily workflow of nurses. Shiells et al. (2019), focused their integrative review on the extent to which EHRs facilitated or hindered care provision. They concluded that the nature of the device, the software applications, functionality, content, and structure were all important for the successful implementation of the EHR. Meißner and Schnepp (2014), drew attention to the lack of understanding of the way in which staff experience the technology implementation process. They concluded that the benefits (or perceived lack of benefits) of an electronic system were tied to the amount of time taken to complete the documentation process, which in turn related to ease of use. Both reviews highlight a gap in understanding about the outcomes of EHRs utilized for care delivery in nursing homes.

Although many nursing homes utilize EHRs, the level of person-centeredness and nurse and carer usability in the context of their workflows vary to a great extent (Bail et al., 2022). According to Matthews et al. (2018), the exact meaning and operational requirements of a person-centered approach remain vague, which creates conceptual ambiguity that can influence care planning and documentation processes. Stanhope and Matthews (2019), found that the EHR and its stage of development influenced the implementation of person-centered care planning in community mental health clinics. They concluded that the increased utilization of EHRs in behavioral health settings makes it essential to ensure that systems are responsive to and reflective of the unique needs of the patient to maintain high-quality healthcare services. Additionally, life story work in dementia care can contribute to the maintenance of the person with dementia as a whole person rather than as a “demented patient.” As this group of persons are at risk of becoming objectified and seen as non-persons, especially as the disease progresses (Kitwood & Bredin, 1992), the use of life stories should be considered an important element of care planning and documentation to preserve and enhance the dignity and well-being of the patient. However, studies on how EHRs facilitate this information are lacking (Gridley et al., 2020).

Therefore, there is a need to understand the care planning and documentation process of nurses in the dementia care setting to facilitate valid and rigorous EHRs in this context, in the sense that EHRs can communicate and exchange information about high-quality nursing care accurately and comprehensively (Ko et al., 2018; Kutney-Lee et al., 2019). Knowledge about nurses’ daily care planning and documentation practices in the EHRs in LTC dementia could help us to better understand how nurses and EHRs, including nursing standards, can add value to core tasks for the safe daily living of patients suffering from dementia (Shiells et al., 2020; Stanhope & Matthews, 2019). Moreover, such knowledge could be helpful in achieving specific goals related to efficiency, satisfaction with nurses’ utilization of EHRs, and safeguarding continuity of care and patient safety (Ko et al., 2018).

Knowledge about nurses’ care planning and documentation processes in the dementia care setting might provide valuable insights into how nurses can safeguard individualized and personalized care in EHRs of patients living with dementia (Kolanowski et al., 2015; Molony et al., 2018; Sefcik et al., 2020). Moreover, an understanding of how contemporary EHRs, including nursing standards, are perceived by nurses in the dementia care context could provide a deeper understanding of the complex interactions between people, processes, environment, and technology as they endeavor to safely develop, implement, and maintain the digital infrastructure (Lehne et al., 2019; Sittig et al., 2020).

3 Aim and research questions

The overall aim of this PhD project was to gain knowledge and understanding of the care planning and documentation processes of nurses in the EHRs in the dementia nursing home setting. The PhD project is based on three substudies (Papers 1–3) with the following specific aims:

3.1 Study 1

The aim of Substudy 1 was to describe the content and comprehensiveness of nursing documentation in the records of patients living with dementia in nursing homes in relation to PCC and the NP. Research questions were: (i) What characterizes the content of nursing documentation in dementia care relating to the following categories: identity, comfort, inclusion, attachment, and occupation? (ii) How comprehensive is the nursing documentation in dementia care relating to the NP?

3.2 Study 2

The aim of Substudy 2 was to explore nurses' clinical reasoning processes during care planning and documentation of nursing in the EHRs of patients in dementia LTC. Our research questions were as follows: a) How do experienced nurses utilize the NP in their clinical reasoning when planning and documenting nursing care for patients living with dementia? and b) Which cognitive processes characterize the clinical reasoning of experienced nurses when planning and documenting nursing care in EHRs of patients living with dementia?

3.3 Study 3

The aim of Substudy 3 was to describe nurses' experiences and perceptions of utilizing nursing standards, including SNCPs with SNL, in daily EHR planning and documentation of nursing care for patients living in special dementia care units in nursing homes. Our research questions were as follows: a) How do the nurses experience care planning and documentation processes utilizing EHRs in daily clinical practice? b) What are their perceptions of utilizing standardized structures and language in daily care planning and documentation practices?

4 Theoretical frameworks

This section introduces information processing theory, which was used when exploring how nurses think about or process information during care planning and documentation in EHRs. It then moves on to sociotechnical theory, which is important to the successful implementation, adoption, and use of EHRs in clinical practice. The theoretical framework used in this PhD project allowed an understanding of the work system of nurses, the nursing process, and the outcomes related to nursing practice, including patient outcomes.

4.1 Theory of information processing

Information processing theory (IPT) was utilized in this PhD project to allow an investigation of the nurses' cognitive processes and information flow involved in gathering and assessing the information, making judgments and selecting optimal solutions in the planning and documentation of nursing care. Information processing theory is about how an individual processes information during problem-solving or task performance. When a task or problem is given to a nurse, IPT makes it possible to determine what kinds of information the nurse applies to generate correct or relevant responses or solutions (Fossum et al., 2011; Lee et al., 2016).

Information processing theory evolved through the work of Newell and Simon (1972) and describes problem-solving as an interaction between the problem-solver and a task environment. Information processing theory provides a structured framework for understanding how people learn, think, and remember. The theory assumes that problem-solving occurs when the solver translates a problem into their own internal representation of the problem and then searches for a pathway to reach the designed goal (Taylor, 2000).

Information processing theory is commonly used to understand nurses' clinical reasoning, judgment, and decision-making in clinical practice (Holder, 2018). In this PhD project, IPT not only allowed an external observation of nurses' cognitive performance, but it also provided the possibility to access and infer "active" knowledge or concurrent information from the nurses during care planning and documentation in EHRs (Ericsson & Simon, 1993). According to the IPT, during information processing, the nurse can access information from long-term memory. However, it is only information from the short-term or working memory that can be verbalized; hence, verbal reports contain concurrent information or thoughts from the nurse (Ericsson & Simon, 1993). Retrieval of concurrent information retrospectively is possible by recoding the verbalization (Johnsen et al., 2016).

To understand the verbalization process, a psychological model forms the basis of predictions about how the nurses' minds work; more specifically, which cognitive processes' that will take place in the context of a particular task and in which order they will occur (Ericsson & Simon, 1993). Therefore, the content of verbal protocols can be predicted from the structure of the task (Eccles & Arsal, 2017; Lee et al., 2016).

4.2 Socio-technical system theory

Socio-technical system (STS) theory was used in this PhD project because it allowed us to be specific about the EHR, including standards (technology). At the same time, it was possible to simultaneously incorporate nurses (actors), nursing homes, and dementia care (contextual and cultural elements), and how their relationships lead to action opportunities (care planning and documentation practices).

Socio-technical system theory originated in the 1950s from industry-based action research, resulting in an approach to the design of work systems that perceive people as more than extensions to machines (Abbas & Michael, 2023). The theory recognizes that technology and human social systems are intertwined and interact with each other to achieve specific goals. The theory underpins the idea that the design and performance of any organizational or work system can only be understood and improved if all the social, technical, and environmental aspects are brought together in a "joint optimization" (Abbas & Michael, 2023; Appelbaum, 1997; Walker et al., 2008).

Socio-technical system theory frameworks are commonly applied in research and evaluation processes concerning the development, implementation, and use of information technology systems in healthcare settings. Research applying STS frameworks attempts to understand the contributions of phenomena at the human level to the performance of technical systems (Eslami et al., 2017; Sittig & Singh, 2010). The socio-technical model described by Sittig and Singh (2010) aims to influence the success of information technology interventions by integrating several technical and social dimensions into a model assuming that these dimensions interact and relate to each other. These dimensions are described as follows:

1. *Hardware and software computing infrastructure*, which refers purely to the physical devices (e.g., monitor, keyboard, and printer) and software required to keep these devices running. The user is commonly unaware that most of this infrastructure exists until it fails.
2. *Clinical content* represents the “language” of clinical applications. It includes everything on the DIKW continuum that is stored in the system, expressed as textual or numeric data, and images related to clinical aspects, such as the patient’s condition, patient location, or demographic data. Clinical content elements can be used to configure certain software requirements.
3. The *human–computer interface* refers to all aspects of the computer that the user can see, touch, or hear when interacting with the technology. The hardware and software “operationalize” the user interface, provided these function as designed, meaning that the human–computer interaction matches the user’s modified clinical workflow.
4. *People* are purely on the social end of the socio-technical spectrum, and this term refers to everyone who interacts with the system in any way, from the developer to end users, including potential patients, or their caregivers. This dimension also includes the ways in which systems help users think and how they make them feel.
5. *Workflow and communication* are the processes or steps required to ensure that patient care tasks are performed effectively. This dimension acknowledges that people often need to work cohesively with others in the healthcare system to accomplish patient care and that this collaboration requires significant two-way communication.
6. *Internal organizational features* refer to the internal structures, policies, procedures, and culture in an organization. This dimension affects every other dimension of the model.
7. *External rules and regulations* refer to national laws or guidelines that facilitate or limit the implementation, use, and evaluations of health information technologies in the clinical setting.
8. *System measurement and monitoring* refer to the processes of regular measurement and assessment of health information technology effects related to availability, how the various features and functions are being used, how anticipated outcomes are achieved, and identifying and

> documenting unintended consequences that manifest themselves following the use of these systems.

When applied to nursing, Sockolow et al. (2011) identified and explained an STS framework concerning a comprehensive evaluation of a clinician's satisfaction with the impact of the EHR on the clinical process. The framework includes evaluation methodologies that focus beyond user, software, and organizational interactions to include the systematic and environmental level (Sockolow et al., 2011).

The framework encompasses six dimensions that can influence nurses' satisfaction with the EHR: 1) *Structural quality* refers to the patients' health record being consistently available and user-friendly and relates to the quality of the hardware and software, and the organizational support capacity. 2) *Quality of information logistics* refers to the accurate and valid recording of patient data. This relates to whether the system is worth the time and effort to use, the confidentiality of the system, and patient satisfaction with the use of the system. 3) *Effects on the quality of processes* refers to effective communication between members of the healthcare team, delivery of appropriate patient care, and user involvement in system implementation. 4) *Effects on outcomes and quality care* refer to contributions to the safety of the patient, related to patient outcome, costs of patient care, patient-related knowledge, and patient satisfaction with care. 5) *Unintended consequences or benefits* relate to nurses' perceptions of unintended changes the system introduces to patient care and whether these effects are positive or negative. 6) *Barriers or facilitators* to the adoption and use of EHRs, which relate to government support, organizational culture or interoperability of the system.

5 Methodology

The substudies included in this PhD project were conducted between 2018 and 2021 in nursing home settings in Southern Norway. This section first introduces the philosophical considerations of the project. Next, it presents the overall design before moving on to a presentation of how the substudies were carried out. Finally, ethical considerations are explained.

5.1 Philosophical considerations

The ontological viewpoint of reality as complex and multiple forms the foundation for this PhD project. Reality as complex and multiple means that both a mind-independent physical world and a constructed social and psychological world exist (Morgan, 2007). This implies that although knowledge exists in the external world, it must be experienced by individuals through their own senses and interpretations (Shan, 2022).

With this PhD project, my ambition was to provide an understanding of how nurses can provide and secure high-quality planning and documentation of nursing care utilizing EHRs, including nursing standards, in the dementia care context. This ambition implies a focus on practical and achievable research outcomes, allowing the use of multiple sources of data and knowledge to answer the research questions of this project (Allemang et al., 2022; Morgan, 2007).

Substudies 1 and 2 consist of both qualitative and quantitative data, indicating that this PhD project could employ a combination of positivistic and interpretive methods. However, the retrospective chart review helped the project sensitize with shared beliefs and practices in the field and aimed to increase insight into the phenomenon of study in the PhD project (Allemang et al., 2022; Long et al., 2018). A more interpretive (and reflexive) technique was adopted in Substudy 3 (Paper 3), implying that this project has some phenomenological overtones (Kim et al., 2017). This PhD project acknowledges that interpretation is foundational to all data, meaning that “nothing becomes data without the intervention of the researcher”. According to Sandelowski (2011), what differentiates inquiry is not whether it is qualitative or quantitative but rather the attitude taken toward the data generated in a study. This would demand a high degree of reflexivity in the researcher, as explained more thoroughly in Chapter 6.1.

Knowledge in this PhD project is believed to be created through “joint actions.” Such belief is based on the inherent social being of humans, and that action is the basic category of knowledge (Morgan, 2007). Further, it is assumed that knowledge is produced by nurses through their lived lives in their everyday world, including context and culture (Thomas et al., 2014). However, knowledge is neither specific, context bound, universal, nor generalized, meaning that things learned can be transferred to other settings (Morgan, 2007; Thomas et al., 2014).

In this PhD project, it is believed that new knowledge is built upon the knowledge nurses already possess, implying that experiences are needed to ascribe meaning to an event (Allemang et al., 2022). Thus, the focus of investigations has been to explore the participants’ perspectives and experiences in their everyday clinical context, the beliefs that stand behind such perspectives and experiences, and the consequences that are likely to follow from different perspectives and experiences (Papers 1–3).

The theories utilized in this PhD project are not solely an aspect of inductive inferences. Such inferences must be assessed through action (Morgan, 2007). Abductive reasoning allowed me to move back and forth between induction and deduction, first converting observations into theories (Substudy 1), and then assessing those theories through action (Substudies 2 and 3). Moreover, abductive reasoning provided opportunities for deductive results to inform inductive results and vice versa, which provided me with opportunities to search for useful points of connection between theory and data (Karlsen et al., 2021; Shannon-Baker, 2016).

5.2 Design

A qualitative descriptive (QD) design was chosen for this PhD project as it allowed multiple approaches to elicit the perspectives and experiences of nurses to understand their everyday world of planning and documenting nursing in the dementia care context. This flexibility helped me tailor my research approaches to my specific research questions (Kim et al., 2017).

A QD design can provide a comprehensive and detailed description of a complex phenomenon, especially when detailed, context-specific insights are needed. The QD design focuses on collecting data that describe what is happening, which is valuable when little prior information is available on the subject. Furthermore, a QD design facilitated recognition of the subjective nature of my research topic, as the design emphasizes capturing the perspectives and voices of the participants directly (Doyle et al., 2020; Kim et al., 2017).

A QD design is generally drawn from a naturalistic perspective, which facilitates studying the participant's care planning and documentation processes in their everyday work in the dementia care context. This was valuable, as the goal of this PhD project was to understand the participants' real-world behaviors, perspectives, and experiences (Sandelowski, 2000, 2010).

The QD design allowed for the presentation of the findings in a way that closely resembles the terminology used in the research questions. This is particularly relevant in research concerning nurses' or other healthcare professionals' perspectives or experiences of a phenomenon or related interventions, which can inform policy decisions or guide practical applications (Kim et al., 2017).

Thus, three substudies (Papers 1–3) were conducted utilizing different approaches in data collection and analysis to elicit nurses' behaviors, perspectives, and experiences expressed through written texts (e.g., patient journals), their immediate thoughts (e.g., verbal protocols), and through conversations (e.g., interviews). A core function of the retrospective chart review in Substudy 1 was to describe important features of nursing documentation in the dementia care setting. The data collection method chosen for this substudy was helpful in obtaining insights into what and how nurses actually plan and document in nursing clinical practice. Findings from Substudy 1 provided data that gave important insights into the organizing, recording, and dissemination of information in the EHR of patients living with dementia in nursing homes. These findings raised further questions concerning how nurses select information for documentation purposes and how they reason during their care planning and documentation processes (Paper 1).

A central goal of Substudy 2 was to understand and describe the cognitive processes used by nurses during care planning and documentation in EHRs. This method of collecting data provided important data concerning insights into the nurses' processing of information. Such data were helpful for further understanding of how the nurses think, reason, and make decisions concerning the research topic. Findings from Substudy 2 raised further questions concerning how and why the EHR system influences daily care planning and documentation processes, and how nursing standards might affect these processes (Paper 2).

Therefore, individual face-to-face interviews were conducted in Substudy 3. This data collection method allowed a deeper exploration of the research topic, as I had the opportunity to clarify or probe ambiguous responses from the participants in real time. The findings from Substudy 3 contributed to a deeper understanding of how the nurse's process information in their interaction with the EHR and the dementia care context in their daily clinical work (Paper 3).
Table 2 shows an overview of the theoretical framework, design, methods, setting, sample, and analysis in the three substudies conducted for this PhD project.

Table 2 Overview of the theoretical framework, design, research methods, setting, sample, and analysis in the substudies

Substudy	Theoretical framework	Design	Data collection
1	Information processing theory	Descriptive and retrospective	Retrospective chart review
2	Information processing theory	Explorative and descriptive	Concurrent think-aloud (TA) interviews and observations
3	Sociotechnical theory	Interpretive	Individual interviews

Table 2 Overview cont.

Substudy	Setting	Sample	Data analysis
1	Seven nursing homes located in three municipalities in Southern Norway with special dementia care units. Nursing documentation in EHRs is structured according to the nursing process.	121 records of residents living in special dementia care units at the time of the study.	Deductive content analysis Descriptive statistics
2	Three nursing homes located in three municipalities in Southern Norway with special dementia care units. EHR systems facilitate nursing documentation according to the nursing process.	12 RNs with more than 2 years of experience as a nurse and documentation skills at an expert level.	Protocol analysis
3	Three nursing homes (not the same as in Substudy 2) located in three municipalities in Southern Norway with special dementia care units. EHR systems facilitate nursing documentation according to the nursing process and access to structured care plans with standardized nursing language, ICNP.	14 RNs with more than 2 years of experience as a registered nurse and clinical work with residents living with dementia.	Reflexive thematic analysis Inductive approach

In the first substudy, a QD design was appropriate and useful as a starting point for my PhD, gaining insight into how PCC and comprehensiveness are described by nurses in the records of patients living with dementia in nursing homes (Paper 1). In the second substudy, the QD design was appropriate to understand the participant’s cognitive processes and how they think, judge, and decide regarding care planning and documenting nursing in EHRs (Paper 2). In the third substudy, the QD design was appropriate to obtain rich, detailed, and contextualized descriptions from the nurses regarding their experiences and perceptions of documenting nursing in EHRs of patients living with dementia, and how EHRs, including nursing standards, can be utilized in dementia documentation practice (Paper 3).

5.3 Setting

In Norway, municipalities are responsible for the delivery of primary healthcare services, including nursing homes. At the time of the present studies, the nursing home setting included 926 institutions with 39,241 beds, whereas 10,927 were special dementia care beds organized in 356 municipalities (Statistics Norway, n.d.). The patients in Norwegian nursing homes are mainly in need of long-term care and are provided with assistance to all their activities of daily living 24 hours a day. A recent study conducted in 47 Norwegian nursing homes (Roen et al., 2017) showed that of 696 patients, 583 (83.8%) were diagnosed with dementia; however, only 389 (55.9%) had a dementia diagnosis recorded in their health records.

Mainly registered nurses (RNs) (bachelor’s degree in nursing), nursing aides (NAs), and nursing assistants (nurses without formal education) are working shifts in the nursing homes (Gautun, 2021). Despite the increased responsibility for patients with complex care needs, a limited number of RNs are employed in Norwegian municipal healthcare. At the time of the present studies, 50% of nurses with a bachelor’s degree in nursing in Norway worked in municipal healthcare (Norwegian Nurses Organisation, n.d.).

At the time of the present studies, nursing documentation in the EHRs in Norwegian nursing homes was mostly locally developed, with different standards defining information structure and formal semantics in clinical information. A variety of information sources are used by nurses in daily clinical practice, including electronic, paper-based, and oral information. Additionally, information on whiteboards is utilized in the communication and organization of patient information (Bjerkan et al., 2020; Østensen et al., 2019). The most common structure for planning and documentation of nursing care in Norwegian EHRs is according to the elements in the NP. Additionally, free text writing is mostly utilized in EHR documentation work (Norwegian Directorate of eHealth, 2018b).

5.4 Data collection

To recruit participants for the three substudies, the chief administrative of the local government in nine municipalities located in Southern Norway were contacted by email or telephone with information about the project and a request for assistance in identifying appropriate nursing homes (Appendix 1).

Four municipalities responded positively, and 10 nursing homes that provided special care beds to patients living with dementia agreed to participate in this PhD project. The head manager in each nursing home received an information letter about the project and a request for assistance in identifying appropriate participants (Appendix 2). The sample sizes in each of the substudies were based on estimates drawn from similar study designs and the information power of the sample (Malterud et al., 2016).

All 10 nursing homes in the three substudies had an EHR system structured according to the elements of the NP in a linear fashion. Standard text based on categories, such as “Circulation,” “Respiration,” “Nutrition,” “Personal Hygiene,” and “Mental Health,” constituted the starting point of documenting the basic needs of the resident in the care plan. There was freewriting for the categories of NDs, patient outcomes (PO), and NIVs in the NCPs. Daily reports and evaluations of outcomes were written in the PNs. The NCP was visible on the same screen as the PNs. Assessment charts and life stories were documented in separate files.

At all study sites, nurses were responsible for creating and developing the patient’s NCP in the EHR. In addition to the nurses, the NAs were the primary contact of the patient, and they collaborated with the nurses in updating the NCPs. All staff members, regardless of whether they had received a professional education, had access to the EHRs and were responsible for writing daily notes in the PNs.

The EHRs utilized at all sites had access to SNCPs with ICNP terminology. It was optional to use such nursing standards in the daily planning and documentation of nursing care in EHRs.

6 Description of the studies

6.1 Study 1

6.1.1 Participants

The substudy included 121 records of residents living in special dementia care units in seven Norwegian public nursing homes within three municipalities in southern Norway. Inclusion criteria were (a) all residents currently living in special care units for older adults at (b) a public nursing home that (c) had access to the EHR system that supported documentation of nursing care according to the NP. Nursing documentation in this substudy constitute assessment charts, NCP templates, PNs, and the life story of the resident.

6.1.2 Data collection

Data from the records were retrieved from a retrospective period of 3 months prior to the collection day (day of printout). Background characteristics, such as age, gender, dementia medical diagnosis, and length of stay, were collected from the main card. Information from other institutions and physician reports was not reviewed. The printouts were performed by the quality improvement-coordinating nurse on site in accordance with written instructions developed for the study (Appendix 3). To provide a rich context description of the setting, a multiple-choice questionnaire was filled out by the unit nurse manager (Appendix 4).

6.1.3 Data analysis

A content analysis with a deductive approach was employed in this substudy, utilizing PCC literature as the theoretical structure for the dementia care context. The theory related to the elements of the NP was utilized as a theoretical structure for the documentation process. The analysis was carried out in a stepwise manner by the PhD student and her main supervisor. First, we identified whether the life stories of the residents and assessment charts were registered in the nursing records (yes or no). Then, whether the identified assessment charts contained information related to the PCC categories (yes or no). Thereafter, relevant NDs were identified in the NCPs and sorted into PCC categories. In the identification and organization of PCC information, we followed an extraction guide (Appendix 5). The extraction guide was based on PCC theory and supported the selection of relevant expressions and statements from the residents' records. The extraction guide was developed for and utilized in organizing the recorded content into the following PCC categories: identity, comfort, inclusion, attachment, and occupation.

Finally, information connected to the identified NDs was tracked throughout the care plan and PNs and subsequently given a score of 1–5 for comprehensiveness utilizing a modified form of the Comprehensiveness In Nursing Documentation (CIND) scale (Appendix 6). To assess and describe the comprehensiveness of the content, specific NDs (current or potential resident needs or problems) related to the PCC categories were reviewed utilizing the CIND-scale. All scores were transferred to SPSS version 25 (IBM Corp., Armonk, NY, USA) for descriptive analysis.

Joint reviews and discussions were utilized in the analysis process for training purposes and for securing data quality, such as consistency, accuracy, and timelessness (O'Connor & Joffe, 2020; Vassar & Holzmann, 2013). The PhD student first identified and organized the PCC-NDs into two records and evaluated the comprehensiveness of the recorded information for training purposes. Then, the PhD student and main supervisor individually performed the same procedure in five new records and then compared and discussed the identified information and the organization into categories. Differences in the comparison and discussions concerned judgments about what constitutes a ND, which interventions could be considered planned and implemented, and what constitutes an expected outcome or goal. The process of reflection and discussion resulted in agreement about how to sort information into different categories for further analysis. At this point, the decision rules for further review were determined to clarify conflicting interpretations. Thereafter, the PhD student and main supervisor individually reviewed 12 new records, following the same procedure based on previous discussions and decisions. The individual review was followed by compartments and face-to-face discussions to further clarify the discrepancies. Finally, the PhD student included all the records used for training and validation purposes ($N = 19$) in the data analysis.

6.2 Study 2

6.2.1 Participants

This substudy included 12 nurses working in special dementia care units in three different nursing homes within three municipalities in Southern Norway. Inclusion criteria were (a) RNs with more than two years of experience, (b) RNs with documentation skills at an expert level and (c) had access to an EHR system that supported the documentation of nursing care according to the NP.

The participants' ages ranged from 25–58 (mean 40.6) years, and their clinical experience as nurses ranged from 2–32 (mean 11.7) years. Two of the participants had special education in dementia care, and 10 of them had more than 5 years of clinical experience working with patients suffering from dementia. Seven of the participants ranged their experience of documenting nursing in EHRs of residents living with dementia at an expert level (5 years or more). All 12 participants had responsibilities for the development and follow-up of NCPs and daily documentation of nursing in the EHRs.

6.2.2 Data collection

Data collection was performed based on the method and process described in the think-aloud (TA) protocol (van Somren et al., 1994).

All 12 TA sessions with each nurse were conducted in the respective nursing homes and in an office with only the participant and the PhD student present. The TA session started with the PhD student explaining the purpose of the study, the method for personal data protection, and the principles of the TA method. In addition, each participant had a few minutes of training on verbalizing thoughts when solving a task on the Internet.

Interruptions and corrections were avoided during the session; however, if participants paused while speaking out loud for more than 30 seconds, they were asked to "keep on talking." Other interruptions that occurred frequently were residents or colleagues entering the room or a telephone ringing. Each TA session was audiotaped with a digital recorder and transcribed verbatim by the PhD candidate. The audiotape was paused if interruptions mentioned above occurred.

The documentation period was between 22 and 60 (mean = 44) minutes. To provide a rich context description, the nurse filled out a questionnaire (Appendix 7).

6.2.3 Data analysis

The collected data were analyzed using a stepwise verbal protocol analysis to explore the participants’ clinical reasoning process. To support the analysis of the verbal protocols, coding schemes based on the attributes of clinical reasoning in nursing and the steps in the nursing process were developed to capture the participants’ verbalized thoughts (Appendix 8 and 9).

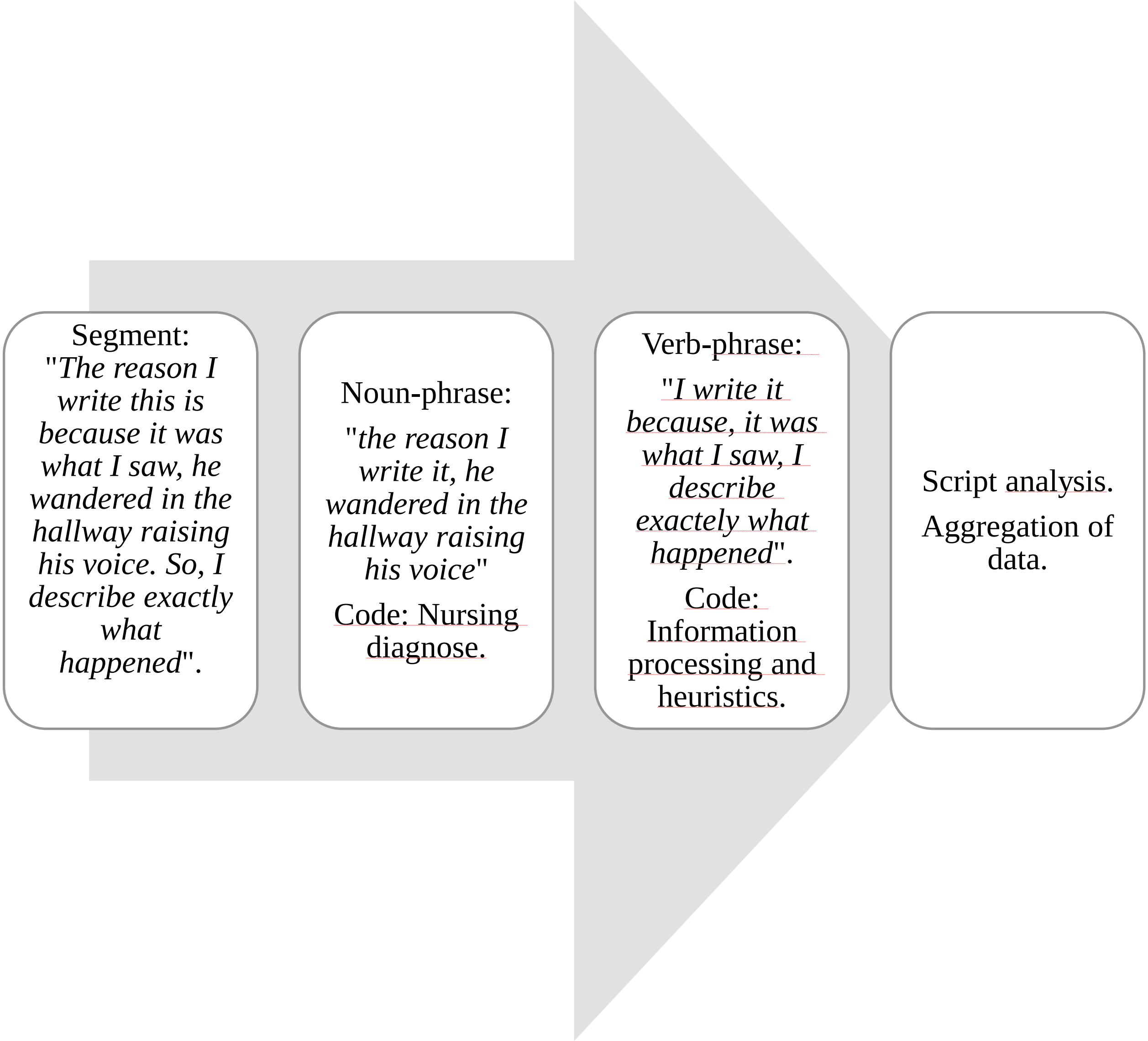
The first step of the analysis included listening and transcribing each TA session followed by reading the transcribed text to obtain a broad sense of meaning. To facilitate further analysis, the text was divided into segments that represented the natural phrases in the participants’ speech. Furthermore, the analysis was performed in three steps (Funkesson et al., 2007; Johnsen et al., 2016; Simmons et al., 2003).

I) Referring phrase analysis: All nouns and noun phrases that the participants focused on within each segment during clinical reasoning were identified and coded according to the NP.

II) Assertional analysis: Positive statements or declarations the participants made related to documentation within each segment were identified and coded according to the attributes of clinical reasoning explained by Simmons (2010).

III) Script analysis: In this step, the data from the segments were aggregated into episodes to provide an overview of the reasoning process in relation to the nursing process and the attributes of clinical reasoning.

Figures 1a and 1b illustrate the stepwise process of coding and analyzing.



Segment:
"*The reason I write this is because it was what I saw, he wandered in the hallway raising his voice. So, I describe exactly what happened*".

Noun-phrase:

"*the reason I write it, he wandered in the hallway raising his voice*"

Code: Nursing diagnose.

Verb-phrase:

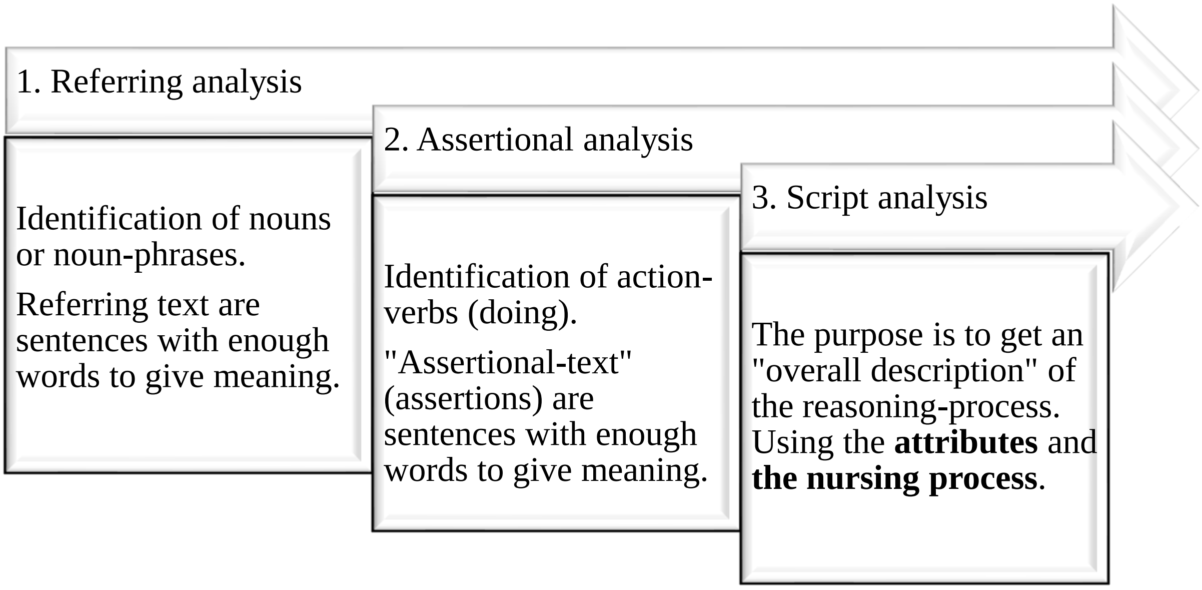
"*I write it because, it was what I saw, I describe exactely what happened*".

Code: Information processing and heuristics.

Script analysis.

Aggregation of data.

Figure 1a. Example of identification of noun-phrase and verb-phrase from a segment/episode



1. Referring analysis

Identification of nouns or noun-phrases.

Referring text are sentences with enough words to give meaning.

2. Assertional analysis

Identification of action-verbs (doing).

"Assertional-text" (assertions) are sentences with enough words to give meaning.

3. Script analysis

The purpose is to get an "overall description" of the reasoning-process. Using the **attributes** and **the nursing process**.

Figure 1b. Practical information about what to do in the stepwise verbal protocol analysis in the Think Aloud study

6.3 Study 3

6.3.1 Participants

This study included 14 nurses employed in special dementia care units in five different nursing homes within three municipalities in Southern Norway. Inclusion criteria were (a) nurses with a bachelor’s degree in nursing, (b) currently working in a special dementia care unit, (c) over two years of experience working with patients living with dementia, (d) over two years of experience documenting nursing care in EHR of patients living with dementia, and (e) access to EHR, including nursing standards..

6.3.2 Data collection

All the participants were interviewed individually, utilizing a semi-structured interview guide (Appendix 10). The participants’ clinical experience working as a nurse ranged from 2–35 years, and their clinical experience working with residents suffering from dementia ranged from 2–34 years. Seven participants had been working for 5 years or more in their respective units. Ten of the participants had more than 5 years’ experience documenting nursing care in the EHRs of residents living with dementia.

All 14 interviews were performed face-to-face at the respective nursing homes during the daytime shift in an office with only the participant and the PhD student present. The interviews were facilitated as one-to-one interviews utilizing open-ended questioning to stimulate the nurses to talk about their experiences, views, and beliefs concerning the utilization of SNCPs with SNL in the EHRs of patients living with dementia in nursing homes. The semi-structured interview guide's questions covered topics such as the nurses' daily documentation practices in the EHR in general, when care plans were developed manually, and when SNCPs and SNL were utilized. Comments were made in response to the participants' answers to probe for clarifications or explorations, such as "tell me more about … " or "could you elaborate … "

Each interview was audio-recorded with a digital recorder and transcribed verbatim by the PhD student.

6.3.3 Data analysis

Data were analyzed utilizing reflexive thematic analysis following a deductive orientation to generate patterns of shared meanings through the following six steps: 1) becoming familiar with the collected data, 2) developing or producing codes, 3) generating initial themes, 4) reviewing and developing themes, 5) refining, defining, and naming themes, and 6) producing the report (Braun & Clarke, 2019, 2021, 2022). The collected data were analyzed manually with the active role of the PhD candidate in the development of themes.

Initial familiarization with the data started during transcription, forming early ideas for the analysis. Reading each transcribed interview text carefully generated initial ideas about what was interesting about the data.

Codes were produced by identifying and labeling features in the text concerning the participants' experiences and perceptions of utilizing nursing standards in the EHR for the planning and documentation of nursing care. During the coding process, the codes were sharpened or expanded to capture depth and possible shared meanings. The coding continued until no additional meaningful units were identified.

Initial themes were generated by sorting the different codes into potential themes and collating the coded text within the themes. During this phase, the potential themes were explored using thematic maps. Additionally, the identification and interpretations of subthemes were performed by reflexive discussions between the PhD candidate and the mentors.

In the next step of the analysis, the candidate's themes were reviewed and developed through rereading the coded text, considering whether the collated extracts of data for each theme formed a meaningful pattern of shared meaning. During this phase, considerations were made for those extracts that did not work in already existing themes to either create new themes or discard the extracts from the analysis. Figure 2 displays the development of a theme and subthemes with an example of a coded text.

During the fifth step, the themes were further developed by refining, defining, and naming each theme, capturing the essence of shared meaning in each theme based on the extracts across the dataset. In the final step of the analysis or write-up of the report, the emphasis was on going beyond describing the data and creating a narrative utilizing extracts as examples in relation to the research questions (Braun & Clarke, 2022).

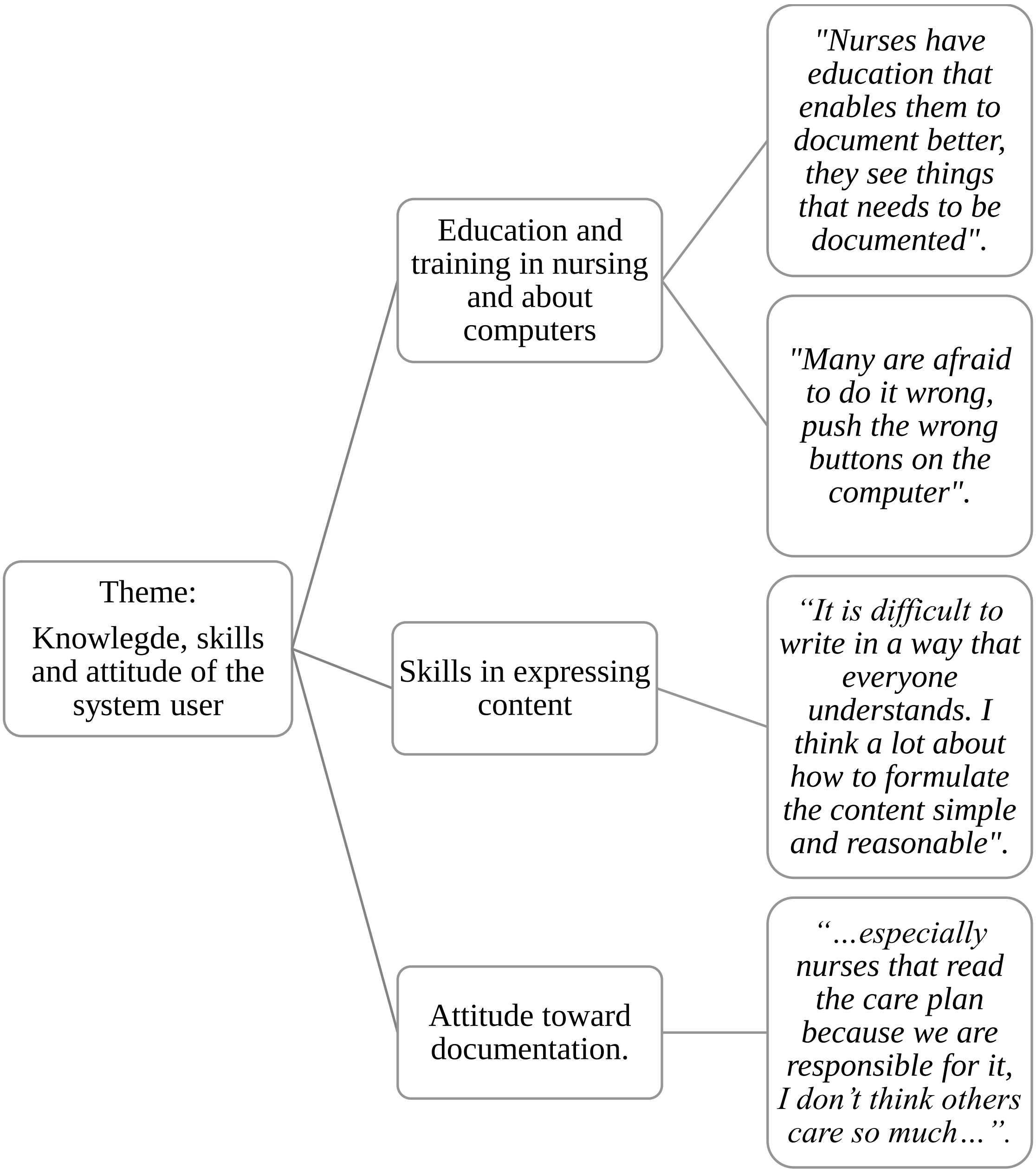


Figure 2. Development of theme and sub-theme from coded text in reflexive thematic analysis

6.4 Ethical considerations

This PhD project contends that overall, ethically, strategic decisions regarding ethical reflexivity were made. In addition, the PhD student performed continuous systematic and ethical reflexivity along with the project's different phases as needed (National Research Ethics Comittees, 2019).

6.4.1 Formal ethics

In accordance with norms for conducting healthcare research, approval was sought before recruiting participants, investigating the patient records in Substudy 1 and observing and interviewing participants in Substudies 2 and 3. The Regional Ethics Committee for Medical Research (REK) and the Norwegian Center for Research Data (NSD) considered the PhD project. The NSD considered and approved the substudies (NSD; reference number: 61364, Appendix 11). However, as no verbal data were to be collected directly from the patients in the three substudies, the REK considered the PhD project not to be within the scope of the Norwegian Health Research Act, and approval was deemed unnecessary (REK; reference number 2018/1158 A, Appendix 12). Additionally, the local Faculty of Ethics Committee (FEK) at the University of Agder approved the project (Appendix 13). Furthermore, the project adhered to the General Data Protection Regulation (EU, 2016).

6.4.2 Ethical considerations in the research field

There are ethical considerations related to researching people in potentially vulnerable situations. Schrems (2014) argues that the researcher has a responsibility to reduce the risk of abuse or exploration, as the need for healthcare and the associated dependency make people exceedingly vulnerable. Research conducted in the LTC dementia context raises concerns regarding the design of informed consent and the application of risk-benefit considerations (Götzelmann et al., 2021; Lam et al., 2018).

To recruit appropriate participants for all three substudies, the PhD student required help from the chief administrative of the local government in the municipalities to identify appropriate nursing homes. Additionally, help was required from the head manager in the nursing home to identify unit managers (often nurses) who could assist in the recruitment of participants at the unit level. They all contributed to gaining access to valuable participants and not disclosing details of patients or nurses in the dementia LTC service (Lam et al., 2018).

All the participants in the three substudies were approached by the nurse unit manager, who provided written and oral information about the specific substudy before data collection started. The information included the right to withdraw their consent at any time without any negative consequences regarding their stay and healthcare in the nursing homes (Substudies 1 and 2) and their work at the nursing homes. Additionally, the information letters guaranteed confidentiality and emphasized learning and not control as motivators for the research activity (Appendix 14–19).

In Substudy 1, written consent was collected for the allowance of the PhD student to review the information on the patients' records. Consent from the patients' next of kin was collected in situations where the patients' cognitive impairment hindered their consent. This contributed to the protection of the patients and the inclusion of patients suffering from dementia in the research (Götzelmann et al., 2021). In Substudy 2, written consent was collected both from the participants, and the patient or their next of kin, allowing the PhD student to observe during the nurse's documentation in the patient's EHR. In Substudy 3, the PhD student obtained oral consent from the participants by phone to minimize feelings of pressure to participate in the study (Lam et al., 2018). Written consent was collected on the interview day by the PhD student to avoid delays in postal delivery (Paper 3).

Considerations were taken to frame the research environment as safe and to ensure the participants' integrity and anonymity. To secure patient confidentiality in Substudy 1, a local nurse assisted in printing patient information from the computer. To accommodate time constraints and support the printing, if needed, the PhD student was present in the nursing home during the printing. Furthermore, all identifiable information about the patients was removed manually from the text by the PhD student before the printouts were removed from the nursing home. The printouts were stored in a chest of drawers made of steel and locked with a key in a locked office at the university (Paper 1). To further secure patient confidentiality, Substudy 2's participants were instructed to avoid mentioning identifiable information about the patients during the TA session. Nevertheless, identifiable information about the participants was excluded during the verbatim transcription in both Substudies 2 and 3 (Papers 2 and 3). All identifiable information about the participants in all three substudies was removed from the published reports (Papers 1–3).

To provide a relaxed and safe environment for the participants, the PhD student started each TA and interview session started with small talk. Furthermore, the PhD student emphasized that the purpose of the following observation or conversation was to learn and not to control. In this regard, it was highlighted that the participants' experiences and knowledge were essential to this project (Papers 2 and 3). This approach was an attempt to equalize the power between the participant and the PhD student and increase the participants' trust and confidentiality. Being physically present in the participants' daily environment during the data collection processes in all three substudies provided the PhD student with valuable contextual information that might have increased the opportunities for a more holistic understanding of the participant's perceptions and experiences. However, the PhD student's presence might, on the other hand, have altered the natural behavior of the participants, affecting the responses. This should be considered when reading the findings of this PhD project (Rose & Johnson, 2020).

During the TA session in Substudy 2, I sat within 1–1.5 meters from and slightly behind the participants to avoid feelings of pressure and unnecessary disturbance. During the interview process in Substudy 3, I provided an open posture, appropriate facial expressions, and good eye contact with each participant to facilitate a confident and attentive approach (Papers 2 and 3).

The qualitative research literature appears to reflect a consensus about the need for researcher reflexivity during the research process (Morse, 2018; Rose & Johnson, 2020). My reflexivity in this PhD project is discussed thoroughly in chapter 6.1.1.

7 Findings

The findings of this PhD project are presented in Papers 1–3 (Appendices 19–21). In this section, I introduce a summary of the findings from each substudy. At the end of the section, a summary of all three substudies is provided.

7.1 Study 1

Substudy 1 described the content and comprehensiveness of nursing documentation in 121 EHRs of patients living with dementia in nursing homes (Paper 1).

7.1.1 Characteristics of the participants

The record owners (patients) were mainly women (*n* = 87). The mean age of the residents was 84 years (standard deviation = 8, range 64–100), and the mean length of stay was 28 months (standard deviation = 25.7, range 1–100).

A dementia medical diagnosis was recorded in 86 (71%) of the records; however, 52 (61%) of the recorded diagnoses were not specific and lacked a description of which type of dementia the resident suffered from (e.g., *P70: Dementia*).

7.1.2 PCC-related content in the nursing documentation

One hundred (82.6%) of the reviewed records had an assessment chart containing information related to PCC; however, the life story of the patient was registered only in 19 (15.7%) of the reviewed records.

Further results from the record review revealed that there was PCC content related to the PCC categories in 104 (86%) of the reviewed records. Within these records, 372 NDs related to the PCC categories were identified. The identified NDs across all PCC categories were commonly written without proper descriptions of signs and symptoms, and the content was mostly related to pain, behavior, activity, and family matters (e.g., *the patient has pain*, or *the patient is restless*).

Variations in recorded PCC content were found across all categories, showing that NDs in the identity category (35%) were most frequently documented, while the inclusion category (7%) was infrequently recorded in the nursing documentation. Table 3 displays the total PCC NDs identified within each category.

Table 3. Comprehensiveness In Nursing Documentation (CIND) related to nursing diagnoses (ND) expressing PCC (*N* = 372)

	Comprehensiveness					
	Score 1	Score 2	Score 3	Score 4	Score 5	
PCC-ND* frequency						Total NDs
Identity	14	34	44	36	1	129
Comfort	9	28	13	32	0	82
Inclusion	3	12	3	8	1	27
Attachment/belonging	6	16	20	24	1	67
Occupation	4	17	32	14	0	67
Total score comprehensiveness	36	107	112	114	3	

*PCC-ND = person centered care-nursing diagnose

7.1.3 Comprehensiveness of PCC-related content

The recorded information had variations in comprehensiveness, showing that the elements of the NP were insufficiently documented. The PCC-NDs and corresponding planned interventions were commonly stated in the care plans, followed by a stated effect of the planned interventions. These statements were often written as an observed effect of the interventions (e.g., *the patient was calm after medication*).

Furthermore, the analysis revealed that evaluations of delivered care were seldom recorded based on the patients' perceptions and experiences, and only three identified NDs across the PCC categories received a CIND score of 5. Most of the identified NDs received CIND scores of 3 or 4, meaning that the patients' need for nursing (the ND) and corresponding nursing actions (the NIVs) were stated in the NCP or additionally implemented (recorded information related to completion of the stated action), and that the outcome of the stated and completed action (nursing) was recorded. Table 3 displays the total comprehensiveness score within each category. Table 4 shows an example of CIND scoring with the data extract.

Table 4. Nursing process elements and CIND* scores explained with identified data extracts

Elements in the NP**	CIND score	Example of identified NP statements	Example of data extracts	Explanation of CIND score
Stated nursing diagnoses	1	“Needs assistance in managing own behavior”	[1] “Needs assistance in managing own behavior,” **and** [2] “One-on-one follow-up at signs of agitation,” **or** [3] “The resident has been agitated today. They received one-on-one follow-up,” **and** [4] “without any effect.”	The problem is described, ***and*** intervention planned ***and*** implemented, ***and*** nursing outcome is recorded (= CIND score of 4).
Nursing intervention planned	2	“One-on-one follow-up when signs of agitation”		
Nursing intervention implemented	3	The patient has been agitated today. Have received one-on-one follow-up …”		
Nursing outcome recorded	4	“… without any effect”	[1] “Needs assistance in managing own behavior” **and** [2] “One-on-one follow-up when signs of agitation” **and** [3]“The resident has been agitated today. They received one-on-one follow-up **and** [4] without any effect.”	
Evaluation of delivered care based on patient experiences = CIND score of 5	5	None identified		

*CIND = Comprehensiveness In Nursing Documentation, **NP = Nursing process

7.2 Study 2

The first two steps of the protocol analysis in Substudy 2 identified 1,404 verbalized thoughts from participants concerning the planning and documentation of nursing care in the EHRs of residents living in special dementia care units. The findings in this substudy are presented according to the different steps of the analysis (Paper 2).

7.2.1 Findings from the referring phrase analysis

The referring phrase analysis revealed that participants focused on all the elements of the NP and that they moved in a non-linear way between the elements when reasoning about planning and documenting care.

The most focused elements were *assessment*, *interventions* (planned or implemented), and *evaluation focusing on information exchange*. The participants mostly concentrated on evaluations of what information to exchange and how to formulate it. The elements *of diagnosis* (nursing problem) and *planning* (of goals or outcomes) received the least focus in the nursing process. The elements of the nursing process are presented in Table 5 with examples of verbal data.

Table 5. Nursing process elements identified from referring phrase analysis with examples of verbal data

Nursing process element	Examples of verbal data
Assessment	"… has problems with elimination, therefore, it is important to write about." "… appeared very happy today, and I will report that."
Diagnosing	"... I enter the problem, 'At risk of nutritional problem,' and it is well justified in the notes that he has had weight variations during the last year …"
Planning	"...the goal is normal BMI, because the resident is slightly overweight …"
Implementation	"… I am reporting an intervention concerning appropriate documentation about nutrition. We are only documenting if he is not eating …"
Evaluations	"….then he was calm and didn't notice that I was doing something else, then we know that is the way to do it …"
	"… I don't write all that, it is explained in the intervention what we are supposed to do …"

7.2.2 Findings from the assertional analysis

The assertional analysis revealed that all the clinical reasoning attributes were used by participants during their care planning and documentation processes; however, *intuition* was only identified once. The most frequently used attributes were *information processing, awareness and perception,* and *inference*. The clinical attributes are presented in Table 6.

Table 6. Clinical reasoning attributes identified from assertional analysis with verbal data

	Examples of verbal data
Clinical reasoning attributes	
Analysis	“… the resident was at risk of impaired nutrition in an earlier stage, and it has been a problem, but he eats well now and is no longer at risk; therefore, we don’t document on nutrition every day.”
Deliberation	“To make sure that her weight is stable, we measure it every month, or at least every other month. She is stable in weight now and has gained a little weight, so it is not necessary. But this measure looks a bit old…”
Heuristic	“I think it is difficult to claim that the patient is angry because it isn’t certain that he was angry. Maybe that is his way of being. I try to write what I experience or see and justify why I experienced that. I can write that he raised his voice; that is more objective.”
Logic	“… I write an intervention concerning appropriate documentation of nutrition. We only document it if he is not eating …”
Inference	“This seems updated and relevant, but very long. I don’t think I should remove anything here. I think this is good.”
Metacognition	“… it is difficult to know how to write because I don’t like to use numbers when I document because it all depends on how the resident’s day has been, but I will write …”
Awareness and perception (cognition)	“Sometimes she sits in her room to eat, and sometimes she sits in the living room. Today, she sat in her room for breakfast and in the common area for lunch, and she ate well. I will document this.”
Information processing	“… I look through the nursing care plan to remind me of anything else I should document today; I usually start at the top.”
Intuition	“… that is why I can say this, I know this resident well, he is one of my residents, and I know how much he eats at every meal. I have observed it during the last three weeks.”

7.2.3 Findings from the script analysis

The script analysis showed that the participants combined elements of the NP and clinical reasoning attributes during care planning and documentation in the EHRs. Additionally, they moved back and forth between the NP elements, utilizing a variety of cognitive processes. All combinations are presented in Table 7. The three most frequently used combinations were *assessment and intervention*, *assessment and evaluation*, and *intervention and evaluation*.

Table 7. Combinations of elements in the nursing process and clinical reasoning attributes derived from script analysis

		Examples of verbal data (episodes)
Combination of nursing process elements	Combination of clinical reasoning attributes	
Assessment and Information-exchange	Information-processing Cognition Metacognition Heuristics Deliberation Inference	“There has been a problem related to the resident who wouldn’t get up this morning and that is not normal. The nightshift wrote that she slept well during the night, but I don’t know if she was wandering or something. I must be objective and write only what happened today. I will choose Night Sleep to write the report in. I could choose Cognitive Impairment, but I don’t know why she refused to get up. It is hard to know.”
Assessment and Evaluation and Information-exchange	Information-processing Cognition Metacognition Heuristics Deliberation Inference	“Usually, the resident eats well. He normally comes to the common area to eat together with the other residents. He ate well today, but he has had a problem with a low intake of nutrition lately, so it might be good to write how much and what he ate today. He got himself a cup of coffee, but I will not write anything about that because it is normal that he gets his own drinks.”
Assessment and Implementation and Information-exchange	Information-processing Cognition Logic Deliberation Inference	“We have talked about removing his phone because it can cause him great distress. We chose to wait for the intervention. I think it is especially important that I document this decision because we continuously work with this particular problem, and it can have an impact on the resident’s feelings. It is very important that I get this right.”

Implementation and Information-exchange	Information-processing Cognition Logic Inference	“I write the intervention on the workplan because I am not at work tomorrow. That way, I will not forget to contact the daughter. If I write it on my nursing list, it will appear on my list when I am back at work.”
Implementation and Evaluation and Information-exchange	Information-processing Cognition Logic Deliberation Inference	“We have reduced the medication for this patient, and it has not worked. It is not important that I do anything about that today, because I should create proper documentation of whether the reduction has worked for the resident. I quickly read through and confirmed that what I have observed is confirmed, and I will address this when I return to work. I think it is challenging for the assistants to know what to do in this situation, and I think it is important that I document it in a way that they understand that I have seen the problem and that I plan to do something about it.”

7.3 Study 3

The overall analysis in this substudy generated four themes: knowledge, skills, and attitude of the system users; management and organization of documentation work; usability issues of the EHR; and nursing standards in EHR contributing to the development of documentation practices (Paper 3). Findings from this study will be presented in accordance with the developed themes. Figure 3 displays an overview of the themes and subthemes developed during the analysis.

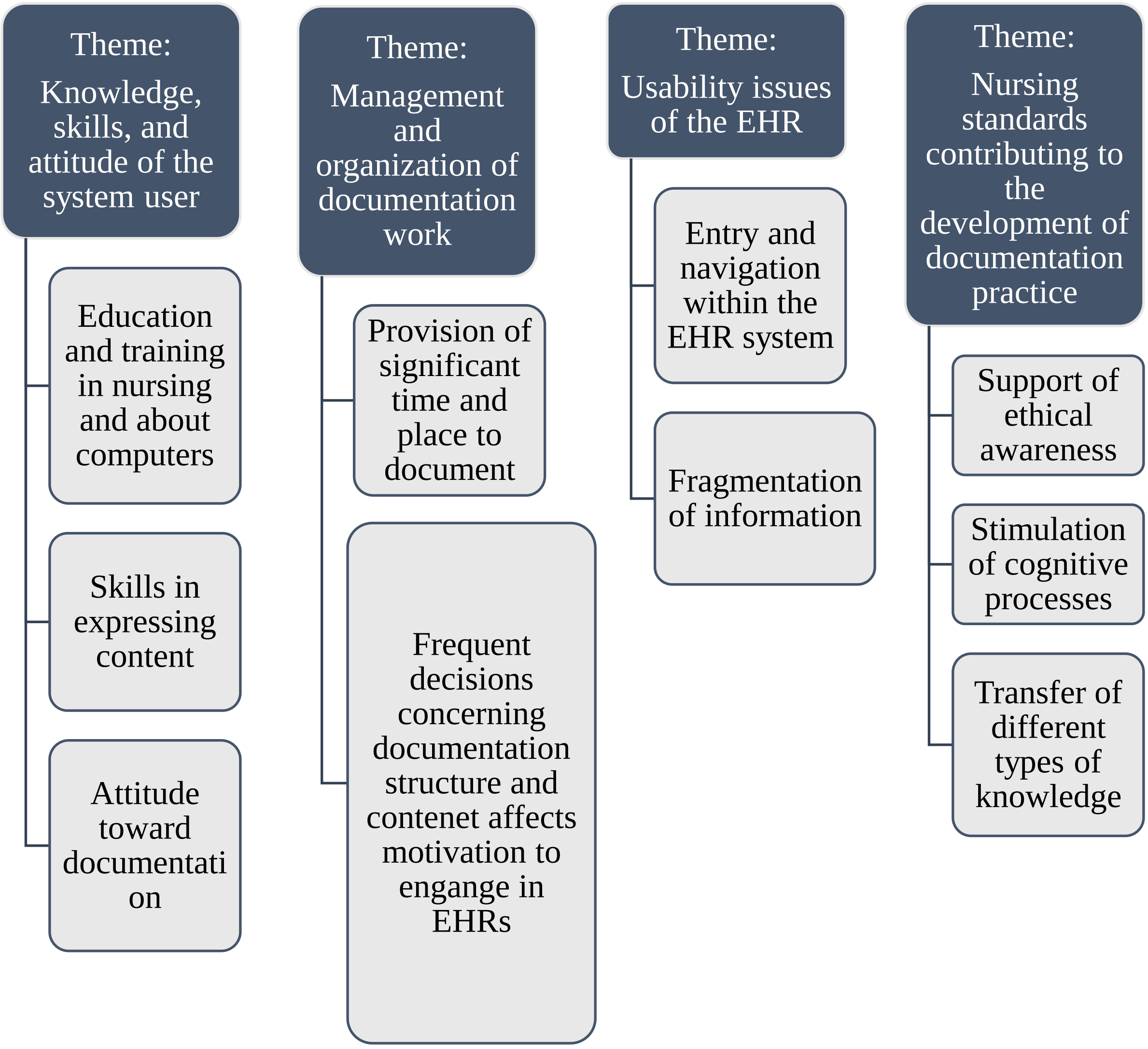


Figure 3. Overview of themes in Substudy 3

7.3.1 Knowledge, skills, and attitude of the system user

Professional, ethical, and digital knowledge, skills, and attitude were viewed by the participants in this study as highly influential on daily care planning and documentation processes. To secure updated information and safe follow-up of patients, professional education and training in both nursing and technology is important for quality care planning and documentation in EHRs of patients living with dementia, according to the participants.

Further, the participants viewed the responsibility of every person working with the patients as central to continuity of care and patient safety. To secure information flow, it was viewed as important that everyone involved in the daily care of the patients read the nursing documentation. Lack of computer skills often led to avoidance in recording relevant information, according to the participants. Additionally, the participants perceived it as challenging to express content to secure understanding “of everyone” and not offend the patients with their words, especially concerning psychosocial aspects of care.

7.3.2 Management and organization of documentation work

The participants perceived local management and regulations concerning documentation work as central to their documentation workflow. Several of them talked about a lack of time, an appropriate place for quality checks of the NCPs, and completing their documentation in the EHR. The participants especially talked about the many interruptions during daily documentation work, such as patients or colleagues asking questions or simply wanting to have a conversation.

Frequent decisions made by local leaders concerning daily documentation in the EHR often lead to confusion about what and how to document, according to the participants. Several mentioned that frequent decision-making by local leaders without the involvement of the nurses who performed daily documentation affected their engagement and commitment in daily EHR care planning and documentation.

7.3.3 Usability issues of the EHR

The participants in this substudy commonly perceived it as positive that the EHRs could store historical information about the patient, which was helpful for continuity of care. However, accessing, managing, and finding relevant information were viewed as limitations of the system, causing poor care planning and time-consuming documentation work. The participants especially talked about frustrations concerning double documentation and the fragmentation of information.

Further, the participants felt a need to document information outside the EHRs, both oral and written, for simplicity, avoidance of misunderstandings, and remembrance of daily tasks or patient appointments. Several of the participants talked about a paper book or binder where they noted tasks, such as “taking the blood pressure” or patients’ dentist appointments.

7.3.4 Nursing standards in EHR contributing to the development of documentation practices

The participants perceived nursing standards as important for the development of high-quality planning and documentation of nursing in EHRs. The participants particularly talked about the benefits of standard text regarding support in treating the patient and their relatives with respect and honor by securing objectivity in the EHR content.

Another benefit that several of the participants mentioned was the ability of nursing standards to stimulate their cognitive processes relating to creativity and memory. Several of the participants expressed that nursing standards could be helpful in ensuring that relevant information was documented. This was often mentioned concerning tips of important NDs, especially regarding psychosocial needs, which several of the participants said were difficult to remember and formulate in free text.

Several of the participants expressed that nursing standards could enable the development of good care plans. Additionally, the participants perceived nursing standards as beneficial in transferring different types of knowledge, such as professional, practical, and personal knowledge. Overall, the participants were positive about nursing standards in the EHRs, although most worried that the ability of critical thinking could be imposed by utilizing nursing standards. In this regard, almost all the participants mentioned the importance of the option to write descriptions “in their own words” below the standardized term or phrase in the SNCP to preserve individualized and personalized care planning and documentation in patients’ records.

7.4 Summary of findings

Overall, the PhD project shows that the care planning and documentation of nursing in the EHR involves complex processes involving the patient, nurse, environment, and technology.

The PhD provides insights into what and how nursing information is planned and documented in the EHR of patients living with dementia in nursing homes. More specifically, how content is expressed and recorded in the patient's EHR relating to PCC and the NP. Furthermore, insights into how dementia care nurses' reason and make decisions during care planning and documentation of nursing in the EHR are provided. More specifically, how, and which cognitive processes the nurses utilized during planning and documentation work relating to specific attributes of clinical reasoning and the NP. Insights into dementia care nurses' experiences and perceptions concerning EHR documentation practices utilizing nursing standards were also revealed. In addition, insights concerning the utilization of the EHR, including SNCPs with SNL, in daily care planning and documentation work were highlighted.

8 Discussions

8.1 Discussion of findings

The aim of this PhD project was to gain knowledge and understanding of nurses' care planning and documentation processes in EHRs of patients living with dementia in nursing homes.

The PhD project highlights the paradox of EHRs' intention to streamline practice, which often also intensifies and disrupts work for frontline dementia care practitioners. This is consistent with STS theory, which recognizes successful change as a process requiring consideration of the interrelated relationships of the environment, people, and machines (Sittig & Singh, 2010). Context plays a crucial role in nurses' planning and documentation of nursing, as context directly influences the assessment, decision-making, and implementation of nursing interventions. Furthermore, the PhD project highlights how dementia care nurses' understanding influences the utilization of EHRs. This is consistent with IPT theory, which recognizes that the human understanding process is responsible for assimilating the stimulus that poses a problem (in this case, care planning and documentation in the EHR), and for then producing mental information structures (cognitive processes) that constitute a person's understanding of that problem (Taylor, 2000).

8.1.1 Expression of PCC content

Findings in this PhD project show that expressions of PCC content in EHRs are perceived as important but challenging for nurses in the dementia care settings. Nursing content needs to express the patient's actual condition to advance the planning and evaluation of care to safeguard the patient. Although Substudy 1 demonstrated that PCC content was present and structured, shortcomings in the expression of this information in an adequate and accurate way were evident. Such shortcomings included a lack of content containing psychosocial aspects of patient care and incomplete documentation of such information according to the elements in the NP. In Substudy 1, PCC content varied, with little focus on the basic psychosocial needs and experiences of the patients. Additionally, this substudy revealed insufficiencies regarding the documentation of the patients' experiences. In Substudies 2 and 3, the nurses experienced struggles concerning the formulation of information related to the patients' feelings and behavior, especially concerning the creation and formulation of the patients’ problems and setting goals.

The lack of expression in the content relating to psychosocial aspects of care demonstrated in this PhD project corresponds well with the results from the reviews by Buus and Hamilton (2016) and Wang et al. (2011); they found that nursing documentation has a predominance of biomedical content. Previous studies, such as those by Heckemann et al. (2022), Karlsson et al. (2013), and Laitinen et al. (2010), revealed that written expressions in patients’ records were mostly focused on the medical and physical aspects of care. In their audit of records for patients living with dementia at the end of their lives, Høgsnes et al. (2016), found that psychological and existential needs and assessment barely existed and that issues in relation to the physical health of the patient, such as respirational, pain, and gastrointestinal signs, were prominent. A recent study (2020) describing the content in care plans relating to the NPS of patients living with dementia in nursing homes revealed that the care plans did not contain information regarding the personal characteristics, preferences, or interests of the patient (Sefcik et al., 2020). If nurses emphasize physical information over psychosocial information in their documentation practice, the communication and exchange of patient information might not reflect the person as the recipient of care. This could in turn have a negative impact on the outcome of care provided to the patient, such as a depersonalization of care and decreased well-being of the patient (Karlsson et al., 2013; Molony et al., 2018).

Moreover, this could also highlight a deeper problem: the conflicting goals of PCC and the current bio-medically oriented healthcare system (Feo & Kitson, 2016). The bio-medical system aims to enable a functional life (i.e., a focus on symptom management), while PCC focuses on a meaningful life (Fazio et al., 2018; Håkansson Eklund et al., 2019). This could have implications for EHRs. If the patient’s psychosocial needs and personal strengths and capacities are overshadowed by a problem-oriented perspective in the EHR, expressions of PCC content would be less visible, leading to a lack of focus on PCC for the planning and documentation of nursing (Rosenbloom et al., 2011; Rotegaard & Ruland, 2010). An increased focus within the EHR system on content relating to PCC might enable a more informative and meaningful recording of nursing, which could promote increased discourse concerning the patient’s psychosocial health and well-being in the healthcare team (Heckemann et al., 2022; Sittig & Singh, 2010).

The findings of this PhD project highlight nurses’ awareness of their ethical responsibility when documenting care in the EHR. Protection of the patient’s dignity and honest recording of information were emphasized by the participating nurses in Substudies 2 and 3. Such findings are supported by recent research showing that fair information practice in regard to doing good for the patient’s benefit and not harming the patient are central ethical issues in healthcare professional’s utilization of EHRs (Afzal & Arshad, 2021; Jacquemard et al., 2020). Moreover, both reviews suggest further attention to the importance of addressing the accuracy of EHR data to promote a safe and responsible sharing of information in EHRs (Afzal & Arshad, 2021; Jacquemard et al., 2020), which underscores the importance of the ethical issues found in this PhD project.

Knowing which words and phrases to utilize without “offending” or “harming” the patient or their relatives (Substudy 3) was not always obvious to the participants, according to this PhD project. Similar findings are reported in Engen et al. (2020), who found that choosing the right words in documenting mental health issues could be a balancing act between achieving accuracy and completeness in the documentation and maintaining the dignity of the patient. Jørgensen and Kollerup (2022) found that nurses in a hospital setting experienced several ethical issues when documenting nursing, including respecting the patient and not cause harm to the patient. The choice of words to record in NCPs or elsewhere in the EHR can invoke emotions in the individual who is reading or even thinking about the words. In this regard, language and words entered into EHRs can alter the perceptions of future readers of the patient’s documentation (Martin & Stanford, 2020; Rosenbloom et al., 2011). Thus, both nurses and EHRs should adhere to the ethical principles of beneficence and honesty in care planning and documentation processes. This might, in turn, support the way information is handled and processed by nurses and EHRs, which could potentially enable decision-making processes that protect the dignity of the patient (Jacquemard et al., 2020).

The difficulties in choosing the “right” language and words in the care planning and documentation demonstrated in this PhD project might have been influenced by the understanding and implementation of the concept of PCC. According to Matthews et al. (2018), the adoption of PCC in clinical practice requires a deeper shift in personal values and beliefs, as opposed to an acquisition of a new procedural skill. This suggests that proper education and training regarding central concepts pertaining to PCC are required to understand how to formulate and record appropriate words and language in EHRs regarding PCC. Gwernan-Jones et al. (2020), found that inadequate levels of training in PCC among hospital staff were perceived as a major barrier to providing PCC for patients suffering from dementia. Moore et al. (2017), found that professional training and education were highly emphasized by the participants to enable communication in a "PCC way." If nurses in dementia care settings possess theoretical and practical knowledge about PCC, it might help them operationalize central concepts pertaining to PCC and choose the right words or language in the care planning and documentation processes (Moore et al., 2017). Moreover, if nurses in the dementia care settings are familiar and comfortable with concepts pertaining to PCC, it might lead to the development of NCPs that could contribute to flexibility and different strategies in planning and implementing PCC in clinical practice (Surr et al., 2017).

8.1.2 Telling the patient's story

The PhD project highlights that telling the patient's complete story in the EHR extends beyond a chronological account of milestones to offer a narrative account of the patient's lived experiences in everyday life at the nursing home. Findings from the three substudies indicate that narrative recording and thorough descriptions of the patient's past and current condition and care are essential in the care planning and documentation process to enable an understanding of the patient and their context (Finn, 2015; Spasic & Nenadic, 2020). Substudy 1 revealed that the PNs were characterized by detailed descriptions, utilizing natural language, of what had happened during a shift or in a particular patient situation. The participant nurses in Substudy 2 commonly used narrative thinking during their care planning and documentation processes, often writing exactly what they said aloud. In Substudy 3, the participants perceived it as very important to describe the patient's "whole story" through the documentation, including how the patient acted and how the patient "was" during the shift. Additionally, the participating nurses highlighted the importance of descriptions in the NCP of the "little things" that mattered to the patient and descriptions of how to perform care to the patient.

The possibility of creating narrative nursing notes in EHRs of patients living with dementia might enable nurses to pull together events and information in a meaningful way within an environment that is subjectively experienced as well as documenting time-oriented events (Hall & Powell, 2011). Varpio et al. (2015b), argue that narrative notes are fundamental to patient care activities and care planning, as they provide a holistic account of a set of events regarding the patient's care and contain a mixture of beliefs, intentions, actions, and contextual details. This might suggest that descriptive and narrative information is important to record for nurses in the dementia care setting to understand how events of the past unfold chronologically and how this information connects with and informs present and future actions. On the other hand, a narrative text can be time-consuming to enter and not as easily accessed for reviewing (Embi et al., 2013).

According to Varpio et al. (2015b), clinicians' need a sense or cognitive overview of the patients in the EHR. Such a cognitive overview includes an understanding of the history of how the patient got to the current state of health or well-being (alternatively ill-being), parameters of the current status, the procedures maintaining the current status, problem identification, and a plan for changing or sustaining the current status, which resonated with the findings in this PhD project. These considerations can be said to be in line with previous studies in dementia care settings showing that knowledge of the patient and their history enables staff to meet the unique needs of the patient and work proactively in supporting the patient through their daily living (Elfrink et al., 2018; Kolanowski et al., 2015). Therefore, this PhD project suggests that EHRs in the dementia care settings should facilitate a structure that allows the recording and retrieval of "the whole story," both past and present. This might support nurses in synthesizing personal and individualized patient information in their care planning and documentation processes, which in turn might further increase the understanding of the patient and anticipate the patient's trajectory (Varpio et al., 2015a; Varpio et al., 2015b).

The PhD project demonstrates some conflicting findings regarding the inclusion of the patient's story in the care planning and documentation processes, as Substudy 1 revealed a serious lack of the patients' life stories in the EHRs, while such information was perceived as crucial by the participants in Substudy 3 to obtain individualized and personalized care planning. This contradiction could be explained by time pressure or the lack of a designated place to create a holistic PCC plan. On the other hand, life stories in dementia care are developed and created in different ways that require storage elsewhere than in the EHR (Dennerstein et al., 2018; Gridley et al., 2020). Another explanation for the conflicting findings might be that the EHR systems required information-fragmentation in the EHR, “forcing” the nurses to document the life story outside the EHR, or that life story work was not focused on from an organizational level (Varpio et al., 2015b).

8.1.3 Organizing and structure of nursing content

The NP is the recommended framework for organizing and structuring nursing content in EHRs in Norway (Norwegian Directorate of eHealth, 2018b). The NP should be utilized in all sectors where nursing care is provided to the patients to facilitate nurses’ or other healthcare professionals’ easy access to high-quality patient information essential for decision-making (De Groot et al., 2019; Wang et al., 2011). This PhD project shows that, although the EHR was structured according to the NP for care planning and documentation processes, the content was inaccurately and insufficiently recorded in the patient’s EHR (Substudy 1). Moreover, experiences and perceptions of challenges regarding thinking about and formulating nursing care in alignment with the elements of the NP were reported by the participating nurses in Substudies 2 and 3. These findings are consistent with several previous studies regarding care planning and documentation of nursing in EHRs (Akhu-Zaheya et al., 2018; Bail et al., 2021; Thoroddsen et al., 2013; Tuinman et al., 2017; Wang et al., 2011; Wang et al., 2015). Supported by the findings in this PhD project, this implies that difficulties in organizing and structuring nursing content in care planning and documentation is a continuous problem in nursing practice despite the facilitation of NP care planning and documentation in EHRs. An explanation for this continuous problem might be how the nurses understand the NP. According to Zamanzadeh et al. (2015), one of the major factors affecting the documentation process is how nurses understand the meaning of the NP. This is supported by studies such as those of Akhu-Zaheya et al. (2018) and Björvell et al. (2003), who found that challenges in the documentation process were related to the nurses’ understanding of the NP and its elements In a study conducted by Takahashi et al. (2008), the participating nurses reported that difficulties in performing care planning included a lack of theoretical knowledge and practical exercise in the application of the NP.

On the other hand, how well the NP was incorporated in the EHRs utilized in this PhD project might also have had an impact on how the nurses organized the content in the EHRs. This suggestion is supported by a recent literature review (2023), which suggests that the complete NP is not effectively being incorporated into EHRs, which is significantly impacting nurses' ability to make clinical decisions to promote the best patient care outcomes (Hants et al., 2023).

This PhD project highlights nurses' difficulties in creating NDs in the care planning and documentation process. In Substudy 1, the identified NDs lacked explanations regarding what led to the establishment of the ND. In Substudy 2, the participants were highly focused on the assessment and implementation element, while they had very little focus on diagnosing and setting patient goals (prediction of patient outcomes). In Substudy 3, the participants perceived the formulation of NDs in the patient's NCP as particularly difficult. Similar findings have been reported in previous studies, such as by Thoroddsen et al. (2013), Tuinman et al. (2017), and Wang et al. (2015), who identified several quality issues regarding insufficient descriptions of NDs in nursing documentation, including a lack of descriptions concerning factors contributing to the stated patient problem.

In Norway, the planning and documentation of NDs are commonly performed by the individual nurse at the point of care (Østensen et al., 2019; Østensen et al., 2020). This requires competence and skills in diagnostic reasoning (Paans et al., 2011). Although this PhD project did not specifically investigate nurses' diagnostic reasoning, Substudy 2 demonstrated limited utilization of analytical thinking during reasoning, which might have affected the ability of the nurses to arrive at an appropriate ND (Smith et al., 2022). Analytical thinking involves breaking down complex information or problems into smaller parts, understanding the relationships between those parts, and drawing logical conclusions. However, the ability of nurses to utilize their analytical skills in retrieving patient data is strongest in the early days of practicing nursing (Cappelletti et al., 2014; Tanner, 2006). The clinical experience of the participating nurses in this PhD project might have affected the identification and formulation of NDs. According to Simmons (2010), clinically experienced nurses employ informal thinking strategies and cognitive shortcuts to reason about complex issues; however, such cognitive shortcuts can lead to erroneous diagnostic reasoning due to "thumbnail" views (Simmons, 2010; Tanner et al., 2006). According to Griffith et al. (2023), diagnostic reasoning, and by that identification of NDs, is also vulnerable to cognitive biases that often occur because the healthcare provider accepts and reacts to information in a predictable way rather than thinking critically about the information. On the other hand, if clinically experienced nurses in the dementia care context continuously utilize both their analytical skills and the intuition gained through years of experience in clinical practice, they might sustain their critical thinking. This might, in turn, lead to the identification and determination of appropriate NDs in the dementia care setting (LaManna et al., 2019; Smith et al., 2022).

8.1.4 The opportunities and limits of nursing standards

This PhD project suggests that SNCPs with SNL implemented in EHRs provide opportunities to support nurses' cognition in the care planning and documentation processes. The participating nurses in Substudy 3 highlighted nursing standards as helpful in that SNCPs with SNL provided them with details that could save them from having to memorize too much. Moreover, they highlighted SNCPs with SNL as positive for ethical awareness and the transfer of professional knowledge, especially concerning dementia care. Similar findings are reported in a study conducted in nursing homes, which found that the nurses saw the SNCP with SNL as an information source they could learn from (Østensen et al., 2020). Other previous studies from the hospital care setting, such as those by Lee et al. (2019), Schumacher et al. (2019) and Castellà-Creus et al. (2019), found that SNCPs with SNL support nurses in thinking processes and decision-making during the planning and documentation of nursing in patients' EHRs, which resonates with the findings in this PhD project. Such findings could indicate that the implementation and utilization of nursing standards in EHRs of patients living with dementia might act as a decision aid and contribute to more comprehensive care planning, which in turn supports the nurses in safe documentation of patients' progress (Shafiee et al., 2022). This might, in turn, contribute to nurses being proactive in preventing and responding to the complex needs of patients living with dementia and decreasing symptoms. As a result, patients could experience positive outcomes of care delivered.

This PhD project suggests that SNCPs with SNL provide opportunities for communication and exchange of nursing information in a comprehensive and accurate way between nurses and EHR systems. Several previous studies in the nursing profession have shown that nursing standards have the capability to improve the communication and interoperability of nursing data within and across health information systems (De Groot et al., 2019; Fennelly et al., 2021; Johnson et al., 2018). Macieira et al. (2019), found that standardized nursing data extracted from the patients' EHRs were useful in characterizing nursing practice and offered the potential for demonstrating its impact on patient outcomes.

However, standardization processes in EHRs should ensure that the structure and semantics of data conform to a common reference model to facilitate interoperability, consistency, and clarity within nursing (Moreno-Conde et al., 2015). Recent research shows that SNCPs with SNL have the potential to be applicable to EHR software for documentation through mapping to HL7. Seyyedi and Maghsoudloo (2018) developed an integrated, comprehensive structure of the NP as a domain information model mapped into the HL7 reference model, showing promising results concerning nursing communication and workflow in EHRs. Matney et al. (2016) described and illustrated how a standard structure within the EHR, represented by an SNCP encoded with SNL, offers significant areas of progress toward continuity of care through the promotion of appropriate data sharing, interpretation, and storage of nursing data. Both studies highlight the complexity of mapping nursing models into HL7, and more research is needed (Matney et al., 2016; Seyyedi & Maghsoudloo, 2018). However, given that SNCPs with SNL relevant for the dementia care setting are mapped into an acknowledged reference model, such as HL7, this might facilitate accurate and comprehensive communication and exchange of information. Moreover, it might promote collaboration between clinical and technical professionals, which could minimize the diversity of ways in which a structured and standardized artifact relevant to nursing can be designed for the dementia care setting (Moreno-Conde et al., 2015).

On the other hand, the PhD project also indicates some limits to the utilization of nursing standards in the care planning and documentation of nursing in the EHR of patients living with dementia. Substudies 1 and 2 demonstrated a need to describe nursing care utilizing natural language in long text units. The participants in Substudy 3 highlighted the importance of descriptions in the nursing documentation to “know what to do.” A series of descriptions in nursing documentation are shown to be important for nurses to convey their own observations and the care given to patients (Jefferies et al., 2012).

It has been suggested that the EHR exposes a fundamental conflict between the needs of software and the needs of human users, meaning that the EHR tries to bridge two worlds: the human, “analogue,” cognitive world and the formal, logical, “digital” world of the machine (Roberts, 2017). This complex interplay between the content characteristics that nurses value and the structure and standardization required for interoperability can hamper the nurse’s workflow. Such hamper might influence the process and products of recording clinical information, and in turn influence how well patient information can be incorporated into the EHR system for reuse and analysis (Rosenbloom et al., 2011). One attempt to bridge the analogue and digital worlds can be seen in the use of SNL in EHRs. Such language is not intended to replace clinical narratives but rather to allow the coding of events alongside the narrative text of the record. However, there is also a need to recognize the importance of natural language in human communication and allow for it when building EHRs and when deploying technologies, such as EHRs (Roberts, 2017), which is a suggestion supported by the findings in this PhD project.

Allowing descriptions with natural language in the EHR of patients living with dementia might support nurses in utilizing SNCPs with SNL. This could, in turn, support the planning and documentation of accurate and reliable patient information in the EHR and the identification of the patient’s individual needs and preferences. Moreover, such descriptions could enable understanding of the patient’s situation to other healthcare providers reviewing patient records. As a result, this could increase continuity, improve decision-making, and increase the accuracy of nursing language in nursing documentation, which in turn might minimize errors and more accurately track patient care planning (Macieira et al., 2019; Roberts, 2017).

8.1.5 Usability of EHRs and nursing informatics

The PhD project shows that usability problems of the EHR system present challenges for effective care planning and documentation in the dementia care setting. In Substudy 2, sudden stops and logouts from the EHR system were observed during the TA session, while the participants in Substudy 3 especially mentioned slow log-ins, navigation problems, and difficulties finding relevant information related to EHR utilization, which caused disruptions in their planning and documentation work. Similar results were reported in the review of Tsai et al. (2020), who found that slowness of the system and difficulties in the location of necessary information had a negative impact on clinicians’ efficiency. Lee and Kang (2021), found that slow internet connections and sudden stops during EHR utilization were closely correlated with the perception of workflow delays related to EMR use by nurses in a medical ward. Arikan et al. (2022), found that extended time required for entering data into the system was perceived to be a major barrier for EHR adoption by nurses in a hospital setting.

Nurses need to work cohesively with other nurses and caregivers in an environment that allows and facilitates two-way communication to accomplish care. From a socio-technical point of view, this means that EHRs should be designed and programmed to meet the workflow of nurses in their everyday environment to ensure that each patient receives the care they need at the time they need it (Sittig & Singh, 2010). In the study of Vehko et al. (2019), the results revealed that low reliability and low support for information flow in EHRs were associated with high levels of psychological distress by the nurses. Additionally, the EHR system might infringe on the essentially interpersonal part of nursing work, which is a fundamental part of PCC. Stanhope and Matthews (2019) found difficulties in personalizing information in the EHR due to drop-down menus giving the nurses uniform options rather than the ability to individualize goals and objectives. If nurses in the dementia care setting experience that EHRs do not match their daily communication and workflow related to how and when they process clinical information, this might lead to the abandonment of utilizing EHRs. This might contribute to the creation of workarounds, such as documenting important information outside the EHR or communicating planned care orally, which in turn could potentially jeopardize patients' safety (Boonstra et al., 2021).

The PhD project supports and acknowledges that the technical features of the EHR system are highly influential to the usability of EHRs in the dementia care setting. However, supported by the literature (Brown et al., 2020), this PhD project suggests that knowledge about NI is critical for optimizing the usability of EHRs for nurses in dementia care settings. This suggestion is supported by Staggers et al. (2015) and Strudwick et al. (2019), who argue that knowledge about NI can improve the design and functionality of EHR systems, making such systems more user-friendly and effective for nurses, which could subsequently benefit patient care. Furthermore, Strudwick et al. (2019) concluded that a long-term outcome of nursing leaders being better equipped with specific informatics competencies is that direct care nurses can benefit from having improved guidance on informatics skills. In a study conducted by Al-Hawamdih and Ahmad (2018), the results revealed a correlation between NI competency and the quality of information processing of nurses in a hospital setting, which might indicate that clinical nurses in dementia care settings should possess NI knowledge to be able to effectively plan and document nursing care in the dementia care settings. Such a suggestion is supported by Kunkel et al. (2023), who concluded that educators in nursing need tools to improve self-assessed deficits in informatics, technology, and digital health competencies, which are foundational to all other competencies in healthcare and nursing education. Furthermore, they argue that all faculty must be continuously learning to teach information technology and digital health competencies across a nursing curriculum, as they are ubiquitous and woven through all aspects of health care in very rapidly evolving healthcare and educational environments (Kunkel et al., 2023).

8.2 Methodological considerations

Several aspects are involved to demonstrate and potentially increase the credibility and trustworthiness of this PhD project. I have chosen to use the terms subjectivity, reflexivity, reliability, and validity to critically discuss the methodological approaches used in the project. How the research has been carried out is presented in Chapters 5 and 6. Additionally, the ethical considerations presented in Chapter 6.4 should be considered regarding the trustworthiness of the PhD project.

The concepts of reliability and validity in regard to the credibility and trustworthiness of research are often discussed in quantitative research. However, recent discussions in the literature indicate that elements of reliability and validity should be included in all research to obtain sufficient rigor in the research process. At the same time, establishing credibility for this PhD project involves considerations concerning my personal identity and values as well as my disciplinary perspectives and how those could cause an underlying threat to the reliability and validity of the project (Morse, 2018; Morse, 2015; Rose & Johnson, 2020).

My previous understanding and experiences from different clinical contexts might have influenced my choices about what is considered important in the daily planning and documentation of nursing in the EHRs. Additionally, before I entered this PhD project, I had only to a limited extent reflected on the importance of the EHR system’s influence on nurses’ documentation practices, which might have affected my choices concerning the research topic (McCoy, 2012; Morse, 2018). On the other hand, my previous understanding and experience might have contributed to the development of interest, understanding, and views of central concepts relating to nursing, PCC, planning, and documentation in EHRs, nursing standards, and EHR systems. In this regard, my previous experience and knowledge could have provided me with a contextual understanding, which could have strengthened the actualization of the purpose of the PhD project (Badu et al., 2019; Rose & Johnson, 2020). That said, I fully acknowledge that my perspectives and views may vary from another researcher's viewpoint, which could affect the transferability of the findings (Morgan, 2007; Sandelowski, 2011).

The research design chosen for the PhD project provided opportunities to capture detailed information about the research topic, including context, history, and cultural significance, which can strengthen the realism and contextual understanding of the findings (Rose & Johnson, 2020). Although I was familiar with the dementia care setting through my work experience as a nurse, relevant concepts in this context were not fully developed or clarified at the start of the project, potentially leading to misconceptions and misinterpretations. Additionally, my experience as both a clinical nurse and a nursing teacher could lead to hasty or premature deductions during the research process. To minimize the narrow formulations of the research questions, especially in the initial parts of the project, the literature close to the research topic was reviewed. This provided an overview of the research field and helped establish a strong conceptual framework for the PhD project that was supportive in the development of the research questions (Jackson & Mazzei, 2018; Kyngäs & Kaakinen, 2020). Moreover, conducting Substudy 1 provided insight into and an understanding of what is known, and what is not known, relating to the planning and documentation of nursing in the Norwegian dementia care setting. Such insights were helpful in the further development and refinement of the research questions in Substudies 2 and 3, contributing to strengthening the balance of neutrality of the entire research process (Johnson et al., 2020; Morse, 2018).

Sampling strategies utilized in the PhD project can be considered a strength, as these strategies contributed to the recruitment of informants who were especially knowledgeable about the research questions (Johnson et al., 2020). By allowing the objective of the three substudies to guide the sampling strategies, we were able to recruit participants who contributed information-rich data through their communication of experiences and perceptions in an articulate, expressive, and reflective manner relating to the dementia care context. The combinations of sampling strategies demonstrated in the three substudies might have enhanced the depth and breadth of the data in the PhD project, contributing to meaningful insights into EHR care planning and documentation processes in the dementia care setting (Palinkas et al., 2015; Rose & Johnson, 2020).

Another strength of this PhD project is that the participants in all three substudies were sampled from different-sized municipalities, from southwest to southeast Norway. Such variations might have contributed to a wide range of perspectives across locations and an opportunity to identify common patterns that cut across the variations (Palinkas et al., 2015; Sandelowski, 2010). It could, however, have also been relevant to include participants from municipalities located in the central or northern part of Norway due to cultural or organizational differences in the healthcare services in relation to dementia LTC (Kim et al., 2017). However, in the Norwegian LTC setting, multiple EHR systems are implemented and utilized with different software available for the planning and documentation of nursing care.

Although the number of records included in Substudy 1 was high, a limitation is that there was no way of knowing that the recorded information was written by nurses, which might have affected the findings in this substudy and, ultimately, the discussions of findings in the PhD project. Limitations to sample size in Substudies 2 and 3 must also be accounted for in reading the findings. However, the sample consists of participants who best represent and have broad experience and knowledge concerning the planning and documentation of nursing care in the EHRs of patients living with dementia in nursing homes, indicating information power. Furthermore, access to RNs in the Norwegian nursing home setting is limited, and in this regard, the sample size could be considered strong (Malterud et al., 2016; Morse, 2018). Combined with the high number of records in Substudy 1, this could be considered a strength of the PhD project (Rose & Johnson, 2020).

By utilizing different techniques in the data collection process the PhD project was able to provide an accurate and comprehensive understanding of the experiences and perspectives of the participants. The collection of data from the documents, observations, and interviews provided the opportunity to obtain supporting data from different angles, which provided a background to and helped explain the participant’s experiences and perceptions. Such a combination of methods contributes to increasing confidence in the findings by providing a rich and nuanced understanding of nurses’ care planning and documentation processes in the EHRs of patients living with dementia (Badu et al., 2019; Morse, 2018). However, my novice position as a researcher could have limited my judgments and decisions during the collection and analysis of the data, which might have influenced the findings of this PhD project. An example of this is my lack of knowledge and self-trust concerning how much interpretation is allowed before what I see or find in the data does not represent the participants' behaviors, experiences, and perceptions. This may have influenced my identification and selection of data, especially in Substudy 1(Rose & Johnson, 2020; Sandelowski, 2011). In this regard, the ethical reflections in Chapter 6.4 should also be considered in relation to the credibility of the PhD project (Johnson et al., 2020).

A limitation to the PhD project might be the time-consuming management of the different data collection processes, which could have caused a loss of actuality of the data between the substudies, and in turn, affected the outcomes of the analysis process. The data collection in Substudy 3 was delayed at the start and during the collection process due to the Covid-19 pandemic, causing further delays in the analysis and writing of reports. These delays could have influenced the interpretations and decisions made in the data collection and analysis, and thus affected the findings (Queirós et al., 2017). However, in this substudy, the semi-structured interview guide provided a clear road map to the collection of data, both securing that the participants were asked adequate questions and that the questions were asked in the same sequential order, which might have contributed to the validity of the PhD project (Rose & Johnson, 2020).

Several research tools were developed and utilized in the PhD project to facilitate accuracy and consistency in the collection and analysis of data. The research tools were inspired by theory but accounted for situated knowledge (as stated in Chapter 6). These tools contributed to objectivity and consistency in selections and decisions in the three substudies of, for example, what expressions were "worthy" of being an ND represented by PCC content (Substudy 1). Another example is from Substudy 2, where the statements from the verbal reports were to be considered according to the different elements of the NP. The development and utilization of these tools were highly supportive of my understanding and operationalization of central concepts important for the research process, including PCC, the NP, and clinical reasoning in nursing. Thus, the tools might have contributed to minimizing the risk of misconceptions and misunderstandings, which in turn might have led to a reduction of errors in the collection and analysis of data (Jackson & Mazzei, 2018; Sandelowski, 2011). However, utilization of the tools could, on the other hand, have limited reflexivity, which might have influenced the interpretations of the data (Braun & Clark, 2022). To stabilize meanings during the development of the tools, I had regular discussions with my supervisors through reflections, conversations, and discussions agreeing on the relevance of the theory engaged as well as clarifications of concepts imbedded in the theories.

Structuring and organizing the collected data into a software application in Substudy 1 provided evidence for the analysis. This means that the results were based on a representative majority of the collected data to increase the rigor of the PhD project (Johnson et al., 2020). However, I still had to read and select the documented text in the patients' journals before the statements or expressions were coded. During the coding in Substudy 1, I experienced different emotions from what I read and how it was written, which might have influenced the analysis process. To increase the consistency, the analysis processes were assisted by computer software applications (Substudy 1 as mentioned above) and manual methods, including creating coding schemes (Substudy 2) and categorizing recurring segments represented by key concepts (Substudy 3). The principle of theory-based categorization provided the opportunity to broadly understand and describe relevant parts of the nurses' daily care planning and documentation processes in the EHRs, which might have increased the transferability of the findings in the PhD project (Kyngäs & Kaakinen, 2020).

Appropriate training concerning coding was sought to ensure consistency in the data analysis process. Both my supervisors and I participated in the initial coding and analyzing processes in each substudy, with checks for appropriate agreement and to detect discrepancies in the findings. Furthermore, data collection and analysis methods were presented and discussed with fellow PhD students and other PhD supervisors through different seminars and courses. This might have increased the reliability of the findings in this PhD project (O'Connor & Joffe, 2020; Vassar & Holzmann, 2013). Additionally, the publication processes of Papers 1–3 provided valuable critiques of the applied research methods and the conclusions drawn in the three substudies, which might contribute to strengthening the rigor of this PhD project (Johnson et al., 2020)

9 Concluding remarks

This PhD project is, to our knowledge, the first to report on the care planning and documentation process in EHRs of patients living with dementia in Norwegian nursing homes. Overall, this PhD project contributes to knowledge related to documentation practices in the dementia care setting and nurses' cognitive and practical processes in planning care for patients' living with dementia. Additionally, the project contributes to knowledge about the utilization of EHRs in the nursing home setting. Furthermore, this project enhanced our understanding of the care planning and documentation process from multiple viewpoints, as it explored the nature of the nursing documentation in addition to the experiences and perceptions of nurses planning and documenting nursing care into contemporary EHRs, including the utilization of nursing standards. As a result, the project increased our understanding of the interaction between nurses and the EHRs and the inter-relationships between nurses, the EHRs and the patients. Five concluding remarks can be drawn from this PhD project:

- Nursing documentation in the dementia care setting is characterized by a lack of PCC content and a noncomprehensive organization and structure of the content according to the NP. In particular, the experiences and perceptions of the patients are lacking in the planning and recording of nursing care.
- Experienced nurses utilized the NP in a non-linear manner during reasoning about care planning and documentation of nursing in the EHR of patients living with dementia. Additionally, the nurses utilized logical thinking and followed local rules for documentation when reasoning about planned or implemented interventions. When the nurses reasoned about the patient's current health status and well-being, they utilized their experience and heuristics (informal thinking strategies or mental short cuts).
- Nurses experienced a lack of knowledge, skills, and attitude concerning the planning and documentation of nursing in the EHRs of patients living with dementia relating to psychosocial aspects of care, especially in expressing the patients' needs. Additionally, they perceived it as important to gain proper education and training for using the EHR system to best follow up on planned and implemented nursing care.

- Nurses perceived nursing standards as a contributor to development of “best practices,” however, nurses and nursing leaders must be continuously involved and engaged in EHR documentation to safeguard the development and implementation of relevant nursing standards.
- The usability factors of the EHR system, such as challenges navigating within the system and finding relevant information, impacted both the information flow and workflow of the nurses. However, opportunities within the system to store patient information were highlighted as positive.

9.1 Implications for practice and education

This PhD project not only contributes to the understanding of the care planning and documentation process of nurses in the EHR of patients living with dementia, but also has practical implications for effective care planning and documentation during the utilization of EHRs, including nursing standards. The EHR system needs to facilitate a standardized way of exchanging nursing information to improve knowledge about patients for nurses and other healthcare professionals. Moreover, to enhance care planning and documentation of valid and reliable information in EHRs, a proper process of data capturing from both nurses and the EHR is needed. The application of nursing standards fosters the development of EHRs to establish the ability to share patient data between settings and to assure care continuity and quality. Furthermore, utilization of nursing standards in EHRs can contribute to more effective ways of analyzing nursing data contributing to new insights into nursing at the point of care.

Difficulties in ND and evaluation of care found in this PhD project a call for support in planning and documenting nursing according to the NP and PCC concepts or principles. The content and structure of EHRs should facilitate information related to basic psychosocial needs and the experiences and perceptions of the patient. In sum, PCC should be fully expressed in the content of the EHR in a quality structure and format based on a dynamic NP framework. This would, in turn, have implications for the development and implementation of decision-support systems in EHRs for the planning and documentation process of nurses.

By integrating NI principles into EHR design and development, healthcare organizations can create systems that better support nursing practice and ultimately benefit patient outcomes. The involvement of nurses in the development of digital systems should be prioritized, and this PhD project recommends that there be an investment in providing opportunities for professional development regarding NI to ensure nurses have and continue to build their digital capabilities. Additionally, nursing leaders need to be continuously updated and trained in NI to visualize nursing care in the EHRs and extract relevant data from EHRs for quality improvements and research. Further, NI should be incorporated into nursing curricula to support the sustainable adoption and utilization of EHRs.

9.2 Further research

The findings of this PhD project indicate that a major contributing factor to challenges in expressing and structuring the nursing content in the EHRs was the nurse's understanding of central PCC concepts and the ability of the EHR to focus on PCC content. Further research should be conducted utilizing the methodology used in this PhD project to enable comparisons to be drawn between different healthcare settings. Moreover, more research is required to examine other possible variables that influence the quality of information processing among nurses in different settings.

The identification in this PhD project of a need to plan and document PCC content and structure such information according to the NP suggests a further exploration of significant determinants of quality planning and documentation of nursing in EHRs of patients living with dementia.

Furthermore, this PhD project suggests longitudinal studies to assess the impact of EHR systems on nurses' delivery of care. Although the PhD project provides knowledge about nurse's utilization of EHRs in nursing homes, future research should focus on EHR outcomes for quality and safety of care outcomes for patients and their families and staff.

Usability issues found in this PhD project indicate that further research is needed to investigate the internal relationship between assessment notes (separate file), NCPs, and evaluation notes (in PNs in this project).

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Appendix 1

Information about the PhD project to the administrative leader – municipalities

FORESPØRSEL OM DELTAKELSE I FORSKNINGSPROSJEKTET

STANDARDISERT TERMINOLOGI I SYKEPLEIE – HVORDAN DOKUMENTERER HELSEPERSONELL

Til administrativ leder i ………………….. kommune,

Dette er en forespørsel om tillatelse til å gjennomføre et forskningsprosjekt i deres kommune. Studien er et doktorgradsprosjekt med tema standardisert terminologi i sykepleiedokumentasjon, hvor vi ønsker å se på hvordan helsepersonell dokumenterer i behandlingsplanen og hvilke begreper helsepersonell bruker når de skal planlegge og dokumentere sykepleie med utgangspunkt i behandlingsplaner/tiltaksplaner som inneholder standardisert terminologi.

Helsedirektoratet har nylig publisert en rapport fra Direktoratet for eHelse angående vurdering av en felles nasjonal terminologi for elektronisk dokumentasjon av helsehjelp i Norge. For felles terminologi for sykepleiepraksis foreslår direktoratet International Classification for Nursing Practice (ICNP®). Elektronisk dokumentasjon av sykepleie gjør det viktig med et standardisert språk. Når sykepleiere bruker de samme ordene, kan opplysninger fra pasientjournalen hjelpe helsepersonell til å utvikle seg og til å gi bedre helsehjelp i fremtiden.

Deres kommune har elektroniske dokumentasjonssystemer som legger til rette for bruk av det standardiserte terminologisettet ICNP®. Vi ønsker med dette å rette en forespørsel til kommunen om tillatelse til å gå videre til aktuelle sykehjem i kommunen med en forespørsel om deltagelse i forskningsprosjektet.

Det er Universitetet i Agder som er ansvarlig for studien, og den gjennomføres som et ledd i et doktorgradsarbeid ved Institutt for Helse- og sykepleievitenskap. Prosjektleder er PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), Tlf: 412 58 366, hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845 og medveileder er professor Åshild Slettebø (ashild.slettebo@uia.no), Tlf: 992 43 315. Norsk Sykepleierforbund har finansiert studien.

HVA INNEBÆRER PROSJEKTET?

Prosjektet har tre delstudier:

Delstudie 1: Gjennomgang av av-identifiserte pasientjournaler.

Delstudie 2: Observasjon av sykepleieres resonnering mens de dokumenterer i pasientjournaler

Delstudie 3: Deltagende aksjonsforskning med observasjon og intervju av sykepleiere i grupper over en periode på ca fire måneder

Ved å se nærmere på innhold i dokumentasjon av sykepleie til personer med demens som bor på tilrettelagte avdelinger på sykehjem ønsker vi å få kunnskap om hva sykepleiere dokumenterer. For å få denne kunnskapen vil en journalgranskning bli gjennomført. I journalgranskingen vil opplysninger som er dokumentert bli systematisk gjennomgått.

Gjennom å observere og intervjue sykepleiere mens de dokumenterer ønsker vi få en dypere forståelse for hvordan sykepleieren planlegger og vurderer behovet for sykepleie. Vi ønsker å undersøke hvordan sykepleiere bruker standardisert terminologi for å sikre kontinuitet og kvalitet i vurdering og planlegging av sykepleie. Videre gjennom refleksjon og diskusjon sammen med sykepleiere i grupper ønsker vi å identifisere mulige utfordringer knyttet til bruk av standardisert terminologi og komme frem til tiltak som kan implementeres for å forbedre profesjonell praksis og kvalitet på oppfølging av den sykepleie som er planlagt. Vi vil gjennomføre en evaluering av eventuelle nye implementeringer av tiltak.

Vi har behov for å komme i kontakt med leder av sykehjem i kommunen som tilbyr tilrettelagte avdelinger for personer med demens.

Prosjektleder Lene B. Laukvik har ansvar for den daglige driften av forskningsprosjektet og at opplysninger om deltagere blir behandlet på en sikker måte. Informasjon om deltagere vil bli anonymisert eller slettet senest fem år etter prosjektslutt (2027).

MULIGE FORDELER OG ULEMPER

Fordelene med å delta i studien, kan være at man får økt kunnskap og nye ideer om bruk av standardisert terminologi i planlegging av sykepleie til personer med demens. Forståelsen for gjenbruk av data kan økes hos deltagerne og kan føre til bedre kontinuitet og oppfølging av planlagt sykepleie. Deltagelse kan medføre økt fokus på personsentrert omsorg blant personalet, noe som kan gi bedre kvalitet på den pleien som gis til pasientene på aktuelle avdelinger. Det ansees ikke å være noen risiko forbundet med deltagelse i studien. Pasienter involveres ikke direkte og studien medfører ingen negative konsekvenser for dem. De ulempene som eventuelt kan oppstå, er tiden ansvarlig på avdelingen bruker på av-identifisering av journalene. For de sykepleierne som skal delta kan det oppleves ubehagelig å bli observert mens de jobber. Vi vil gjøre vårt ytterste for at samarbeidsklima skal oppleves godt og vil rette fokus mot læring.

Dersom det er ønskelig kan Lene B. Laukvik og Mariann Fossum komme på et personlig møte for å gi nærmere informasjon om prosjektet. Vi kan også se på muligheter for å kunne gi informasjon og undervisning knyttet til dokumentasjon av sykepleie og demensomsorg.

Vi vil legge frem resultater av studien for din kommune, men vi kan dessverre ikke tilby enkelttall eller detaljert informasjon fra andre deltagende kommuner. Dere vil motta total resultater av studien.

Vi håper du har mulighet til å sette oss i kontakt med institusjonsledere ved aktuelle sykehjem i kommunen.

GODKJENNING

Prosjektet er godkjent av Norsk senter for forskningsdata (NSD).

Med vennlig hilsen

Lene Baagøe Laukvik

Appendix 2

Information about the PhD project to the institution leader – nursing homes

UNIVERSITETET I AGDER

FORESPØRSEL OM DELTAKELSE I FORSKNINGSPROSJEKTET

STANDARDISERT TERMINOLOGI I SYKEPLEIE – HVORDAN IVARETA HELHET OG PERSONSENTRERT OMSORG

Til institusjonsleder ved NN sykehjem

Dette er et spørsmål til deres institusjon om å delta i et forskningsprosjekt. Studien er et doktorgradsprosjekt med tema standardisert terminologi i sykepleiedokumentasjon, hvor vi ønsker å se på hvordan helsepersonell dokumenterer i behandlingsplanen og hvilke begreper helsepersonell bruker når de skal planlegge og dokumentere sykepleie med utgangspunkt i behandlingsplaner/tiltaksplaner som inneholder standardisert terminologi.

Helsedirektoratet har nylig publisert en rapport fra Direktoratet for eHelse angående vurdering av en felles nasjonal terminologi for elektronisk dokumentasjon av helsehjelp i Norge. For felles terminologi for sykepleiepraksis foreslår direktoratet International Classification for Nursing Practice (ICNP®). Elektronisk dokumentasjon av sykepleie gjør det viktig med et standardisert språk. Når sykepleiere bruker de samme ordene, kan opplysninger fra pasientjournalen hjelpe helsepersonell til å utvikle seg og til å gi bedre helsehjelp i fremtiden.

Vi tar kontakt med deg fordi du står som ansvarlig for daglig drift av sykehjemmet. Deres sykehjem tilbyr behandling, oppfølging og pleie av personer med demens på tilrettelagte avdelinger. Deres sykehjem har i tillegg datastruktur som er lagt til rette for bruk av den standardiserte terminologien ICNP®. Gjennom sykepleiedokumentasjonen i den elektroniske pasientjournalen til beboere ved deres sykehjem og ved å ta del i sykepleiernes erfaringer og synspunkter, kan vi få svar på studiens hensikt.

Det er Universitetet i Agder som er ansvarlig for studien, og den gjennomføres som et ledd i et doktorgradsarbeid ved Institutt for Helse- og sykepleievitenskap. Prosjektleder er PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), Tlf: 412 58 366, hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845 og medveileder er professor Åshild Slettebø (ashild.slettebo@uia.no), Tlf: 992 43 315. Norsk Sykepleierforbund har finansiert studien.

Kontaktperson:
Lene B. Laukvik,
Universitetet i Agder, Grimstad
Fakultet for Helse- og Idrettsvitenskap,
TLF: 372 37 69 / 412 58366

HVA INNEBÆRER PROSJEKTET?

Prosjektet har tre delstudier:

Delstudie 1: Gjennomgang av av-identifiserte pasientjournaler.

Delstudie 2: Observasjon av sykepleieres resonnering mens de dokumenterer i pasientjournaler

Delstudie 3: Deltagende aksjonsforskning med observasjon og intervju av sykepleiere i grupper over en periode på ca fire måneder

Del-studie 1:
Vi ønsker å se nærmere på innhold i dokumentasjon av sykepleie til personer med demens som bor på tilrettelagte avdelinger på sykehjem for å få kunnskap om hva sykepleierne dokumenterer. For å få denne kunnskapen vil en journalgransking bli gjennomført hvor opplysninger som er dokumentert, systematisk blir gjennomgått. Vi har behov for at opplysningene er tatt ut av hovedjournalen og avidentifisert før prosjektleder mottar dem. Avdelingen vil motta en sjekkliste på hva som skal kopieres fra journalen og hvordan opplysningene blir avidentifiserte. Det vil bli gitt en økonomisk kompensasjon til avdelingen for tiden det tar å skaffe til veie disse opplysningene og avidentifisere dem. Vi vil sende informasjon om studien og skjema for frivillig samtykke / tillatelse til opplysninger fra pasientjournalen til pasient/pårørende. Dersom pasienten ikke har samtykkekompetanse overbringes forespørsel til ansvarlig pårørende. På den måten vi kan få innhentet informert samtykke i tråd med personvernreglene. Pasienter vil ikke være direkte involvert og studien vil ikke ha noen negativ konsekvens for dem. Totalt vil vi ha behov for opplysninger fra 150 journaler.

Del-studie 2:
Vi ønsker å observere og intervjue sykepleiere enkeltvis mens de dokumenterer, få en dypere forståelse for hvordan sykepleierne planlegger og vurderer behovet for sykepleie. Pasienter vil ikke være direkte involvert og studien vil ikke ha noen negativ konsekvens for dem. Vi vil sende informasjon om studien og skjema for frivillig samtykke / tillatelse til å være til stede mens sykepleier dokumenterer, til pasient/pårørende. Dersom pasienten ikke har samtykkekompetanse overbringes forespørsel til ansvarlig pårørende. På den måten vi kan få innhentet informert samtykke i tråd med personvernreglene. Vi har behov for å komme i kontakt med totalt 15 sykepleiere som til daglig følger opp personer med demens i klinisk arbeid og som er kjent med dokumentasjon av helsehjelp i elektronisk pasientjournal. Prosjektleder vil etter identifisering av aktuelle sykepleiere sende dem en personlig mail med informasjon om studien og skjema for frivillig samtykke.

Del-studie 3:
Vi ønsker vi å undersøke hvordan sykepleiere bruker standardisert terminologi for å sikre kontinuitet og kvalitet i vurdering og planlegging av sykepleie. Gjennom refleksjon og diskusjon sammen med sykepleiere i grupper ønsker vi å identifisere mulige utfordringer knyttet til bruk av standardisert terminologi og komme frem til tiltak som kan implementeres for å forbedre profesjonell praksis og kvalitet på oppfølging av den sykepleie som er planlagt. Vi vil gjennomføre en evaluering av eventuelle nye implementeringer av tiltak. Vi har behov for å komme i kontakt med totalt 20 sykepleiere. Prosjektleder vil etter identifisering av aktuelle sykepleiere sende dem en personlig mail med informasjon om studien og skjema for frivillig samtykke.

Vi kontakter flere kommuner og sykehjem i Norge med forespørsel om deltagelse for å få gjennomført studien.

Prosjektleder Lene B. Laukvik har ansvar for den daglige driften av forskningsprosjektet og at opplysninger om deltagere blir behandlet på en sikker måte. Informasjon om deltagere vil bli anonymisert eller slettet senest fem år etter prosjektslutt (2027).

MULIGE FORDELER OG ULEMPER

Fordelene med å delta i studien, kan være at man får økt kunnskap og nye ideer om bruk av standardisert terminologi i planlegging av sykepleie til personer med demens. Forståelsen for gjenbruk av data kan økes hos deltagerne og kan føre til bedre kontinuitet og oppfølging av planlagt sykepleie. Deltagelse kan medføre økt fokus på personsentrert omsorg blant personalet, noe som kan gi bedre kvalitet på den pleien som gis til pasientene på aktuelle avdelinger. Det ansees ikke å være noen risiko forbundet med deltagelse i studien. De ulempene som eventuelt kan oppstå, er tiden ansvarlig på avdelingen bruker på av-identifisering av journalene. For de sykepleierne som skal delta kan det oppleves ubehagelig å bli observert og intervjuet mens de jobber. Vi vil gjøre vårt ytterste for at samarbeidsklima skal oppleves godt og vil rette fokus mot læring.

Dersom det er ønskelig kan Lene B. Laukvik og Mariann Fossum komme på et personlig møte for å gi nærmere informasjon om prosjektet. Vi kan også se på muligheter for å kunne gi informasjon og undervisning knyttet til dokumentasjon av sykepleie og demensomsorg.

GODKJENNING

Prosjektet er godkjent av Norsk senter for forskningsdata (NSD).

Med vennlig hilsen

Lene Baagøe Laukvik

Appendix 3

Instructions for printouts sub study 1

Oversikt over informasjon som skal skrives ut fra pasientjournalen i forbindelse med studien.

NB! Alt som skrives ut skal avidentifiseres før det tas ut fra sykehjemmet. Det vil si at alle sensitive personopplysninger som ikke fjernes av datasystemet skal fjernes med sort tusj eller blanko når det er skrevet ut på papir. Dette gjøres av definert personell i samråd med avdelingsleder/fagsykepleier. Alle dokumentene skal omfatte tre måneder tilbake i tid (fra den dagen man starter med innsamling av pasientopplysningene).

- **Hovedkort**- det er spesielt viktig å få med hvor lenge pasienten har vært innlagt i sykehjemmet, kjønn, alder, demensdiagnose og kognitiv vurdering → navn og personnummer må strykes ut.

- **Livshistorie**- hvis det foreligger en innkomstrapport som er skrevet når pasienten ble innlagt i sykehjemmet skal denne med →navn (på pasient og eventuelle pårørende) og fødselsdato og personnummer må strykes ut.

- **Datasamlingsguide**- hvis den foreligger er hovedområdene for grunnleggende behov er viktig å få med → dekkes denne av neste punkt? → navn og personnummer må strykes ut.

- **Tiltaksplan/pleieplan**- helt uavhengig av om det er skrevet lite eller mye skal alle behovsområdene skrives ut. → navn og personnummer på pasient må strykes ut.

- **Fortløpende rapport**- kun for de siste tre månedene fra den dagen pasientopplysningene samles og skrives ut →navn (på pasient og eventuelle pårørende) og fødselsdato og personnummer må strykes ut hvis det står inne i rapporten.

Appendix 4

Background information sub study 1

Bakgrunnsinformasjon pasient

(fylles ut av den personen som skriver ut, eventuelt i samarbeid med PhD-student)

1. Journalnummer (pasient): ……………..

2. Type avdeling?
   (sett ett kryss)
   ○ Skjermet enhet for personer med demens
   ○ Tilrettelagt enhet for personer med demens
   ○ Forsterket enhet for personer med demens
   ○ Annen type, spesifiser …………………………………………………………………………….

3. Hva er pasientens totale liggetid ved sykehjemmet (antall påbegynte døgn)?

   ……………………………………………………………………………

4. Pasientens alder?

   ………………………………………………

5. Pasientens kjønn?

   …………………………………………………………………….

6. Er det nedtegnet en demensdiagnose?
   ○ Ja
   ○ Nei

7. Hvis ja, hvilken diagnose?

   ……………………………………………………………………………….

8. Finnes beskrivelse/narrativ av pasientens livshistorie
   ○ Ja
   ○ Nei

Appendix 5

Data extraction guide sub study 1

Data extraction guide for Person Centred Care (PCC) content, derived from PCC literature

Category (code)	**Theoretical definition**	**Questions for identification of appropriate statements to code Yes/no Where found? (NCP or PN or both)**	**Examples of theme in statements (maximum three statements for each question should be extracted for examples)**
Identity	To know who you are Your own (and others') experiences Cognitive and emotional Autonomy To some degree our identity is defined by other people through the subtle messages they express about our performance.	Resident's communication of own needs/preferences?	Resident's expression of needs, what he/she wants/desires, pain, sleep, hungry, wants to go home
		Resident's needs associated with emotions?	Statements about the resident's feelings (observed). F.ex: happy, sad, angry, indifferent
		Resident's needs associated with behaviour?	About the resident's behaviour (observed). F.ex: wandering, restless, aggressive, and calm
		Resident's experience of own behaviour?	Expressions describing how the resident experiences his/her behaviour in a situation
		Resident's needs associated with cognition?	Statements about the resident's cognition (observed). F.ex: disoriented, memory loss
		Resident's experience of own condition/illness?	Expressions describing resident's experience of his/her condition or illness, situation in life or the nursing home
Comfort	Proximity, tenderness, relief from pain and grief, reassurance to relieve anxiety and grief. The feeling of security that comes from being close to another person. Maintaining a wholeness when you experience falling apart together (in parts, subdivided). The need is strongest in managing loss.	Resident's experience of well-being?	Statements about the resident's experience of pain or other discomfort. Statements about planned care connected to pain, expressed as "pain" in the nursing care plan. Statements about mental state
		Resident's experience of his/her own emotions?	Expressions describing resident's experience related to his/her emotions
		The quality of interaction between resident and staff?	The quality of the interaction expressed, see the interaction from the resident's perspective
Inclusion	Social dimension Being part of a group Primarily, being part of a group is essential for human survival. In dementia, this need arises especially through attention-seeking behaviour.	Use of non-verbal communication interaction?	Sitting silently with the patient, changing staff members, providing diversion silently
		Resident's experiences of communication with others?	Family, friends, relatives, volunteers, other residents, staff
		Facilitation of the environment to safeguard the resident's autonomy?	Facilitate autonomy in everyday situations (grooming, meals, social activities, and navigation)
		Use of coercion in interaction between resident and staff?	Locked doors Physical restraint, holding patient down, remaining in room

Attachment	Social nature, attachment, and bonding Establishing emotional bonding, connecting with others is instinctive. Difficult for a person to function without having a sense of belonging. Loss of primary attachment can have a negative impact.	Facilitating a home-like environment for the resident?	Resident room or common area Use of biography: pictures, conversations about “old times” (family, relatives, friends, work, interests), life history, religion
		Needs related to social relationships?	Family, friends, relatives, volunteers visiting, other residents. Statements of social relations, documented visits
		Resident’s experience of/with social relationships?	Description of the resident’s experience of the abovementioned relationships
Occupation	Being involved. The opposite is boredom, apathy, feeling useless Being involved in the life process in a way that is personally significant. Draws on a person's abilities and strengths.	Participation in activities?	If the resident has participated in any social or physical activity
		Needs associated with activities?	What needs does the resident have related to social/physical activity?
		Patient experience of participation in activities?	Expressions describing the resident’s experience of participating in an activity
		Resident’s use of the outdoor area?	If the patient uses the outdoor facilities or organized outdoor excursions

References:

Edvardsson, Winblad & Sandman, 2008. Person-centred care of people with severe Alzheimer's disease: current status and ways forward. *The Lancet, 7*(4), 362-367. Doi: https://doi.org/10.1016/S1474-4422(08)70063-2

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Kitwood, T. (2019). *Dementia Reconsidered, Revisited - The Person Still Comes First* (D. Brooker Ed. 2. ed.): Open University Press.

Shiells, K., Holmerova, I., Steffl, M., & Stepankova, O. (2019). Electronic patient records as a tool to facilitate care provision in nursing homes: an integrative review. *Informatics for Health & Social Care*, *44*(3), 262-277. doi:10.1080/17538157.2018.1496091

Stein-Parbury, J., Chenoweth, L., Jeon, Y. H., Brodaty, H., Haas, M., & Norman, R. (2012). Implementing Person-Centered Care in Residential Dementia Care. *Clinical Gerontologist*, *35*(5), 404-424 421p. doi:10.1080/07317115.2012.702654

Teitelman, J., Raber, C., & Watts, J. (2010). The power of the social environment in motivating persons with dementia to engage in occupation: qualitative findings. *Physical & Occupational Therapy in Geriatrics*, *28*(4), 321-333. doi:10.3109/02703181.2010.532582

Appendix 6

Comprehensiveness in nursing documentation (CIND) scale in relation to PCC sub study 1

Comprehensiveness In Nursing Documentation (CIND) scale in relation to the person-centred care (PCC) categories: identity, comfort, inclusion, attachment, and occupation

PCC Category	Nursing problem/-diagnose	1=The problem is described **or** intervention planned **or** implemented.	2= The problem is described **and** interventions planned **or** implemented.	3=The problem is described **and** intervention planned **or** implemented **and** nursing outcome is recorded.	4= The problem is described **and** intervention planned **and** implemented **and** nursing outcome is recorded.	5= All aspects of the nursing process are recoded. Good description of the problem and recoding of the relevance for nursing.
Identity						
Comfort						
Inclusion						
Attachment						
Occupation						

Ehnfors, M., & Smeby, B. (1993). Nursing care as documented in patient records. *Scandinavian Journal of Caring Sciences*, *7*(4), 209–220. https://doi.org/https://doi.org/10.1111/j.1471-6712.1993.tb00206.x

Ehrenberg, A., & Ehnfors, M. (1999). Patient Records in Nursing Homes - Effects of Training on Content and Comprehensiveness. *Scandinavian Journal of Caring Sciences, 13*(2), 72-82. https://doi.org/http://doi.org/10.1111/j.1471-6712.1999.tb00519.x

Kitwood, T. (1997). The experience of dementia. *Aging & Mental Health, 1:1*, 13–22. https://doi.org/ https://doi.org/10.1080/13607869757344

Kitwood, T. (2019). On being a person. In D. Brooker (Ed.), *Dementia reconsidered, revisited. The Person Still Comes First*. Open University Press.

Appendix 7

Background information nurse sub study 2 and 3

Bakgrunnsopplysninger sykepleier del-studie 3 individuelle intervju:

1. Fullt navn:

2. Fødselsår:

3. Epost-adresse jobb:

4. Hvilket år fullførte du grunnutdanningen/bachelor i sykepleie:

5. Har du videreutdanning innen demensomsorg?
   ○ Ja
   ○ Nei
6. Hvis Ja, spesifiser hvilken type utdanning:

7. Antall år i nåværende stilling på dette sykehjemmet:

8. Antall år med relevant erfaring fra arbeid med personer med demens:

9. På hvilket nivå vil du beskrive din erfaring med dokumentasjon av sykepleie i elektronisk pasientjournal? (sett ett kryss og spesifiser antall år)
   ○ Nybegynner (1-2 år) ……………...
   ○ Viderekommen (2-5 år) …………….
   ○ Ekspert (5 år eller mer) ……………..

10. På hvilken måte vil du beskrive din erfaring med dokumentasjon av sykepleie for personer med demens i den elektroniske pasientjournalen? (sett ett kryss og spesifiser antall år)
    ○ Nybegynner (1-2 år) …………….
    ○Viderekommen (2-5 år) …………….
    ○ Ekspert (5 år eller mer) …………....

Appendix 8

Coding scheme nursing process sub study 2

Coding scheme nursing process based on theory relating to the nursing process and the VIPS model

VIPS model	Nursing Process code	Description
Nursing history and nursing status	*Assessment.*	Gathering data or information. Thoughts or expressions of the resident's or significant other's descriptions of reason for care, expectations to care and treatment, current health situation and living conditions in the nursing home as basis for assessment and nursing care planning. The resident's, significant others, or the nurse's description of: • Function, physical or psychosocial. • Discomfort. • Influencing factors/circumstances (environment, internal resources, values, expectations, perceptions).
Nursing diagnose assessment and formulation	*Diagnosing.*	Information interpretations. Identification and prioritization of needs, problems, or risks, suggesting possible causes and symptoms influencing functioning in daily life, formulation of nursing diagnoses in three levels: • Basic description of problem or need. • Problem description based on closer analysis or observed behaviour. • Includes descriptions of aethology or related factors and possible consequences for or responses from the resident.
Setting expected resident outcome or nursing goal	*Planning.*	Thoughts of expected outcomes or resident-goals, long og short term, that can be measured. Thoughts related to functional ability and health status of the resident, self-care and disease, management of health promotion, lifestyle alterations, resident's satisfaction, and well-being.
Implementing or planning nursing interventions	*Implementation.*	Thoughts of planned and/or implemented nursing interventions to promote the resident's health and prevent illness, thoughts on how to maintain or retain health and well-being of the resident.
Evaluation from nursing perspectives	*Evaluation*	Thoughts in relation to evaluation of the nursing care, signs of change, stability or achieved patient outcomes or coals, the nursing care's effect on the resident's: • Ability to function and status of the health • Experience of well-being • Coping of self-care • Coping of disease and other health-issues • Will and motivation

Information Exchange		Thoughts of how the information is exchanged, formulations, managing of information in the electronic healthcare record-system.

Ehrenberg, A., Ehnfors, M., & Thorell-Ekstrand, I. (1996). Nursing documentation in patient records: experience of the use of the VIPS model. *Journal of Advanced Nursing, 24*(4), 853-867. https://doi.org/https://doi.org/10.1046/j.1365-2648.1996.26325.x

Toney-Butler, T. J., & Thayer, J. M. (2022). Nursing Process. In *StatPearls. Content is King*. StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK499937/#_article-26037_s8_

Appendix 9

Coding scheme clinical reasoning attributes sub study 2

Coding-scheme clinical reasoning attributes based on clinical reasoning theory sub study 3

Attribute code	**Cognitive process**	**Description**
Analysis	Interpreting information	Systematically and rationally weighing of generated alternatives against clinical data or outcomes that can be validated.
Deliberation	Rumination	Narrative thinking, trying to understand the case or making sense of experience by pondering, considering evidence, negotiate or persuading, interpret human concerns, intents and motives.
Heuristics	Informal thinking strategies or mental shortcuts	Informal thinking strategies, recognizing patterns, describing, explaining, judging value, based on experience.
Logic	Argument	Arguments or makes inferences following a rule, e.g. a rule that state when particular conditions are met or certain rules (formal/informal) in the nursing home (culture) that one are expected to follow.
Inference	Speculation	Speculation, forming conclusions or opinions or an educated guess based on observations, can be logical or illogical.
Metacognition	Reflective thinking	Reflective thinking, reflecting over own documentation process, or critiquing data collection processes and results or reviewing personal biases or limitations in knowledge depth, breadth, and organization.
Cognition	Perception or awareness	Perception/awareness of information or a situation, remembering information or observed data, connecting information, and planning.
Information processing	Organizing data	Organizing data, acquiring, recording, retrieving, displaying, and disseminating resident information and data through computer-based operations.
Intuition	Insight independent of reasoning	A "hunch" or a "gut feeling", immediate knowing without reason, cannot be verbalized in the sense that the source of knowledge cannot be determined.

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Appendix 10

Interview guide sub study 3 in Norwegian and English

Norsk versjon

1. Hva er dine opplevelser med dokumentasjon av sykepleie?
2. Hva er dine opplevelser med standardisert terminologi?
3. I hvilken grad opplever du at pleieplanen blir oppdatert?
4. I hvilken grad opplever du at pleieplanen blir fulgt opp?
5. I hvilke sammenhenger bruker du fritekst fremfor standardisert terminologi når du skal utvikle pleieplan?
6. Hva gjør du for å strukturere dokumentasjonen?
7. Hvilke områder er mest sentrale å dokumentere for personer med demens?
8. På hvilken måte kan man sikre helhet og sammenheng i planlegging av sykepleie til pasienter med demens?
9. Hvordan kan helhet og sammenheng komme til uttrykk i en pleieplan for pasienter med demens?
10. På hvilken måte kan man sikre personer med demens personsentrert omsorg i planlegging av sykepleie?
11. Hvordan kan personsentrert omsorg komme til uttrykk i en pleieplan for pasienter med demens?
12. Hva er dine opplevelser/erfaringer med standardisert språk?

English version

1. What are your experiences with the documentation of nursing care?
2. What are your experiences with standardized terminology?
3. To what extent do you experience the care plan as updated?
4. To what extent do you experience that the care plan is followed-up?
5. In which contexts do you use free text rather than standardized language when developing a care plan?
6. How do you structure the documentation of nursing care?
7. Which areas are most important to document for patients with dementia?
8. How can you ensure completeness and comprehensiveness in the planning of nursing care for patients with dementia?
9. How can completeness and comprehensiveness be expressed in the care plan of patients with dementia?
10. How can patients with dementia be ensured person-centered care in the planning of nursing care?
11. How can person-centered care be expressed in the care plan of patients with dementia?
12. What are your experiences with standardized language?

Appendix 11

Approval from Norwegian Centre for Research Data (NSD)

Universitetet i Agder
Att. Laukvik, Lene Baagøe
lene.laukvik@uia.no
lene.laukvik@gmail.com

Vår dato: 07.09.2018 Vår ref: 61364 AMS/LR Deres dato: Deres ref:

VURDERING AV BEHANDLING AV SÆRSKILTE KATEGORIER PERSONOPPLYSNINGER I PROSJEKTET: STANDARDISERT TERMINOLOGI I SYKEPLEIE - HELHET OG PERSONSENTRERT OMSORG I PLANLEGGING AV SYKEPLEIE

NSD - Norsk senter for forskningsdata AS viser til meldeskjema innsendt 29.06.2018. Vi beklager lang responstid. Dette skyldes enkelte deler av prosjektet måtte avklares, samt overgang til nytt lovverk.

Meldingen gjelder behandling av personopplysninger til forskningsformål.

Etter avtale med den behandlingsansvarlige, Universitetet i Agder, har NSD foretatt en vurdering av om den planlagte behandlingen er i samsvar med personvernlovgivningen.

Resultat av NSDs vurdering:

NSD vurderer at det vil bli behandlet særskilte kategorier personopplysninger frem til 31.12.2027.

NSDs vurdering er at behandlingen vil være i samsvar med personvernlovgivingen, og at lovlig grunnlag for behandlingen er samtykke og allmenn interesse.

Vår vurdering forutsetter at prosjektansvarlig behandler personopplysninger i tråd med:

- opplysninger gitt i meldeskjema og øvrig dokumentasjon
- dialog med NSD, og vår vurdering (se under)
- Universitetet i Agder sine retningslinjer for datasikkerhet, herunder regler om hvilke tekniske hjelpemidler det er tillatt å bruke

Nærmere begrunnelse for NSDs vurdering:

1. Beskrivelse av den planlagte behandlingen av personopplysninger

Formålet med prosjektet er å få kunnskap om hvordan standardisert terminologi kan ivareta helhet og personsentrert omsorg i vurdering og planlegging av sykepleie. Gjennom tre delstudier vil vi utvikle kunnskap om innhold i sykepleiedokumentasjon, sykepleieres resonnering i planlegging og vurdering av sykepleie og om bruk av standardisert terminologi i planlegging av sykepleie.

Prosjektet innebærer at forskningsdata innhentes gjennom:

- Journalopplysninger om pasienter
- Feltarbeid med deltakende observasjon av ansatte og pasienter
- Observasjon og intervju av ansatte som dokumenterer journal
- Intervju med ansatte

Det innhentes samtykke fra ansatte og beboere som kan samtykke selv.

Dersom beboere ikke kan samtykke selv vil pårørende samtykke til at journalopplysninger kan inngå i datamaterialet og/eller at forsker kan observere/intervjue sykepleier om dokumentasjon av sin nærstående sine journalopplysninger.

Om en person er samtykkekompetent eller ikke, må vise seg gjennom en individuell vurdering av hver enkelt potensiell deltaker. Forsker har et eget ansvar for at samtykkekompetansen blir vurdert. Samtykkekompetansen skal vurderes av helsepersonell som kjenner vedkommende godt og nærmeste pårørende.

Dersom det vurderes at vedkommende ikke er i stand til å forstå formålet og hva deltakelse i prosjektet innebærer, vil det innhentes samtykke fra nærmeste pårørende. Samtykke fra nærmeste pårørende vil oppheve taushetsplikten på vegne av den registrerte og vil bidra til å redusere personvernulempen ved deltakelse. Personer uten samtykkekompetanse vil kun delta i prosjektet dersom pårørende har fått informasjon om prosjektet og samtykket til at vedkommende inkluderes i studien. Personer uten samtykkekompetanse vil få tilpasset, muntlig informasjon om prosjektet. Personer som viser vegring mot å delta vil ikke inkluderes, selv om pårørende har samtykket til deltakelse. Ethvert uttrykk for at vedkommende motsetter seg deltakelse skal respekteres.

Informasjonsskrivene som ble mottatt etter revisjon 30.08.2018 er godt utformet.

2. Personvernprinsipper

NSDs vurdering er at behandlingen følger personvernprinsippene, ved at personopplysninger;

- skal behandles på en lovlig, rettferdig og åpen måte med hensyn til den registrerte
- skal samles inn for spesifikke, uttrykkelig angitte og berettigede formål og der personopplysningene ikke viderebehandles på en måte som er uforenelig med
- vil være adekvate, relevante og begrenset til det som er nødvendig for formålet de behandles for
- skal lagres slik måte at det ikke er mulig å identifisere de registrerte lengre enn det som er nødvendig for formålet

3. Lovlig grunnlag for å behandle særskilte kategorier

1) Særskilte kategorier - Samtykke ((art. 6.1. a), art. 9.2 a)) for deler av utvalget, herunder ansatte og beboere som kan samtykke selv.
2) For beboere som ikke er samtykkekompetente er grunnlaget for behandlingen allmenn interesse (art. 6.1 e, 9.2 j, jf. personopplysningsloven §§ 8 og 9).

. NSD vurderer at den planlagte behandlingen av personopplysninger er lovlig fordi:

- det skal innhentes uttrykkelig samtykke fra de registrerte og
- forsker har oppfylt den særskilte rådføringsplikten

- behandlingen har allmenn interesse

4. De registrertes rettigheter

NSD vurderer at den registrerte har krav på å benytte seg av følgende rettigheter: informasjon, innsyn, retting og sletting av personopplysninger, dataportabilitet, protest.

NSD finner at informasjonsskrivet vil gi de registrerte god informasjon om hva behandlingen innebærer og om hvilke rettigheter de har.

Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har Universitetet i Agder plikt til å svare innen en måned. Vi forutsetter at prosjektansvarlig informerer institusjonen så fort som mulig og at Universitetet i Agder har rutiner for hvordan henvendelser fra registrerte skal følges opp.

5. Informasjonssikkerhet

NSD forutsetter at personopplysningene behandles i tråd med personvernforordningens krav og Universitetet i Agder sine retningslinjer for informasjonssikkerhet.

6. Varighet

Ifølge meldeskjema skal personopplysninger behandles frem til 31.12.2027. Opplysninger som kan knyttes til en enkeltperson skal da slettes/anonymiseres.

Anonymisering innebærer å bearbeide datamaterialet slik at ingen enkeltpersoner kan bli identifisert.

Det gjøres ved å
- Slette navn, fødselsnummer/andre ID-nummer, adresse, telefonnummer, epostadresse, IP-adresse og andre nettidentifikatorer
- Slette eller grovkategorisere bakgrunnsopplysninger
- Slette eller sladde bilder/videopptak og lydopptak

Universitetet i Agder må kunne dokumentere at datamaterialet er anonymisert.

Meld fra om endringer
Dersom behandlingen av personopplysninger endrer seg, kan det være nødvending å melde dette til NSD via Min side. På våre nettsider informerer vi om hvilke endringer som må meldes. Vent på svar før endringen gjennomføres.

Informasjon om behandlingen publiseres på Min side, Meldingsarkivet og nettsider
Alle relevante saksopplysninger og dokumenter er tilgjengelig:
- via Min side for forskere, veiledere og studenter
- via Meldingsarkivet for ansatte med internkontrolloppgaver ved Universitetet i Agder

NSD tar kontakt om status for behandling av personopplysninger
Etter avtale med Universitetet i Agder vil NSD følge opp behandlingen av personopplysninger underveis, og ved planlagt avslutning.

Vi sender da en skriftlig henvendelse til prosjektansvarlig og ber om skriftlig svar på status for behandling av personopplysninger.

Se våre nettsider eller ta kontakt ved spørsmål. Vi ønsker lykke til med prosjektet.

Med vennlig hilsen

Marianne Høgetveit Myhren
seksjonsleder

Anne-Mette Somby
spesialrådgiver

Appendix 12

Evaluation from the Regional Ethics Committee for Medical Research (REK)

Lene Baagøe Laukvik

Fra:	post@helseforskning.etikkom.no
Sendt:	fredag 8. juni 2018 11.03
Til:	Lene Baagøe Laukvik
Emne:	Sv: REK sør-øst 2018/1158 Standardisert terminologi i sykepleiedokumentasjon

Vår ref.nr.: 2018/1158 A

Vi viser til skjema for framleggingsvurdering, mottatt 31.05.2018, vår referanse 2018/1158.

Prosjektets tittel er «Standardisert terminologi i sykepleiedokumentasjon».

Henvendelsen er vurdert av komiteens leder, Knut Engedal.

Helseforskningsloven gjelder for medisinsk og helsefaglig forskning på mennesker, humant biologisk materiale eller helseopplysninger, jf § 2. Medisinsk og helsefaglig forskning defineres som virksomhet som utføres med vitenskapelig metodikk for å skaffe til veie ny kunnskap om helse og sykdom, jf §4 bokstav a.

Studien har følgende problemstilling:

"*Formålet med studien er å fastslå kliniske effekter av standardisert sykepleieterminologi (ST)identifisert for å forbedre dokumentasjon sykepleie til personer med demens som bor i sykehjem. Studiespørsmål: I hvilken grad utrykker dokumentasjonen sentrale elementer i sykepleieprosessen ogpersonsentrert omsorg? På hvilken måte planlegger sykepleier å uttrykke sykepleieprosessen ogdemensomsorg i pleieplanen? På hvilken måte gjøres pleieplanen individuell? I hvilken grad bidrar STtil sammenheng og personsentrert omsorg i dokumentasjon? I hvilken grad bidrar ST til endring av sykepleieres arbeidsmetoder?*".

Basert på opplysningene som gis, er ikke formålet med prosjektet å fremskaffe ny kunnskap om helse og sykdom, men snarere vurdere kvalitet på dokumentasjon. Prosjektet vurderes å være et kvalitetssikringsprosjekt.

Kvalitetssikring kan defineres som prosjekter, undersøkelser, evalueringer o.l. som har som formål å kontrollere at diagnostikk og behandling gir de intenderte resultater, eller har som formål å etterprøve behandlingsvirksomhet i alle deler og ledd, herunder å studere om beste behandlingsmetode følges. Kvalitetssikringsprosjekter omfattes ikke av helseforskningslovens virkeområde, som omfatter prosjekter med det formål å skaffe ny kunnskap om helse og sykdom, jf. helseforskningsloven § 2 og § 4 a, og er dermed ikke fremleggingspliktig for REK.

Det er institusjonens ansvar på å sørge for at prosjektet gjennomføres på en forsvarlig måte med hensyn til for eksempel regler for taushetsplikt og personvern samt innhenting av stedlige godkjenninger.

REK gjør oppmerksom på at det faktum at et prosjekt blir vurdert av REK til å være et kvalitetssikringsprosjekt utenfor helseforskningslovens virkeområde ikke er til hinder for at resultater fra prosjektet kan publiseres.

REK gjør oppmerksom på at det er Helsedirektoratet som gir dispensasjon fra taushetsplikten for å bruke journaldata til kvalitetssikring, jf. helsepersonelloven § 29 b.

Jeg gjør oppmerksom på at konklusjonen er å anse som veiledende jfr. forvaltningsloven § 11.

Dersom dere likevel ønsker å søke REK vil søknaden bli behandlet i komitémøte, og det vil bli fattet et enkeltvedtak etter forvaltningsloven.

Med vennlig hilsen
Leena Heinonen
rådgiver
post@helseforskning.etikkom.no
T: 22845522

Regional komité for medisinsk og helsefaglig forskningsetikk REK sør-øst-Norge (REK sør-øst)
http://helseforskning.etikkom.no

REK
REGIONALE KOMITEER FOR MEDISINSK OG HELSEFAGLIG FORSKNINGSETIKK

Appendix 13

Approval from the Ethical Committee at the Faculty for Health and Sports Sciences, University of Agder

UNIVERSITETET I AGDER
FAKULTET FOR HELSE- OG IDRETTSVITENSKAP

Kristiansand 3 oktober 2018

Til Lene Baagøe Laukvik

Forskningsetisk komite ved Fakultet for helse og -idrettsvitenskap behandlet 2 oktober 2018 din søknad om etisk godkjenning av prosjektet» Standardisert terminologi – hvordan ivareta helhet og personsentrert omsorg i planlegging av sykepleie til personer med demens»?

FEK har ingen etiske betenkeligheter med gjennomføring av prosjektet under forutsetning av gjennomført som beskrevet i søknaden som inkluderer godkjenning fra NSD.

Lykke til med et viktig prosjekt!

På vegne av Forskningsetisk komite

Anne Valen-Sendstad Skisland

Leder

Appendix 14

Information about sub study 1 and informed consent – patient

Vil du delta i forskningsprosjektet

” Standardisert terminologi – hva dokumenterer helsepersonell”?

Til NN

Dette er et spørsmål til deg om tillatelse til å bruke opplysninger fra din pasientjournal i et forskningsprosjekt. Vi ønsker å se på hvordan helsepersonell dokumenterer sykepleie i behandlingsplanen. Videre vil vi se på hvilke begreper helsepersonell bruker når de skal planlegge og dokumentere sykepleie. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål
Studien er en del av et doktorgradsprosjekt. Gjennom denne delstudien ønsker vi å se nærmere på innholdet i dokumentasjon av sykepleie. Vi ønsker å få kunnskap om hva sykepleiere dokumenterer. For å få denne kunnskapen går vi systematisk gjennom det sykepleierne på avdelingen dokumenterer i pasientjournalen din.

Hvem er ansvarlig for forskningsprosjektet?
Det er Universitetet i Agder som er ansvarlig for studien, og den gjennomføres som et ledd i et doktorgradsarbeid ved Institutt for Helse- og sykepleievitenskap.
Prosjektleder er PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), Tlf: 412 58 366, hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845 og medveileder er professor Åshild Slettebø (ashild.slettebo@uia.no), Tlf: 992 43 315.
Norsk Sykepleierforbund har finansiert studien.
Personalet ved din avdeling overleverer denne forespørselen til deg på vegne av oss.

Hvorfor får du spørsmål om å delta?
Sykehjemmet du bor på har et elektronisk dokumentasjonssystem som er tilrettelagt for bruk av standardiserte ord og uttrykk. Det er et fagspråk sykepleierne kan bruke når de skal dokumentere sykepleie til deg, og det er viktig for studien.
Vi ønsker tilgang til din pasientjournal fordi det sykepleierne skriver her vil gi oss opplysninger om hva de dokumenterer.

Hva innebærer det for deg å delta?
Du vil ikke være direkte involvert studien. Vi vil samle aktuelle opplysninger vi har behov for fra pasientjournalen din. Aktuell informasjon vi trenger vil være sykepleiedokumentasjon med tilhørende notater fra tre måneder tilbake. Vi vil systematisk gå gjennom behandlingsplanen din med tilhørende notater og se på livshistorien din dersom den er inkludert. Opplysninger som kan identifisere deg, sånn som navn og fødselsnummer vil bli tatt bort.

Det er frivillig å delta
Det er frivillig å delta i prosjektet. Hvis du velger å gi tillatelse til at vi kan bruke opplysninger fra deler av pasientjournalen din, kan du når som helst trekke tillatelsen tilbake uten å oppgi noen grunn. Alle opplysninger om deg vil da bli anonymisert. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil gi tillatelse eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger
Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

Prosjektleder Lene B. Laukvik har ansvar for den daglige driften av forskningsprosjektet og at opplysninger om deg blir behandlet på en sikker måte.

Istedenfor navn og fødselsnummer setter vi et tall på de opplysningene vi mottar fra journalen din. Opplysninger om alder, kjønn, total botid ved sykehjemmet og type avdeling du bor på vil bli registrert og koblet til tallkoden fra journalen på en egen liste. Informasjon uten navn og fødselsnummer fra behandlingsplanen med tilhørende notater samt livshistorien din, vil bli registrert. Vi oppbevarer informasjonen på nettverk i Universitetet i Agder sin server. I tillegg oppbevares den på minnepenn i PDF format og på bærbar PC med brukernavn og passordbeskyttelse som prosjektleder har tilgang til. Datamaskinen oppbevares i låsbart rom. Papirbaserte notater og minnepenn oppbevares i låsbart skap. Prosjektleder har tilgang til nøkkelen. Hovedveileder professor Mariann Fossum og medveileder professor Åshild Slettebø ved Universitetet i Agder, vil også ha tilgang til datamaterialet.
All informasjon om deg vil bli anonymisert. Ved publikasjon av resultatene av studien skal det ikke være mulig å gjenkjenne deg.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?
Prosjektet skal etter planen avsluttes 7.februar 2022. Informasjon om deg vil bli anonymisert og slettet senest 5 år etter prosjektets slutt (2027). Vi oppbevarer datamaterialet i fem år etter prosjektets slutt for etterprøvbarhet og uforutsette hendelser underveis. Opplysningene lagres og oppbevares som beskrevet tidligere.

Dine rettigheter
Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger, og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke.
På oppdrag fra Universitetet i Agder har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- Universitetet i Agder ved PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), tlf: 412 58 366 og hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845.
- Vårt personvernombud på Universitetet i Agder: Ina Danielsen, (personvernombud@uia.no).
- NSD – Norsk senter for forskningsdata AS, på epost (personvernombudet@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig (Forsker/veileder)	Eventuelt student

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «Standardisert terminologi –hva dokumenterer helsepersonell?», og har fått anledning til å stille spørsmål. Jeg gir tillatelse til:

☐ At journalen min deltar i en vitenskapelig journalgranskning.
☐ At mine opplysninger lagres etter prosjektets slutt for etterprøvbarhet og eventuelle uforutsette hendelser.

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, februar 2022 og senest februar 2027.

(Signert av prosjektdeltaker, dato)

Appendix 15

Information about sub study 1 and informed consent – next of kin

Vil din nærstående delta i forskningsprosjektet

” Standardisert terminologi – hva dokumenterer helsepersonell”?

Til…………………………

Dette er et spørsmål til deg som er nærstående til NN. Vi spør om din tillatelse til å bruke avidentifiserte opplysninger fra NN sin pasientjournal i et forskningsprosjekt hvor vi ønsker å se på hvordan helsepersonell dokumenterer sykepleie i behandlingsplanen og hvilke begreper helsepersonell bruker når de skal planlegge og dokumentere sykepleie. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for din nærstående.

Formål

Studien er en del av et doktorgradsprosjekt. Gjennom denne delstudien ønsker vi å se nærmere på innholdet i dokumentasjon av sykepleie. Vi ønsker å få kunnskap om hva sykepleiere dokumenterer. For å få denne kunnskapen går vi systematisk gjennom det sykepleierne på avdelingen dokumenterer i pasientjournalen til din nærstående.

Hvem er ansvarlig for forskningsprosjektet?

Det er Universitetet i Agder som er ansvarlig for studien, og den gjennomføres som et ledd i et doktorgradsarbeid ved Institutt for Helse- og sykepleievitenskap.
Prosjektleder er PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), Tlf: 412 58 366, hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845 og medveileder er professor Åshild Slettebø (ashild.slettebo@uia.no), Tlf: 992 43 315.
Norsk Sykepleierforbund har finansiert studien.
Personalet ved avdelingen overleverer denne forespørselen på vegne av oss.

Hvorfor får din nærstående spørsmål om å delta?

Sykehjemmet din nærstående bor på har et elektronisk dokumentasjonssystem som er tilrettelagt for bruk av standardiserte ord og uttrykk. Det er et fagspråk sykepleierne kan bruke når de skal dokumentere sykepleie til din nærstående, og det er viktig for studien.
Vi ønsker tilgang til pasientjournalen til din nærstående fordi det sykepleierne skriver her vil gi oss opplysninger om hva de dokumenterer.

Hva innebærer det for din nærstående å delta?

Din nærstående vil ikke være direkte involvert studien. Vi vil samle aktuelle opplysninger vi har behov for fra pasientjournalen. Aktuell informasjon vi trenger vil være sykepleiedokumentasjon med tilhørende notater fra tre måneder tilbake. Vi vil systematisk gå gjennom behandlingsplanen med tilhørende notater og se på livshistorien dersom den er inkludert. Opplysninger som kan identifisere din nærstående, sånn som navn og fødselsnummer vil bli tatt bort.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å gi tillatelse til at vi kan bruke opplysninger fra deler av pasientjournalen til din nærstående, kan du når som helst trekke tillatelsen tilbake uten å oppgi noen grunn. Alle opplysninger om din nærstående vil da bli anonymisert. Det vil ikke ha noen negative konsekvenser hvis du ikke vil gi tillatelse eller senere velger å trekke tillatelsen.

Din nærstående sitt personvern – hvordan vi oppbevarer og bruker opplysningene

Vi vil bare bruke opplysningene om din nærstående til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.
Prosjektleder Lene B. Laukvik har ansvar for den daglige driften av forskningsprosjektet og at opplysninger om blir samlet i dette prosjektet blir behandlet på en sikker måte.

Istedenfor navn og fødselsnummer setter vi et tall på de opplysningene vi mottar fra journalen. Opplysninger om alder, kjønn, total botid ved sykehjemmet og type avdeling din nærstående bor på vil bli registrert og koblet til tallkoden fra journalen på en egen liste. Informasjon uten navn og fødselsnummer blir oppbevart på nettverk i Universitetet i Agder sin server. I tillegg oppbevares den på minnepenn i PDF format og på bærbar PC med brukernavn og passordbeskyttelse som prosjektleder har tilgang til. Datamaskinen oppbevares i låsbart rom. Papirbaserte notater og minnepenn oppbevares i låsbart skap. Prosjektleder har tilgang til nøkkel til låsbart skap og rom. Hovedveileder professor Mariann Fossum og medveileder professor Åshild Slettebø ved Universitetet i Agder, vil også ha tilgang til datamaterialet.
All informasjon om din nærstående vil bli anonymisert ved publikasjon av resultatene av studien og det skal ikke være mulig å gjenkjenne ham/henne i publiseringsmaterialet.

Hva skjer med opplysningene til din nærstående når vi avslutter forskningsprosjektet?
Prosjektet skal etter planen avsluttes 7. februar 2022. Informasjon om din nærstående vil bli anonymisert og slettet senest 5 år etter prosjektets slutt (2027). Vi oppbevarer datamaterialet i fem år etter prosjektets slutt for etterprøvbarhet og uforutsette hendelser underveis. Opplysningene lagres og oppbevares som beskrevet tidligere.

Din nærstående sine rettigheter
Så lenge din nærstående kan identifiseres i datamaterialet, har du på vegne av ham/henne rett til:

- innsyn i hvilke personopplysninger som er registrert om din nærstående,
- å få rettet personopplysninger om din nærstående,
- få slettet personopplysninger om din nærstående,
- få utlevert en kopi av din nærstående sine personopplysninger, og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av din nærstående sine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om din nærstående?
Vi behandler opplysninger om din nærstående basert på ditt samtykke.
På oppdrag fra Universitetet i Agder har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan du finne ut mer?
Hvis du har spørsmål til studien, ønsker å benytte deg av rettigheter på vegne av din nærstående, ta kontakt med:

- Universitetet i Agder ved PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), tlf: 412 58 366 og hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845.
- Vårt personvernombud: Ina Danielsen, (personverombud@uia.no).
- NSD – Norsk senter for forskningsdata AS, på epost (personvernombudet@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig
(Forsker/veileder)

Eventuelt student

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «Standardisert terminologi –hva dokumenterer helsepersonell?», og har fått anledning til å stille spørsmål. Jeg gir på vegne av min nærstående ……………………………., tillatelse til:

- ☐ At …………………………………….. sin journal deltar i en vitenskapelig journalgranskning.
- ☐ At …………………………………….. sine opplysninger lagres etter prosjektets slutt for etterprøvbarhet og eventuelle uforutsette hendelser.

Jeg samtykker til at min nærstående sine opplysninger behandles frem til prosjektet er avsluttet, februar 2022 og senest februar 2027.

(Signert av pårørende på vegne av prosjektdeltaker, dato)

Appendix 16

Information about sub study 2 and informed consent – patient

Vil du delta i forskningsprosjektet

” Standardisert terminologi – hvordan dokumenterer helsepersonell”?

Til NN

Dette er et spørsmål til deg om tillatelse til å bruke opplysninger fra din pasientjournal i et forskningsprosjekt. Vi ønsker å se på hvordan helsepersonell dokumenterer sykepleie i behandlingsplanen din. Videre vil vi se på hvilke begreper helsepersonell bruker når de skal planlegge og dokumentere sykepleie. I dette informasjonsskrivet gir vi deg informasjon prosjektets mål og hva tillatelsen vil innebære for deg.

Formål
Studien er en del av et doktorgradsprosjekt, og gjennom denne del-studien ønsker vi å se nærmere på hvordan sykepleierne planlegger og vurderer behovet for sykepleie. Ved at vi observerer og intervjuer sykepleierne mens de dokumenterer kan vi få en dypere forståelse hvordan sykepleierne jobber med behandlingsplanen din. Vi kan finne ut hvilke ord og uttrykk de velger for å utvikle behandlingsplanen i tråd med dine behov. Videre kan vi få forståelse for hvorfor sykepleier foretar disse valgene.

Hvem er ansvarlig for forskningsprosjektet?
Det er Universitetet i Agder som er ansvarlig for studien, og den gjennomføres som et ledd i et doktorgradsarbeid ved Institutt for Helse- og sykepleievitenskap.
Prosjektleder er PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), Tlf: 412 58 366, hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845 og medveileder er professor Åshild Slettebø (ashild.slettebo@uia.no), Tlf: 992 43 315.
Norsk Sykepleierforbund har finansiert studien.
Personalet ved din avdeling overleverer denne forespørselen til deg på vegne av oss.

Hvorfor får du spørsmål om å gi tillatelse?
Sykehjemmet du bor på har et elektronisk dokumentasjonssystem som er tilrettelagt for bruk av standardiserte ord og uttrykk. Det er et fagspråk sykepleierne kan bruke når de skal dokumentere sykepleie, og det er viktig for studien.
Vi ønsker tillatelse til å være til stede når sykepleier skal jobbe med behandlingsplanen din. På den måten kan vi få direkte informasjon om hva sykepleier tenker og hvilke valg hun/han tar i dokumentasjonsprosessen. På den måten har vi mulighet til å fange opp noe av den kunnskapen som sykepleier har, men som ikke nødvendigvis kommer til uttrykk i den skriftlige dokumentasjonen.

Hva innebærer det for deg å gi tillatelse?
Du vil ikke være direkte involvert i studien. Vi vil samle aktuell informasjon om dokumentasjonsprosessen ved å observere og intervjue en og en sykepleier. Vi vil ta lydopptak og notater når vi er tilstede sammen med sykepleieren. I denne prosessen er det mulighet for at opplysninger som kan identifisere deg kan komme til uttrykk. Disse opplysningene er ikke nødvendige for hensikten med studien og vil bli fjernet fra datamaterialet.

Det er frivillig å delta
Det er frivillig å gi tillatelse. Hvis du velger å gi tillatelse til at vi kan være tilstede mens sykepleier dokumenterer i journalen din, kan du når som helst trekke tillatelsen tilbake uten å oppgi noen grunn.

Alle opplysninger om deg vil da bli anonymisert. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil gi tillatelse eller senere velger å trekke tillatelsen.

Ditt personvern – hvordan vi oppbevarer og bruker opplysninger
Vi vil bare bruke opplysningene fra sykepleier til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.
Prosjektleder Lene B. Laukvik har ansvar for den daglige driften av forskningsprosjektet og at opplysninger om deg som måtte fremkomme blir behandlet på en sikker måte.

Dersom opplysninger som navn og fødselsnummer skulle komme til uttrykk mens vi observerer og intervjuer sykepleieren vil disse opplysningene ikke bli registrert. Disse opplysningene vil ikke bli tatt med når lydopptaket transkriberes av prosjektleder, Lene B. Laukvik. Alle opplysninger om deg vil bli anonymisert og det skal ikke være mulig å gjenkjenne deg ved publisering av resultater. Lydopptak knyttet til observasjon og intervju av sykepleierne vil bli gjort på universitetets båndopptaker. Skriftlig datamateriale vil bli oppbevart på nettverk i Universitetet i Agder sin server og på bærbar PC med brukernavn og passordbeskyttelse som prosjektleder har tilgang til. Hovedveileder professor Mariann Fossum og medveileder professor Åshild Slettebø ved Universitetet i Agder, vil også ha tilgang til datamaterialet.

Hva skjer med opplysningene når vi avslutter forskningsprosjektet?
Prosjektet skal etter planen avsluttes 07.02.2022. Lydopptak og skriftlig datamateriale vil bli anonymisert og slettet senest fem år etter prosjektets slutt. Vi oppbevarer datamaterialet i fem år etter prosjektets slutt for etterprøvbarhet og uforutsette hendelser underveis. Opplysningene lagres og oppbevares som beskrevet tidligere.

Dine rettigheter
Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger, og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

På oppdrag fra Universitetet i Agder har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- Universitetet i Agder ved PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), Tlf: 412 58 366 eller hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845.
- Vårt personvernombud ved Universitetet i Agder: Ina Danielsen, (personvernombud@uia.no).
- NSD – Norsk senter for forskningsdata AS, på epost (personvernombudet@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig Eventuelt student
(Forsker/veileder)

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «Standardisert terminologi –hvordan dokumenterer helsepersonell», og har fått anledning til å stille spørsmål. Jeg samtykker til:

- ☐ At forsker fra Universitetet i Agder, Lene Baagøe Laukvik, kan være til stede og ta notater mens sykepleier dokumenterer i NN sin journal.
- ☐ At forsker fra Universitetet i Agder, Lene Baagøe Laukvik, kan intervjue sykepleier om dokumentasjonsprosessen og ta samtalen opp på lydbånd.

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, februar 2022 og senest februar 2027.

(Signert av prosjektdeltaker, dato)

Appendix 17

Information about sub study 2 and informed consent – next of kin

Vil din nærstående delta i forskningsprosjektet

” Standardisert terminologi – hvordan dokumenterer helsepersonell”?

Til…………………………

Dette er et spørsmål til deg som er nærstående til NN. Vi spør om din tillatelse til å bruke avidentifiserte opplysninger fra NN sin pasientjournal i et forskningsprosjekt hvor vi ønsker å se på hvordan helsepersonell dokumenterer sykepleie i behandlingsplanen og hvilke begreper helsepersonell bruker når de skal planlegge og dokumentere sykepleie. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for din nærstående.

Formål

Studien er en del av et doktorgradsprosjekt, og gjennom denne delstudien ønsker vi å se nærmere på hvordan sykepleiere vurderer og planlegger sykepleie. Ved at vi observerer og intervjuer sykepleierne mens de dokumenterer i pasientjournalen til din nærstående kan vi få en dypere forståelse for hvordan sykepleiere utvikler og oppdaterer behandlingsplanen til din nærstående, hvilke ord og uttrykk de velger for å utvikle behandlingsplanen i tråd med NN sine behov og hvorfor de foretar disse valgene i dokumentasjonsprosessen

Hvem er ansvarlig for forskningsprosjektet?

Det er Universitetet i Agder som er ansvarlig for studien, og den gjennomføres som et ledd i et doktorgradsarbeid ved Institutt for Helse- og sykepleievitenskap.
Prosjektleder er PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), Tlf: 412 58 366, hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845 og medveileder er professor Åshild Slettebø (ashild.slettebo@uia.no), Tlf: 992 43 315.
Norsk Sykepleierforbund har finansiert studien.
Personalet ved avdelingen overleverer denne forespørselen på vegne av oss.

Hvorfor får du spørsmål på vegne av din nærstående om tillatelse?

Sykehjemmet din nærstående bor på har et elektronisk dokumentasjonssystem som er tilrettelagt for bruk av standardiserte ord og uttrykk. Det er et fagspråk sykepleierne kan bruke når de skal oppdatere behandlingsplanen, og det er viktig for studien.
Vi ønsker tillatelse til å være til stede når sykepleier skal jobbe med behandlingsplanen til din nærstående for å få kunnskap om hvilke vurderinger sykepleierne gjør og hvilke valg hun/han tar i dokumentasjonsprosessen. På den måten kan vi lære mer om dokumentasjonen som sykepleierne gjør som en del av behandlingsopplegget på sykehjemmet.

Hva innebærer det for din nærstående at du gir tillatelse?

Din nærstående vil ikke være direkte involvert i studien. Vi vil samle aktuell informasjon om dokumentasjonsprosessen ved å observere og intervjue de sykepleierne som har sagt seg villig til å delta mens de jobber med behandlingsplaner. Vi vil ta lydopptak og notater når vi er tilstede sammen med sykepleier. I denne prosessen er det mulighet for at opplysninger som kan identifisere din nærstående kan komme til uttrykk. Disse opplysningene er ikke nødvendige for hensikten med studien og vil bli fjernet fra datamaterialet.

Det er frivillig å delta

Det er frivillig å gi tillatelse. Hvis du velger å gi tillatelse til at vi kan være tilstede mens sykepleier dokumenterer i journalen til din nærstående, kan du når som helst trekke tillatelsen tilbake uten å oppgi noen grunn. Alle opplysninger om ham/henne vil da bli anonymisert. Det vil ikke ha noen negative konsekvenser for din nærstående hvis du ikke vil gi tillatelse eller senere velger å trekke tillatelsen.

Personvern – hvordan vi oppbevarer og bruker opplysninger
Vi vil bare bruke opplysningene fra sykepleier til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.
Prosjektleder Lene B. Laukvik har ansvar for den daglige driften av forskningsprosjektet og at opplysninger som samles i prosjektet blir behandlet på en sikker måte.

Opplysninger som navn og fødselsnummer vil ikke bli tatt med når lydopptaket transkriberes av prosjektleder, Lene B. Laukvik. Alle opplysninger om din nærstående vil bli anonymisert og det skal ikke være mulig å gjenkjenne ham/henne ved publisering av resultater. Lydopptak knyttet til observasjon og intervju av sykepleierne vil bli gjort på universitetets båndopptaker. Skriftlig datamateriale vil bli oppbevart på nettverk i Universitetet i Agder sin server og på bærbar PC med brukernavn og passordbeskyttelse som prosjektleder har tilgang til. Hovedveileder professor Mariann Fossum og medveileder professor Åshild Slettebø ved Universitetet i Agder, vil også ha tilgang til datamaterialet.

Hva skjer med opplysningene når vi avslutter forskningsprosjektet?
Prosjektet skal etter planen avsluttes 07.02.2022. Lydopptak og skriftlig datamateriale vil bli anonymisert og slettet senest fem år etter prosjektets slutt. Vi oppbevarer datamaterialet i fem år etter prosjektets slutt for etterprøvbarhet og uforutsette hendelser underveis. Opplysningene lagres og oppbevares som beskrevet tidligere.

Din nærstående sine rettigheter
Så lenge din nærstående kan identifiseres i datamaterialet, har du på vegne av ham/henne rett til:

- innsyn i hvilke personopplysninger som er registrert om din nærstående,
- å få rettet personopplysninger om din nærstående,
- få slettet personopplysninger om din nærstående,
- få utlevert en kopi av din nærstående sine personopplysninger, og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av din nærstående sine personopplysninger.

På oppdrag fra Universitetet i Agder har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- Universitetet i Agder ved PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), Tlf: 412 58 366 eller hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845.
- Vårt personvernombud ved Universitetet i Agder: Ina Danielsen, (personvernombud@uia.no).
- NSD – Norsk senter for forskningsdata AS, på epost (personvernombudet@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig Eventuelt student
(Forsker/veileder)

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «Standardisert terminologi –hvordan dokumenterer helsepersonell?», og har fått anledning til å stille spørsmål. Jeg gir på vegne av min nærstående ………………………………. tillatelse til:

- ☐ At forsker fra Universitetet i Agder, Lene Baagøe Laukvik, kan være til stede og ta notater mens sykepleier dokumenterer i …………………………………… sin journal.
- ☐ At forsker fra Universitetet i Agder, Lene Baagøe Laukvik, kan intervjue sykepleier om dokumentasjonsprosessen og ta samtalen opp på lydbånd.

Jeg samtykker til at min nærstående sine opplysninger behandles frem til prosjektet er avsluttet, februar 2022 og senest februar 2027.

(Signert av pårørende på vegne av prosjektdeltaker, dato)

Appendix 18

Information about sub study 2 and informed consent – nurse

Vil du delta i forskningsprosjektet

”Standardisert terminologi – hvordan dokumenterer helsepersonell”?

Til NN

Dette er et spørsmål til deg om deltagelse i et forskningsprosjekt hvor vi ønsker å se på hvordan helsepersonell dokumenterer sykepleie i behandlingsplanen og hvilke begreper helsepersonell bruker når de skal planlegge og dokumentere sykepleie. I dette informasjonsskrivet presenteres målene for prosjektet og hva deltakelse vil innebære for deg.

Formål
Studien er en del av et doktorgradsprosjekt, og gjennom denne delstudien ønsker vi å se nærmere på hvordan sykepleiere vurderer og planlegger sykepleie. Ved at vi observerer og intervjuer sykepleierne mens de dokumenterer i journalen ønsker vi få en bedre forståelse hvordan sykepleiere planlegger og dokumenterer sykepleie, hvilke ord og uttrykk de velger og hvorfor sykepleiere foretar disse valgene i dokumentasjonsprosessen.

Hvem er ansvarlig for forskningsprosjektet?
Det er Universitetet i Agder som er ansvarlig for studien, og den gjennomføres som et ledd i et doktorgradsarbeid ved Institutt for Helse- og sykepleievitenskap.
Prosjektleder er PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), Tlf: 412 58 366, hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845 og medveileder er professor Åshild Slettebø (ashild.slettebo@uia.no), Tlf: 992 43 315.
Norsk Sykepleierforbund har finansiert studien.

Hvorfor får du spørsmål om å delta?
Sykehjemmet du arbeider ved har et elektronisk dokumentasjonssystem som er tilrettelagt for bruk av standardiserte ord og uttrykk. Det er et fagspråk sykepleierne kan bruke når de skal oppdatere behandlingsplanen, og det er viktig for studien.
Vi ønsker din deltagelse fordi du innehar nødvendig kompetanse i klinisk arbeid med personer med demens og å dokumentere sykepleie til denne pasientgruppen. Dette gjør at du har de beste forutsetninger for å gi oss helhetlig og relevant informasjon om vurdering, planlegging og dokumentasjon av sykepleie til personer med demens. Vi har behov for 15 sykepleiere med din kompetanse og erfaring og vi henvender oss til flere sykehjem i din kommune og andre kommuner i Norge for rekruttering til studien.

Vi har vært i kontakt med daglig leder ved dette sykehjemmet og fått tillatelse til å kontakte deg med forespørsel om deltagelse.

Hva innebærer det for deg å delta?
Hvis du velger å delta innebærer det at du underveis i dokumentasjonsprosessen snakker ut/sier høyt det du tenker mens du dokumenterer i pasientjournalen. For å få med viktig informasjon om det du sier, tar vi opp prosessen på lydbånd slik at vi kan analysere datamaterialet på best mulig måte i etterkant. Prosjektleder, Lene B. Laukvik vil være til stede i rommet mens du dokumenterer. Hun vil kun være til stede når du jobber med sykepleiedokumentasjon hvor pasient/pårørende har godkjent tilstedeværelsen. Hun vil ikke være deltagende i prosessen, kun observere og notere. Du vil få en halv time til disposisjon for dokumentasjon. Rett etter du er ferdig med å dokumentere vil det bli

gjennomført et oppfølgingsintervju på ca 30 minutter for å avklare eventuelle spørsmål. Intervjuet blir tatt opp på lydbånd slik at vi kan analysere datamaterialet på en tilfredsstillende måte.

Det ansees ikke å være noen risiko forbundet med deltagelse i studien. De ulempene som eventuelt kan oppstå, er tiden man bruker på deltagelse og at det kan oppleves ubehagelig å bli observert og intervjuet mens du jobber. Vi vil gjøre vårt ytterste for at samarbeidsklima skal oppleves godt og vil rette fokus mot læring.

Det er frivillig å delta
Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykke tilbake uten å oppgi noen grunn. Alle opplysninger om deg vil da bli anonymisert. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg. Det vil ikke påvirke forholdet ditt til din nærmeste leder eller til dine kollegaer ved sykehjemmet.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger
Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.
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Vi vil registrere personidentifiserbare opplysninger som navn, stilling, klinisk erfaring, erfaring med dokumentasjon i elektronisk pasientjournal og utdanningstype som bakgrunnsinformasjon. Disse opplysningene og din kontaktinformasjon vil bli erstattet av en kode som lagres på egen navneliste på papir og oppbevares adskilt fra øvrig datamateriale i låsbart skap med nøkkel som prosjektleder, Lene Baagøe Laukvik har tilgang til. Lydopptak vil bli gjort på universitetets båndopptaker. Transkripsjon av lydopptak vil bli gjort av prosjektleder og oppbevares på nettverk i Universitetet i Agder sin server og på bærbar PC med brukernavn og passordbeskyttelse som prosjektleder har tilgang til. Bærbar PC oppbevares i låsbart rom som prosjektleder har tilgang til. Hovedveileder professor Mariann Fossum og medveileder professor Åshild Slettebø ved Universitetet i Agder, vil også ha tilgang til datamaterialet.
Personidentifiserbare opplysninger anonymiseres ved publisering av resultater av studien og det skal ikke være mulig å kjenne deg igjen i det materialet som publiseres.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?
Prosjektet skal etter planen avsluttes 07.02.2022. Lydopptak og skriftlig datamateriale vil bli anonymisert og slettet senest fem år etter prosjektets slutt. Vi oppbevarer datamaterialet i fem år etter prosjektets slutt for etterprøvbarhet og uforutsette hendelser underveis. Opplysningene lagres og oppbevares som beskrevet tidligere.

Dine rettigheter
Så lenge du kan identifiseres i datamaterialet, har du rett til:
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- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra Universitetet i Agder har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- Universitetet i Agder ved PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), Tlf: 412 58 366 eller hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845.
- Vårt personvernombud ved Universitetet i Agder: Ina Danielsen, (personvernombud@uia.no).
- NSD – Norsk senter for forskningsdata AS, på epost (personvernombudet@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig (Forsker/veileder)	Eventuelt student

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «Standardisert terminologi –hvordan dokumenterer helsepersonell», og har fått anledning til å stille spørsmål. Jeg samtykker til:

- ☐ Å delta i observasjonsstudiet.
- ☐ Å delta i intervju.
- ☐ At mine opplysninger lagres etter prosjektets slutt for etterprøvbarhet og eventuelle uforutsette hendelser.

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, februar 2022 og senest februar 2027.

(Signert av prosjektdeltaker, dato)

Appendix 19

Information about sub study 3 and informed consent

Vil du delta i forskningsprosjektet

Standardisert terminologi – hvordan ivaretas kontinuitet og kvalitet?

Dette er et spørsmål til deg om deltagelse i et forskningsprosjekt hvor vi ønsker å se på hvordan helsepersonell dokumenterer sykepleie i behandlingsplanen og hvilke begreper helsepersonell bruker når de skal planlegge og dokumentere sykepleie. I dette informasjonsskrivet presenteres målene for prosjektet og hva deltakelse vil innebære for deg.

Formål
Studien er en del av et doktorgradsprosjekt, og gjennom denne del-studien ønsker vi å se nærmere på hvordan bruk av standardisert terminologi (fagspråk) kan sikre kontinuitet og kvalitet i vurdering og planlegging av sykepleie. Ved at sykepleiere deler sine erfaringer og synspunkter, kan vi få en dypere forståelse for og innsikt i hvordan sykepleiere sikrer kontinuitet og kvalitet i vurdering og planlegging av sykepleie.

Hvem er ansvarlig for forskningsprosjektet?
Det er Universitetet i Agder som er ansvarlig for studien, og den gjennomføres som et ledd i et doktorgradsarbeid ved Institutt for Helse- og sykepleievitenskap.
Prosjektleder er PhD-student Lene Baagøe Laukvik (lene.laukvik@uia.no), Tlf: 412 58 366, hovedveileder er professor Mariann Fossum (mariann.fossum@uia.no), Tlf: 918 54 845 og medveileder er professor Åshild Slettebø (ashild.slettebo@uia.no), Tlf: 992 43 315.
Norsk Sykepleierforbund har finansiert studien.

Hvorfor får du spørsmål om å delta?
Sykehjemmet du arbeider ved har et elektronisk dokumentasjonssystem som er tilrettelagt for bruk av standardisert terminologi, og det er viktig for studien.
Vi ønsker din deltagelse fordi du innehar nødvendig kompetanse og erfaring i klinisk arbeid med personer med demens og i å dokumentere sykepleie i elektronisk pasientjournal. Dette gjør at du har de beste forutsetninger for å gi oss helhetlig og relevant informasjon. Vi har behov for sykepleiere med din kompetanse og erfaring og vi henvender oss til flere sykehjem i din kommune og andre kommuner i Norge for rekruttering til studien.

Vi har vært i kontakt med daglig leder ved dette sykehjemmet og fått tillatelse til å kontakte deg med forespørsel om deltagelse.

Hva innebærer det for deg å delta?
Hvis du velger å delta innebærer det at du deler dine meninger om og holdninger til hvordan standardisert terminologi kan brukes i den praktiske hverdagen når du skal dokumentere sykepleie til personer med demens. Samtalen vil i noen grad styres av PhD-student Lene B Laukvik. Sentrale tema som ønskes tas opp er dine tanker/meninger/erfaringer knyttet pleieplan, standardisert terminologi, personsentrert omsorg og sammenheng og helhet i dokumentasjonen av sykepleie til personer med demens. Vi understreker at pasientene ikke er direkte involvert og således må personidentifiserende opplysninger om pasientene holdes utenfor refleksjonene. Vi henstiller til å omtale den enkelte pasientsituasjon anonymt. Hver samtale vil vare i ca 45-60 minutter og samtalen blir tatt opp på lydbånd for at vi på best mulig måte skal kunne analysere intervjuene.

Det ansees ikke å være noen risiko forbundet med deltagelse i studien. Ulemper som eventuelt kan oppstå, er tiden man bruker på deltagelse. Samtidig kan det være lærerikt og interessant å sette ord på erfaringer og tanker man har om dokumentasjon. Vi vil gjøre vårt ytterste for at samarbeidsklima skal oppleves godt. Vi setter respekt for kunnskap ervervet gjennom praksis høyt og er av den oppfatning at det kan utfylle teori og gi den nye dimensjoner.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykke tilbake uten å oppgi noen grunn. Alle opplysninger om deg vil da bli anonymisert. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg. Det vil ikke påvirke forholdet ditt til din nærmeste leder.

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Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Prosjektet skal etter planen avsluttes 07.02.2022. Personopplysninger og lydopptak vil bli anonymisert og slettet senest fem år etter prosjektets slutt. Vi oppbevarer datamaterialet i fem år etter prosjektets slutt for etterprøvbarhet og uforutsette hendelser underveis. Opplysningene lagres og oppbevares som beskrevet tidligere.

Dine rettigheter

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- NSD – Norsk senter for forskningsdata AS, på epost (personvernombudet@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Prosjektansvarlig
(Forsker / ph.d.kandidat)

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «Standardisert terminologi –hvordan ivaretas kontinuitet og kvalitet?», og har fått anledning til å stille spørsmål. Jeg samtykker til:

- ☐ Å delta i individuelt intervju
- ☐ At mine opplysninger lagres etter prosjektets slutt for etterprøvbarhet og eventuelle uforutsette hendelser.

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, februar 2022 og senest februar 2027.

(Signert av prosjektdeltaker, dato)

Paper 1

Content and comprehensiveness in the nursing documentation for residents in long-term dementia care: a retrospective chart review

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BMC Nursing

RESEARCH

Open Access

Content and comprehensiveness in the nursing documentation for residents in long-term dementia care: a retrospective chart review

Lene Baagøe Laukvik[1*], Merete Lyngstad[2], Ann Kristin Rotegård[3], Åshild Slettebø[1] and Mariann Fossum[1]

Abstract

Background: Insight into and understanding of content and comprehensiveness in nursing documentation is important to secure continuity and high-quality care planning in long-term dementia care. The accuracy of nursing documentation is vital in areas where residents have difficulties in communicating needs and preferences. This study described the content and comprehensiveness of nursing documentation for residents living with dementia in nursing homes.

Methods: We used a retrospective chart review to describe content and comprehensiveness in the nursing documentation. Person-centered content related to identity, comfort, inclusion, attachment, and occupation was identified, using an extraction tool derived from person-centered care literature. The five-point Comprehensiveness in the Nursing Documentation scale was used to describe the comprehensiveness of the nursing documentation in relation to the nursing process.

Results: The residents' life stories were identified in 16% of the reviewed records. There were variations in the identified nursing diagnoses related to person-centered information, across all the five categories. There were variations in comprehensiveness within all five categories, and inclusion and occupation had the least comprehensive information.

Conclusion: Findings from this study highlights challenges in documenting person-centered information in a comprehensive way. To improve nursing documentation of residents living with dementia in nursing homes, nurses need to include residents' perspectives and experiences in their planning and evaluation of care.

Keywords: Clinical audit, Dementia, Long-term-care, Nursing care, Patient participation

Background

According to the World Health Organization, approximately 55 million people worldwide are currently physically, psychologically, socially, and economically impacted by dementia, and this number is expected to increase [1]. Dementia is characterized as a progressive chronic neurocognitive disease that impacts one or more cognitive domains, causing loss of verbal abilities and resulting in a complete dependence in activities of daily living [2]. International research shows that more than half of nursing home residents suffer from dementia [3]. In Norway, estimates show that nearly 80% of residents living in nursing homes have some form of dementia and that around 25% of nursing homes are part of special care units for people with dementia [4]. The healthcare

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*Correspondence: lene.laukvik@uia.no
[1] Department of Health and Nursing Science, Faculty of Health and Sport Sciences, University of Agder, PO Box 509, NO-4898 Grimstad, Norway
Full list of author information is available at the end of the article

workforce in nursing homes consists of both professionals and nonprofessionals with a mix of nurses and nurse aides involved in daily care planning and documentation of nursing care in the electronic health records (EHRs) of residents living with dementia [5, 6]. Access to accurate and reliable information in the EHRs of residents living with dementia is important to secure continuity, quality, and safety of the residents [7, 8]. The global action plan on the public health response to dementia [1], emphasizes that the sharing of high-quality data relevant to dementia care is important to improve the healthcare trajectories of persons suffering from dementia.

Person-centered care (PCC), is increasingly considered as high-quality care in dementia long-term facilities, wherein individualized care planning, informed by the residents' history, needs, and preferences, are recommended [9, 10]. PCC is an important part of the culture change movement and is highly profiled in long-term care for older adults in the 2018 Alzheimer's Association Demementia Care Practice Recommendations [11]. Recent research shows that individualized and personalized information about the resident can improve nurses' knowledge and attitudes and adjust care-delivery accordingly, in dementia care [12, 13].

The concept of PCC is not defined unambiguously, and several PCC models exist in the literature [10]. In this study, we employ the work of Kitwood [14–16], to help clarify the concept of PCC. Basic needs identified by Kitwood and Bredin [17], such as identity, comfort, inclusion, attachment, and occupation, are considered as particularly important to comprehensively document to ensure high-quality care planning, in the context of dementia care. *Identity* reflects the need to know who you are, both cognitively and emotionally, and to have a sense of continuity with the past [15]. *Comfort* reflects the need for warmth and strength from other people, which can enable the resident to remain peaceful when they are in danger of deterioration. *Inclusion* reflects the need to be involved in, and to maintain relationships and a social life. *Attachment* reflects the need to establish and experience emotional bonds. *Occupation* reflects the need to be involved in life processes, in a way that is personally significant [15]. Learning about the resident's life story is a key indicator for understanding who the resident is, which needs are prominent, and what is the best way to approach these needs [11, 12]. Recognizing and maintaining selfhood is key to PCC. Through the written life story, nurses and other members of the healthcare team can learn about the social context of the resident's life, roles, values, relationships, losses, and sense of self, and use this information in the development of person-centered care plans [11, 13]. Recent research shows that documentation of the life stories of residents in nursing homes can improve communication and the quality of relationships between the residents, their relatives, and healthcare professionals significantly [18]. However, the actual use of life stories in clinical practice varies across healthcare settings [19, 20].

Quality care planning and documentation of nursing in dementia care is a complex ongoing process that must reflect the unique needs and experiences of the resident [5, 21]. Nursing home residents living with dementia often cannot articulate their needs and preferences, and adequate and comprehensive information enables nurses to meet the basic needs of the residents and promotes their well-being [6, 12]. Comprehensiveness in nursing documentation is defined as documentation according to the nursing process using an unambigous language [7, 22]. The nursing process model, consisting of assessment, diagnosis, planning, implementation, and evaluation is implemented as the basic structure to record nursing care in several EHR systems [22, 23]. Sufficient documentation of the core elements in the nursing process may enable nurses in long-term facilities to obtain a more complete picture of the residents and adjust care delivery accordingly [24, 25]. Standarized nursing language (SNL) to describe nursing care is developed and implemented to support nurses in documenting accurate and comprehensive information, which shows a positive effect on the structure and descriptions of the elements of the nursing process[26]. In Norway, the Norwegian Directorate of eHealth [27] recommends the use of the International Classification for Nursing Practice (ICNP) for nursing documentation in clinical practice. However, the implementation of SNL is in its early stages and has been done partially in Norway [28]. Despite development of quality critera and positive support for nursing documentation, research in both community and hospital care, show inaccuracies in the recorded content, such as insufficient and incomplete documentation of the nursing process-elements [22, 24, 29], and a lack of recorded person-centered information [30, 31]. Lack of adequate content and comprehensiveness in nursing documentation may cause potential misunderstandings and misintrepretations, thus jeopardising the safety of residents [6, 7].

An insight into the content of recorded nursing care of residents living with dementia could provide knowledge of how to focus their basic needs in the care planning and documentation of nursing to preserve a sense of personhood in daily living [11, 12]. Knowledge and insight into the content and comprehensiveness of the recorded information of such nursing care, may help nurses to better understand how to effectively communicate comprehensive individual and person-centered information, to facilitate continuity of high-quality care [6, 7]. Thus, this study aimed to describe the content and comprehensiveness of nursing documentation for residents living with dementia in nursing homes in relation to identity, comfort, inclusion, attachment, and occupation.

Methods

A cross-sectional retrospective chart review of resident records was conducted, to describe the content and comprehensiveness of nursing documentation for residents living with dementia in nursing homes, in relation to the following PCC-themes: identity, comfort, inclusion, attachment, and occupation [32]. An auditing instrument: Comprehensiveness In Nursing Documentation, CIND, was used to evaluate the comprehensiveness of the nursing documentation [33]. Data was analyzed using descriptive statistics and summarized in tables and figures [34]. The Strengthening the Reporting of Observational studies in Epidemiology (STROBE) checklist was used to ensure quality reporting (Additional file 1).

Sample and setting

A constructive sample of residents [34], currently living in long-term dementia care units in two large (populations of 40,000–50,000) municipalities and one medium (population of 19,000) municipality were recruited for this study. The residents or their next of kin were approached by the nurse unit manager who provided oral and written information about the study. Out of a total of 173 identified eligible residents, 121 agreed to participate, allowing their records to be audited for research purposes. The inclusion criteria were: (a) all residents currently living in special care units for older adults at (b) a public nursing home that (c) had access to the EHR system that supported documentation of nursing care according to the nursing process model. According to local guidelines, in all study sites, registered nurses and assistant nurses were responsible for the development of NCPs. However, there was no official routine as to when the the plans were to be updated. In all the study sites, all staff, with and without special education in dementia care, and nursing aides without any healthcare education, had access to write daily reports/progress notes (PNs) in the EHR. The EHR system in all study sites was structured according to the nursing process model, with freewriting for nursing diagnoses, resident outcomes, and interventions in the NCPs, and evaluation of outcomes in the PNs. Assessment charts and the life story of the resident were documented in separate files. Nursing documentation in this study constitutes the life story of the resident, assessment charts, NCPs, and PNs.

Data collection

Data were collected between January 2019 and April 2019. Retrospective data from three months prior were extracted from the residents' records. This method has been found to be effective in previous studies [35]. Documentation from other institutions and physician reports were not reviewed. One of the researchers was present at the nursing home during the printing process to support this work, if needed. Information on residents' gender, age, and length of stay was collected from the EHR, in addition to the nursing documentation.

Instrument

The comprehensiveness in the nursing documentation was reviewed for specific problems related to identity, comfort, inclusion, attachment, and occupation, using an instrument developed by Ehnfors and Smeby [33], the comprehensiveness in nursing documentation scale, CIND. Comprehensiveness in this study was defined as whether the information was recorded in accordance with the nursing process. Specific descriptions of the CIND scores are presented in Table 1. The total score ranges from 1 to 5, where 5 indicates the most comprehensive documentation, which includes: (a) a recorded nursing diagnosis (ND), (b) planned and implemented nursing interventions, (c) recorded nursing outcomes, and (d) a recorded evaluation of the steps in the nursing process. A guide, based on PCC-literature, was used for sorting recorded content into the themes of identity, comfort, inclusion, attachment, and occupation [32].

Procedure and data analysis

The sample size of records was based on estimates drawn from similar study designs [29, 36]. First, whether the life story was registered in the records (yes/no) was recorded. Then, whether the assessment notes were registered in the records, and if the identified notes contained information relating to identity, comfort, inclusion, attachment, and occupation, following the guide (yes/no), was recorded. Thereafter, free-text-written nursing diagnoses in relation to psychosocial needs were identified in the NCP and organized into identity, comfort, inclusion, attachment, and occupation, following a guide (Additional file 2). Next, information connected to the identified ND was tracked throughout the NCP and PNs; subsequently given a score of 1–5 for comprehensiveness (Table 1). All scores were transferred to SPSS version 25 (IBM Corp., Armonk, NY, USA), and analyzed using descriptive statistics [34].

A modified form of the nominal group technique (NGT) was used in the validation process of CIND and the extraction tool [37]. The reviewers (LBL and MF) involved in the validation process were familiar with the chart review technique, and they had knowledge and experience in dementia care in long-term care settings, and in documenting nursing care. First, one author (LBL)

Table 1 Comprehensiveness scores according to CIND[a] and corresponding descriptions of the PCC[b]-categories in the nursing documentation

Grading protocol for the comprehensiveness-score		**Description of scores**	**Example of scores with statements from the nursing care plan and progress notes**
Score of 1	The problem is described, *or* interventions planned *or* implemented	[1] PCC-ND[c] **or** [2] PCC-NIV[d] is present in NCP[e], **or** [3] statement that the PCC-NIV is completed	[1] "Needs assistance in managing own behavior" **or** [2] "One-on-one follow-up when signs of agitation" **or** [3] "The resident has been agitated today. They received one-on-one follow-up."
Score of 2	The problem is described, *and* interventions planned *or* implemented	[1] PCC-ND **and** [2] PCC-NIV is present in NCP, **or** [3] statement that the PCC-NIV is completed	[1] "Needs assistance in managing own behavior" **and** [2] "One-on-one follow-up when signs of agitation" **or** [3] "The resident has been agitated today. They received one-on-one follow-up."
Score of 3	The problem is described, *and* intervention planned *or* implemented, *and* resident outcome is recorded	[1] PCC-ND **and** [2] PCC-NIV are present in NCP, **or** [3] statement that PCC-NIV is completed **and** [4] PCC-NO[f] is recorded	[1] 'Needs assistance in managing own behavior" **and** [2] "One-on-one follow-up when signs of agitation" **or** [3] "The resident has been agitated today. They received one-on-one follow-up **and** [4] without any effect."
Score of 4	The problem is described, *and* intervention planned *and* implemented, *and* nursing outcome is recorded	[1] PCC-ND **and** [2] PCC-NIV are present **and** statement [3] that the PCC-NIV is completed **and** [3] PCC-NO is recorded	[1] "Needs assistance in managing own behavior" **and** [2] "One-on-one follow-up when signs of agitation" **and** [3]"The resident has been agitated today. They received one-on-one follow-up **and** [4] without any effect."
Score of 5	All aspects of the nursing process are recorded, including nursing history, diagnosis, goals, and discharge notes. There is an adequate description of the problem. The recording is of relevance to nursing	[1] PCC-ND described adequately with present [2] PCC-NG[g] and [3] PCC-NIV is present. Statement that the [4] PCC-NIV is completed [5], PCC-NO is recorded, an evaluation of the resident's experience of completed PCC-NIV is recorded	[1] "Needs assistance in managing own behavior. The resident has no insight into own health condition. Reacts negatively with anger to changes made to surroundings. Has reacted in a hostile manner toward other residents, relatives and staff." [2] "Resident feels seen and understood." [3] "One-on-one follow-up when signs of agitation occur." [4] "The resident has been agitated today. They received one-on-one follow-up without any effect. [5] They were in despair and started crying when expressing how much they missed their partner."

[a] *CIND* Comprehensiveness in nursing documentation

[b] *PCC* Person-centered care;

[c] *ND* Nursing diagnosis

[d] *NIV* Nursing intervention

[e] *NCP* Nursing care plan

[f] *NO* Nursing outcome

[g] *NG* Nursing goal

identified and sorted NDs according to the categories and evaluated the comprehensiveness of the information using CIND and the extraction tool from two records for training purposes. Then, two members of the research group (LBL and MF) individually evaluated five new records using CIND and the extraction tool. The evaluations were compared and discussed face-to-face until an acceptable agreement was reached. The decision rules were created (Table 2). Second, the same authors (LBL and MF) individually evaluated 12 new records using CIND and the extraction tool. The evaluations were compared and discussed face-to-face until an acceptable agreement was reached. All records used for training purposes and discussions ($N=19$) were audited again by the first author and included in the data analysis.

Results

A total of 173 eligible residents' records were identified, and 121 residents from a total of 21 special care units in seven public nursing homes agreed to participate in this study, allowing their records to be audited for research purposes. The mean age of the residents was 84 years (standard deviation = 8, range = 64–100), and 87 residents (71.9%) were women. The mean length of a nursing home stay was 28 months (standard deviation = 25.7, range = 1–100).

Person-centered content

The life story of the residents was identified in only 19 (15.7%) of the reviewed records. Assessment charts, containing information relevant for the PCC categories, were identified in 100 (82.6%) of the records. NCPs containing nursing diagnoses (NDs) related to identity, comfort, inclusion, attachment, and occupation were identified in 104 (86%) records (Table 3).

Within the 104 records containing PCC-related NDs, a total of 372 (mean 4, range 1 -8) NDs were identified. One hundred and twenty-nine (35%) of the NDs contained content related to identity and 27 (7%) contained information related to inclusion. Table 4 shows the total number of identified NDs in each PCC category. The identified NDs were most often brief statements about the resident's general condition. The content of the NDs were most commonly related to pain, behaviour, activity and family matters, e.g. "The resident has a headache", "The resident is restless," "Need for activity" and "Contact with family," without any proper description of signs and symptoms. All identified NDs, goals, and planned interventions in the NCP were written as free texts. Evaluations and resident outcomes were written as unstructured free text in the PNs in all the 104 records.

Table 3 Number of records containing PCC[a]-information in the reviewed records ($n=121$)

Content identified	Frequency	Percent
Life story	19	15.7
Assessment charts containing PCC[a] relevant information	100	82.6
Nursing care plan	121	100
Nursing diagnoses related to the PCC-categories in nursing care plan	104	86.0

[a] Person Centered Care

Comprehensiveness

A CIND score of 4 was achieved with 114 (31%) of the 372 identified NDs across all PCC categories, meaning that the resident's problem and corresponding planned interventions were stated, and an effect of the implemented interventions were stated. Only three (1%) of 372 identified NDs achieved a CIND score of 5, meaning that all aspects of the nursing process were recorded, containing descriptions of the resident's experience. Table 4 shows the distribution of the scores achieved in accordance with the PCC variables.

Discussion

The findings of this study highlight issues of nursing documentation important for the planning and implementation of PCC in long-term dementia care. The lack of documentation of the residents' life stories found in this study could indicate that the EHR system used for nursing documentation had limitations concering structures and content for recording the life stories. Recent research shows that the provision of appropriate structures or templates in the EHR system for facilitating recording of background information enables nurses in

Table 2 Number of decision rules for data coding and extraction

1. No specific structure required for the nursing diagnose formulation for selection from the nursing care plan
2. The interventions present in the nursing care plan must be connected or related to the identified nursing diagnoses
3. All recorded interventions (connected to the identified nursing diagnoses) are implemented when it is recorded that the intervention has been done (completed)
4. Recorded nursing goals and nursing outcomes need to be clearly formulated as resident outcomes

Table 4 CIND[a] score within the PCC[b]-categories based on identified NDs[c] (*N* = 372). Total number of records: 104

	CIND[a] score					**Total NDs[c]**
	1 **The problem is described, or intervention planned or implemented**	**2** **The problem is described, and intervention planned or implemented**	**3** **The problem is described, and intervention planned or implemented, and nursing outcome is recorded**	**4** **The problem is described, and intervention planned and implemented, and nursing outcome is recorded**	**5** **All aspects of the nursing process are recoded. Good description of the problem and recoding of the relevance for nursing**	
PCC[b] category	*f* (%)	*f* (%)	*f* (%)	*f* (%)	*f* (%)	*f* (%)
Identity	14 (3.8)	34 (9.2)	44 (11.9)	36 (9.7)	1 (0.3)	129 (34.7)
Comfort	9 (2.4)	28 (7.6)	13 (3.5)	32 (8.6)	0	82 (22.0)
Inclusion	3 (0.8)	12 (3.2)	3 (0.8)	8 (2.2)	1 (0.3)	27 (7.3)
Attachment	6 (1.6)	16 (4.3)	20 (5.4)	24 (6.5)	1 (0.3)	67 (18.0)
Occupation	4 (1.1)	17 (4.6)	32 (8.6)	14 (3.8)	0	67 (18.0)
Total *f*(%)	36 (9.7)	107 (28.8)	112 (30.1)	114 (30.7)	3 (0.8)	372

[a] *CIND* Comprehensiveness in nursing documentation

[b] *PCC* Person centered care

[c] *NDs* Nursing diagnoses

the documentation of individualized and personalized information [6]. Unique information about the defining moments in the residents' lives should be registered and provided as a whole in the nursing documentation in order for nurses to relate and interact with the resident in a way that is meaningful and safe [13].

Earlier research suggests that a poor standard of life story records in care planning and nursing documentation could be a result of the motivations behind writing or creating these stories [18, 19]. However, several studies show that nurses and other healthcare professionals have positive attitudes towards using life stories for quality care planning and delivery of care for residents living with dementia [12, 20, 38]. On the other hand, life stories might contain sensitive information, causing an avoidance of recording such information due to the ethical aspects of resident participation in writing their life stories [19]. If the values and beliefs of the resident are not reflected in the nursing documentation, it could hinder nurses and other members of the healthcare team in accommodating the residents' individual daily routines, learn about who the residents are, and provide all residents with a variety of activities [11].

Even if the number of registered life stories were low in this study, some of the recorded interventions in care plans, especially related to activity, were based on what the resident had previously enjoyed, such as "went to church every Sunday with their partner" or "used to work on a farm all their adult life." Such information in the nursing documentation can contribute to the creation of a proactive care plan that responds to the behavioral and psychosocial symptoms of dementia [12, 19].

This study found variations between the number of identified assessment charts containing PCC-relevant information and the number of NCPs containing PCC-related NDs. In addition, the NDs were commonly lacking in descriptions of what led to the NDs. This could imply that relevant assessment-data was not used in forming and deciding NDs in the care planning process. Similar problems have been identified by Tuinman, de Greef [24], and Wang, Yu [25], in study settings where NDs were required. A disconnection between information about contributing factors that lead to the stated ND can create serious gaps in the nursing documentation. Such gaps can create interpretations and assumptions of relevant needs and desires that could threaten individualized care planning and the safety of the resident [10, 19]. However, some of the NDs identified in this study contained descriptive information about what led to the ND; typically an observation of the resident's behavior or emotions (see example in Table 1). If descriptions of contributing factors connected to the stated ND are provided, they might facilitate better understanding of the nature of the identified problem. This could stimulate nurses' engagement in the clinical reasoning process of deriving a sound and clinically meaningful ND, as the basis for further care planning [22, 25]. Structured documentation that demonstrates how the condition of the residents living with dementia has been understood can contribute to ensuring that they are valued and respected as persons [11]. By connecting information about signs and symptoms that led to the NDs into the NCP, nurses in dementia care can identify and implement appropriate interventions to achieve desired person-centered outcomes [22, 39].

A comprehensive recording of the nursing process containing an evaluation of care based on the residents' perspectives and experiences were only found in three NDs in this study. An explanation for this low number might be related to challenges in expressing and formulating personalized information during documentation [19]. Previous studies suggest that information concerning physical aspects of care are more familiar to nurses, resulting in a more distant and objective language in the nursing documentation, making PCC-planning difficult [40, 41]. The implementation and use of SNL related to psychosocial information could increase the comprehensiveness and person-centeredness in the nursing documentation investigated in this study [7, 23].

When comprehensiveness was high in this study, the documentation included information about the residents' expressed feelings and/or nurses' observed response to care indicating that the residents' descriptions of their own situation and response to care should form the content of evaluations of nursing care [12]. Increased focus on the perspectives and experiences of the resident in care planning, and documentation of nursing for residents living with dementia, can create an environment in the nursing home that respects and maintains the selfhood of the resident [11].

Strength and limitations

One of the strengths of this study is that it provides valuable information about documentation of nursing care to residents living with dementia in long-term care. Our findings do not represent the content and comprehensiveness of all long-term residents suffering from dementia; therefore, they cannot be generalised. However, the findings represent care planning and documentation of nursing in the context of dementia care in nursing homes. The extraction tool used in this study may not have been conceptually and visually clear enough to avoid errors in the identification of content in relation to the PCC-categories. An extraction tool was provided with a description and examples of themes derived from established PCC-literature, to help the reviewer identify appropriate statements. To minimise the subjective factors in the identification and coding of data, training and validation processes was completed through thorough discussions among members of the research team [32, 37].

Conclusions

Findings from this study show challenges in documenting person-centered information in a comprehensive way. Serious flaws in the nursing documentation of residents living with dementia, such as incomplete documentation of the steps in the nursing process and lack of registered life story can create assumptions and interpretations jeopardising the safety of the residents. To improve nursing documentation of residents living with dementia in nursing homes, nurses need to include residents' perspectives and experiences in their planning and evaluation of care. Failure to comprehensively record information related to psychosocial aspects can make it impossible to understand whether important basic needs have been considered in the evaluation processes or whether interventions are appropriate and should be continued. Further qualitative research should be conducted to obtain an in-depth insight into nurses' attitude toward PCC and the documentation process, including the use of terminology related to psychosocial needs. Such insight could help further understand how to comprehensively document nursing care of residents living with dementia.

Abbreviations

CIND: Comprehensiveness in nursing documentation; EHR: Electronic health records; ICNP: International classification for nursing practice; NCP: Nursing care plan; NDs: Nursing diagnosis; NG: Nursing goal; NIVs: Nursing interventions; NO: Nursing outcome; PCC: Person-centered care; SNL: Standardized nursing language.

Supplementary Information

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Additional file 1.

Additional file 2.

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Authors' contributions

All authors participated in designing the study. LBL was responsible for data collection, writing the main manuscript and preparing the tables. All authors participated in analysis and discussions, in addition to preparing the manuscript. All authors reviewed the manuscript. The author(s) read and approved the final manuscript.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

The Norwegian Centre for Research Data and the local ethics committee at the University of Agder approved the study (61364). Information about the study and written informed consent were collected from the residents' next of kin if the residents themselves were cognitively unable to provide consent to researchers accessing the recorded information under investigation. The study was carried out in accordance with the standards of the Norwegian Centre for Research Data and the General Data Protection Regulations [42]. All identifying information about the residents was removed from the text before the printouts of the healthcare records from the nursing homes were accessed. All the printouts were stored in a locked cabinet in a locked office.

Consent for publication

Not applicable.

Competing interests

The authors declare no conflicts of interest.

Author details

[1]Department of Health and Nursing Science, Faculty of Health and Sport Sciences, University of Agder, PO Box 509, NO-4898 Grimstad, Norway. [2]Norwegian Nurses Organization, Oslo, Norway. [3]VAR Healthcare, Cappelen Damm, Oslo, Norway.

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Publisher's Note

Paper 2

Registered nurses’ reasoning process during care planning and documentation in the electronic health records: A concurrent think-aloud study

Accepted manuscript

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AURA:

Registered nurses' reasoning process during care planning and documentation in the electronic health records: A concurrent think-aloud study

Abstract

Aims and Objectives: To explore the clinical reasoning process of experienced registered nurses during care planning and documentation of nursing in the electronic health records of residents in long-term dementia care.

Background: Clinical reasoning is an essential element in nursing practice. Registered nurses' clinical reasoning process during the documentation of nursing care in electronic health records has received little attention in nursing literature. Further research is needed to understand registered nurses' clinical reasoning, especially for care planning and documentation of dementia care due to its complexity and a large amount of information collected.

Design: A qualitative explorative design was used with a concurrent think-aloud technique.

Methods: The transcribed verbalisations were analysed using protocol analysis with referring phrase, assertional, and script analyses. Data were collected over ten months in 2019–2020 from 12 registered nurses in three nursing homes offering special dementia care. The COREQ checklist for qualitative studies was used.

Results: The nurses primarily focused on assessments and interventions during documentation. Most registered nurses used their experience and heuristics when reasoning about the residents' current health and well-being. They also used logical thinking or followed local practice rules when reasoning about planned or implemented interventions.

Conclusion: The registered nurses moved back and forth among all the elements in the nursing process. They used a variety of clinical reasoning attributes during care planning and nursing documentation. The most used clinical reasoning attributes were information processing, cognition, and inference. The most focused information was planned and implemented interventions.

Relevance to clinical practice: Knowledge of the clinical reasoning process of registered nurses during care planning and documentation should be used in developing electronic health record systems that support the workflow of registered nurses and enhance their ability to disseminate relevant information.

KEYWORDS: care planning, clinical reasoning, think-aloud technique, dementia care, electronic health records, registered nurses

1 | INTRODUCTION

The number of people living with dementia has increased over the last decade. According to the World Health Organization (WHO), more than half of the residents living in nursing homes suffer from some form of dementia (WHO, 2017). Nursing documentation supports effective communication, cooperation, and coordination between healthcare team members to ensure safety and continuity of care for residents living with dementia in nursing homes (Brown et al., 2020; Van Walraven et al., 2010). Access to relevant and comprehensive information in the electronic healthcare records (EHRs) about a resident's needs, values, preferences, and experiences in daily life is important for the clinical reasoning of registered nurses (RNs) to deliver high-quality care (Bail et al., 2021). Over the last decade, there has been an increase in the level and complexity of dementia long-term care and care planning. Residents living with dementia experience severe physical and cognitive impairments, such as decreased physical health, impaired communication, disorientation, confusion, and behavioural changes (Gilster et al., 2018). High quality nursing care in dementia involves communicating effectively, having an emphatic approach, monitoring the physical environment, assessing physical health, uncovering reasons for behaviours, and protecting the residents' rights (Fazio et al., 2018; Kolanowski et al., 2015). Care planning and documentation of nursing care for residents living with dementia require accurate nursing skills and involves combining and understanding large amounts of subjective and objective data (Sefcik et al., 2020; Tuinman et al., 2017). Documentation of nursing is essential for identifying the residents' needs, setting goals, planning, and implementing interventions, and evaluating resident outcomes (Jefferies et al., 2010). Previous research shows that RNs use several cognitive strategies and processes in clinical reasoning during care planning (Fossum et al., 2011; Gerber et al., 2015; Johnsen et al., 2016; Wihlborg et al., 2019). A recent review shows that the cognitive work of RNs increases during care planning and documentation of nursing in the EHRs, causing inaccurate information, which can put resident safety at risk (Wisner et al., 2019). By increasing our knowledge about the way RNs retrieve, connect, synthesise, and communicate clinically meaningful and resident-supportive information, we may understand the clinical reasoning process in dementia care and improve care planning and documentation of nursing in this context (Bail et al., 2021; Cappelletti et al., 2014; Wihlborg et al., 2019). This paper presents a study designed to explore the RNs' reasoning process during care planning and documentation of nursing in the EHRs of residents living with dementia in nursing homes.

2 | BACKGROUND

2.1 | Documentation of nursing care

Documentation of nursing care in the form of EHRs is a professional responsibility of nurses and ensures practice accountability. Accurate and comprehensive information in the resident record is essential for providing safe, high-quality, and effective evidence-based nursing care (Gilster et al., 2018). The nursing process model consists of assessment, diagnosis, planning, implementation, and evaluation, widely used in education and clinical practice, to facilitate clinical reasoning and decision making (De Groot et al., 2019). In this study, the nursing process model presents the basis for RNs' behaviour in clinical situations, such as care planning and nursing documentation. Sufficient and comprehensive documentation of the core elements in the nursing process is essential for providing quality documentation in the EHRs to safeguard the continuity of high-quality care (Bail et al., 2021; Shiells et al., 2019). The VIPS model framework (as shown in Figure 1) was developed to support RNs in their verbalisation and documentation of essential data in accordance with the nursing process (Ehnfors et al., 1991; Ehrenberg et al., 1996). The model is internationally recognised and has shown positive impacts on RNs' understanding, care planning, and documentation of nursing

(Björvell et al., 2003; Darmer et al., 2004, 2006), in addition to supporting teaching and research activities (Akhu-Zaheya et al., 2018; Saranto et al., 2014). Several electronic healthcare systems have implemented nursing process elements as the basic structure of nursing care documentation to support nurses' workflow and thinking (Saranto et al., 2014). However, recent research has shown that RNs have trouble grasping and applying the core concepts of the process in their documentation of nursing care (Akhu-Zaheya et al., 2018). In addition, there is a lack of personalised and individualised information in nursing care documentation (Bail et al., 2021).

[Insert Figure 1 here]

2.2 | Clinical reasoning process in nursing

Clinical reasoning in nursing is used for the cognitive processing performed by RNs when collecting and analysing patient information, evaluating the significance of this information, weighing alternative actions, achieving positive patient outcomes, and reflecting upon care delivery (Higgs et al., 2008; Levett-Jones et al., 2010). Multiple concepts have been used in literature in relation to clinical reasoning, such as decision-making, problem-solving, and clinical judgement (Cappelletti et al., 2014). However, these concepts suggest an endpoint to the thinking process, while clinical reasoning emphasises the cognitive processes prior to the endpoint (Simmons, 2010).

Simmons' (2010) concept analysis of clinical reasoning guides this study. It defines clinical reasoning in nursing as a complex cognitive process that uses formal and informal thinking strategies in a forward chaining process that moves sequentially through a series of inferences to a final decision supported by the nursing process (Simmons, 2010, pp. 1154–1155). The following specific attributes explained by Simmons (2010) represent the essence of the meaning of clinical reasoning in the present study: data analysis (interpreting information), deliberation (rumination), heuristics (informal thinking strategies), inference (speculation), metacognition (reflexive thinking), logic (argument), cognition (perception or awareness), information processing (organising data), and intuition (insight independent of reasoning). These attributes differ according to nursing experience, domain-specific knowledge, contextual parameters of the residents, and the environment (Simmons, 2010; Levett-Jones et al., 2010).

Research shows that RNs struggle in documenting nursing care optimally and effectively in a timely and accurate manner, causing poor content and lack of structure and comprehensiveness (McCarthy et al., 2019). Despite the implementation of EHR systems that support the nursing process model, several studies show that RNs fail to grasp and apply the core elements of the nursing process in their care planning and documentation of nursing in EHRs (Akhu-Zaheya et al., 2018; Bail et al., 2021; Tuinman et al., 2017; Wang et al., 2015). An understanding of how RNs retrieve, organize, synthesize, and communicate information can provide a deeper understanding of how RNs interpret and record vital information, such as the perspectives and experiences of residents living with dementia, that can secure continuity of care and safety of the resident (Varpio et al., 2015b; Wisner et al., 2019). The clinical reasoning process of RNs has previously been studied in both hospital and community care; however, this research topic lacks in dementia care (Fossum et al., 2011; Gerber et al., 2015; Johnsen et al., 2016; Lee et al., 2016; Wihlborg et al., 2019). The cognitive processes used by RNs during care planning and documentation of nursing in the EHRs of residents living with dementia should be captured and communicated to better understand how to reduce errors in nursing documentation and address omission of care (Bail et al., 2021). Understanding how RNs reason during the documentation process may enhance effectiveness of nursing education as well as training programmes for RNs in relation to care planning and documentation of nursing (Akhu-Zaheya et al., 2018; Cappelletti et al., 2014; Varpio et al., 2015b). Knowledge about RNs' thoughts and reasoning during the documentation process can have implications for the improvement of EHR systems, specifically the design features and structures that support the competencies, knowledge, and cognitive work of RNs (Wilbanks & McMullen, 2018; Wisner et al., 2019).

2.3 | Aim

This study aimed to explore the clinical reasoning process of experienced RNs during care planning and documentation of nursing in the EHRs of residents in long-term dementia care. Our research questions were (i) How do experienced RNs use the nursing process in their clinical reasoning when planning and documenting nursing care for residents living with dementia? (ii) Which cognitive processes characterise the clinical reasoning of RNs when planning and documenting nursing care for residents living with dementia?

3 | METHODS

3.1 | Design

An explorative design was used to study the clinical reasoning process of experienced RNs during care planning and nursing documentation. The study was conducted using the concurrent think-aloud (TA) method to collect concurrent verbal protocols from RNs during the completion of daily documentation of nursing care in the EHRs of residents living with dementia in nursing homes. Collected data were analysed using verbal protocol analysis (van Somren et al., 1994). Coding schemes were developed based on the attributes defined by Simmons (2010) and the elements of the nursing process model explained through the VIPS model (Ehrenberg et al., 1996) to identify cognitive processes in the verbal protocols of the RNs (Appendices 1 and 2). The consolidated criteria for reporting qualitative research (COREQ) checklist (Tong et al., 2007) was used to ensure quality reporting (Supplementary file 1).

3.1.1 Think-aloud (TA) method

The TA method is a qualitative technique that asks the subject to speak out loud all the thoughts occurring during a problem-solving process, enabling collection of direct data from the working memory that are not interpreted by the subject. Concurrent verbal reports are beneficial as they reveal information by linking cognitive processes with 'active' perceptions (van Somren et al., 1994 p. 19–21). The TA technique combined with protocol analysis has been widely used in clinical settings to explore cognitive processes used by experienced RNs in their problem solving (Fonteyn & Fisher, 1995; Funkesson et al., 2007; Lundgrèn-Laine & Salanterä, 2010; Whyte et al., 2007). To capture and structure the clinical reasoning process, coding schemes that describe which cognitive processes will occur and in which order in the verbalization during problem solving in a specific context must be developed (van Somren et al., 1994, p. 120). Categories in a coding scheme can cover more than one segment in the verbal protocol (van Somren et al., 1994, p. 122). Aitken et al. (2011) compared the observational method to the TA method in their study of decision making of critical care nurses related to sedation assessment and management within intensive care. Their results showed that the concurrent TA method collected more relevant data than the observational method alone.

3.2 | Sample and setting

A convenience sample of 12 RNs (all females) was recruited to participate in this study by contacting the nurse unit manager via e-mail. Demographic data were collected from each participant and are summarised in Table 1.

[Insert Table 1 here]

The RNs were employed at three nursing homes, providing special dementia care in two large municipalities (populations of 40,000–50,000) and one medium municipality (population of

19,000) in southern Norway. The participants met the following inclusion criteria: (a) RNs with more than two years of experience, (b) RNs with documentation skills at an expert level, and (c) RNs that had access to an EHR system that supported the documentation of nursing care according to the nursing process model.

The investigators acknowledged that a minimum of two years of experience with clinical practice justified categorising these participants as experienced RNs (Simmons et al., 2003). Two of the respondents had special education in dementia care, and ten of them had more than five years of clinical experience working with residents suffering from dementia. The EHR workstation used for documentation of nursing at all study sites were in a separate office. At all the study sites, RNs were responsible for developing the nursing care plan (NCP). Nursing assistants were the primary contact of the residents, responsible for updating the NCP. All staff members, regardless of whether they had received a professional education, had access to the EHR system and were responsible for writing daily reports in the progress notes (PNs) at the end of each shift. The EHR system used at all study sites was structured according to the nursing process model, with freewriting for nursing diagnoses, resident outcomes, and interventions in the NCP, and evaluation of outcomes in the PNs. Assessment charts were documented in separate files. The NCP was visible on the same screen as the PN when the RNs used the EHR system for documentation.

3.3 | Procedure and data collection

Data were collected between December 2019 and October 2020. All TA sessions were performed at the nursing homes. Before the session started, an observer (LBL) explained to each participant the purpose of the study, the data protection method, and the principles of the TA method. The observer had previous experience as a nurse in dementia care. However, the participants and the observer had not interacted before the TA session. Each participant had a few minutes of training on how to speak out loud while solving a simple task on the Internet.

The participants were then asked to document nursing as usual. They were also asked to avoid interpretation or explanation of their activity and concentrate on the documentation process when speaking aloud. Data were collected at the end of the day shift. The participants were informed that the observer would only speak if a participant was silent for more than 30 seconds. The observer was sitting nearby the participants during the TA sessions to provide a comfortable environment. The documentation period lasted for a maximum of 60 minutes. During the session, the observer acknowledged the speech of the participants through sounds. If silence persisted, the observer asked the participant to ‘keep on talking’ or questioned ‘what are you thinking now?’ Each TA session was audiotaped using a digital voice recorder and transcribed into verbal protocols.

3.4 | Data analysis

Data were analysed in a series of steps adapted from earlier descriptions of verbal protocol analysis, using referring phrase analysis, assertional analysis, and script analysis (Funkesson et al., 2007; Johnsen et al., 2016; Simmons et al., 2003), and the coding schemes. First, the text was transcribed and divided into segments that reflected the natural boundaries of phrases in the participants’ speech. Portions of the text that did not reflect verbal thoughts, such as when the RNs read the record, were eliminated from the segments. In addition, fillers such as ‘ehh’, ‘umm’, and ‘uh’ were removed. However, pauses in speech (while thinking) were marked with three dots for short pauses and five dots for long pauses to avoid unwarranted interpretations and highlight the segments. Further, all authors identified nouns and noun phrases in the established segments that referred to the elements of the nursing process and coded them according to the nursing process (as shown in Appendix 1). The codes were numbered in order of appearance to achieve the flow of the nursing process in relation to the reasoning process. Thereafter, all authors identified positive statements or declarations in the identified segments made by the participants related to the documentation process and coded them according to the attributes of the clinical reasoning process (as shown in Appendix 2). Each segment was coded using one or several codes according to the nursing process and the attributes, as it was not possible to minimize the segments further without lifting the protocol statements out of their context (van Somren et al., 1994, p. 128). Finally, the identified segments were merged into episodes to aggregate data that corresponded in 'grain size' to the elements of the nursing process (van Somren et al., 1994, p. 127). This provided an overview of which elements of the nursing process the participants focused on and which attributes they used when reasoning. Tables 2 and 3 show examples of analysis.

[Insert Tables 2 and 3 here]

Inter-coder reliability was sought by all five authors in each step of the analysis and discussed until acceptable agreement (van Someren et al., 1994). Discussions mainly concerned which segment belonged to which step of the nursing process and the meaning of the attributes. Several elements of the nursing process and attributes were present in each segment, which when merged to form episodes led to the removal of duplicates.

3.5 | Ethical considerations

The Norwegian Centre for Research Data and the local ethics committee at the University of Agder approved the study (61364). Information about the study was provided and written consent was obtained from the RNs and the residents or residents' next of kin if the residents themselves were cognitively unable to consent to LBL's observations during documentation in the nursing record. The information letter followed the standards of the Norwegian Centre for Research Data and the General Data Protection Regulations (European Union; EU, 2016). Confidentiality was ensured by removing all personal identification information and assuring participants that the information would only be used for research purposes.

4 | RESULTS

Each TA session was between 22 and 60 minutes long (*M* = 35 minutes). A total of seven hours of TA sessions were transcribed into 54 pages, and 1,404 reasoning episodes were identified for analysis. In the following text, we present results from the stepwise analyses.

4.1 | RNs focus on the nursing process when planning and documenting nursing care

The referring phrase analysis showed that the RNs reasoned within all the elements of the nursing process when care planning and documenting nursing in the EHRs. Further, they combined different elements in their reasoning during the planning and documentation of nursing care. Information exchange (34%), assessment (28%), and implementation (23%) were the most focused elements. The frequency of the focus of each element in the nursing process is displayed in Table 4.

[Insert Table 4 here]

When the RNs focused on *assessment*, they concentrated on information related to the residents' current health status, such as physical or psychosocial function, needs in daily life, or the comfort or discomfort of the resident. One participant stated, 'It is challenging to claim that the resident is angry because it is not certain that is the case; maybe this is the resident's way of being. I will try to write what I experienced or what I saw and explain why I wrote it; I try to be objective' (RN1). It was important to be objective and document observations and experiences or what they witnessed.

The RNs concentrated on information related to planned or implemented interventions when focusing on *implementation*. It is important to document that the implemented interventions were completed. One participant said: 'All the residents shall have interventions concerning trust-building in their care plan; we must document information in relation to this after every shift' (RN12). The participants mainly followed local rules or structures in the EHR system (for example, an obligation to document a specific type of information).

When the RNs concentrated on *information exchange*, they mainly focused on which information to document and how to write the necessary information. One participant stated: 'I need to read through what I have written; maybe it is not necessary to write so much. It is a bit difficult to write. It was a quiet evening; I would write more about what happened if it was not a quiet evening for the residents' (RN6). The participants often decided on the formulation of content based on what happened during their shift.

4.2 | How RNs used clinical reasoning attributes when planning and documenting nursing care

The assertional analysis showed that the RNs used all clinical reasoning attributes in their reasoning during care planning and documenting nursing in the EHRs. Inference (22%), information processing (22%), and cognition (18%) were the most used attributes by the RNs. The frequency of use of each clinical reasoning attribute is displayed in Table 4.

Using *information processing*, the RNs retrieved, organised, and recorded their data in accordance with the information they needed to document. The participants often reviewed the documentation to detect errors or changes or used the written text as a reminder of what to document. A participant stated, 'I look through the nursing care plan to be reminded of anything else I should document today. I usually start at the top of the list of problems and work my way through' (RN11). The participants commonly followed the structures in the EHR system when processing the data.

The RNs used *cognition* to think about relevant information to document by remembering the individual needs or preferences of the residents. One said: 'Sometimes she sits in her room to eat, and sometimes she sits in the living room. Today, she sat in her room for breakfast and in the common area for lunch, and she ate well. I will document this' (RN8). Commonly, the participants connected information from their memory to their awareness or perceptions of the events during the shift, and their thoughts were often detailed.

Using *inference,* the RNs reached conclusions or formed opinions about what and how to write or disseminate necessary information. One participant stated, 'This seems updated and relevant, but very long. I do not think I should remove or add anything here, so I think this is good' (RN2). The participants often used written information or observations to form opinions on or conclude what or how to document.

4.3 | How RNs combined nursing process elements and clinical reasoning attributes when planning and documenting nursing care

The script analysis showed that all the participants moved back and forth among the elements in the nursing process and combined different elements when reasoning using multiple reasoning attributes. On an individual level, the use of the reasoning attributes varied greatly; however, the analysis revealed some patterns in the reasoning within different combinations of nursing process elements. Table 5 displays all the combinations used by RNs during the planning and documentation of nursing care.

[Insert Table 5 here]

The participants commonly used *information processing, cognition, deliberation, logic, and inference* when reasoning within the combination of *assessment and implementation*. The RNs often connected information about the residents' current ability to function when deciding what to document in relation to implemented interventions. One participant said: 'The resident has impaired mobility. We must avoid letting her fall, and she must have a walker nearby. We must pay attention to her when she walks around. I usually write that I have followed the implemented intervention, that I have watched her, and assisted her in walking to the toilet or other places' (RN7). The participants commonly argued or negotiated their choices based on decisions made among colleagues. They expressed that it was important to document that they had followed and implemented the planned interventions.

The RNs mostly used *information processing, cognition, deliberation, heuristics, and inference* when reasoning within the combination of *assessment* and *evaluation*. The participants often stated the current health status of the resident, followed by an evaluation of signs or changes that had happened 'today' or 'lately'. One participant expressed: 'Usually, the resident eats well and normally comes out to eat with the other residents. He ate well today. However, he has had a problem with low intake of nutrition lately, and I should document how much and what he has been eating today. I will not document that he got himself a cup of coffee because it is typical that he gets his own drink' (RN5). When focusing on this information, the RNs commonly used narrative thinking by pondering or considering their observations to explain their conclusions about what information should be included in their documentation.

RNs commonly used *information processing, cognition, deliberation, heuristics, logic, and inference* when reasoning within the combination of *implementation* and *evaluation*. The participants often expressed thoughts concerning an intervention they had performed during the day, and it was important to explain the events in detail. One participant said, 'I have tried to calm things down and lower the expectations; as a result, the resident cooperated. She expressed some negative statements, but her body language was calm, and we got the intervention done. We did not force her; we would have to document that in a different way. Yes, I am satisfied with this documentation' (RN9). In addition, the participants often tried to make sense of the effect of the intervention on the residents' ability to function or their experience of well-being. The participants commonly decided what to write based on their experiences or a local rule concerning what to write.

5 | DISCUSSION

This study demonstrates that RNs use multiple cognitive processes in their reasoning process during planning and documentation of nursing care in the EHRs. The RNs move back and forth in the nursing process during their reasoning and use several clinical reasoning attributes. Some patterns in the clinical reasoning process did appear in this study showing that assessment, implementation, and information exchange were most focused by the RNs. In addition, the RNs combined the attributes of clinical reasoning differently within the stages of the nursing process.

The definite focus on assessment identified in this study might reflect that the RNs need to obtain a relevant and comprehensive understanding of the residents' actual status and situation to move forward in the care planning and documentation process (Lee et al., 2016; Varpio et al., 2015b). If RNs get an overview of a resident's case, they can obtain a cognitive framework that can guide their thinking, interpretation, and response to clinical data and anticipate the clinical trajectory of the resident (Nibbelink & Brewer, 2018; Wisner et al., 2019). The EHR system should provide possibilities for RNs in the assessment to synthesise information from the resident's relevant history and current health status to better understand what led to the current status and thus document personalised and individualised information accurately and consistently (Lee et al., 2016; Varpio et al., 2015b).

Most of the RNs in this study used heuristics when forming opinions and deriving inferences about what to write in the assessment step. This implies that the RNs' knowledge of residents and their observations during the shift provided essential information for relevant and meaningful assessment of the residents' status (Lee et al., 2016). If the EHR system can stimulate the visualisation of personal knowledge and observations made by RNs during their assessment, it may contribute to a comprehensive understanding of the residents' needs, thus, enabling secure and holistic care planning, meaningful documentation, and resident safety (Cappelletti et al., 2014; Wisner et al., 2019).

This study also found a strong focus among RNs in the implementation step when planning and documenting nursing care in the EHR. Within this step, the RNs commonly followed local rules or structures of the EHR system when reasoning. These findings support previous research on clinical reasoning, where RNs often focused on factors besides the resident while reasoning about nursing interventions (Fossum et al., 2011; Göransson et al., 2008; Simmons et al., 2003). Recent reviews have shown that the clinical reasoning process and decision making of RNs are highly influenced by factors such as the culture within a unit or the structures of an EHR system (Cappelletti et al., 2014; Levett-Jones et al., 2010; Wisner et al., 2019). If RNs have cognitive concerns related to factors besides residents, it might lead to missing valuable information about the residents' response to nursing care, resulting in decreased opportunities to include perspectives and experiences of the residents relating to the planning and documentation of nursing care (Wisner et al., 2019).

The findings of this study might indicate that RNs need to review gathered information to plan and document relevant and meaningful information in relation to nursing interventions. Similar results were identified in a study by Lee et al. (2016), who showed that RNs returned to the assessment step for data necessary for confirmation or clearance to draw conclusions. By moving back and forth between the steps in the nursing process in their clinical reasoning, RNs can connect appropriate data for individualised and personalised interventions for residents living with dementia (Lee et al., 2016; Levett-Jones et al., 2010). Thus, the EHR system should support a workflow that enables RNs to quickly move back and forth among the elements of the nursing process and connect information when planning and documenting nursing care in the EHR (Wisner et al., 2019).

This study found that the RNs mostly used narrative thinking to make sense of the residents' status or situation by pondering, considering, and interpreting written or observed data. These findings might indicate that narrative content supports RNs in understanding what is going on with the patient. Previous research shows that it is challenging to understand how events have unfolded chronologically and how the history of the resident connects with and informs the present and future actions if narrative content is lacking in the EHR (Varpio et al., 2015a). Documented narratives enable RNs to retrieve relevant resident information and professional domain knowledge, which might improve clinical reasoning and maintain resident safety (Cappelletti et al., 2014; Varpio et al., 2015b; Wisner et al., 2019). However, research also shows that massive data do not necessarily enable RNs to obtain in-depth knowledge about the residents (Blair & Smith, 2012; Varpio et al., 2015a). A recent review found that narrative nursing notes are rarely read by others in the healthcare team because of the difficulties associated with interpreting the text (Wisner et al., 2019). If the EHR systems support RNs' narrative thinking, it could support the clinical reasoning process of RNs during care planning and documentation of nursing in dementia care (Varpio et al., 2015b; Wisner et al., 2019). However, unstructured nursing information and ambiguous language can cause inadequacies in the nursing documentation that might lead to misunderstandings and adverse events for the residents (Blair & Smith, 2012; De Groot et al., 2019). Findings related to the RNs' constant focus on content and formulation in this study might indicate that RNs need to secure the exchange of relevant information necessary for safe coordination and planning of care for residents living with dementia (Wisner et al., 2019). It is important to disseminate the professional domain knowledge and perspectives of RNs working in dementia care through documentation of nursing care in the EHRs. This can enable members of the healthcare team to access clinically meaningful information and maintain the 'wholeness' of the residents' needs and response to given nursing care (Cappelletti et al., 2014; Wisner et al., 2019).

However, a large amount of information presented on an EHR user interface can increase cognitive workload and mental fatigue in RNs (Wilbanks et al., 2018).

The diagnosis phase and the setting of goals were the least focused elements of the nursing process in this study, and the participants rarely formulated a specific nursing diagnosis or expressed thoughts concerning expected resident outcomes. These findings contrast with Funkesson et al. (2007), who found planning to be the most focused element of the nursing process when RNs reasoned about pressure ulcer prevention. An explanation for this discrepancy might be that, in the present study, RNs planned and documented nursing care for residents living in the nursing home, while in the study of Funkesson et al. (2007), the RNs started their planning and documentation before the arrival of the resident. After the arrival of the resident, the assessment phase was highly focused, indicating that RNs have a strong focus on assessing when the resident is physically present in the room (Funkesson et al., 2007). However, a lack of focus concerning nursing diagnosis in care planning and documentation of nursing may decrease the efficiency of care management and make it challenging to provide tailored care for the residents (Sanson et al., 2017).

5.1 | Methodological considerations

The complete and holistic articulation of thought processes might have been challenging for the participants, and the skills of each participant in thinking aloud might have affected the quality of the collected data and the results (Aitken et al., 2011; Koro-Ljungberg et al., 2013). However, training in think-aloud and explicit instruction to only speak out loud immediate thoughts and avoid explanations was provided to minimise this potential bias (Fossum et al., 2011; Gerber et al., 2015). The design of this study could have influenced the participants' thinking about documentation. To avoid impact of social and motivational aspects on the participants' reasoning process, a natural setting in an including environment was facilitated (van Somren et al., 1994 p. 34). A limitation of this study is the small sample size; however, the participants had a wide range of experiences relevant for this study, implying information power (Malterud et al., 2016). All the participants performed their documentation in systems that had the same structures and interfaces (Wisner et al., 2019). Deductive coding was chosen for this study. However, inductive coding may provide a different result (Fossum et al., 2011). On the other hand, all steps of the nursing process (Ehnfors et al., 1991) and all clinical attributes (Simmons, 2010) were identified, which may support the deductive method of analysis.

6 | CONCLUSION

This study provides insight into the clinical reasoning process of RNs during care planning and documentation of nursing in the EHR of residents living with dementia. The results show that RNs move back and forth between the elements of the nursing process and use a variety of clinical reasoning attributes in their reasoning process. The study identified that the RNs in dementia long-term care regularly use their experiences and heuristics when reasoning about the residents' current health status and wellbeing. While reasoning about planned or implemented interventions, they use logical thinking and follow local rules for documentation.

7 | RELEVANCE TO CLINICAL PRACTICE

Knowing more about the clinical reasoning of RNs during their planning and documentation of nursing care is important for the development of routines and structures that facilitate better coordination and cooperation between RNs and other members of the healthcare team. This knowledge is important for optimising professional training and practice to increase good nursing documentation and high-quality care. The knowledge from this study of cognitive processes and clinical reasoning can be used to design EHR systems that support the clinical decisions and workflow of RNs and enhance their ability to connect data and disseminate relevant information. Further research should be conducted to understand RNs' reasoning when documenting in EHRs, such as comparing the reasoning of RNs when writing in PNs and updating the NCP.

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8 | Tables

TABLE 1: Characteristics of respondents (n = 12)

	Years		
	Range	Mean	Standard Deviation

Age	25—58	40.6	11.1
Experience from clinical practice as registered nurse	2—32	11.7	9.4
Experience working with persons living with dementia	.5—35	10.9	9.5
Length of employment at the nursing home	.5—10	4.5	3.3

TABLE 2: Example of referring phrase analysis

Segment	Nursing process element with example†
‘There has been a problem related to the resident wouldn’t get up this morning and that is not normal. The nightshift wrote that she slept well during the night, but I don’t know if she was wandering or something. I must be objective and only write what happened today. I will choose Night Sleep to write the report in, I could choose Cognitive Impairment, but I don’t know why she refused to get up, it is hard to know’.	Assessment *‘There has been a* ***problem*** *related to* ***the resident*** *wouldn’t get up* ***this morning*** *and that is not normal’.*
	Evaluation *‘**The nightshift** wrote that she slept well during the* ***night****, but I don’t know if she was wandering or something’.*
	Information exchange *‘**I must be objective** and only write* ***what happened*** *today. I will choose* ***Night Sleep*** *to write* ***the report*** *in, I could choose* ***Cognitive Impairment****, but I don’t know why she refused to get up, it is hard to know’.*

†Bold text shows nouns and noun phrases that refer to the elements of the nursing process.

TABLE 3: Example of assertional analysis

Segment	Clinical reasoning attribute with example†
‘There has been a problem related to the resident wouldn’t get up this morning and that is not normal. The nightshift wrote that she slept well during the night, but I don’t know if she was wandering or something. I must be objective and only write what happened today. I will choose Night Sleep to write the report in, I could choose Cognitive Impairment, but I don’t know why she refused to get up, it is hard to know’.	Cognition *‘**There has been** a problem related to the resident wouldn’t get up this morning and that* ***is not normal.****’*
	Heuristics *‘**The nightshift wrote** that she slept well during the night, but* ***I don’t know*** *if she was wandering or something.’*
	Metacognition *‘**I must be objective** and* ***only write what*** *happened today.’*
	Information processing *‘I will choose Night Sleep to* ***write the report in****, I could choose Cognitive Impairment.’*
	Inference *‘**I will choose** Night Sleep to write the report in.’*
	Deliberation *‘**The nightshift wrote** that she slept well during the night,* ***but I don’t know if*** *she was wandering or something.* ***I must be*** *objective and* ***only write*** *what happened today.* ***I will choose*** *Night Sleep to write the report in,* ***I could choose*** *Cognitive Impairment,* ***but I don’t know why*** *she refused to get up,* ***it is hard to know****.’*

†Bold text shows identified assertions, defined as positive statements or declarations made by the participant related to the documentation process.

TABLE 4: Frequency of focused elements of the nursing process and used reasoning attributes derived from identified reasoning episodes (*N*=1404)

	Elements of the Nursing Process focused						
	Assessment	Diagnosing	Planning	Implementation	Evaluation	Information exchange	
	Nursing history and status	Nursing- diagnose assessment and formulation	Expected outcome (goal)	Implemented or planned nursing intervention	Evaluating nursing		
Reasoning Attributes used							**Total** *f* (%)
Information Processing	80	3	4	79	33	110	309 (22)
Cognition	78	5	4	59	28	79	253 (18)
Heuristics	68	2	3	21	28	39	161 (11.5)
Deliberation	52	2	3	28	22	45	152 (10.8)
Inference	83	3	3	79	44	102	314 (22.4)
Metacognition	14	2	1	12	5	33	67 (4.8)
Intuition	1	0	0	0	0	0	1 (0.07)
Analyse	1	0	0	1	0	2	4 (0.3)
Logic	17	2	1	50	11	62	143 (10.2)
Total *f* (%)	394 (28)	19 (1.)	19 (1.4)	329 (23.4)	171 (12.2)	472 (33.6)	1404

TABLE 5: The participants' cognitive combinations of elements in the nursing process and clinical reasoning attributes during documentation (*n*=12)

Combinations of nursing process elements in focus	Combinations of attributes used	Number of times used
Assessment and Implementation	IP†, C‡, D§, L¶, INF††	11 (92%)
Assessment and Evaluation	IP, C, D, H‡‡, INF.	9 (75%)
Implementation and Evaluation	IP, C, D, H, L, INF.	8 (67%)
Assessment and Diagnosing	IP, C, D, H, INF	2 (17%)
Assessment and planning	C, D	1 (8%)
Planning and implementation	IP, C, D, H, INF	1 (8%)

†IP, information processing; ‡C, cognition; §D, deliberation; ¶L, logical; ††INF, inference; ‡‡H, heuristics

9 | Figure Legends

Figure 1 The VIPS-model framework.

10 | Appendices

APPENDIX 1

CODING SCHEME BASED ON THE VIPS DOCUMENTATION MODEL AND THE NURSING PROCESS MODEL

VIPS model	Nursing Process code	Description
Nursing history and nursing status	*Assessment.*	Gathering data or information. Thoughts or expressions of the resident's or significant other's descriptions of reason for care, expectations to care and treatment, current health situation and living conditions in the nursing home as basis for assessment and nursing care planning. The resident's, significant others, or the nurse's description of: • Function, physical or psychosocial. • Discomfort. • Influencing factors/circumstances (environment, internal resources, values, expectations, perceptions).
Nursing diagnose assessment and formulation	*Diagnosing.*	Information interpretations. Identification and prioritization of needs, problems, or risks, suggesting possible causes and symptoms influencing functioning in daily life, formulation of nursing diagnoses in three levels: • Basic description of problem or need. • Problem description based on closer analysis or observed behaviour. • Includes descriptions of aethology or related factors and possible consequences for or responses from the resident.
Setting expected resident outcome or nursing goal	*Planning.*	Thoughts of expected outcomes or resident-goals, long og short term, that can be measured. Thoughts related to functional ability and health status of the resident, self-care and disease, management of health promotion, lifestyle alterations, resident's satisfaction, and well-being.
Implementing or planning nursing interventions	*Implementation.*	Thoughts of planned and/or implemented nursing interventions to promote the resident's health and prevent illness, thoughts on how to maintain or retain health and well-being of the resident.
Evaluation from nursing perspectives	*Evaluation*	Thoughts in relation to evaluation of the nursing care, signs of change, stability or achieved patient outcomes or coals, the nursing care's effect on the resident's: • Ability to function and status of the health • Experience of well-being • Coping of self-care • Coping of disease and other health-issues • Will and motivation

Information-Exchange		Thoughts of how the information is exchanged, formulations, managing of information in the electronic healthcare record-system.

APPENDIX 2

CODING-SCHEME ATTRIBUTES OF CLINICAL REASONING BASED ON CLINICAL REASONING THEORY

Attribute code	Cognitive process	Description
Analysis	Interpreting information	Systematically and rationally weighing of generated alternatives against clinical data or outcomes that can be validated.
Deliberation	Rumination	Narrative thinking, that is trying to understand the case or making sense of the experience by pondering, considering evidence, negotiating or persuading, interpreting human concerns, intents and motives.
Heuristics	Informal thinking strategies or mental shortcuts	Informal thinking strategies, recognizing patterns, describing, explaining, judging value, based on experience.
Logic	Argument	Arguments or inferences following a rule, e.g. a rule that state when particular conditions are met or certain rules (formal/informal) in the nursing home (culture) that one are expected to follow.
Inference	Speculation	Speculation, that is forming conclusions or opinions or an educated guess based on observations, can be logical or illogical.
Metacognition	Reflective thinking	Reflective thinking, that is reflecting over own documentation process, or critiquing data collection processes and results or reviewing personal biases or limitations in knowledge depth, breadth, and organization.
Cognition	Perception or awareness	Perception/awareness of information or a situation, remembering information or observed data, connecting information, and planning.
Information processing	Organizing data	Organizing data, acquiring, recording, retrieving, displaying, and disseminating resident information and data through computer-based operations.
Intuition	Insight independent of reasoning	A “hunch” or a “gut feeling”, immediate knowing without reason, cannot be verbalized in the sense that the source of knowledge cannot be determined.

11 | Impact Statement

11.1 What does this paper contribute to the wider global clinical community?

- This study shed light on the importance of clinical reasoning in nursing practice.
- This knowledge can be used to develop electronic health record systems that support the workflow of registered nurses and disseminate relevant information.
- This understanding will help facilitate better coordination and cooperation between nurses and other members of the healthcare team.

Paper 3

Utilizing nursing standards in electronic health records: A descriptive qualitative study

Submitted September 2023

Utilizing nursing standards in electronic health records: A descriptive qualitative study

Lene Baagøe LAUKVIK*, PhD-candidate, RN, Department of Health and Nursing Science, Faculty of Health and Sport Sciences, University of Agder, PO Box 509, NO-4898 Grimstad, Norway, tel.: +47 412 58366, email: lene.laukvik@uia.no

Merete LYNGSTAD, PhD, RN, Norwegian Nurses Organisation, Oslo, Norway, email: merete.lyngstad@nsf.no

Ann Kristin ROTEGÅRD, PhD, RN, VAR Healthcare, Cappelen Damm, Oslo, Norway, email: ann.kristin.rotegaard@cappelendamm.no

Mariann FOSSUM, PhD, RN, University of Agder, Department of Health and Nursing Science, Faculty of Health and Sport Sciences, Grimstad, Norway, email: mariann.fossum@uia.no

*Corresponding author

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Utilizing nursing standards in electronic health records: A descriptive qualitative study

Abstract

Background: The electronic health record (EHR), including standardized structures and languages, represents an important data source for nurses, to continually update their individual and shared perceptual understanding of clinical situations. Registered nurses' utilization of nursing standards, such as standardized nursing care plans and language in EHRs, has received little attention in the literature. Further research is needed to understand nurses' care planning and documentation practice.

Aims: This study aimed to describe the experiences and perceptions of nurses' EHR documentation practices utilizing standardized nursing care plans including standardized nursing language, in the daily documentation of nursing care for patients living in special dementia-care units in nursing homes in Norway.

Methods: A descriptive qualitative study was conducted between April and November 2021 among registered nurses working in special dementia care units in Norwegian nursing homes. In-depth interviews were conducted, and data was analyzed utilizing reflexive thematic analysis with a deductive orientation.

Findings: Four themes were generated from the analysis. First, the knowledge, skills, and attitude of system users were perceived to influence daily documentation practice. Second, management and organization of documentation work, internally and externally, influenced motivation and engagement in daily documentation processes. Third, usability issues of the EHR were perceived to limit the daily workflow and the nurses' information-needs. Last, nursing standards in the EHR were perceived to contribute to the development of documentation practices, supporting and stimulating ethical awareness, cognitive processes, and knowledge development.

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Conclusion: Nurses and nursing leaders need to be continuously involved and engaged in EHR documentation to safeguard development and implementation of relevant nursing standards.

Keywords: Care planning, documentation, electronic health records, nursing homes, nursing standards

1 INTRODUCTION

Initiatives of nursing standards such as standardized nursing care plans (SNCPs) and standardized nursing languages (SNL) have been developed to support nursing documentation processes in EHR [1]. SNCPs are evidence-based, pre-prepared documents structured according to the nursing process [2], while SNL is an established set of terms that systematically groups, defines, and encodes nursing care as nursing diagnoses, nursing interventions and/or nursing outcomes [3]. The International Classification for Nursing Practice (ICNP), the Omaha System, and NANDA are examples of SNLs that have been accepted and implemented in clinical practice [3]. International research shows that the implementation and utilization of nursing standards in EHR can increase the possibility of distinguishing, extracting, and analyzing nursing care for quality and safety improvements, including improvements of nurses' knowledge of evidence-based clinical guidelines [1, 3]. Other potential benefits include reductions in administrative burdens, improved quality of documentation, and enabling identification of patient care needs and more effective management of long-term conditions [4, 5]. However, achieving these benefits is challenging, and organization-wide adoption and utilization of nursing standards in EHR in clinical practice are not optimal [6, 7]. Outcomes concerning the patient's experiences and preferences and high-quality care delivery are lacking in EHRs [8, 9]. Moreover, biomedical values dominate EHR-related ethical concerns [10]. Additionally, inaccurate, and non-comprehensive recording of information [11], mismatch with nurses' workflow, increased documentation load, and cognitive overload, have been reported [12, 13]. The European Union (2021) report highlights the need for knowledge about the actual utilization of EHR and standards in clinical practice, to understand how to overcome barriers to adoption and use in specific clinical contexts [14]. Investigations of nurses' experiences and perceptions on utilizing nursing standards in daily EHR documentation are lacking [15, 16]. Exploring and describing the experiences and perceptions of such, could increase our understanding of how to generate valuable nursing knowledge and high-quality care from EHR documentation [4]. Additionally, it could improve the customizability of EHR to enhance documentation processes and communication of patient information [17]. Lastly, such EHR documentation focus could improve our understanding of nurses' digital competence and how evidence-based knowledge can be transferred into everyday clinical practice [18]. This study is underpinned by the socio-technical-system (STS) theory, emphasizing interactions between the human, technical, and environmental levels to understand an organizational or work system [19]. The socio-technical view allowed us to understand the contribution of phenomena at the human social level (nurses in dementia care) to the performance of technical systems (nursing standards in EHRs) [20], and has previously been utilized in development, implementation, and evaluation of safe and effective EHR systems in healthcare services [21, 22].

This study aims to describe nurses' experiences and perceptions of utilizing nursing standards, including SNCPs with SNL, in daily EHR documentation of nursing care for patients living in special dementia-care units in nursing homes.

2 MATERIAL AND METHODS

2.1 Study design

A qualitative descriptive (QD) design based on data from individual interviews was utilized in this study to elicit shared meaning among nurses related to experiences and perceptions of daily EHR utilization, including nursing standards, in documenting nursing in a dementia long-term care setting [23]. Semi-structured interviews were conducted, and the interview guide was inspired by the Health Information Technology Reference-based Evaluation Framework (HITREF) [24] and the clinical expertise of all authors. The semi-structured interview guide's questions covered experiences and perceptions regarding the nurses' daily documentation practice in the EHR in general and when utilizing SNCPs and SNL. Table 1 presents the questions in the semi-structured interview guide. The questions were open-ended to facilitate a broader data collection and richer discussion. The interview guide was piloted with one participant and included in the final analysis without changes. A deductive orientation towards the data was performed during analysis. The consolidated criteria for reporting qualitative research (COREQ) checklist [25] were utilized to ensure quality reporting (Supplementary File 1). The Norwegian Centre for Research Data (NSD) and local ethics committee X University approved the study (approval number blinded). Information about the study was provided, and written consent was obtained from the participants. The information letter followed the standards of the NSD and General Data Protection Regulations [26]. Confidentiality was ensured by removing all personal identification information and assuring participants that their information would only be utilized for research purposes.

Table 1. The semi-structured interview guide questions

Number	Questions
1.	What are your experiences with the documentation of nursing care?
2.	What are your experiences with standardized terminology?
3.	To what extent do you experience the care plan as updated?
4.	To what extent do you experience that the care plan is followed-up?
5.	In which contexts do you use free text rather than standardized language when developing a care plan?
6.	How do you structure the documentation of nursing care?
7.	Which areas are most important to document for patients with dementia?
8.	How can you ensure completeness and comprehensiveness in the planning of nursing care for patients with dementia?
9.	How can completeness and comprehensiveness be expressed in the care plan of patients with dementia?
10.	How can patients with dementia be ensured person-centered care in the planning of nursing care?
11.	How can person-centered care be expressed in the care plan of patients with dementia?
12.	What are your experiences with standardized language?

2.2 Sample and setting

A purposeful sampling method was utilized to recruit nurses within three large municipalities (populations of 50,000–130,000) and one medium-sized municipality (population of 19,000) in southern Norway. We were granted access to the field through healthcare service leaders, who helped identify appropriate nurses for participation. Eighteen nurses who met the following inclusion criteria were identified: a) a bachelor's degree in nursing, b) currently working in a special dementia care unit, c) over two years of experience working with patients living with dementia, d) over two years of experience documenting nursing care in EHR of patients living with dementia, and e) access to EHR, including nursing standards. Fifteen nurses agreed to participate; however, one participant withdrew on the day of data collection. Five of the respondents had special education in dementia care, and 11 had over five years of clinical experience in dementia care. Ten participants rated their experience documenting nursing care for patients living with dementia in the EHR at an expert level (over five years). Demographics are summarized in Table 2.

Table 2. Characteristics of participants (N = 14)

	Median	Range
Age (years)	46	23–59
Experience from clinical practice as a registered nurse	16	2–35
Experience working with persons living with dementia	17	2–34

At all study sites, nurses were responsible for initiating and developing nursing care plans. Nursing aides or registered nurses were the primary contacts of the patients and responsible for updating the nursing care plans. All staff members, regardless of whether they had received professional education, had access to the EHR and were responsible for authoring daily reports in the progress notes per Norwegian health legislation [27]. The EHR utilized at all study sites were structured according to the nursing process model. The basic needs categories, such as “Circulation,” “Respiration,” “Nutrition,” “Personal Hygiene,” and “Mental Health”, were defined as areas to enter for free text writing of nursing diagnoses, patient outcomes, and interventions. The EHR utilized at all sites contained SNCPs with ICNP terminology, which were optional to use.

2.3 Data collection and analysis

The data were collected between April and November 2021 by the first author (XX), who was a female PhD candidate with prior experience as a nurse in dementia care. Each interview took place at the nursing home during the day shift. The participant and interviewer had not interacted before the interview. The primary researcher listened actively, took notes on issues to explore further, and asked follow-up questions to deepen participants’ responses. No repeat interviews were carried out. The interviews were conducted in Norwegian, audiotaped with a digital recorder, and transcribed verbatim by the first author. Eight hours of individual interviews were transcribed into approximately 50 pages. The interviews lasted around 34 minutes (range: 23–42 minutes).

The data analysis was performed manually following the principles of reflexive thematic analysis by Braun and Clark [28]. The analysis included (1) familiarizing, (2) production of initial codes, (3) exploring potential themes utilizing thematic maps, including central organizing concepts, (4) reviewing themes, (5) defining, refining, and naming themes, and (6) finalizing the findings. Each theme and sub-theme were initially discussed by two members of the research team (XX and XX) and further with all the members of the research team for consensus.

3 RESULTS AND DISCUSSIONS

STS-theory was an appropriate framework for this study as it allowed us to be specific about the technology (EHR, including standards), while simultaneously incorporate actors such as the participants, and contextual and cultural elements, and how relationships between these elements lead to action possibilities (care planning and documentation practices). The semi-structured interview guide stimulated rich discussions about the topics, and about the attitudes and feelings of the person utilizing the EHR, including nursing standards. Several themes and sub-themes were generated from the analysis (see Table 3 below).

Table 3. Summary of findings

Themes	Sub-themes
Knowledge, skills, and attitude of the system-user	Education and training in nursing and about computers Skills in expressing content Attitude towards documentation
Management and organization of documentation work	Provision of significant time and place to document Frequent decisions concerning structure and content affect motivation to engage in EHR
Usability issues of the EHR*	Entry and navigation within the EHR system Fragmentation of information
Nursing standards contributes to development of documentation practices	Support of ethical awareness Stimulation of cognitive processes Transfer of different types of knowledge

*EHR = Electronic healthcare records

3.1 Theme: Knowledge, skills, and attitude of the system-user

Most participants expressed that the knowledge, skills, and attitude of the person utilizing the EHR matter for quality and safety of the documentation and communication of patient information in everyday work. This theme was supported by three sub-themes.

3.1.1 Education and training in nursing and about computers

Professional education in nursing, and education and training regarding documenting nursing in the EHR were important factors in the production of high-quality EHR documentation and in securing appropriate follow-up of the patients, according to study participants. Knowing how to document nursing in the EHR were viewed as crucial to secure the well-being of the patients.

"*Nurses have education that enables them to document better, they see things that needs* [sic] *to be documented. When we have few nurses not everything with the patients is done properly…we need to use our knowledge from nursing school relating to what is relevant*" (P2).

These findings correspond to previous research showing that strong professional knowledge and skills are necessary for nurses to adopt and utilize EHR in clinical practice. Staggers et al. found that nurses reported a need to receive pertinent data relevant to the surgical patient in handoff situations to "make sense" of the patient's situation [29]. Kemp et al. found that participants viewed general health literacy as a preceding need to implement digital health approaches in cancer care [30]. Nevertheless, several of our participants experienced a need to be adequately prepared with education and training regarding EHR.

"I think it is the computer that makes it difficult for many, the fear of deleting the whole care plan if they push the wrong button." (P9).

Arikan et al. and Jedwab et al. both found that the lack of knowledge and skills for effective EHR utilization is a major barrier to adoption and utilization of EHR in clinical practice, and must be considered [16, 31]. If nurses' clinical knowledge and skills relating to dementia care and their digital competence is strengthened with proper and continuous education it might increase nurses' adoption and utilization of EHR, which in turn could enhance nurses' workflow and patient care in the dementia care setting [16, 31, 32].

3.1.2 Skills in expressing content

Expressing content was highlighted by most participants as challenging, often related to provision of understanding of meaning (semantics). Expressions concerning the psychosocial aspects of care were often viewed as especially difficult.

"*It is difficult to write in a way that everyone understands. I think a lot about how to formulate the content simple and reasonable* [sic]" (P13).

Some of the participants highlighted careful word choice concerning the patients' behaviors or feelings. As stated by P9: *"…you need to find words that preserve the patient and the situation, it is not my own feelings that should be in the center"*. Such findings correspond to previous research showing that nurses have concerns and dilemmas relating to the patient's dignity and well-being, when choosing words and content during documentation in the EHR [33, 34]. Balancing ethical principles relating to benefit/risk for the patient is important for nurses. Leveraging nurses' concerns regarding respectful documentation of patient information could be a way to optimize EHR utilization among nurses in the dementia care setting, possibly thus supporting the well-being of the patient [35]. Increased focus within the EHR system on content relating to psychosocial aspects of care might enable a more informative and meaningful recording of nursing care, which could promote the nurse's skills in expressing high-quality care in the EHR [9].

3.1.3 Attitude towards documentation work

Several participants talked about a personal responsibility towards documentation work as crucial to secure information flow and proper follow–up of documentation.

"It is completely necessary in relation to the patients, that it is well documented both from nurses and other staff. It is necessary that you read what the nurses have been writing when you come to work…we are totally dependent on that" (P3).

Such responsibility was commonly assigned to those who had primary responsibility for the patients. However, there was a general concern among the participants that the *feeling* of responsibility towards documentation work is not something everyone involved with the daily patient care possessed. As P6 noted: *"My experience is that those who are here now and then do not care very much about documentation, I often write information that is not picked up by everyone…".* This often led to a general concern that the necessary information was not regularly read or utilized by everyone involved in the daily planning and caring of the patients, which could potentially harm the patient.

These findings could be explained by a general lack of focus regarding the value of documentation in the working environment, potentially affecting the attitude of all staff regarding involvement and engagement in EHR documentation work [36]. Jedwab et al [31] found that motivation was the most perceived barrier and enabler among nurses for utilizing the EHR system in a hospital setting. If nurses (and other staff) in the dementia care setting are supported with proper education and training regarding care planning and documentation in the EHR, it may stimulate the feeling of responsibility to read, write, and follow–up documentation work in the EHR.

3.2 Theme: Management and organization of documentation work

Most participants experienced local and external management and organization of documentation work as highly influential on their documentation practices. This theme is supported by two sub-themes.

3.2.1 Provision of significant time and place to document

Several participants expressed that lacking sufficient time and a designated place for EHR documentation work as a stressful and distracting factor causing concerns regarding the quality of the documentation, such as regular updates of the care plans.

"We do not get the care plans updated regularly; we have too little time for such tasks. If we had better time, I think the care plans would be better" (P12).

Such findings correspond with previous research showing that sufficient time and a designated place for completing EHR documentation are important for efficient documentation and secure patient care. Varpio et al. [37] showed that lack of accommodated time to perform documentation work in the nurses' time schedules leads to an insufficient patient overview for the nurses. Furthermore, negative responses concerning overall workflow are reported in literature if documentation work is interrupted or exposed to noise [12]. If nurses in dementia care settings are provided with both appropriate time and a designated place to perform EHR documentation work, it may increase their concentration during documentation. However, there are inconsistencies in the literature regarding the time required by nurses to utilize the EHR effectively, which could be related to different EHRs or versions [12].

3.2.2 Frequent decisions concerning documentation structure and content affects motivation to engage in EHRs

Participants experienced constant changes in documentation routines as negatively affecting the daily documentation work. Frequent changes in decisions relating to structure and content, (i.e., how and what to document) were viewed as confusing, often resulting in low engagement in documentation work and nothing (relevant) recorded.

"*It has been a lot of back and forth, people cannot land on anything, as soon as you have become accustomed to writing in one way, everything is turned upside down"* (P3).

Internal and external decisions concerning daily EHR documentation practice should involve nurses and be consistent over time to facilitate a sustainable adoption and utilization of the EHR. Raddaha et al. identified a significant correlation between nurses' positive attitudes towards EHR and leader-initiated involvement of nurses in questions related to customization of the system [38]. Furthermore, nurses that are provided with time to familiarize themselves with the EHR system might be quicker at non-documentation administrative tasks, increasing time spent on direct care in the dementia care setting [4, 39].

3.3 Theme: Usability issues of the EHR

Generally, storing the recorded information in the electronic system was viewed positively by all the participants, making retrieving historical information and continuity of care easier. However, the EHR system was experienced as challenging, especially concerning entry, navigation, and fragmentation of information. This theme is supported by two sub-themes.

3.3.1 Navigation and fragmentation of information within the EHR system

Several participants experienced challenges navigating within the system to find relevant information. Not finding relevant information within the system, such as the nursing notes or the data collection, was perceived as a major challenge, potentially leading to information loss and interruptions in workflow.

"Finding the nursing-notes is challenging because you must look through the whole system to find them; some information clearly gets lost on the way." (P10).

The systems' requirements of information fragmentation especially caused frustrations regarding time spent on double documentation and division of holistic information, which was perceived as inefficient for optimizing the care plans.

"The care plan is what we are supposed to use, but sometimes it is challenging and time-consuming because we must split the information into several boxes. I mean the information you collect should be reflected in the care plan. We need to start with their story and current needs." (P12).

Similar results are reported in the review of Tsai et al. [40], who found that inefficiencies of EHR often are experienced by functionality problems not compatible with the nurses' workflow. A breakdown in the nurses' workflow caused by usability and functionality challenges, leading to insufficient transfer of important information and documentation putting the patients' security at risk [12, 40].

3.4 Theme: Nursing standards in EHR contributes to development of documentation practices

According to our participants, nursing standards included in the EHR have the potential to support and develop daily documentation practices. This theme is supported by three sub-themes.

3.4.1 Support of ethical awareness

Nursing standards were perceived as more professional and objective by the participants, and they could be helpful in avoiding subjectivity and promote a more respectful documentation, which in turn could stimulate their ethical awareness when free text was required.

"It saves the pondering on how to formulate problems or interventions, it is very good that it is already formulated." (P4).

Few studies exist regarding the ethical issues of utilizing nursing standards in EHR in a single healthcare practice. Ethical principles are important in clinical practice and these findings could indicate that nursing standards represent one solution to the negative experiences of nurses regarding ethical issues when utilizing EHR [10]. If nurses have access to nursing standards in their daily documentation practices, it may enhance their ability to make morally correct decisions when planning care and documenting nursing in EHR. This could support the patients' best interests, potentially safeguarding the wellbeing and dignity of patients.

3.4.2 Stimulation of cognitive processes

Our participants perceived nursing standards as helpful in supporting cognitive processes such as memory and creativity during care planning and documentation. Several mentioned them as particularly supportive in development of the care plan content, making it easier to identify and document nursing diagnosis, especially related to the patient's psychosocial needs.

"It is super-important, without it we are almost nothing; it brainstorms you, helps you to think more…without SNL it would be hard to write nursing diagnosis, goals, and interventions. Everyone should use it." (P5).

Similar findings were shown in a study from an acute hospital setting reporting that the utilization of SNCPs simplified nurses' work regarding easier decision-making processes concerning choices of diagnosis or interventions in care plans [41]. If nurses have access to nursing standards relevant for patients in the dementia care setting, it may facilitate clinical reasoning and decision making in documentation practice, potentially decrease the diversity in nursing diagnosis and interventions and making the patient care plan more meaningful [5]. However, several participating nurses emphasized that activating critical thinking is crucial when utilizing nursing standards. It was a general concern that by using such standards uncritically it may result in an impersonalized care plan.

"I like to use my brain and I think that if everything gets automized, maybe people think less logically" (P2).
"The care plan might not be so individual in a way and that is negative, it will not be special for each patient, they become very alike" (P8).

A good practice approach in planning care for patients living with dementia is to tailor the individual needs and preferences of the patient, and critical thinking is an essential and active part of nursing practice to safeguard the patient [42, 43]. Previous research show that if nurses experience becoming passive users (i.e., simply following an automated system), it leads to inappropriate nursing statements in the descriptions of patient situations [4].

3.4.3 Transfer of different types of knowledge

Personal information, such as the life story of the patient or every-day events (“the little things”), were viewed as particularly important to incorporate into the care plan for making sense of changes in the patient’s situation.

“*The care plan must represent what is special about this person, the little things must appear there. This is completely crucial information which we have no opportunity to get, especially from those who lack language.*” (P11).

This need for personalized and individualized information might be an explanation to the nurses’ concerns related to thinking critically when utilizing nursing standards for documentation purposes. For the nurses to become active users of nursing standards included in the EHR of patients living with dementia, there should be possibilities to add data or information that facilitate an individualized and personalized approach to care. Being able to add such information may enhance nurses’ EHR adoption and utilization, including enhancing patient care [32, 44].

Several participants mentioned that nursing standards could clarify dementia care and be helpful in guiding and improving their care planning and delivery.

“I think it would be helpful, especially for me since I have little experience in dementia care and there are lots of things that I don’t know regarding what affects the patients, even though I have been a nurse for several years.” (P12).

However, thorough descriptions in the documentation were highlighted for understanding the patient’s needs and knowing how to meet them.

These findings correspond to previous research showing that nursing standards facilitating the generation of accurate and timely knowledge aids high-quality care planning and documentation [3]. However, individual and personalized information require more text, often written in a more narrative way [45]. Castellà-Creus, et al. [41] reports that nurses in acute care hospitalization wards preferred to record in a narrative way to individualize the planning and delivery of care. Lack of possibilities for free text writing may make nursing standards inflexible and inadequate to follow, especially regarding psychosocial aspects of care. A possible solution may be to grant nurses in the dementia care setting access to nursing standards containing free text possibilities on specific keywords regarding the psychosocial needs and wellbeing of the patient. However, the quality of natural language notes should be considered as features and processes of such notes in EHR could be problematic regarding nursing visibility and in achieving a comprehensive view of the patient's clinical status [46].

3.5 Limitations, strengths, and implications for future recommendations

Regarding limitations, our study has a relatively small sample size, which could have affected the sufficiency of the data collected. Moreover, our study did not include the experiences of other significant stakeholders (e.g., nurse aides or other care givers), and hence, future research is needed to explore the experiences of these stakeholders. However, the participants had a wide range of experiences relevant to this study, implying information power [47]. Furthermore, our findings may have been influenced by the interview guide, potentially causing significant data to be overlooked in the data collection and analysis process. Conversely, the interview guide may have minimized subjectivity, as our interpretation of the findings may be one of many possible [48].

From our findings, we have three recommendations. First, nurses' professional, digital, and ethical knowledge, skills, and attitude is not only necessary for safeguarding quality of documentation work, but also suggested for the continuity and safe delivery of care when utilizing EHR in clinical practice. Second, EHR utilization, including nursing standards, is an effective strategy to improve understanding and knowledge regarding dementia care. Third, to further develop knowledge for enhancing care planning and nursing documentation in the dementia care setting, this study suggests implementing relevant nursing standards into the EHR.

4 CONCLUSIONS

Although EHR utilization in Norway is common in clinical practice, the utilization of nursing standards is novel, and research is limited. Our findings suggests that nurses and nursing leaders must be continuously involved and engaged in EHR documentation to safeguard development and implementation of relevant nursing standards. Further qualitative research is needed to get a better understanding of how nurses in different clinical settings experience and perceive adoption and utilization of EHRs, including nursing standards.

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Summary table

- This study aimed to describe the experiences and perceptions of nurses' electronic health record (EHR) documentation practices utilizing standardized nursing care plans, including standardized nursing language, in the daily documentation of nursing care for patients living in special dementia-care units in nursing homes in Norway.
- International research shows that the implementation and utilization of nursing standards in EHR can increase the possibility of distinguishing, extracting, and analyzing nursing care for quality and safety improvements, including improvements of nurses' knowledge of evidence-based clinical guidelines. Other potential benefits include reductions in administrative burdens, improved quality of documentation, and enabling identification of patient care needs and more effective management of long-term conditions.
- Exploring and describing the experiences and perceptions of such, could increase our understanding of how to generate valuable nursing knowledge and high-quality care from EHR documentation. Additionally, it could improve the customizability of EHR to enhance documentation processes and communication of patient information. Lastly, such EHR documentation focus could improve our understanding of nurses' digital competence and how evidence-based knowledge can be transferred into everyday clinical practice.

- Our study yielded the following recommendations. First, nurses' professional, digital, and ethical knowledge, skills, and attitude is not only necessary for safeguarding quality of documentation work, but also suggested for the continuity and safe delivery of care when utilizing EHR in clinical practice. Second, EHR utilization, including nursing standards, is an effective strategy to improve understanding and knowledge regarding dementia care. Third, to further develop knowledge for enhancing care planning and nursing documentation in the dementia care setting, this study suggests implementing relevant nursing standards into the EHR.
- Our findings suggest that nurses and nursing leaders need to be continuously involved and engaged in EHR documentation to safeguard development and implementation of relevant nursing standards.

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