



# Registered nurses' clinical reasoning in home healthcare clinical practice: A think-aloud study with protocol analysis



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## ABSTRACT

**Background:** The home healthcare context can be unpredictable and complex, and requires registered nurses with a high level of clinical reasoning skills and professional autonomy. Thus, additional knowledge about registered nurses' clinical reasoning performance during patient home care is required.

**Objectives:** The aim of this study is to describe the cognitive processes and thinking strategies used by recently graduated registered nurses while caring for patients in home healthcare clinical practice.

**Design:** An exploratory qualitative think-aloud design with protocol analysis was used.

**Settings:** Home healthcare visits to patients with stroke, diabetes, and chronic obstructive pulmonary disease in seven healthcare districts in southern Norway.

**Participants:** A purposeful sample of eight registered nurses with one year of experience.

**Methods:** Each nurse was interviewed using the concurrent think-aloud technique in three different patient home healthcare clinical practice visits. A total of 24 home healthcare visits occurred. Follow-up interviews were conducted with each participant. The think-aloud sessions were transcribed and analysed using three-step protocol analysis.

**Results:** Recently graduated registered nurses focused on both general nursing concepts and concepts specific to the domains required and tasks provided in home healthcare services as well as for different patient groups. Additionally, participants used several assertion types, cognitive processes, and thinking strategies.

**Conclusions:** Our results showed that recently graduated registered nurses used both simple and complex cognitive processes involving both inductive and deductive reasoning. However, their reasoning was more reactive than proactive. The results may contribute to nursing practice in terms of developing effective nursing education programmes.

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## 1. Introduction

Demographic changes in the population require increasingly more complex patient care, particularly in managing healthcare for patients with geriatric conditions, disabilities, and chronic diseases (Ministry of Health and Care Services, 2009). Patients with chronic conditions and co-morbidities need comprehensive care and require that registered nurses (RNs) practicing home healthcare have a high level of clinical reasoning skills and evidence-based knowledge to maintain high quality nursing care (Benner et al., 2010; Higgs et al., 2008).

In Norway, RNs working in home healthcare clinical practice are primarily responsible for planning and performing nursing care for patients living in distinct geographical areas. These RNs are responsible for patients' medication administration, medical procedures, and consultations with other healthcare professionals. The home healthcare

context can be unpredictable and complex, requiring RNs to have highly developed clinical reasoning skills and professional autonomy (Higgs et al., 2008).

Nurses' detection of cues or signs that indicate possible patient deterioration is an important aspect of clinical decision-making (Hoffman et al., 2009). Studies report that novice RNs identify fewer cues than expert RNs, and are limited in their ability to cluster cues during clinical reasoning and decision-making (Jensen et al., 2008; Loftus and Smith, 2008; Simmons, 2010). Novices tend to be more rule-governed and unable to see situations as a whole (Jensen et al., 2008). To better prepare students for clinical practice, bachelor programmes in nursing have employed a curricula where reflective thinking and problem-based learning are emphasized (Benner et al., 2010).

To our knowledge, no studies have specifically explored how recently graduated home healthcare RNs use clinical reasoning while caring for patients after one year experience in clinical practice. An increased understanding may provide nurse educators with further information about how to improve students' clinical reasoning and decision-making and guide the development of technology enhanced learning and decision support tools. Consequently, the aim of this study is to

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describe the cognitive processes and thinking strategies used by recently graduated RNs while caring for patients in home healthcare clinical practice.

## 2. Background

### 2.1. Clinical Reasoning

The term 'clinical reasoning' is often used synonymously with the terms decision-making and clinical judgment (Banning, 2008b; Fonteyn and Ritter, 2008; Simmons, 2010). However, clinical reasoning consists of all thinking and decision-making processes associated with clinical practice (Higgs et al., 2008). In this paper, RNs' clinical reasoning is defined as follows:

The cognitive processes and thinking strategies that nurses use to understand the significance of patient data, to identify and diagnose actual and potential patient problems, to make clinical decisions to assist in problem resolution, and to achieve positive patient outcome (Fonteyn and Ritter, 2008, p. 236).

The nursing process (assessment, diagnosis, planning, implementation, and evaluation) forms the foundation for clinical reasoning (Alfaro-LeFevre, 2013). Additionally, clinical reasoning attributes differ according to nursing experience and domain-specific knowledge (Banning, 2008b; Jensen et al., 2008; Simmons, 2010).

In this study, core dimensions of clinical reasoning include cognition, metacognition, discipline-specific knowledge, mutual decision-making, and contextual interaction (Banning, 2008b; Higgs and Jones, 2008; Simmons, 2010).

### 2.2. Information Processing Theory and the Think-aloud Method

Information Processing Theory describes how the individual process information during decision-making and is used to understand nurses' clinical reasoning (Banning, 2008b; Fonteyn and Ritter, 2008; Newell and Simon, 1972). According to Information Processing Theory, information is processed in short-term memory with pre-existing knowledge from long-term memory, leading to an outcome such as a verbalised decision (Ericsson and Simon, 1993; Newell and Simon, 1972; Van Someren et al., 1994).

The think-aloud method (Ericsson and Simon, 1993; Van Someren et al., 1994) has been used to collect information about nurses' cognitive processes and thinking strategies, by using written or clinical scenarios (Fonteyn, 1997; Fonteyn and Grobe, 1992; Forsberg et al., 2014; Fossum et al., 2011; Fowler, 1997; Funkesson et al., 2007; Göransson et al., 2008; Grobe et al., 1991) or real-life clinical practice settings (Fisher and Fonteyn, 1995; Greenwood and King, 1995; Greenwood et al., 2000; Hoffman et al., 2009; Simmons et al., 2003). Most studies have focused on different parts of the nursing process (i.e. assessment, decision-making, and/or planning), and few have studied novice or recently graduated RNs (Greenwood and King, 1995; Greenwood et al., 2000; Hoffman et al., 2009). Only two of the scenario-based studies assessed primary healthcare services; one assessed nursing homes (Fossum et al., 2011) and the other home healthcare (Fowler, 1997). To our knowledge, no studies have explored how recently graduated home healthcare RNs use clinical reasoning while caring for patients in clinical practice.

## 3. Methods

### 3.1. Design

An explorative qualitative design was used to study how recently graduated RNs' use clinical reasoning in patients' homes. A concurrent think-aloud method based on Information Processing Theory was

used for data collection (Ericsson and Simon, 1993; Newell and Simon, 1972). In addition, a follow-up interview was conducted with each participant.

### 3.2. Participants and Context

A purposeful sampling method was used. Inclusion criteria were RNs currently working more than 50% of their time in home healthcare and who had approximately one year of nursing experience. Since stroke, diabetes, and chronic obstructive pulmonary disease (COPD) are among the most common chronic diseases and leading causes of mortality in the world (WHO, 2014), an additional inclusion criterion was that the home healthcare districts should be able to provide three different home visits to patients within this selection of chronic diseases. Hence, if a patient from one of the selected groups was unavailable, one or more patients from the other groups were included.

Eight recently graduated RNs were recruited from seven municipalities in three counties in southern Norway. All RNs had been practicing for between 11 to 12 months. Participants were women aged 22 to 52. Half of the participants had other healthcare-related education prior to their Bachelor of Nursing degree. Additionally, all participants had worked as nurse aids in home healthcare, nursing homes, or other healthcare-related institutions while obtaining their nursing education.

While caring for patients during the three visits, each participant was thinking aloud. There were a total of 24 visits, including nine to patients with COPD, nine to patients with diabetes, and six to patients with stroke. Visits lasted between 5 and 73 min. Several patients had additional diagnoses, such as heart failure, renal insufficiency, and asthma. Six patients lived with a spouse.

### 3.3. Ethical Considerations

The study was approved by the Norwegian Social Science Data Services (Number: 38298), and was found not to require further approval from the Regional Research Ethics Committee (Number: 2014/791).

To obtain consent for accompanying participants into patients' homes, researchers signed a confidentiality agreement for each home healthcare ward. No personal data was to be obtained from the patients. Thus, no written consent was required from the patients. However, verbal consent to enter each patient's home was obtained prior to visits. Patients were informed that the interview conducted in their home would be audiotaped, and that the researcher would not transcribe nor use any of the patients statements during the process of data analysis.

All participants received oral and written information about the project and signed informed consent forms.

### 3.4. Procedure

Participants engaged in a practice think-aloud session prior to their first formal think-aloud session (Ericsson and Simon, 1993). Participants were encouraged to verbalise their thoughts while problem solving and avoid merely describing what they were doing and/or why (Ericsson and Simon, 1993). During this process, the researcher could provide reminders about the method. After the practice session, the researcher accompanied participants to three patient home visits.

The patients were notified when the audiotape was turned on, and that the researcher might prompt the nurse to think aloud during the visit. Participants were asked to avoid communicating with the researcher during formal sessions in patients' homes. Notes were not recorded during the home visit to avoid placing undue stress on the nurse or patient. To protect their personal privacy and intimacy, each patient was asked whether they wanted the researcher to turn away or leave the room during assistance with personal hygiene.

Follow-up interviews were conducted either in the home healthcare nurse's official car or at the home healthcare office. The participants

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