

From the Department of Neurobiology, Care Sciences and Society  
Karolinska Institutet, Stockholm, Sweden

**Exploring Care for Older People:  
District Nurses' Experiences and Clinical Practice**

Annica Lagerin



**Karolinska  
Institutet**

Stockholm 2016

All previously published papers were reproduced with permission from the publisher.

Published by Karolinska Institutet.

Printed by E-Print AB 2016, Illustration: Anna Ödlund

© Annica Lagerin, 2016,

ISBN 978-91-7676-434-3

## ABSTRACT

**Background and aim:** The health care system needs to prepare in order to provide high-quality care to a growing older population. In Sweden, much primary health care for older people is the responsibility of district nurses (DNs), but research into DNs' clinical care has not been extensive. The general aim of this thesis was therefore to explore the clinical care DNs provide to older people and DNs' experiences of this care, focusing on preventive home visits (PHVs), medication management, and leg ulcer care.

**Material and methods:** The thesis includes five studies. Study I used qualitative content analysis to analyze data from group interviews with 20 DNs about their experiences of PHVs. In Study II, DNs used the Safe Medication Assessment (SMA) tool in PHVs with 113 people to identify factors related to unsafe medication management and to describe interventions used to improve the safety of medication management. Study III employed data from the Swedish Prescribed Drug Register on 671,940 community-dwelling older people to examine the extent and quality of their drug use. In Study IV, the electronic records of 97 patients before and 96 after the intervention were used to evaluate DNs' leg ulcer management. In Study V, grounded theory method was used to collect and analyze data from group interviews with 30 DNs about providing leg ulcer care in accordance with guidelines.

**Results:** Study I found facilitators of and barriers to a successful health dialogue in the PHV. Three main themes illustrated professional dilemmas in the health dialogue that the DNs had to resolve to achieve the purpose of the PHV. In Study II, DNs found several factors related to unsafe medication management when they used the SMA during PHVs. DNs intervened to improve medication management in more than two-thirds of the visits. Study III found that the prevalence of most drug groups and of inappropriate drug use increased with age.

Polypharmacy and use of potentially inappropriate medications were already prevalent in 75-year-olds. Study IV found that nurses' documentation of leg ulcer management was sparse and far from consistent with clinical guidelines. Study V resulted in a theoretical model that illustrates how DNs balance compensating, motivating, and compromising strategies to follow clinical guidelines as far as possible and provide leg ulcer care that is good enough.

**Conclusions:** DNs experience facilitators of and barriers to health dialogues during PHVs and must balance a personal and a professional approach, a task-oriented and person-oriented approach, and a salutogenic and a pathogenic approach. The proportion of people who use drugs in most drug groups and who take inappropriate drugs increases with age. Using the SMA tool in PHVs may help improve the safety of medication management in older people and may be appropriate at age 75 and age 80. DNs cannot always follow guidelines but try to adhere to a treatment plan that is acceptable to patient and that hopefully can lead to a healed leg ulcer.

**Keywords:** assessment, clinical guidelines, health promotion, medication management, nursing care, leg ulcer, older people, preventive home visit, primary health care, tool



# LIST OF SCIENTIFIC PAPERS

This thesis is based on the following five papers, which will be referred to in the text by their Roman numerals:

- I. Lagerin A., Törnkvist L., Hylander I. District nurses' experiences of preventive home visits to 75-year-olds in Stockholm: A qualitative study. *Primary Health Care Research & Development*. 2015 Dec 1:1-15. doi:10.1017/S1463423615000560.
- II. Lagerin A., Carlsson C.A., Nilsson G., Westman J., Törnkvist L. District nurses' preventive home visits to 75-year-olds: An opportunity to identify factors related to unsafe medication management. *Scandinavian Journal of Public Health*. 2014 Dec;42(8):786-94. doi: 10.1177/1403494814550680.
- III. Lagerin A., Törnkvist L., Nilsson G., Jonell, K., Fastbom J. Extent and quality of drug use in community-dwelling people 75 years and older: a Swedish nationwide register-based study. In manuscript.
- IV. Lagerin A., Nilsson G., Törnkvist L. An educational intervention for district nurses: use of electronic patient records in leg ulcer management. *Journal of Wound Care*. 2007 Jan;16(1):29-32.
- V. Lagerin A., Hylander I., Törnkvist L. District nurses' experiences of caring for leg ulcers in accordance with clinical guidelines: A grounded theory study. In manuscript.

# CONTENTS

1	INTRODUCTION .....	7
2	BACKGROUND .....	8
2.1	OLDER PEOPLE .....	8
2.1.1	Health and well-being in older people .....	8
2.1.2	Drug use in older people .....	9
2.1.3	Leg ulcers in older people .....	10
2.2	DISTRICT NURSES .....	10
2.2.1	District nurses in Sweden.....	11
2.2.2	Preventive home visit by district nurses .....	12
2.2.3	Safe medication management by district nurses .....	12
2.2.4	Leg ulcer management by district nurses .....	13
2.3	THE RATIONALE FOR THIS THESIS .....	14
3	AIMS .....	15
3.1	GENERAL AIM.....	15
3.2	SPECIFIC AIMS .....	15
4	MATERIAL AND METHODS.....	17
4.1	STUDY DESIGN .....	17
4.2	SETTING AND PARTICIPANTS .....	18
4.3	DATA COLLECTION .....	19
4.4	DATA ANALYSIS.....	22
4.5	ETHICAL CONSIDERATION.....	24
5	MAIN RESULTS .....	25
5.1	STUDY I.....	25
5.1.1	The dialogue between the district nurses and the older people in the preventive home visits.....	25
5.1.2	District nurses' dilemmas in the preventive home visits .....	26
5.2	STUDY II.....	27
5.3	STUDY III .....	29
5.4	STUDY IV .....	30
5.4.1	Study group characteristics before and after the intervention .....	30
5.5	STUDY V .....	31
5.5.1	Theoretical model.....	32
6	DISCUSSION.....	34
6.1	MAIN FINDINGS .....	34
6.2	PREVENTIVE HOME VISITS, MEDICATION MANAGEMENT, AND DRUG USE IN OLDER PEOPLE (STUDY I, II, AND III) .....	35
6.2.1	District nurses' experiences of barriers to and facilitators of a successful health dialogue.....	35

6.2.2	District nurses' experiences of dilemmas in preventive home visits to older people .....	36
6.2.3	District nurses' medication management in clinical practice and older people's drug use.....	37
6.2.4	Nursing care interventions regarding medication management in clinical practice .....	38
6.3	LEG ULCER MANAGEMENT IN OLDER PEOPLE (STUDY IV AND STUDY V).....	39
6.3.1	District nurses' care of patients with leg ulcers.....	39
6.3.2	District nurses' experiences of leg ulcer management in accordance with clinical guidelines .....	40
6.4	METHODOLOGICAL CONSIDERATIONS.....	41
7	IMPLICATIONS FOR HEALTH CARE .....	46
8	CONCLUSIONS.....	47
9	FUTURE PERSPECTIVE .....	48
10	SAMMANFATTNING PÅ SVENSKA .....	49
11	ACKNOWLEDGMENTS .....	52
12	REFERENCES.....	53

## LIST OF ABBREVIATIONS

ABPI	Ankle brachial pressure index
DN	District nurse
EPR	Electronic patient record
GP	General practitioner
GTM	Grounded theory method
PHCC	Primary health care center
PHV	Preventive home visit
SMA	Safe medication assessment
SPDR	Swedish prescribed drug register
VIPS	Well-being, integrity, prevention, and safety



# 1 INTRODUCTION

This research project focuses on district nurses' (DNs') care of older patients with leg ulcers, older peoples' medication management, and DN's health-promoting activities in preventive home visits (PHVs) to 75-year-olds. I have worked for many years as a DN and often cared for older people in their homes or at clinic visits. I noticed that certain common health problems, such as leg ulcers and other chronic diseases, affect mainly older people. Furthermore, as I took part in medication management for older people, I noticed that home visits might be suitable occasions for me to assess the safety of medication management and intervene if necessary.

After many years of clinical work as a DN, I was given the opportunity to work with continuing education for nurses in the Stockholm County Council area. My responsibility as an educator was to arrange seminars and shorter educational sessions for nurses in primary health care. In connection with this I got the opportunity to embark a new journey, doing research at the former Centre for Family Medicine (CeFAM), today the Academic Primary Health Care Centre (PHCC).

## 2 BACKGROUND

### 2.1 OLDER PEOPLE

In Europe, the aging population is growing rapidly, and as people's age increases, the probability that they will have multiple diseases also grows (1, 2). Today, life expectancy in Sweden is about 84 years for women and 80 years for men, and calculations indicate that by 2060, 2.7 million people—25 percent of the country's population—will be over the age of 65 years (3). According to WHO, all countries in Europe need to adapt their health care systems to prepare for an aging population (4). We also need to assure that care for older people is safe and of high quality. This care should be evidence-based; that is, based on professional expertise, the best available evidence, and the care recipients' situation and desires (5). High-quality evidence-based care depends on ongoing contributions from research, including research based on clinical work. Although there is a long tradition of district nursing in Sweden, and although district nurses (DNs) routinely provide care to older people, to date, research into DNs' clinical care has not been extensive. An examination of preventive home visits, medication management, and leg ulcer management can contribute to filling this gap. This focus is in accordance with the Stockholm County Council's 2015-2019 strategy for research, development, and education, which calls for work that bridges gaps in knowledge and contributes to preventing, treating, and curing major health problems (6).

#### 2.1.1 Health and well-being in older people

According to WHO, health is “a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity” (7). It is a resource in daily life; not the goal of life, but rather something that makes a good life possible (7). When people are healthy, they feel well and can do the things they feel are of value in life (8).

The salutogenetic approach to health is a holistic perspective introduced by medical sociologist Aaron Antonovsky in the late 1970s (9). The salutogenic perspective shifts focus away from what causes disease and looks at what creates and maintains health. This health-promoting approach is based on resources and strategies that people can use to develop their health, well-being, and quality of life (10).

##### 2.1.1.1 *The most common health problems in older people*

Globally, even though older people often have good mental health, many are at risk of developing neurological diseases and mental disorders (11). Approximately 15 percent of people aged 60 and over have a mental disorder; the most common diseases are dementia and depression (11). Approximately 10 to 15 percent of older people have symptoms of depression, and the diagnosis is more common in women than men. Nearly 50 percent of older people with Alzheimer disease or vascular diseases have depression (12). In addition, elder abuse is a common health problem among older people and is often also misdiagnosed (11).

In Europe as a whole, common health problems in older people include hearing loss, back and neck pain, pulmonary disease, diabetes, depression, dementia, and osteoarthritis. In addition, as people age, they are more likely to experience several conditions at the same time. Furthermore, complex health problems in later life are often the result of multiple underlying factors, such as urinary incontinence, falls, frailty, and pressure ulcers (11).

In Sweden, common health problems in older people include heart disease, dementia, mental health problems, diabetes, cancer, disability, and pain. Heart diseases and cancer are the most common cause of death in older men and women (13).

#### *2.1.1.2 Older people's perceived health*

Perceived health is a complex phenomenon. It differs by individual and may change by situation (8). Earlier research shows that despite the higher risk for chronic diseases and functional impairments that comes with increasing age, older people often report that their health is good (14, 15). In Sweden, research shows that 86 percent of people over 75 years perceive their health as good or very good (16).

A survey by the Swedish National Institute of Public Health of people aged 55 to 84 found that those aged 75 to 84 reported significantly poorer health than those in other age groups. A total of 27 percent of women and 14 percent of men between the ages of 65 and 79 years report that they feel some degree of anxiousness, worry, or anxiety (16).

Moreover, a Swedish study of PHVs to older people found that 75-year-olds perceived their health and well-being as good even though they also reported problems such as pain, fatigue, elimination problems, sleeping problems, memory failure and pain (17). The 75-year-olds also perceived poor knowledge and understanding of their own health and illnesses.

#### **2.1.2 Drug use in older people**

As in other countries, in Sweden, drug use in older people has greatly increased during the past 25 years (18). Nearly 90 percent of people over 75 years in Sweden use drugs (19, 20). Today, over 40 percent of the population aged 75 years and older uses an average of five medications, the common criterion for polypharmacy (21). Polypharmacy, multiple diseases, and age-related physiological changes are factors that can lead to increased sensitivity to drugs and raises the risk of adverse drug reactions (ADRs) (22). Polypharmacy also raises the risk of inappropriate drug use. Previous researchers estimate that the prevalence of inappropriate drug use ranges from 12 percent to 62 percent in older people (23). It is also higher in people with multi morbidity, women, and people of low socioeconomic position (20). In Sweden, drug-related problems account for a substantial percentage of all hospital admissions in people over the age of 75 (24-26) and are costly both to individuals (27, 28) and society (29, 30) .

### **2.1.3 Leg ulcers in older people**

Slow-healing leg ulcers—wounds on the lower leg that have lasted for at least six weeks (31, 32)—are a global health care problem and affected 2.2 percent of the population of Sweden in 2002 (33). Venous insufficiency is the most common cause of leg ulcers (33). Risk factors include smoking and physical inactivity. Age also raises the risk of leg ulcers because it is associated with numerous diseases that are characterized by impaired circulation and swelling, such as heart disease, diabetes, and vascular disease (34). Leg ulcers can take several months or even years to heal and can recur, causing lifelong problems (35). The wounds frequently impair people’s quality of life (36-38) and are specifically associated with pain and sleep disturbance in people over age 80 (39).

## **2.2 DISTRICT NURSES**

DNs are found in various parts of the world, but in many ways, the Swedish model is unique. In Sweden, DNs are traditionally based in a specific geographic area and play a key role in a multi-professional team (40). They are responsible for both health-promoting activities and treatment of diseases. In other Nordic countries and in the United Kingdom, public health nurses work with health promotion, but they do not provide home health care for patients with illness (41).

Nursing, including district nursing, falls under the umbrella of caring science (42). Nursing aims to support and improve health. The discipline focuses on four key areas—human beings, health, the environment, and caring. The knowledge generated by research in the field of caring science can and should be used in practice by the members of all caring professions, including nurses, doctors, occupational therapists, and those working in eldercare (8). The ethical code of the International Council of Nurses states that nurses’ four main responsibilities are “to promote health, to prevent illness, to restore health and to relieve suffering” (43). Nursing care science focuses on research into these responsibilities.

The caring-science concept of health promotion grew out of medical science’s focus on disease prevention and health education. The goal of prevention is to affect lifestyle factors. Prevention can be divided into three categories: primary prevention, which aims to prevent the occurrence of disease; secondary prevention, which aims to prevent the development of existing diseases (for example, screening programs in primary health care); and tertiary prevention, which aims to reduce limitations associated with functional decline. Prevention is based on understanding the causes of disease (44).

Health promotion work is based on knowledge about the processes with the aim to improve people’s perceived health (45). Taking a salutogenetic perspective in health-promoting activities means focuses on finding resources and strategies that can develop a persons’ health, well-being, and quality of life (10). For example, the health dialogue in the PHV is an important opportunity to stimulate the person's willingness to change their life habits.

## 2.2.1 District nurses in Sweden

### 2.2.1.1 History

A thesis by A-C Lindström describes the development of district nursing in Sweden in detail (46). To summarize, DNs have existed in Sweden since the early part of the 1900s. At first, their education was one year long, but it already included both the prevention and treatment of diseases, particularly in vulnerable populations, such as children, older people, and the poor. At that time, DNs were responsible for health care in a specific geographic district. The first college-level district nursing program began in 1977.

Today, DNs are registered nurses working in the primary health care system who are trained to provide holistic care to people of all ages (47, 48). They have a degree in advanced specialist nurse education in public health and health promotion that includes 75 European Credit Transfer System (ECTS) credits and the right to prescribe incontinence and diabetes aids and a limited number of drugs (e.g., cortisone salves for eczema) (49). DNs no longer have the responsibility for health care in specific districts (46). Rather, they work in a variety of primary care settings, including at PHCCs, child health care centers, in schools, in home health care, and in eldercare.

The Swedish Patient Record Act (50) requires all registered health care personnel, including DNs, to keep a permanent record of their work. For every patient DNs meet, DNs must record the reason for the visit, the examinations they conduct, and the interventions they provide. The documentation must respect the patient's right to privacy and personal dignity. Care and treatment should be performed in consultation with the patient (51) and in accordance with evidence-based practice (52).

Furthermore, both the care DNs provide and the documentation they keep must follow the stages of judgment, diagnosis, planning, performance, and evaluation. The nursing documentation model used in Sweden, which is based on this process, is called the Well-being, Integrity, Prevention, and Safety (VIPS) model (53, 54). VIPS is used in primary health care (55) and in hospitals (54).

### 2.2.1.2 District nurses' clinical practice

Today, DNs share the responsibility for patient care with other members of multi-professional teams at PHCCs. These teams typically include GPs, registered nurses, and assistant nurses (56). The tasks DNs do and the structure of their everyday work varies widely by PHCC. For instance, if the PHCC has a home health care team, the DN is likely to be part of it (57). If the PHCC has no home health care team, the DN does other tasks. For example, DNs may specialize in working with patients with diabetes, high blood pressure (58), or asthma (59), and they often have special consultation hours when they see patients (for example, to rebandage leg ulcers). Recently, DNs have been given greater responsibility for preventing disease by helping patients change unhealthy lifestyle habits (60).

DNs now spend more time than before visiting older people at home to provide nursing care. They provide treatment and care, support lifestyle change, educate patients in self-care, and educate patients' families in how to help their relative who is in need of care. There are two

main reasons for DNs' increased focus on home health care to older people. The first and perhaps most obvious is the growth in the number of older people in the population. The second is changing policy. In Sweden, the number of hospital beds has been reduced and care that was once provided in hospitals is now provided in primary health care (57, 61).

### **2.2.2 Preventive home visit by district nurses**

One component of DNs' preventive care for older people is the preventive home visit (PHVs) to 75-year-olds. PHVs are not just a Swedish phenomenon but are conducted in many countries (62-64) to prevent diseases and promote health (19). In Stockholm County, DNs offered PHVs to 75-year-olds between 2008 and 2015. DNs were chosen for this task because of their dual expertise in health promotion and disease prevention (65). DNs at many PHCCs in Stockholm County and other parts of Sweden offer those 75 and older a structured health dialogue at which they can discuss health problems. These typically take place at the PHCC. However, if needed, or if the older person requests a PHV, the DNs will conduct one.

Some previous reviews show that PHVs have a number of benefits: they reduce hospital admissions (66-69) and health care costs at the societal level (67, 70), improve physical functioning (67-69, 71), and postpone mortality (66, 67, 71). However, others conclude that the effects of PHVs are not clear (72-74).

Qualitative studies have found more consistently positive results. PHVs by home visitors in Southern Sweden made the visitors' view of older people more positive (75) and increased the visitors' job satisfaction. Moreover, the home visitors thought the PHVs made them better at their jobs (76). A study conducted in Norway showed that PHVs by nurses helped older people maintain their independence and improved the older people's feelings of safety (77). In Netherlands researchers found that nurses who provided PHVs to older people living at home took a more proactive role in the care of the people they had visited. The nurses also thought that they collaborated better with GPs and other professionals after conducting PHVs (76). In two studies, nurses reported that follow-ups of PHVs should be improved and that more time and better financing were needed (76, 78).

A PHV is a dynamic social process that is quite complex (79-81). Numerous researchers call for additional qualitative evaluations of PHVs to better understand the social process involved in the visits (79, 82, 83).

### **2.2.3 Safe medication management by district nurses**

For patients to safely manage their medication, they must first agree with their prescriber that they should take the medication, and they must also understand how to take it correctly (84-86). Unsafe medication management is associated with diminished cognitive abilities, socioeconomic status, and poor adherence (84, 87). Poor adherence is related to poor prescriber-patient communication about medication, negative changes in the patient's functional abilities, long-term use of medications, and polypharmacy (28, 88, 89).

An important part of DNs' work is assessing patients' ability to manage their medications and communicating with patients and their GPs about potential medication problems. We need to identify opportunities for DNs to help prevent such problem. Moreover, we need to fill the

gaps that remain in our knowledge of drug use in certain groups, such as community-dwelling older people whose main contact with the health care system is primary health care—often with DNs.

Several assessment tools have been developed to facilitate evaluation of medication management (90-92). One is the Safe Medication Assessment (SMA) tool (92). The SMA tool includes items that are important in nursing care for older people, such as whether the older person understands his or her medications and how to take them.

A previous study showed that when DNs used the SMA, it helped them identify potential problems with medication and promote safe medication management. Common medication problems identified in that study included suspected risk for interactions, symptoms presumed to be adverse effects of the medication, and a complex medication regimen. Furthermore, the study showed that more than one-third of the patients felt they had excess medication (92).

Older people's use of drugs continues to increase, and DNs are one of several kinds of health care professionals tasked with promoting safe medication management in older people. Nevertheless, we still know relatively little about how DNs work with safe medication management in this important group of patients. A better understanding of this work and of drug use in older people who live in the community could help DNs prevent inappropriate drug use and drug-related problems in older people and could also provide data useful to policy makers.

#### **2.2.4 Leg ulcer management by district nurses**

There are many international clinical best practice guidelines to ensure the proper treatment of leg ulcers (93, 94). Sweden has its own guidelines (31, 95, 96) based on the European Wound Management Association's position statements (97).

Treatment of patients with leg ulcers is an important and time-consuming task carried out in primary care, mainly by DNs but sometimes by GPs (33, 98). GPs make etiological diagnoses and sometimes treatment decisions (31, 99). Nurses change dressings, apply compression bandages, teach patients about leg ulcers and treatments (31, 98), and complete the patient's EPR after each visit. Leg ulcer treatment can be problematic for a variety of reasons. Leg ulcers are often slow to heal and frequently recur (100), and patients do not always receive an etiological diagnosis (101, 102). Such a diagnosis is critical because the cause of a leg ulcer informs the nursing strategies for treating it. The treatment process takes a great deal of nursing time and much material. Additionally, leg ulcer treatment is often not provided in accordance with guidelines (98, 103, 104).

Several previous studies have illuminated some reasons why guidelines are not always followed in the treatment of leg ulcers in primary health care. They include insufficient familiarity with clinical guidelines (105), poor collaboration between DNs and GPs (100, 106, 107), lack of support from the management of the center where the health professionals work (for example no time to go to courses) (105), poor patient documentation (108, 109), and lack of training in and/or experience in treating leg ulcers (106, 110).

## 2.3 THE RATIONALE FOR THIS THESIS

The older population is growing worldwide, and this demographic change affects many aspects of society, including the health care system. A longer life does not always mean a healthier life, and the probability of experiencing multiple diseases increases with age. The health care system needs to be prepared to cope with the growing older population and older people's specific care needs. DNs are an important category of health care professionals who provide care to older people in a variety of primary care settings. However, research into the clinical care they provide has not been extensive. Research into preventing and treating common health problems faced by older people that cause much suffering and take a great deal of nursing care time can help fill this gap.

PHVs are a technique used in numerous countries. In Sweden, PHVs by DNs to 75-year-olds were interventions that aimed to promote health and prevent diseases in older people living in the community so that they could remain in good health and live in their homes for as long as possible. A PHV is a dynamic social process that can play an important role in health promotion and disease prevention. Qualitative studies that explore the perspective of DNs who conduct PHVs with 75-year-olds can help provide a deeper understanding of this social process.

The vast majority of people over 75 use drugs, and many use more than five drugs, which mean that they meet the definition of polypharmacy. Aging increases the risk of adverse drug reactions, and polypharmacy raises both the risk of inappropriate drug use and of adverse drug reactions. Much suffering among older people and many hospital visits are caused by drug-related problems. Despite DNs' important role in the clinical care of older people, few studies have focused on DNs' work with safe medication management in this important and growing group of patients. DNs' PHVs to 75-year-olds represented an important potential opportunity to identify risk factors for unsafe medication management in older people living in the community. The large Swedish registers also present the opportunity to study drug use in people age 75 and older who live in the community. Such information has the potential to provide an overview of the extent and quality of drug use in this large group of people with whom DNs work to promote health and prevent diseases.

Leg ulcers are a common and difficult problem experienced by older people and treated mainly by DNs in primary care. Good guidelines for leg ulcer treatment exist, but DNs do not always follow them. Research shows that a number of obstacles, including limited knowledge of treatment guidelines, can impede DNs in their care of patients who have leg ulcers. It is important to address these obstacles and attempt to overcome them to improve nursing care for people with leg ulcers and in turn increase their health and well-being.



## **3 AIMS**

### **3.1 GENERAL AIM**

The general aim of this thesis was to explore the clinical care DNs provide to older people and DNs' experiences of this care, focusing on PHVs, medication management, and leg ulcer care.

### **3.2 SPECIFIC AIMS**

The specific aims of this thesis were to:

Describe the dialogue between DNs and older people in preventive home visits from the perspective of the DNs (Study I).

Identify DNs' perceived barriers to and facilitators of the dialogue between older people and DNs during preventive home visits to 75-year-olds (Study I).

Investigate factors related to unsafe medication management in 75-year-olds during preventive home visits and to describe the interventions DNs used (Study II).

Explore the extent and quality of drug use in community-dwelling older people, comparing drug use in 75-year-olds with that in older age groups (Study III).

Evaluate DNs' management of leg ulcer patients and the effects of an in-service education program led by DNs as local educators at PHCCs (Study IV).

Investigate DNs' experiences of caring for patients with leg ulcers in accordance with clinical guidelines (Study V).



## 4 MATERIAL AND METHODS

### 4.1 STUDY DESIGN

This doctoral research project includes five studies. Studies I and V had a qualitative design. Studies II and IV had a quantitative design and Study III was a register-based study (Table 1). Studies I and II are about DNs' PHVs to 75-year-olds; studies II and III, DNs' medication management and older people's drug use; and studies IV and V, DNs' care of older people with leg ulcers.

In Study I, DNs were interviewed to obtain a description of the dialogue between the nurses and the 75-year-olds in PHVs and to identify barriers to and facilitators of this dialogue. In Study II, the Safe Medication Assessment (SMA) tool was used in PHVs to identify factors related to unsafe medication management in 75-year-olds. In Study III, the Swedish Prescribed Drug Register was used to examine the extent and quality of drug use in community-dwelling older people in Sweden. In Study IV, patients' electronic records (EPRs) were used to evaluate DNs' management of patients with leg ulcers and to evaluate an educational intervention for DNs about the care of patients with leg ulcers. Finally, in Study V, DNs were interviewed to investigate their experiences of caring for patients with leg ulcers in accordance with clinical guidelines. We chose to use both qualitative and quantitative methods to enhance the exploratory design and credibility of the findings in this thesis.

**Table 1.** Overview of research, including study focus, design, participants, data collection, and data analysis.

Study	Study focus	Design	Participants	Data collection	Data analysis
I	Describe the dialogue between DNs and older people in preventive home visits; describe barriers to and facilitators of this dialogue	Qualitative	20 DNs	Group interviews	Qualitative content analysis
II	Investigate factors related to unsafe medication management during preventive home visits and describe DNs' interventions	Quantitative	113 older people (36 DNs)	Safe Medication Assessment tool	Exploratory data analysis Fisher's exact-test
III	Explore extent and quality of drug use in community-dwelling older people	Quantitative	671,940 community-dwelling older people	Swedish Prescribed Drug Register	Descriptive data analysis Logistic Regression
IV	Evaluate DNs' management of leg ulcer patients and effects of an education program led by DNs	Quantitative	97 older people before 96 after (12 DNs)	Electronic patient records	Exploratory data analysis Z-test
V	Investigate DNs' experiences of caring for patients with leg ulcers in accordance with clinical guidelines	Qualitative	30 DNs	Group interviews	Grounded theory method

## **4.2 SETTING AND PARTICIPANTS**

Four of the five studies included in this thesis were carried out in primary health care settings. The exception, Study III, focused on older people living in the community, a group to whom DNs often provide primary care. DNs who worked at PHCCs participated in a variety of ways in four of the five studies (I, II, IV, and V), and older people participated or were involved in three of the studies (II, III, and IV). At the time of the studies, the Stockholm County Council area included about two million residents who were served by between 190 and 200 PHCCs. The data on drug use in older people used in Study III were obtained from a nationwide Swedish register.

### **4.2.1 Preventive home visits, medication management, and drug use in older people (Studies I, II, and III)**

**Study I** included DNs from 35 PHCCs located in the five regions of Stockholm County. In 2009, one DN from each of the 35 centers was contacted by telephone and asked to participate in a group interview. The inclusion criteria were completion of a two-day training course on PHVs to 75-year-olds and having conducted at least five PHVs. A total of 20 DNs participated in the group interviews (five groups; two to seven DNs per group).

To recruit DNs for **Study II**, in 2010, of the 175 PHCCs in Stockholm County, 55 were identified at which DNs had taken the course on PHVs and which had not been included in any other study about safe medication management to older people. Sixteen PHCCs and 50 DNs at these PHCCs expressed interest in participating. A total of 36 DNs from 16 PHCCs participated. The DNs informed 119 older people (75-year-olds) about the study during a PHV, and 113 (95%) of the 75-year-olds participated in the study.

The data in **Study III** came from the Swedish Prescribed Drug Register (SPDR), which contains information about all prescription drugs dispensed at Swedish pharmacies to the entire Swedish population (about nine million inhabitants) (111). Of a total of 739,734 people in Sweden to whom prescribed drugs were dispensed on 31 December 2013, 671,940 were included in the study (those 75 and older who lived in the community). The selection of community-dwelling people was made through record linkage to the Swedish Social Services Register. Since 2007, all Swedish municipalities have reported individual-level information on social care to this register (112).

### **4.2.2 Management of leg ulcers in older people (Studies IV and V)**

In Study IV, DNs from 32 PHCCs in the southwest district of Stockholm were invited to participate in a one-day training course about leg ulcer management in 2003. Of the 19 DNs who participated in the course, 14 agreed to act as in-service educators, teaching the DNs with whom they worked (that is, teaching the DNs who worked at the same PHCC). A total of 12 of the 14 DNs undertook this task, training 64 of the 78 DNs employed at the 12 PHCCs. The remaining DNs at the 12 PHCCs did not receive training because they were on a leave of absence, vacation, or sick leave.

The one-day training course for the in-service educators focused on four themes in leg ulcer management. Practical and theoretical training were provided on: 1) Doppler assessments to

measure ankle brachial pressure index (ABPI), 2) bandaging technique and practical training in compression treatment and the selection of compression treatment, 3) a patient-centered approach and using a holistic perspective when educating patients, and 4) documentation of the care process in the EPRs using keywords from the well-being, integrity, prevention and safety (VIPS) model (113).

Each in-service educator then provided training on each of the four themes (a total of approximately one hour of training) to their respective DNs. All educators received written educational material and a checklist to help them ensure that all DNs had participated in the training on all four themes. The in-service educators were also responsible for confirming that the keywords used in the EPR systems at the PHCCs corresponded to VIPS keywords, some of which were variables in the study.

The in-service educators were given the opportunity to take part in follow-up discussions on two occasions. These were held two weeks and four weeks after the one-day course, and the aim was to provide the educators with guidance and supervision. None of the DNs participated in the first follow-up meeting, but two participated in the second. When required, supervision was also available from the project leader (AL), either through visits or telephone calls to the PHCCs. The project leader also kept in touch with the in-service educators by letter on four occasions and by e-mail following the one-day course. One of the letters sent to the in-service educators included information about the study, and the other, a pamphlet with information and guidelines on the measurement of ABPI. The two remaining letters contained a short summary of the one-day course and a description of how to use keywords from the VIPS model when recording information in EPRs. In-service educators at two PHCCs requested the advice and supervision of the project leader, so the project leader made a personal visit to these two PHCCs.

In **Study V**, DNs working at seven PHCCs in the Stockholm County Council area who had clinical experience treating patients with leg ulcers were asked to participate. After oral and written information about the study was provided to the DNs and their managers, a total of 30 DNs participated in a group interview at their own PHCCs.

## **4.3 DATA COLLECTION**

### **4.3.1 Preventive home visit, medication management, and drug use in older people (Study I, II, and III)**

In **Study I**, the group interviews were led by a moderator (AL) who used an interview guide with open-ended questions in accordance with the methods described by Patton (114). The aim was to gather data to explore the phenomenon of PHVs to 75-year-olds. The DNs were asked to describe their experiences of conducting PHVs with 75-year-olds. Examples of questions were: "What strategy did you use in order to be able to discuss 'health'?" and "What kind of opportunities and difficulties emerged during these visits?" During the group interviews, an observer took detailed field notes in accordance with the methods described by

Kreuger and Casey (115). Each interview was recorded and transcribed verbatim. The interviews were 50 to 60 minutes long. After the five group interviews, data became repetitive and redundant, and the researchers estimated that saturation had been achieved.

In **Study II**, the 36 DNs filled in SMA tool during PHVs to 75-year olds who used at least one drug (n=113). DNs used the SMA tool during a 9- to 12-month period. SMA is a 20-item instrument that assesses medication management and identifies potential problems (92). The 16 risk-assessment items cover domains relevant to safe medication management, such as whether the patient uses five or more drugs, has prescribers from more than two medical units, has methods for remembering to take his or her drugs, thinks he or she has to take too many drugs, and stores his or her drugs adequately. The maximum score is 28 points, and the higher the scores the safer the medication management. However, each factor (item) in the SMA is important to achieving safe medication management.

Before using the SMA tool, the DNs participated in a two-part course provided by the Centre for Family Medicine and conducted by the first author (AL). The course was held at the DNs' own PHCCs. The course's learning outcomes were: adequate knowledge about how to use the SMA tool, the ability to identify factors highly related to unsafe medication management and propose interventions, the ability to reflect on issues that could pose risks, and the ability to document (in accordance with the VIPS model) nursing interventions undertaken to promote safe medication management. The course included dialogue, feedback, and formative assessments. Approximately one month after the first one-hour session, the DNs were given an hour-long follow-up session at their PHCC. Additional support was available by phone or at the workplace, although none of the DNs opted to avail themselves of this support.

In **Study III**, one-day point prevalence of drug use on 31 December 2013 was calculated. Briefly, the calculations used information about when the prescription was filled, the amount of drugs dispensed, and the prescribed dosage during the three months before the prevalence date (116). If the same drug was dispensed more than once during this period, it was calculated as one drug. All prescribed drugs were classified in accordance with the Anatomical Therapeutic Chemical (ATC) classification system (117). The quality of drug use was assessed using a selection of the indicators issued by the Swedish National Board of Health and Welfare (118), including the use of long-acting benzodiazepines, drugs with anticholinergic effects, three or more psychotropics, and drug combinations that may lead to clinically relevant drug-drug interactions. The prevalence of the use of five or more drugs was calculated, as was the prevalence of the use of ten or more drugs.

#### **4.3.2 Leg ulcer management in older people (Studies IV and V)**

In **Study IV**, data were collected from EPRs and reviewed for two periods: the six months prior to and the six months after the educational intervention. Data were collected from the EPRs of patients who were being treated for a leg ulcer or a wound below the knee for at least six weeks and who met the DN at least three times, either at the PHCC or at home. A computer program was used to gather EPR entries that included the keywords "leg ulcer," "wound below the knee," or "wound/leg ulcer." The records were printed out on paper, the patients' identities were removed, and the patients' age and sex noted. No reviews were

conducted during the four-week period when the in-service educators were training their colleagues at the clinics.

To compile data from the printouts, the researchers developed an audit tool (a paper form) with a checklist that included specific VIPS words (113). These VIPS words covered ten areas (variables) that reflected the general recommendations for best practice in leg ulcer management identified in the literature 2003 (119-121): 1) health history/care experience, 2) measurement of ABPI, 3) assessment of pain, 4) description of the size of the ulcer, 5) photograph, 6) nursing diagnosis, 7) medical diagnosis, 8) compression treatment, 9) patient participation, and 10) patient education/supervision. One point was awarded for each topic covered in the EPR (maximum: 10 points). EPR entries documenting the following nursing care efforts were also recorded on the tool: 1) descriptions of the types of compression bandaging used, 2) type of patient participation in leg ulcer care, and 3) type of information and education given to patients. We also recorded the number of medical diagnoses per leg ulcer patient that the GPs entered in the EPR before and after the intervention. Finally, the number of different DNs that each patient had seen at home or at the PHCC was recorded.

In **Study V**, 30 DNs were interviewed in seven groups (two to eight DNs per group) (115) at the PHCC where they worked. Five group interviews with 18 DNs were conducted between 2006 and 2007. These groups were selected via theoretical sampling (122) to ensure that participants had a wide range of experiences of leg ulcer management. After a pause in the study, data analysis continued in 2013 and 2014. During analysis, we discovered that additional interviews were needed to increase data variation and achieve category saturation. Two additional group interviews with 12 DNs were thus conducted in 2015. These two groups were chosen on the basis of the DNs' extensive experience with leg ulcer care.

The first author of the study led the interviews, using an interview guide with open-ended questions (114) aimed at gathering data about DNs' experiences of caring for patients with leg ulcers. Some of questions were: "How do you work?" "How do you treat patients with leg ulcers at home?" "Are there any difficulties?" and "How do you get patients to participate in treatment?" Examples of more focused questions included "What do you do when wounds don't heal?" and "What do you do if patients won't follow your advice?" At the end of each interview, the interviewer discussed her impressions with an observer (a DN familiar with group interview methods) who wrote a summary of the interview and read it to the participating DNs. The DNs verified the accuracy of the summary, added more information, or sometimes adjusted it. Memos were written immediately after each interview and during the analytical process.

The group interviews lasted between 40 and 50 minutes, were audio recorded with the nurses' permission, and were transcribed verbatim by the first author. Data were collected via the process of theoretical sampling (122, 123). The original three interviews provided an overview and preliminary understanding of the data. Questions became more focused as analysis progressed and new issues emerged. When questions emerged from the analysis of data generated by the first three group interviews, the three authors (AL, LT, and IH) changed the interview guide to focus on these new questions and interviewed two more groups. Finally, the interview guide was revised again and used to interview two additional groups.

## 4.4. DATA ANALYSIS

### 4.4.1 Preventive home visit, drug management, and drug use in older people (Studies I, II, and III)

**Study I** used qualitative content analysis (124-126) based on the work of Graneheim and Lundman (2004), who analyze text in terms of domains, categories, and themes (126). The transcribed interviews were read several times, after which the text was sorted into five domains (lists of things that go together). The domains used in Study I were created on the basis of the work of Vass et al. (2007) (62), who defined the five parts of PHVs: establishing trustful contact, conducting a structured interview, making an overall assessment, proposing health-promoting activities, and offering follow-up (62). The text in each domain (each of the five parts of a PHV) was then divided into meaning units, condensed, abstracted, and labeled with a code in accordance with the process described by Graneheim and Lundman (126). The codes were grouped into categories and subcategories in the domains to ensure that the analysis was meaningful and coherent. At the conclusion of the analytical process, the researchers identified three themes that ran through the domains and categories and revealed the underlying latent content in the text. To ensure the trustworthiness of the analytical process, the researchers discussed their findings until they reached consensus about the domains, categories, and themes (114). Quotations translated from Swedish to English were used to illustrate the main findings.

In **Study II**, statistical analyses were performed using STATA statistical software version 9.2. Frequencies were presented as numbers and proportions as percentages. Prescribed medications were classified using ATC classification codes (117). Fisher's exact test was used to compare differences in factors related to items in the risk assessment between persons with an SMA score below <25 and those with a score  $\geq 25$ . The significance level was set at  $p < 0.05$ .

In **Study III**, logistic regression analysis was used to study differences in extent and quality of drug use by sex and age. Adjustments were made for age (treated as a continuous variable), sex, and number of drugs (used as a proxy for overall comorbidity) (127). SPSS 22.0 for Windows (SPSS Inc., Chicago, IL) was used for the analyses.

### 4.4.2 Leg ulcer management in older people (Study IV and V)

In **Study IV**, descriptive analyses were carried out on checklist data from the six-month period before and the six-month period after the intervention. Analyses were performed using the statistical software package STATA (StataCorp. Version 9, LP). The difference between proportions was tested with a z-test; large sample sizes were assumed. We used a significance level of  $p < 0.05$ .

In **Study V**, Grounded theory method (GTM) (122, 123) was used to develop a deeper understanding of DNs' experience of caring for patients with leg ulcers in accordance with clinical guidelines. The method is particularly useful when a new perspective on a field is called for. GTM emerged from the work of two American sociologists, Barney Glaser (a



sociologist experienced in quantitative methodology and text analysis) and Anselm Strauss (a sociologist with roots in symbolic interactionism), who collaborated in the 1960s to study dying hospital patients (123). GTM was influenced by symbolic interactionism (128).

The research strategy in Study V was based on the version of classic GT methodology (Glaser & Strauss (1967); (129) Glaser (1978) (130) as it has been elaborated by Charmaz (122) and labeled “Constructivist grounded theory”. Charmaz’ version of GT methodology recognizes that models that result from grounded theory analysis are the product of interpretation and are thus subjective constructions. The GTM steps used by Hylander (131) were employed in the coding process. The researchers constantly compared findings during data collection, coding, and analysis and wrote memos to keep track of ideas and assist in the analytical process.

To develop a theoretical model, data collection and analysis were conducted in parallel. The participants' main concern was defined early in the analysis as “DNs were preoccupied by what they should do but could not do when caring for patients with leg ulcers.” To develop a theoretical model that was well-grounded in data and illuminated this concern, the data were coded in three steps: open coding, focused coding, and theoretical coding (131). In the first step, *open coding*, text was coded line by line to generate initial categories, a process that resulted in thirteen preliminary categories, such as “no good routines” and “compromise.” In the second step, *focused coding*, categories were filled and aspects and dimensions of the categories were developed. The preliminary categories were then reduced to eight main categories; these categories were more conceptual in nature than the preliminary categories. The third analytical step was *theoretical coding*. In this step, codes that describe the relationships between categories were identified. In this study, these included “obstacles” (e.g., “problems with continuity of care”) and “strategies for overcoming obstacles” (e.g. “planning in order to achieve continuity of care”). Finally, in the fourth stage of analysis, the core process appeared. This core process tied all the categories together and described how *DNs strive to stay on track—to follow guidelines and stay motivated despite prolonged wound treatment and feelings of hopelessness*. We estimated that saturation had been achieved when all categories were filled and no additional categories had emerged.

## 4.5. ETHICAL CONSIDERATION

In compliance with the Helsinki Declaration, all research projects included in this thesis were approved by the Ethics Research Committee at Karolinska University Hospital in Huddinge or the Regional Ethical Review Board in Stockholm, Sweden. Registrations numbers were Dnr 2009/5:6 (Study I), Dnr 2010/5:6 (Study II), Dnr 2013/1941-31/3; 2015/1319-32 (Study III), Dnr 367/03 (Study IV), and Dnr 2010/566-31/5 (Study V).

Verbal informed consent for studies I, II, and V was obtained from participating DNs after they received written and oral information about the study. For Study II, written informed consent was obtained from the older people. Codes protected the identities of the older people and DNs. The older people received written information from participating DNs about the purpose of the study, about confidentiality, and about the voluntary and anonymous nature of participation. In Study IV, all information about the patients who participated was rendered anonymous. The anonymity and confidentiality of participants and their patients was guaranteed in the presentation of data. Ethical permission was not required for Study V because of the nature of the topic. However, some international journals require ethical permission for publication, and we therefore applied for such permission in 2010. The response was a statement from the Regional Ethical Review Board in Stockholm stating that permission was not necessary for this study: "It is the advisory opinion of the committee that in the view of the board there are no obstacles to carrying out the research."

Patient records, recordings, transcripts, assessment forms, and intervention forms are kept in a locked location. The material was anonymized and will be destroyed after ten years.

## 5 MAIN RESULTS

This section presents the results of studies I, II, III, IV, and V.

### 5.1 STUDY I

The first of the two main results of Study 1 was a systematic description of the dialogue between the DNs and older people during the PHVs and of the facilitators of and barriers to this dialogue. The second main result to emerge from the study was three themes that expressed and illustrated DNs' dilemmas in PHVs.

#### 5.1.1 The dialogue between the district nurses and the older people in the preventive home visits

Table 2 provides a description of the structure and content of the PHVs. It presents the parts of a PHV (the five domains) that are used to achieve the purpose of the visit along with the facilitators of and barriers to dialogue between older people and DNs in each domain. The domains included establishing trustful contact, conducting a structured interview, making an overall assessment, proposing health-promoting activities, and offering follow-up. The study showed that DNs experienced facilitators of and barriers to the dialogue that were related to the older person, to the DN, and to the home environment. The facilitators and barriers affected the DNs' ability to achieve a successful health dialogue, and thus, to achieve the purpose of the PHV. Subcategories are indicated by italics (Table 2).

**Table 2.** District nurses' experiences of facilitators of and barriers to the dialogue in preventive home visits' five domains. The barriers are related to the older person, the district nurse, and the home environment.

DOMAINS	FACILITATORS			BARRIERS		
	Older person	District nurse	Home environment	Older person	District nurse	Home environment
<b>Establishing trustful contact</b>	<i>confidence in the DN from the start talked frankly and openly</i>	<i>stayed open both emotionally and intellectually</i>	<i>safe and familiar environment</i>	<i>declined the offer</i>	<i>unfamiliar with older person's cultural background pressed for time</i>	<i>medical culture time-consuming</i>
<b>Conducting a structured interview</b>	<i>understood the aims of the PHV</i>	<i>used different tools: information letter, interview guide, health index, medical record, list of drugs, blood pressure, body mass index, daily routines</i>	<i>daily routines</i>	<i>quiet</i>	<i>afraid of embarrassing</i>	<i>interventions by family members</i>
<b>Making an overall assessment</b>	<i>multifaceted health dialogue show the DN around</i>	<i>inspect for the risk of falls</i>	<i>an overall picture of the older person's life situation</i>	<i>limited the conversation to one problem</i>	<i>difficult to keep control of the health dialogue</i>	<i>a purely social event</i>
<b>Proposing health-promoting activities</b>	<i>wish for confirmation of facts and approval of behaviors</i>	<i>the dialogue flowed well</i>	<i>point and show</i>	<i>severely ill did not understand the aims of the visit talked only about medical problems</i>	<i>found it difficult to explain the concept of health</i>	<i>interpreter present during the health dialogue</i>
<b>Offering follow-up</b>	<i>took the initiative</i>	<i>phoned an adequate network</i>	<i>relatives contacted the DNs</i>	<i>did not want to bother the DNs</i>	<i>not have the time</i>	<i>too many duties</i>

## **5.1.2 District nurses' dilemmas in the preventive home visits**

Three themes expressed the latent content of the group interviews and illustrated DNs' professional dilemmas in PHVs. The themes included balancing a personal and professional approach, combining a task-oriented and person-oriented approach, and maintaining a salutogenic and a pathogenic perspective. DNs had to resolve these dilemmas to achieve the purpose of the PHVs.

### *5.1.2.1 Balancing a personal and professional approach*

The DNs thought that older people's home environments were more conducive to achieving a health dialogue than the environment of the PHCCs. DNs reported the familiar setting at home made the older person feel comfortable, health dialogue became more personal at home, and health was discussed more on the older person's terms. DNs said that they often started the health dialogue by asking about pictures or other small things at home and that the home environment facilitated an overall and sounder assessment of the older person's situation and lifestyle habits. However, the DNs also thought that the home environment sometimes posed a dilemma. For instance, it could be challenging to focus on the health dialogue when spouses took part in a distracting way or the dialogue became too friendly. The DNs reported that they sometimes could get too involved in coffee drinking with spouses present, and this could shift focus of the health dialogue away from the health of the older person. To find balance between a personal and professional approach, the DNs used a variety of strategies, such as seeking eye contact with the 75-year-old to facilitate the dialogue and responding flexibly to the wishes of both spouses.

### *5.1.2.2 Balancing a task-oriented and person-oriented approach*

The DNs strived for good rapport during the visits and attempted to conduct the health dialogue on the older person's terms. However, that approach could sometimes cause problems with completing the structured interview and achieving the purpose of the PHV in the limited time available. This could occur, for example, when the older person talked about things other than their health, talked too openly, and/or took up many subjects. The DNs then had to interrupt, end the visit, or stay longer than they should have. The DNs had strategies for listening and conversing on the older person's terms but still taking the lead in the dialogue, such as using an interview guide. In general, they began PHVs with a more person-oriented approach and shifted toward a more task-oriented approach during the structured interview.

### *5.1.2.3 Balancing a salutogenic and a pathogenic approach*

Striving for good rapport during the visit could also hinder a health-promoting approach; for example, if the older person only talked about medical problems and the DN was not able to take the lead in the interview and focus on health promotion. On the other hand, many older people had multiple diseases but perceived their health as good, and sometimes DNs discovered illnesses during the PHV. Thus, some older people expressed a salutogenic perspective, whereas the DN had to focus on ailments and possible diseases. If the older people did not want to discuss health-promoting activities or did not see the reason for doing so, the DNs tried to reach the health-promotion objective by talking about everyday matters

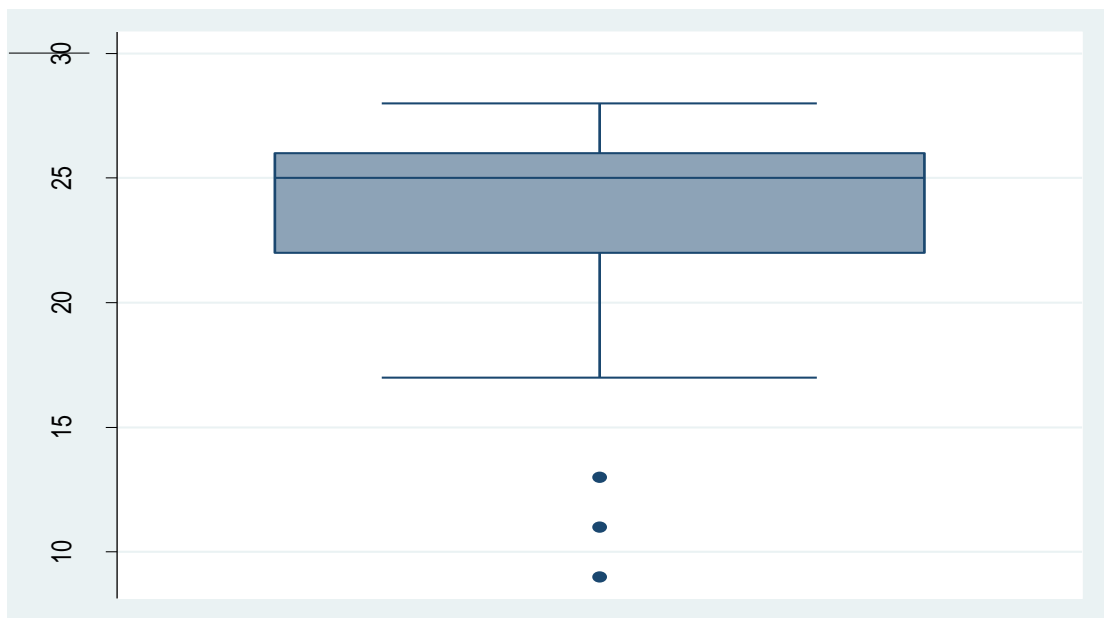
and issues related to the home environment. The DNs therefore had to work to maintain a balance between the salutogenic and the pathogenic perspective.

## 5.2 STUDY II

Study II showed that older people in Stockholm County used a median of five drugs. The percentages of people using drugs in the main groups of the ATC classification system were as follows: cardiovascular system, 72 percent; alimentary tract and metabolism, 57 percent; blood and blood forming organs, 53 percent; nervous system, 41 percent ; musculo-skeletal system, 24 percent; genito-urinary and sex hormones, 20 percent; systemic hormonal preparations excluding sex hormones and insulins, 15 percent; respiratory system, 14 percent; dermatologicals, 12 percent; sensory organs, 9 percent; and antiinfectives for systemic, use 6 percent. A total of 6 percent used over-the-counter medications. Health care professionals or pharmacists assisted 6 percent in dispensing drugs, and relatives assisted 3 percent. A total of percent used a bottle or dose dispenser when taking their drugs.

### 5.2.1 Risk assessment

Each participating DN used the SMA tool to make a median of three assessments (range 1-9). DNs identified one or more factors related to unsafe medication management in 84 percent of the 75-year-olds. The median total risk assessment score was 25 of 28 possible points (range 9-28 points) (Figure 1).



**Figure 1.** Distribution of Safe Medication Assessment tool points (maximum possible score, 28 points) ( $n=113$ ).

Several risk factors were identified in the assessment. The most common were using five or more drugs (42.5%), having symptoms presumed to be adverse effects of the medication (34.5%), having prescribed drugs from more than two sites of care (29.2%), and having no methods or routines for remembering to take their drugs (25.7%). Moreover, 10.6 percent reported that they took a dose other than that prescribed without consulting their prescriber.

Of the 113 older people, 42 percent had a SMA score of <25 points. The two most common factors related to unsafe medication management among those who scored <25 points were the use of five or more drugs (68%) and symptoms that could be possibly be a side effect of the drugs they were taking (57%). These risk factors were less common among older people with a score of  $\geq 25$ . Among those who scored  $\geq 25$  points, the most common risk factor was having prescribers from more than two medical units.

The DNs suspected that 9 percent of the older people were at risk for interactions between drugs and that 7 percent had reduced cognitive ability. The most common symptoms potentially indicative of adverse effects of drugs in the 75-year-olds were dizziness (9%), dry mouth (8%), bruising (7%), and constipation (6%). The most common self-reported reasons the 75-year-olds said they deliberately took a medication at a dose other than that prescribed without consulting their prescriber were fear of drug side effects (7%), desire for greater personal control over their drug treatment (2%), and fear of becoming dependent on drugs (2%).

## **5.2.2 Nursing care interventions**

DNs provided nursing care interventions to 72 percent of the 113 participants in the study to help ensure safe medication management. They used several different nursing care interventions. The most common were information and education. The DNs undertook interventions statistically significantly more often in people with an SMA score of <25 than in those with an SMA score of  $\geq 25$ .

The most common factors related to unsafe medication management in those who did not receive any interventions (28.3%) were the use of five or more drugs, lack of methods or routines for remembering to take drugs, and being of the opinion that one was on too many drugs. The median total SMA score in those who received no interventions was 26 (range 15-28).

DNs intervened in the medication management of more than two-thirds of the 75-year-olds who had the maximum SMA score of 28 (16%). The most common nursing care interventions were conversations about over-the-counter drugs, conversations about the older person's alcohol habits, and advice on how to prevent falls.

### 5.3 STUDY III

Data from 739, 734 people aged 75 years and older listed in the SPDR in 2013 showed that 671,940 (91%) lived in the community; these people comprised the study population. The mean age of the study population was 82 (75-114) years, and 58 percent were women. A total of 9 percent (n= 60,872) were 75-year olds, 40 percent were aged 75-79 years, 31 percent were 80 to 84 years, 20 percent were 85 to 89 years, and 10 percent were 90 years and older.

The extent of the use of drugs in most main ATC groups increased with age. Drug use was lower in 75-year-olds than in people aged 75 years and older, except in groups G (Genito-urinary system and sex hormones; OR, 1.11; 95% CI, 1.08 -1.13) and R (Respiratory system; OR, 1.27; 95% CI, 1.24-1.30). Sex differences were evident in both age groups. A higher proportion of women than men used drugs in groups A (Alimentary tract and metabolism; OR, 1.37; 95% CI, 1.3-1.38), H (Systemic hormonal preparations, excluding sex hormones and insulins; OR, 2.53; 95% CI, 2.49-2.57) and N (Nervous system; OR, 1.86; 95% CI, 1.84-1.88). A higher proportion of men than women used drugs in group B (Blood and blood forming organs; OR, 1.86; 95% CI, 1.84-1.88).

Table 3 shows the proportion of people in different age groups who used in the 14 main ACT groups. The proportion of people using drugs in most ACT groups was lowest in 75-year-olds and increased with age. However, there were some exceptions. The proportion of people using drugs in group A, H, J (Antiinfectives for systemic use) and C (Cardiovascular system) increased little with age.

**Table 3.** Percentage of community-dwelling people in Sweden aged 75 years and aged 75 years and older (N=671,940), by age group, who used drugs in the 14 main ATC groups.

ATC	Drug group	Age in years				
		75	75-79	80-84	85-89	≥90
A	Alimentary tract and metabolism	39.0	40.5	43.0	44.0	43.8
B	Blood and blood forming organs	43.0	46.0	53.6	59.5	61.2
C	Cardiovascular system	71.4	72.7	75.8	77.3	75.3
D	Dermatologicals	8.4	8.7	9.4	10.7	12.9
G	Genito-urinary system and sex hormones	15.1	15.4	15.0	13.8	11.3
H	Systemic hormonal preparations, excluding sex hormones and insulins	13.2	13.7	15.1	15.8	15.5
J	Antiinfectives for systemic use	3.0	2.9	3.0	3.1	3.4
L	Antineoplastic and immunomodulating agents	3.8	3.9	4.1	3.7	2.7
M	Musculo-skeletal system	11.9	12.0	12.2	11.4	9.5
N	Nervous system	35.0	36.6	42.8	48.5	53.2
P	Antiparasitic products, insecticides and repellents	0.3	0.3	0.3	0.3	0.2
R	Respiratory system	14.9	14.9	14.0	12.5	10.7
S	Sensory organs	9.4	10.5	12.9	15.2	17.7
V	Various	0.4	0.4	0.4	0.3	0.2

ATC, Anatomical Therapeutic Chemical

Table 4 shows the analyses of the quality of drug use as measured by indicators of inappropriate drug use. Inappropriate drug use grew more common with increasing age. However, polypharmacy (use of five or more drugs) was already prevalent in 75-year-olds. Furthermore, excessive polypharmacy (use of ten or more drugs) was more common in the older age groups, as was the use of potentially inappropriate drugs (e.g. anticholinergic drugs). The highest prevalence of potential C and D drug-drug interactions was found in those aged 85 to 89 years. In people aged 75, the two most common potential category D interactions were acetylsalicylic acid with warfarin (25% of all class D interactions) and potassium with potassium sparing agents (23%).

**Table 4.** Prevalence of some measures of polypharmacy and prescribing quality in community-dwelling people in Sweden aged 75 years and 75 years and older (N = 671,940) by age group.

Indicator	Age in years				
	75	75-79	80-84	85-89	≥90
Five or more drugs	41.8	44.4	51.2	55.0	55.0
Ten or more drugs	8.0	8.8	10.6	11.5	10.8
Long-acting benzodiazepines	1.5	1.5	1.6	1.9	2.6
Anticholinergic drugs	4.9	5.0	5.0	4.6	4.1
Three or more psychotropic drugs	2.5	2.6	3.0	3.2	3.4
Drug-drug interactions, category C	15.3	15.7	17.9	19.1	16.6
Drug-drug interactions, category D	1.2	1.4	1.3	1.6	1.0

## 5.4 STUDY IV

This study evaluated DNs' management of leg ulcer patients and an in-service educational program led by DNs at the PHCCs where they worked. The results showed that DNs' documentation of leg ulcer management according to guidelines was generally sparse both before and after the intervention. However, after the intervention, statistically significant improvements were found in three key areas: in measurement of ABPI, description of pain, and photographic documentation.

### 5.4.1 Study group characteristics before and after the intervention

A total of 1270 visits either to a patient's home or by a patient to one of the 12 participating PHCCs was recorded before the educational intervention (n=97 patients). A total of 1228 such visits was recorded after the intervention (n=96 patients). In total, 65 patients were included in both review periods. The average age of patients was 75 years. More than 53 percent of the patients were women, and more than 45 percent were treated for a new leg ulcer. In both study periods, the patient met an average of three different DNs at clinic visits (range 1-10), and at home visits (range 1-11).



In both study periods, a medical diagnosis set by a GP was present in the EPR of about 50 percent of the patients. Table 5 shows the number of documented medical diagnoses per leg ulcer patient before and after the intervention. “Leg ulcers” was the most common diagnosis (n=39 before intervention; n=29 after intervention), and “venous leg ulcers” was the second most common (n=11 before intervention; n=4 after intervention).

**Table 5.** Number of documented medical diagnoses per leg ulcer patient before and after the intervention.

Medical diagnoses	Before (n=54)	After (n=43)
	Number	Number
Leg ulcers	39	29
Venous leg ulcers	11	4
Venous insufficiency	3	1
Arterial leg ulcers	1	2
Varicose veins in left leg with leg ulcer	0	2
Varicose veins in lower extremities with leg ulcer	4	3
Oedema	1	0
Leg ulcers with arteriosclerosis	0	1
Wound damage	1	1
Infected leg ulcer	1	1
Other local infections in the skin and underlying layers of skin	6	1
Erysipelas	2	0
Skin infection with leg ulcer	2	0
Non-specific skin rash	1	0
Skin wound	2	0

#### 5.4.2 Key areas documented before and after the intervention

The DNs documentation of the management of patients' leg ulcers in the selected key areas was sparse both before and after the intervention, although there was a statistically significant increase in documentation in three key areas: ABPI ( $p=0.0004$ ), pain ( $p=0.01$ ), and number of digital photographs taken ( $p=0.01$ ). No statistically significant differences were found in the other variables. The EPR descriptions of the types of compression treatment used showed that low-compression bandages were the most commonly used bandages. Descriptions of the type of patient participation were mainly of patient participation in treatment and of patient education (mainly advice on compression treatment). Only a few descriptions of advice on diet and/or on cigarette smoking were entered into the EPRs.

#### 5.5 STUDY V

The results of Study IV highlighted the need for more information about the reasons for the gap between guidelines and clinical practice in leg ulcer management. The aim of Study V was therefore to investigate DNs' experiences of providing care to patients with leg ulcers in accordance with clinical guidelines. The core process illustrated how *DNs strive to stay on track; that is, to follow clinical guidelines and stay motivated despite prolonged wound*

*treatment and feelings of hopelessness.* The participants' main concern was that they “were preoccupied by what they should do but could not do.”

### **5.5.1 Theoretical model**

The DNs described obstacles to adhering to guidelines. These included *complex wound treatment, arduous wound treatment, and an unsupportive wound treatment organization.* If the DNs and/or the patients saw no progress as a result of treatment, the obstacles could result in perceived prolonged treatment, which might lead to feelings of hopelessness in the DNs and/or the patients.

However, the DNs used several strategies to follow clinical guidelines, to stay motivated, and help patients to remain motivated. The DNs used compensating strategies to overcome the obstacles and motivating strategies to overcome feelings of hopelessness. These strategies interacted to facilitate best practice. Even if the DNs remained motivated and strived to follow guidelines, it was not always possible to follow guidelines with all patients. They then had to compromise and follow guidelines as far as possible (i.e., provide leg ulcer care acceptable to both the patient and the DN).

#### *5.5.1.1 Complex wound treatment*

This obstacle to following guidelines was characterized by *challenging collaboration with GPs, complex patient pathology, and complex wound assessment.* DNs described the need to collaborate with GPs to follow guidelines—for example, the need to obtain an etiological diagnosis, which has to be made by a GP. The collaboration with GPs was challenging because GPs lacked time and sometimes had insufficient competence in wound treatment. One example of the consequences of the lack of time and insufficient competence was few etiological diagnoses. Examples of complex patient pathology that made it difficult to follow guidelines included old age, problems with undernutrition, and multiple diseases that negatively influenced the wound healing process and constituted a risk for prolonged treatment. Moreover, disability, mental illness, and cognitive problems could also enhance the complexity of the wound treatment. The complex nature of wound assessment, which included choosing a treatment, assessing preventive measures, creating treatment plans, and documenting treatment in the EPR also made it difficult to follow guidelines.

DNs used compensating strategies to follow guidelines when wound treatment was complex. Examples of such strategies included communicating proactively with GPs and updating their own knowledge and skills. If DNs could not compensate for the complex nature of treatment, consequences included problems such as a lack of up-to-date information and a lack of etiological diagnoses. Moreover, treatment complexity could contribute to patients' lack of ability to cooperate and to time-consuming treatment.

#### *5.5.1.2 Arduous wound treatment*

This obstacle included a *difficult working environment* in home care and *troublesome treatment for patients.* The DNs' working environment was sometimes difficult because of a lack of necessary equipment and because of physically demanding working positions. Wound treatment was sometimes physically, psychologically, and financially troublesome for patients, which made it difficult to follow guidelines.

DNs used compensating strategies so that they could follow guidelines when treatment was arduous. For instance, they collaborated with others, such as those working in home help services, and they provided details about the treatment to patients (such as the benefits of compression hosiery) so that patients would adhere to treatment. If the DN could not compensate for the arduous nature of treatment, experienced DNs might stop working with the treatment of patients with leg ulcers in home care, and patients might not adhere to clinical guidelines.

#### *5.5.1.3 Unsupportive wound treatment organization*

This obstacle included *unevenly distributed competence in and experience of leg ulcer treatment, unclear responsibility for individual patients' wound treatment, no easy access to treatment plans, and unclear policy for ordering materials.*

When they encountered this obstacle, DNs used compensating strategies in an effort to follow guidelines despite the obstacle. For example, they planned so that the patient would have continuity of care, clarified their PHCC's policy for ordering dressing materials, and mentored less-experienced colleagues.

If DNs could not compensate for this obstacle, some patients might not receive treatment in accordance with guidelines. In addition, patients treated by different nurses on different occasions could lack continuity of care. Occasionally, a DN might simply do the same thing as the DN who had previously treated the patient without checking to make sure the previous DN had followed clinical guidelines. Now and then, a DN might not follow the same procedure as the previous DN but rather make her own treatment choice and thereby not follow the treatment plan. Furthermore, unclear responsibility for writing treatment plans could mean that treatment plans were not accessible or did not exist.

#### *5.5.1.4 Motivating strategies to overcome feelings of hopelessness*

Without compensating strategies for overcoming obstacles, the DNs might perceive wound treatment as prolonged, and the potential consequences of prolonged treatment were feelings of hopelessness in the DN and/or the patients.

DNs used motivating strategies to overcome their own feelings of hopelessness and/or the patients' feelings of hopelessness. According to the DNs, establishing a trusting relationship was an important motivating strategy, as was evoking hope. However, if motivating strategies failed, DNs sometimes needed to compromise with patients to follow guidelines as well as possible.

## 6 DISCUSSION

This section discusses the combined contribution of the five studies to a new and broadened understanding of DNs' clinical care of older people and DNs' experiences of this care, focusing on PHVs, medication management, and leg ulcer care.

### 6.1 MAIN FINDINGS

The thesis project resulted in a systematic description of DNs' experiences of facilitators of and barriers to a successful health dialogue between DNs and older people in PHVs. We identified facilitators and barriers and sorted them into five domains related to the older person, the DN, or the home environment. Three themes illustrated the salient findings; that is, the professional dilemmas that DNs had to resolve to achieve the purpose of the PHVs. To resolve these dilemmas, DNs had to balance a personal and professional approach, combine a person-oriented and a task-oriented approach, and employ both a salutogenic and pathogenic approach.

When DNs used the SMA tool during PHVs to older people who used at least one drug, they identified factors related to unsafe medication management in more than 80 percent of the visits. The most common factors were polypharmacy and symptoms potentially indicative of adverse drug effects. In over two-thirds of the visits in which they identified potential problems, the DNs employed nursing care interventions to ensure safe medication management. The thesis project also found that in people 75 years and older in Sweden, the use of most drug groups increased with age, as did inappropriate drug use. However, use of antidepressants and diabetes drugs decreased with age. Furthermore, polypharmacy and use of potentially inappropriate medications such as anticholinergic drugs were already prevalent in 75-year-olds.

In our evaluation of an in-service education program for leg ulcer care, we found that in several areas important in the management of leg ulcers, nurses' documentation was generally sparse and not consistent with clinical guidelines. However, a one-hour educational intervention with a follow-up meeting resulted in a statistically significant change in the documentation of three important areas. Finally, our investigation of DNs' experiences of caring for patients with leg ulcers identified obstacles and consequences of obstacles that DNs faced as they strived to treat leg ulcers in accordance with guidelines. It also described DNs' strategies for overcoming the obstacles and consequences. We developed a theoretical model that illustrates how DNs strive to stay on track in order to follow clinical guidelines, remain motivated, and encourage patients to remain motivated despite prolonged wound treatment and feelings of hopelessness. The model describes how DNs balance compensating, motivating, and compromising strategies to follow clinical guidelines as far as possible and provide care that is good enough.

## **6.2 PREVENTIVE HOME VISITS, MEDICATION MANAGEMENT, AND DRUG USE IN OLDER PEOPLE (STUDY I, II, AND III)**

### **6.2.1 District nurses' experiences of barriers to and facilitators of a successful health dialogue**

The analysis indicated that DNs experienced both barriers to and facilitators of successful health dialogues in all of the five parts of PHVs. It confirmed that the health dialogue between nurses and older people that takes place during PHVs is a complex social process.

The DNs perceived trustful contact as an important aspect of their interaction with the older people and indicated that the older people's home environment facilitated such contact. During the PHV, the older person often talked openly about his or her life experiences, which helped the DN make an overall assessment of the older person's health situation. The DNs wanted to encourage openness in the PHV, but sometimes their clinical work situation meant that they lacked time. Time pressure then prevented them from getting as deeply involved in the health dialogue as they would have liked. Other studies confirm that time pressure and lack of financial resources (76, 78) as well as lack of interprofessional cooperation and follow-up of health care interventions (76) are barriers to promoting the health of older people in primary care.

A previous Swedish qualitative study by Wilhelmsson and Lindberg identified a number of barriers to and facilitators of DNs' health promotion work (48). That study focused very generally on health promotion work in primary care, whereas we focused specifically on the interaction between DNs and 75-year-olds in health dialogues in PHVs. Moreover, in the previous study, the researchers specifically set out to identify barriers and facilitators and posed questions accordingly, whereas in our study, the concept of barriers and facilitators emerged as the result of the analytical process. A few of our findings echo those of Wilhelmsson and Lindberg. An example is that Wilhelmsson and Lindberg found that lack of time was a barrier to health promotion work, and we found that time pressure was a barrier to conducting a successful health dialogue.

As in our study, another group of researchers has found that a trusting relationship and patient-centered approach to care helps professionals promote older people's health in PHVs (132). According to the DNs in our study, tools (e.g., an interview guide) facilitated a structured interview. Previous work has also shown that protocols make it easier to assess and promote older people's health in PHVs (76). Our analyses indicated that an adequate professional network helped DNs meet older people's need for care. Similarly, others have found that interdisciplinary collaboration facilitates promoting the health of older people (133).

## 6.2.2 District nurses' experiences of dilemmas in preventive home visits to older people

DNs experienced three professional dilemmas that they had to resolve to achieve the purpose of the PHV: balancing a personal and a professional approach, a person-oriented and a task-oriented approach, and a salutogenic and a pathogenic approach.

*Balancing a personal and a professional approach.* The finding that DNs needed to balance these two approaches is in keeping with nursing theory, which states that nursing involves both the assessment and the treatment of somatic problems in addition to viewing patients as a whole person with all their needs and desires (134). According to Ericsson (42) this holistic view is an extra component of care that goes beyond somatic assessment and treatment.

Holding health dialogues in the home environment was experienced as positive by DNs. It allowed the dialogue to be conducted on the older person's terms and made the older person comfortable and able to speak openly. Thus the dialogue became more personal and it was easier for DNs to provide nursing care. Occasionally, however, the DNs felt that the older people treated them like personal friends during the PHV, and this could hamper the DNs in their goal of making an overall assessment and conducting a structured interview. When this situation arose, DNs used a variety of strategies to bring the dialogue back into balance. This balance between the personal and professional has been described in other care situations (107, 135). In most of these previous studies, balance was described primarily as important for achieving an adequate or good working environment for the care providers (107, 135, 136) but also to avoid mistakes in care (136) and to provide the care patients needed (107). In our study, however, the purpose of balancing a personal and professional approach was to achieve the goal of the health dialogue, promoting health and preventing disease.

*Balancing a task-oriented and person-oriented approach.* DNs also needed to use a combination of a person-oriented and task-oriented approach in PHVs. The DNs strived to affirm the older people's experiences of illness and disease and promote health on the older people's terms. This person-centered nursing approach is fundamental to successful care outcomes (137, 138). However, it was also important for the DNs to take and maintain the lead in the health dialogue to ensure that they could achieve the multiple important objectives of the dialogue.

We found that typically, the social process in the health dialogue was predominately person-oriented at the outset of the interaction between the DN and the older person and became more task-oriented after trustful contact was established and the dialogue was underway. Without person-orientation at the outset, the DN could have a hard time establishing a trustful dialogue, which could make it more difficult to achieve the goals of the PHV.

The findings of this study add a new dimension to the results of a previous qualitative Swedish study that investigated DNs' clinical work with patients with chronic obstructive pulmonary disease (59). That study found that DNs were either predominantly task-oriented or individual-oriented in their approach to care and that being too task-oriented could result in care that was not patient-centered. The current study found the same two orientations toward

care, person-oriented and task-oriented, but adds the information that a balance between the two is critical to achieving health care goals.

Earlier researchers have also found that trustful contact is necessary for a PHV to have a successful outcome (132). Furthermore, they have found that the home visitor must exhibit professionalism (81), and health care advice must be tailored to the older person's daily life (132).

*Balancing a salutogenic and a pathogenic approach.* Finally, DNs needed to maintain both a salutogenic and a pathogenic perspective in the PHVs. According to the DNs, some older people only expressed a salutogenic perspective and others only wanted to talk about medical problems. The DNs sometimes found that older people believed they were healthy even though they had medical problems. This is in keeping with the results of Sherman et al. (17) and Toien et. al. (132), who reported that most of the older people who participated in PHVs perceived their health as good despite illness (77). When DNs encountered older people with this perspective, the DNs sometimes had to make an effort to ensure sufficient focus on the pathogenic perspective. On the other hand, when they encountered older people who only wanted to talk about medical problems, the DNs had to work to bring the salutogenic perspective to the dialogue. The DNs' task of balancing the salutogenic and pathogenic perspectives was more difficult when older people had trouble understanding the concepts of health promotion and disease prevention. A group of Norwegian researchers has also found that older people sometimes have difficulty understanding these concepts (132). Such difficulty might affect older people's adherence to health promotion advice provided during the PHVs.

### **6.2.3 District nurses' medication management in clinical practice and older people's drug use**

When DNs used the SMA tool during PHVs to 75-year-olds, they found that 80 percent of older people evinced factors related to unsafe medication management. Polypharmacy and symptoms that might be the side effects of drugs were the most prevalent factors. Our exploration of the extent and quality of drug use in older people who lived in the community showed that with age, it was increasingly common for people to have five or more medications (polypharmacy) and to have medications that were potentially inappropriate.

Many earlier researchers have reported a high prevalence of polypharmacy and inappropriate drug use in older people (18, 139). Estimates of inappropriate drug use in older people, range between 12 percent to 62 percent (23). Because polypharmacy increases the risk of inappropriate drug use, it is important for DNs to watch for these risk factors. PHVs can provide a particularly good opportunity for DNs to identify potentially inappropriate drug use.

The 75-year-olds in Study II used a median of five drugs, and both studies II and III showed that cardiovascular drugs were the most commonly used medications. Moreover, Study III showed that the prevalence of these drugs increased with age. However, the use of calcium channel blockers with mainly vascular effects increased little with age. One reason could be that these drugs are associated with the risk of falls in older people (140). Moreover, there was a marked decrease with age in the use of lipid modifying agents, perhaps because

research has found no evidence of lower mortality in people over 80 years who use these drugs (141).

Furthermore, the use of antidiabetic drugs decreased with age. One reason could be that health care providers in Sweden follow the National Board of Health and Welfare's guidelines for the treatment of patients with diabetes (142), which recommend individual blood sugar targets and no strict blood sugar control in older people. The prevalence of respiratory system drugs also decreased with age. We speculate that obstructive pulmonary disease may be undertreated in the older population. A study of asthma treatment in older people in Japan showed that GPs do not always have the education, clinical skills, and teamwork skills required to identify older people's need for asthma medication and to ensure that the older people can use the prescribed treatments (e.g., inhalers) (143).

Although the prevalence of depressive conditions is high in older people (144), Study III showed that the use of antidepressant drugs increased little with age. One explanation could be that symptoms of depression in older people are not necessarily the same as those in younger people, which could lead to under diagnosis (144). Additionally, in older people, depression medication is associated with an increased risk of side effects such as falls (27, 144), which might make physicians reluctant to prescribe such medications for older adults.

Treatment with anticholinergic drugs was already prevalent in the 75-year-old people. In all age groups, one third of these drugs were prescribed for urinary frequency and incontinence. Treatment with anticholinergics at older ages can cause serious adverse effects, such as confusion, urinary retention, and impaired functional status. We did find, however, that the proportion of people who used anticholinergics did not increase with age, which is positive.

#### **6.2.4 Nursing care interventions regarding medication management in clinical practice**

After DNs used the SMA tool during PHVs to identify factors related to unsafe medication management, the DNs undertook a number of nursing care interventions to ensure safe medication management. The most common was patient education. For example, to prevent polypharmacy, DNs provided advice about topics such as diet and exercise to nearly a quarter of the patients who received interventions. They also provided other kinds of advice, such as information on how to prevent dizziness and pain. Earlier research confirms that patient education about drug use, dosage, and adverse effects is important in promoting better medication management and adherence (145, 146). To the best of our knowledge, no previous studies have looked into the role that DNs can play in identifying factors related to unsafe medication management during PHVs.



## **6.3 LEG ULCER MANAGEMENT IN OLDER PEOPLE (STUDY IV AND V)**

### **6.3.1 District nurses' care of patients with leg ulcers**

The analysis of the documentation showed that there were some improvements in nursing care after a one-hour educational intervention led by the local educators (DNs). These improvements included the calculation of ABPI, descriptions of pain, and photographs of wounds. However, even after the intervention, DNs' documentation of the management of leg ulcers remained sparse and the care did not meet the requirements of guidelines for the treatment of leg ulcers. Poor nursing documentation of leg ulcer management has also been found in other studies (108, 109). Although this study indicated that the quality of care was poor, one must bear in mind that data extracted from EPRs is second-hand information about DNs' adherence to guidelines, which makes it impossible to draw definitive conclusions about the actual quality of care.

The documentation indicated that there are several possible reasons for the poor adherence to guidelines: DNs might not see the relative advantage of treating leg ulcers in accordance with the guidelines, it might be difficult to change established procedures at the clinic, and the DNs might have needed more support from the leadership of their clinic and more time and training to adopt new habits. On the other hand, DNs might have provided care in accordance with guidelines but found it particularly difficult to record certain kinds of care in the EPRs (e.g., patient information/education). They may also have recorded care under key terms that were not VIPS keywords chosen as variables in this study.

Because leg ulcer management is such a common issue faced by nurses in clinics and in home care, one might think that DNs would be eager to adopt innovations. However, obstacles to adopting innovations might include factors such as a lack of time and a lack of knowledge and experience of caring for leg ulcers or of the guidelines for such care.

In our study, each in-service educator provided approximately one hour's training on the four themes, and we evaluated the results after six months. A study from Ireland found significant improvements in compression treatment and frequency of dressing changes in patients with leg ulcers 18 months after a one-day educational intervention for community nurses in primary health care (147). It is difficult to determine whether the longer intervention in the Irish study led to better results than our intervention, and it is difficult to rule out potential confounding from other variables in either study, as neither had a control group.

It is perhaps unrealistic to think that a brief, one-time intervention can have a great deal of influence on the adoption of clinical guidelines. The implementation of clinical guidelines in nursing practice is a complex process that is affected by many factors from the organizational to the individual level and can take several years (148). For example, earlier research has shown that opinion leaders (such as the in-service educators in our study who had been trained to influence the behavior of their colleagues) have positive effects on innovation but that these effects are small and can disappear with time (149). Additionally, the adoption of innovations is often influenced by other professionals, by a person's social network, and by a person's cultural background (149). Thus, efforts beyond a one-time intervention may be necessary to ensure the implementation of clinical guidelines.

Studies show that a more standardized process of leg ulcer management can improve clinical outcomes (150, 151). A recent Swedish study shows that leg ulcer management can be improved by use of the National Registry of Ulcer Treatment (RUT) (152). The registry can be a practical tool for structured team management of leg ulcer treatment. Furthermore, treatment costs associated with dressing changes and management of leg ulcers have been reduced by using RUT (152). Effective educational interventions are still needed to implement RUT in primary health care.

### **6.3.2 District nurses' experiences of leg ulcer management in accordance with clinical guidelines**

The core process identified in this study describes how DNs strived to stay on track and follow clinical leg ulcer guidelines as far as possible. We identified several obstacles to following the guidelines and several strategies that DNs used to avoid or overcome these obstacles. Other studies have previously identified many of these obstacles, such as insufficiencies in the collaboration between DNs and GPs (100), lack of support for best practice from the management of the PHCCs (105), poor communication and poor coordination (106), and incomplete/inconsistent documentation (109). The findings of our study, however, bring data on the obstacles together in a new theoretical model that provides information on the strategies DNs used to overcome the obstacles.

Collaboration with GPs was an important aspect of complex wound treatment, and the DNs perceived challenging collaboration as a barrier to following guidelines. If the DNs did not use strategies to compensate for these challenges, the complex nature of wound treatment could lead to a lack of up-to-date information about compression treatment and a lack of etiological diagnoses. This may help explain the low percentage of patients (50 percent) who had a documented medical diagnosis in Study IV. Others have found barriers to collaboration between DNs and GPs, including a lack of knowledge about leg ulcer treatment and/or a general lack of interest in leg ulcer management among GPs (153), which makes it harder for nurses to provide leg ulcer treatment in accordance with guidelines (107, 154).

An earlier Swedish study found that to cope with difficulties in collaborating with GPs regarding leg ulcers, DNs thought they should be responsible for referring patients with leg ulcers to specialist clinics (105). The reason they gave was that experienced DNs often had more knowledge about and experience of treating leg ulcers than did GPs (110). Thus one way to cope with the challenge of difficult collaboration between GPs and DNs regarding leg ulcers would be to give DNs in Sweden this kind of responsibility while simultaneously providing them with supplementary education about leg ulcer care.

In the current study, organisational barriers also could lead to unclear treatment plans or no treatment plans in EPRs. This result might help explain the results of other studies that show a lack of notes on leg ulcer treatment (108).

In home health care, leg ulcer treatment could be arduous because of the difficult working environment and limited equipment in patients' homes. Other studies have also found that treating leg ulcers in patients' homes poses working-environment difficulties (105, 107).

Furthermore, an unsupportive wound treatment organization at some PHCCs meant that those clinics lacked nurses who were trained in leg ulcer treatment guidelines. Other studies have also found it is common for the management of PHCCs to insufficiently support nurses in their need to develop wound-management skills and in their need for teamwork in wound care (106, 107, 110).

The DNs suggested that mentoring less-experienced colleagues could help compensate for unevenly distributed competence. If DNs could not compensate for the combination of complex and arduous wound treatment and an unsupportive wound treatment organization, they could experience treatment as prolonged, which in turn might lead to feelings of hopelessness. This is in line with the findings of Eskilsson and Carlsson (107) and Silva et al. (106), who found that nurses can feel professional frustration when caring for patients with leg ulcers.

The DNs used self-motivating strategies to overcome feelings of hopelessness. These strategies included thinking positively, trying to be patient, and seeing the treatment as a challenge. The DNs also used motivating strategies to help patients overcome feelings of hopelessness by creating trust and by evoking hope. Using strategies to create trust and give hope is in keeping with the goals of nursing care (42). Other researchers have found that trust in health care professionals can increase patients' adherence to the management of leg ulcers (155) and that instilling hope can have a positive impact on patients' ability to cope with leg ulcer treatment (156).

In summary, this study showed that DNs used compensating and motivating strategies and sometimes had to combine these with compromising strategies to achieve care that was good enough. The DNs reported that compromising was an act of balance. They could not always adhere to clinical guidelines but could adhere to a treatment plan that was acceptable to the patient and the DN and hopefully would lead to the goal of a healed leg ulcer.

## **6.4 METHODOLOGICAL CONSIDERATIONS**

In this thesis, both qualitative and quantitative research methods were used to explore DNs' clinical care of older people. A combination of quantitative and qualitative methods can assist in illuminating the complex situations and contradictory phenomena and processes that often characterize nursing care. In this project, qualitative methods led to a deeper understanding of the process of PHVs to 75-year-olds (Study I) and of DNs' management of patients with leg ulcers (Study V). The EPRs that we examined in Study IV, a quantitative study, showed that despite specific training, DNs did not follow recommended guidelines for the treatment of leg ulcers. A natural next step was to investigate DNs' main concerns about providing care in accordance with the guidelines (Study V).

However, the way one assesses the quality of qualitative studies differs from the way one assesses the quality of quantitative studies. In qualitative research, credibility, dependability, conformability, and transferability are used to describe the study's trustworthiness (157). In quantitative research, validity and reliability are used to describe the quality of the study (157). These terms will be used when discussing the strengths and limitations of the studies below.

### 6.4.1 The qualitative studies (Study I and V)

In Study I, qualitative content analysis (124-126) was used to describe the dialogue between DNs and older people in PHVs from the DNs' perspective. Content analysis focuses on the content of the field under study as it is shown in texts. Study I examined both the manifest and latent content of transcribed group interviews (125). In Study V, GTM was used to investigate DNs' experiences of caring for patients with leg ulcers in accordance with clinical guidelines. GTM was chosen because it focuses on social processes in participants' natural settings and aims to form concepts and construct substantive grounded theories (122, 130). The substantive theoretical model in Study V describes how DNs strive to stay on track—to follow guidelines and stay motivated despite prolonged wound treatment and feelings of hopelessness.

**Credibility:** This criterion focuses on how well the data collection and analytical processes address the intended study aim (157). Credibility in qualitative studies is analogous to validity in quantitative studies (126). In both qualitative studies in this thesis, data were collected via group interviews. Group interviews provide a supportive environment in which participants can inspire each other to remember incidents and information they otherwise might have forgotten and that thus may have remained unreported (158). The DNs who participated in the interviews had a great deal of professional experience, spoke openly, willingly shared their experiences, and represented a wide variety of experiences about PHVs (Study I) and about providing leg ulcer care to older people (Study V). The data from the group interviews was thus rich and meaningful, and this was strength.

The first author (AL), who moderated all interviews in studies I and V, has extensive professional experience as a DN, including experience with PHVs and leg ulcer management. This experience facilitated the monitoring of the interviews. Familiarity with the cultural setting of a study can help researchers collect meaningful data and can also enrich the analytic process (126).

In Study I, the researchers estimated that saturation was achieved after five group interviews (126). In Study V, in accordance with the principles of theoretical sampling, data collection continued until no new categories appeared and the researchers judged that all main categories were saturated (122). Quotations were used to elucidate how the findings were grounded in the data and to strengthen trustworthiness. In Study I, a quotation was provided to illustrate each facilitator of and barrier to the health dialogue as well as each professional dilemma in the PHV. In Study V, quotations were provided to illustrate each obstacle and strategy.

In GTM, a theory must fit, work, and have relevance (130). This means that the result; i.e., the substantive theory, must correspond to the data, be comprehensible and consistent, and be relevant to (clinical) practice. Additionally, the substantive theory should add something new to the field. To investigate whether the substantive theory in Study V met these criteria, the theoretical model was presented to a group of ten DNs and one nurse from home care. The presenter (AL) asked them 1) "Do you recognize the processes described in the model?" (fit), 2) "Do you understand the concepts, and is the model comprehensible?" (work), 3) "Can you apply the model in your clinical work?" (relevance), and 4) "Is there anything new in the

model?” They confirmed that they recognized the obstacles and strategies described and that the model and its main categories were comprehensible. They were less apt to recognize it as new, but found it relevant to their clinical practice as it was as a comprehensible way of describing DNs’ main concern when they strive to use clinical guidelines in the care of patients with leg ulcers.

**Dependability:** This criterion refers to the consistency and stability of the data, both during data collection and during analysis (126). Dependability in qualitative studies is analogous to reliability in quantitative studies (157). Dependability is applicable to qualitative content analysis but not to GTM, which uses theoretical sampling and interview questions that are continuously adapted to fit emerging concepts. To contribute to the consistency of data collection in Study I, the first author (AL) performed all interviews. She used an interview guide with open-ended questions, and in some cases, posed follow-up questions based on what the participants said during the group interviews. Additionally, an observer was present at all interviews to take field notes. These notes were used, among other things, to support the moderator in her efforts to cover the topics in the interview guide; for example, to see if any topics were missed during the interview. The first author was also the sole interviewer of all groups in Study V.

Instead of dependability, the term rigor is used to describe the adequacy of a GTM study. In Study V, several measures were undertaken to strengthen rigor. The first author transcribed all recordings immediately after each group interview, and in accordance with GTM, wrote memos during the whole process. Moreover, she maintained an open dialogue with all members of the research team during data collection, analysis, and writing.

**Conformability:** This criterion refers to the degree to which the results derive from the participants and not from the biases of the researcher (157). To help address this issue, in Study I, the researchers followed the approach to content analysis described by Graneheim and Lundman (126), which uses domains, categories, subcategories, and themes. The researchers also illustrated their analytical process with a table that showed how they moved from meaning units found in the text to condensed meaning units, codes, subcategories, categories, and domains. In Study V, the researchers followed the methods of Glaser (129) as further elaborated by Charmaz (122) and by Hylander (131, 159). This meant that to contribute to conformability, the researchers constantly compared the data, concepts, and emerging core process. To further contribute to conformability, an observer was present at all group interviews and wrote down detailed quotations and field notes. The professional experience of the moderator, which may have enhanced meaningfulness, could also have led to bias in the interpretation of data. To minimize this risk, the research group, which included professionals from other disciplines, worked together to analyze the data and discussed the results until they agreed on the findings. The analysis was also discussed at several academic seminars.

**Transferability:** This criterion refers to whether the conclusions made on the basis of the data can be applied to other groups and in other settings (157). The DNs interviewed in Study V came from an urban environment, which might have limited the variation in the data collected and in the variation in obstacles and the strategies used to overcome them. However, the DNs in Study I came from both urban and rural environments.

#### **6.4.2 The quantitative studies (Study II, III, and IV)**

The quantitative studies had both limitations and strengths. The main limitations of Study II were that no control group was used and the SMA tool used to collect the data was not fully validated. However, we chose this tool because to the best of our knowledge, at the time of the study, it was the only instrument developed for use by nurses in assessing older people's medication management. Moreover, it had undergone some testing in a previous study (92). The results showed that the scale reliability coefficient Cronbach's alpha (a measure of inter-item correlation), was 64 percent, which can be regarded as acceptable (92). Furthermore, the previous study showed that DNs found the SMA tool useful and relevant in their clinical practice. Like the DNs in Study II, those in the previous study found many factors related to unsafe medication management, which is also an indication that the tool measures what it was intended to measure. Although the SMA tool needs further validation, its use in Study II represents an important starting point in exploring DNs' clinical practice.

One strength of Study II was that it included 75-year-olds who lived in various municipalities across Stockholm County, and these municipalities differed in socioeconomic status. Other strengths were that the participants had a great deal of experience as DNs and that they participated on a voluntary basis. Despite the relatively short two-hour workplace course on using the SMA, the results of the study provided not only a picture of older people's medication management but also important information on nursing interventions related to safe medication management.

One limitation of Study III was that the data from the Swedish Prescribed Drug Register may not reflect the actual drug use in older people since adherence to treatment may be low. The cross-sectional design used in the study does not allow us to draw causal conclusions. Moreover, information about reasons why the drugs were prescribed to the older people (indications and diagnoses) was not included in the register. The register does not include information on over-the-counter drugs; thus, drug use may have been underestimated. Our method for calculating prevalence is based on the fact that drugs in Sweden are prescribed for use over a maximum of 90 days. We might therefore have missed drugs dispensed before this period and drugs that were taken over a longer period of time/at a lower dose than intended. We may also have included drugs dispensed during the period but discontinued prematurely before the date of measure.

One strength of Study III was its national coverage of all drugs prescribed to people aged 75 years and older in Sweden. Furthermore, the linkage to the Swedish Social Service Register made it possible to focus only on community-dwelling older people; i.e. people that DNs meet in primary health care.

A limitation of Study IV was that no control group was used; therefore, we do not know if there were any confounding variables that affected the results and cannot draw any conclusions regarding effects. Furthermore, the documentation in the EPR may not fully reflect the care and treatment given to the patients with leg ulcers in the study. The information in the EPR is second-hand information about treatment. It may be that although they provided care and treatment in accordance with guidelines, the DNs used the wrong key word (i.e., not in accordance with the VIPS key word model) when documenting the care and

treatment. The DNs also might have found it difficult or time consuming to document some kinds of care and treatment; for example, patient participation or information and education. Finally, of the 128 patients included in the study, 62 were included in both review periods. This may have influenced the results; for example, the results regarding medical diagnoses. Many patients only visit a GP once a year and their medical diagnosis might be made only once. Furthermore, the low number of patients may have meant that we missed significant differences in one of the other areas, which is a weakness of the study design.

Study IV also had a number of strengths. The intervention was naturalistic and relatively low-cost, since the DNs acted as local in-service educators at their own workplace as part of their daily clinical practice. A relatively large number of patients were included in the study. The educational program did result in statistically significant improvements in three important areas. Furthermore, 14 of 19 DNs who participated in the one-day training course for local in-service educators chose to participate as local in-service educators. This shows that many DNs had a high degree of interest and involvement in this study. Strength of the study is that data were easily extracted from the EPR with a software program.

## 7 IMPLICATIONS FOR HEALTH CARE

The findings of this thesis bring attention to DNs' care and treatment of older people, focusing on PHVs, medication management, and leg ulcer management. The knowledge generated by this thesis project can be used as a basis for reflection during planning for health promotion activities such as PHVs and in medication and leg ulcer management for older people.

- ❖ Knowledge gained about barriers to and facilitators of a successful health dialogue in PHVs can be used to improve the training of DNs who will conduct PHVs. This knowledge thus can create better opportunities for achieving the goals of PHVs; that is, promoting the health of older people and preventing disease. Similarly, training can be revised to include the findings on how DNs balanced a personal and a professional approach, a task-oriented and a person-oriented approach, and a salutogenic and a pathogenic approach in the PHVs. This, too, has the potential to improve the visits.
- ❖ Using the SMA instrument in PHVs may help improve the safety of medication management in older people.
- ❖ The substantial proportion of people who used some drugs as early as age 75 confirms the value of including drug use as a topic in PHVs to 75-year-olds. The increase in both polypharmacy and inappropriate drug use with age suggests that it would also be desirable to conduct a follow-up PHV, for example at age 80.
- ❖ An in-service training intervention in which DNs acted as local educators for colleagues seems to have improved three aspects of leg ulcer care in accordance with clinical guidelines. Further developed educational strategies and strategies for measuring and assessing the quality of leg ulcer treatment in the EPR should be used in clinical practice.
- ❖ The theoretical model developed in Study V can be used as a basis for discussions and changes in nursing practice and as a tool in university and continuing educational programs about leg ulcer treatment. It can also help inform the organization of leg ulcer treatment at health care centers.
- ❖ Continued training in wound care for both DNs and GPs is important, as is the use of self-motivating strategies to overcome frustration when wound treatment is prolonged. Collaboration between DNs and GPs in the leg ulcer management needs to be improved. The strategies DNs employ to compensate for the challenging collaboration with GPs and the distribution of responsibilities between the professionals can be used as a basis for discussions and changes at the clinic.



## 8 CONCLUSIONS

DNs experience both facilitators and barriers that affect their ability to achieve the goal of PHV in clinical care settings. Some are related to the older people, others to the DNs, and still others to the home environment. The dialogue between DNs and older people in PHVs can be described as a complex social process through five domains. During this process DNs balance a personal and a professional approach, a person-oriented and a task-oriented approach, and a salutogenic and a pathogenic approach (Study I).

DNs face three main professional dilemmas that they have to resolve to achieve the goal of PHVs. They must balance a personal and professional approach, a person-oriented and a task-oriented approach, and a salutogenic and pathogenic approach (Study I).

PHVs provide an important opportunity to promote safe medication management. When DNs used the SMA tool in PHVs, they identified several factors related to unsafe medication management and carried out a variety of nursing care interventions to ensure safe medication management. Use of the SMA tool in PHVs thus seems to help improve the safety of medication management in older people (Study II).

Drug use and inappropriate drug use increase with age in people  $\geq 75$  years. However, there is a substantial use of some drugs and polypharmacy as well as some inappropriate drugs are prevalent already 75 years (Study III).

DNs' documentation of the management of patients with leg ulcers in selected key areas is sparse and does not seem to be consistent with scientific evidence-based guidelines and recommendations (Study IV).

An in-service training with DNs as local educators for colleagues seems to improve leg ulcer care in some areas, although the documentation is still sparse (Study IV).

A comprehensive model illustrates how DNs strive to stay on track in order to follow clinical guidelines in leg ulcer care and remain motivated despite prolonged treatment and feelings of hopelessness. DNs use strategies to avoid and to overcome consequences of the obstacles to following guidelines. They balance compensating, motivating, and compromising strategies in order to follow clinical guidelines as far as possible and provide care that is good enough (Study V).

DNs experience care of patients with leg ulcers as complex, arduous, and often insufficiently supported by the management of their health care centers. The obstacles to following clinical guidelines described in the thesis need attention. However, the main conclusion of this study is that the strategies for avoiding or overcoming the obstacles, as illustrated in the theoretical model, may inform other DNs and promote changes in the organization of leg ulcer treatment at health care centers (Study V).

## 9 FUTURE PERSPECTIVE

We found that DNs balance a personal and a professional approach, a task-oriented and a person-oriented approach, and a salutogenic and a pathogenic approach in PHVs. We hypothesize that maintaining such a balance is characteristic of DNs' clinical work, not only in PHVs but also in many other care processes. Future studies could investigate this hypothesis. Further studies are also needed to scrutinize DNs' strategies for maintaining this important balance in the health dialogue with older people during PHVs. To improve the health dialogues in PHVs, we also need to better understand the process of the dialogue from the perspective of the older people.

The SMA tool seems to help DNs identify factors related to unsafe medication management and can help them carry out nursing care interventions to ensure safe medication management. However, the SMA tool needs further testing. There also is a need to investigate the interventions DNs undertake to ensure safe medication management and to learn more about the outcomes of these interventions.

To achieve high-quality leg ulcer care, more effective educational strategies and interventions are needed, as are strategies for measuring and assessing the quality of leg ulcer treatment in the EPR and for using the National Registry of Ulcer Treatment.

Future studies could also investigate the comprehensive model that resulted from Study V. Quantitative studies can investigate the outcome of DNs' strategies for overcoming the consequences of the obstacles to following guidelines and also the relevance of the model when used in university training or continuing education.

# 10 SAMMANFATTNING PÅ SVENSKA

## BAKGRUND

Den äldre befolkningen ökar i hela världen vilket får konsekvenser för samhället inklusive hälso- och sjukvården. En längre livstid innebär emellertid inte alltid ett hälsosammare liv och sannolikheten för att få flera sjukdomar ökar vid högre ålder. För att bidra till hög vårdkvalitet samt välbefinnande och hälsa bland äldre behöver hälso- och sjukvården förbereda sig för de utmaningar som en allt åldrande befolkning innebär. Den vård som bedrivs behöver vara evidensbaserad dvs. där den professionelle väger samman sin expertis med bästa tillgängliga kunskap samt den enskildas situation, erfarenheter och önskemål (160). Forskning är en viktig del i utvecklingen av vården men trots att distriktssköterskor både har lång tradition inom vården och möter många äldre personer så har hennes kliniska arbete inte utforskats i någon större omfattning. För att utveckla och säkerställa en god och säker vård av en allt äldre befolkning kan därför en utgångspunkt vara att på olika sätt utforska distriktssköterskans kliniska arbete vad gäller hälsosamtal i hemmet, läkemedelsanvändning och behandling vid bensår.

## MÅLSÄTTNING

Den övergripande målsättningen med denna avhandling var att utforska den vård som distriktssköterskans erbjuder äldre personer och distriktssköterskans erfarenheter av denna vård med inriktning på förebyggande hälsosamtal i hemmet, läkemedelsanvändning och behandling av bensår.

## MATERIAL OCH METOD

Avhandlingen består av fem delstudier. Två kvalitativa (I, V) och tre kvantitativa studier (II, III, IV). I studie I analyserades dialogen mellan distriktssköterskan och den äldre personen i hälsosamtalen i hemmet samt hinder och möjligheter i denna dialog utifrån distriktssköterskans perspektiv. Data samlades in genom 5 gruppintervjuer med 20 distriktssköterskor från 20 vårdcentraler i Stockholms län. Datamaterialet analyserades med kvalitativ innehållsanalys.

I studie II undersöktes faktorer för osäker läkemedelsanvändning vid hälsosamtal i hemmet med 75-åriga personer samt distriktssköterskans omvårdnadsåtgärder relaterade till läkemedelsanvändningen. Under en 9-12 månaders period använde 36 distriktssköterskor från vårdcentraler i Stockholms län formuläret SMA (Safe Medication Assessment) i hälsosamtalen med 113 äldre personer vilka minst använde ett läkemedel.

I studie III undersöktes omfattningen av och kvaliteten på äldres läkemedelsanvändning. Data från läkemedelsregistret (2013) över personer  $\geq 75$  år i eget boende analyserades. Totalt inkluderades 671,940 av de 739,734 personerna  $\geq 75$  år. Kvaliteten på läkemedelsanvändningen bedömdes utifrån ett urval av indikatorer som utformats av socialstyrelsen.

I studie IV utvärderades distriktssköterskans vård och behandling av patienter med bensår före och efter ett utbildningsprogram som genomfördes av 12 distriktssköterskor. Efter egen utbildning agerade de 12 distriktssköterskorna som lokala utbildare på den egna vårdcentralen. Totalt utbildade de 64 av sina kollegor på respektive vårdcentral. Utvärderingen genomfördes via granskning av 97 patientjournaler sex månader före och 96 patientjournaler sex månader efter utbildningsinsatsen. En framtagen granskningsmall användes.

I studie V analyserades distriktssköterskans erfarenheter av vård och behandling av patienter med bensår enligt kliniska riktlinjer. Data samlades in genom sju gruppintervjuer med 30 distriktssköterskor som arbetade vid sju vårdcentraler i Stockholms län. Datamaterialet samlades in och analyserades enligt Grundad teori.

## RESULTAT

Studie I resulterade i en systematisk beskrivning av distriktssköterskans erfarenheter av hinder och möjligheter för att uppnå målet med hälsosamtal för äldre personer i hemmet. Dessa hinder och möjligheter sorterades i fem olika domäner. Studie 1 resulterade även i tre temaområden vilka illustrerar distriktssköterskans professionella dilemman under hälsosamtal i hemmet och som behöver lösas för att uppnå målet med hälsosamtalet. En del var relaterade till den äldre personen, en del till distriktssköterskan och en del till hemmiljön.

I Studie II identifierade distriktssköterskorna med hjälp av SMA en eller flera faktorer relaterade till osäker läkemedelsanvändning bland 84 procent av de äldre personer som ingick i studien och som de genomförde hälsosamtal med i hemmet. Över 40 procent av de äldre använde fem eller fler läkemedel (polyfarmaci) och 34,5 procent rapporterade symtom indikativa för läkemedelsbiverkningar. Närmare 30 procent hade mer än två förskrivare och cirka 7 procent av de äldre hade kognitiva svårigheter. Distriktssköterskorna vidtog omvårdnadsåtgärder bland mer än två tredjedelar av de äldre personer som ingick i studien för att bidra till en säkrare läkemedelsanvändning.

Resultatet i studie III visade att läkemedels användning ökade med högre ålder i de flesta Anatomical Therapeutic Chemical (ATC) grupperna. Undantag var bland annat diabetesmedel och blodfettsänkande medel som minskade med ålder. Kardiovaskulära läkemedel var vanligast (74,8%). Polyfarmaci, användning av potentiellt olämpliga läkemedel och potentiella läkemedelsinteraktioner var allt vanligare med högre ålder. Antikolinerga läkemedel var vanligt redan vid 75-års ålder.

Studie IV visade att dokumentationen inom några utvalda nyckelområden vid bensårsbehandling var sparsam och stämde därmed inte överens med riktlinjer vid vård och behandling av bensår. Granskningen av patientjournalerna efter utbildningsinsatsen visade

emellertid på statistiskt signifikanta förändringar av dokumentationen inom tre viktiga områden: beräkning av ankel-arm index, bedömning av smärta och fotografering av såret.

Studie V resulterade i en teoretisk modell som illustrerar hur distriktssköterskan strävar efter att följa riktlinjer vid vård och behandling av patienter med bensår och hålla sig motiverade trots en ofta långvarig sårbehandling som kan resultera i upplevelse av hopplöshet.

Distriktssköterskan rapporterade tre hinder för att kunna följa riktlinjer: en komplex sårbehandling, en krävande sårbehandling och en icke stödjande organisation. I sin strävan att komma över hindren använde distriktssköterskan kompensande strategier och för att ta hand om känslor av hopplöshet både hos patienten och hos sig själv och motiverande strategier. Men ibland behövdes även kompromissande strategier för att kunna följa riktlinjer så långt som möjligt och för att kunna ge en god och säker vård som är så bra som möjligt när det gäller patienter med bensår.

## **SLUTSATSER**

Distriktssköterskan upplever både försvårande och underlättande aspekter som påverkar möjligheten att uppnå målet med hälsosamtalen i hemmet. Vissa är relaterade till den äldre, andra till distriktssköterskan och ytterligare några är relaterade till hemmiljön. Hälsosamtalet mellan distriktssköterskan och den äldre personen i hemmet kan beskrivas som en komplex social process. I denna process och i sin strävan att uppnå målet med hälsosamtalen behöver distriktssköterskan balansera ett personligt och professionellt förhållningssätt, ett uppgiftsorienterat och personorienterat förhållningssätt samt ett salutogent och sjukdomsorienterat förhållningssätt.

Resultatet från bedömningen av den äldres läkemedelsanvändning med formuläret SMA vid hälsosamtal indikerar att en säker läkemedelsanvändning främjas. Detta är angeläget, då flertalet läkemedelsgrupper och användning av olämpliga läkemedel visar sig öka med högre ålder. En bedömning av hur säker den äldres läkemedelsanvändning är i samband med hälsosamtal kan vara lämplig vid 75 års ålder. Det kan även vara relevant att erbjuda ett andra hälsosamtal med läkemedelsbedömning vid 80 års ålder.

Distriktssköterskans dokumentation av vård och behandling av bensår är sparsam och indikerar att vården inte ges i enlighet med riktlinjer. Utbildningsinsatsen där distriktssköterskor verkar som lokala utbildare av sina kollegor indikerar förbättringar i tre områden när det gäller vården av bensår enligt riktlinjer. Utbildningsinsatsen behöver utvecklas och likaså strategier för mätning av vårdkvalitet när det gäller patienter med bensår.

Även om förbättringar behövs i vården av bensår enligt riktlinjer så kan distriktssköterskan inte alltid följa dessa. Distriktssköterskan eftersträvar emellertid att följa riktlinjerna och att hålla sig motiverade trots en utdragen sårläkningsprocess och ibland känslor av hopplöshet. För att undvika eller komma över hinder använder distriktssköterskan kompensande och motiverande strategier och ibland även kompromissande strategier för att kunna följa riktlinjer i så stor utsträckning som möjligt.

## 11 ACKNOWLEDGMENTS

I would like express my sincere and deep gratitude to everyone who made this thesis possible. First, I want to thank all participating DNs for taking their valuable time and sharing their experiences with me. Especially warm thanks to:

*Lena Törnkvist*, my main supervisor and co-author, for our long journey in the scientific world. Thanks for your kind guidance, support, and warm heart. Thanks for giving me the opportunity to conduct this research.

*Gunnar Nilsson*, my co-supervisor, for being an excellent guide in scientific writing. Thanks for your encouragement and insightful comments.

*Jeanette Westman*, my co-supervisor, for helping me with the application for my second study, which made it possible for me to register as a PhD student.

*Ingrid Hylander*, thanks for sharing your solid knowledge and for giving me such valuable guidance in qualitative methods. Thank you for all your interesting qualitative seminars.

*Kimberly Kane*, scientific editor, special thanks for your always professional supervision, English teaching, and excellent comments and advice on language.

*Johan Fastbom*, co-author, for your kindness and expertise in statistics and pharmacology.

*Sven-Erik Johansson* and *Robert Szulkin*, statisticians for your valuable statistical advice and presentations.

*Åsa Andersson*, my mentor, for sharing your experiences and giving me good advice and support.

*Elisabeth Bos*, *Eva Sundborg*, *Lena Lundh* and *Erica Berggren*, my research colleagues and friends for sharing your knowledge and for all your support during our research journey.

I wish to thank all colleagues and friends at the Academic Primary HealthCare Centre (APC) (formerly the Center for Family and Community Medicine), and all district nurses and other colleagues working at the Continuing Education Department, KI's administration, and *Georg "Jojje" Holm* for your IT advice and support. Thank you for good cooperation and support during these years.

A special thanks to my colleagues and companions *Karin Jacobi* and *Susanne Ekman* at the Children's Healthcare Center at Gröndal Primary Healthcare Center.

*Staffan*, my always supportive husband: thank you for having been there during this journey. What would I have done without all your encouragement and excellent IT-support. And thank you to my lovely daughter *Sara*.

**Financial support.** This thesis project was carried out at Stockholm County Council's Academic Primary Health Care Centre and at the Division of Family Medicine, Department of Neurobiology, Care Science and Society, Karolinska Institutet, Huddinge, Sweden. The work was financed by the Stockholm County Council and by the Swedish Research Council for Health, Working Life and Welfare (Forte), (grant number 2014-4990).

## 12 REFERENCES

1. Tinker A. The social implications of an ageing population. *Mechanisms of Ageing and Development*. 2002;123(7):729-35.
2. Christensen K, Doblhammer G, Rau R, Vaupel JW. Ageing populations: the challenges ahead. *The Lancet*. 2009;374(9696):1196-08.
3. Sveriges framtida befolkning 2009-2060. [Sweden's future population 2009-2060]. Statistiska centralbyrån [Statistics Sweden] 2009 [2016-09-20]; Available from: [http://www.scb.se/statistik/publikationer/BE0401\\_2009I60\\_BR\\_BE51BR0901.pdf](http://www.scb.se/statistik/publikationer/BE0401_2009I60_BR_BE51BR0901.pdf).
4. Global Population Profile: 2002. 2004 [2016-09-20]; Available from: <https://www.census.gov/population/international/files/wp02/wp-02.pdf>.
5. Socialstyrelsen. Att arbeta evidensbaserat. [2016-09-30]; Available from: <http://www.socialstyrelsen.se/evidensbaseradpraktik/attarbetevidensbaserat>.
6. Framtiden hälso- och sjukvård. [Future Health Care] Stockholm County Council; [2016-09-25]; Available from: <http://www.sll.se/verksamhet/halsa-och-varld/framtidsplanen/>
7. Health Promotion Glossary. WHO; 1998 [2016-09-05]; Available from: <http://www.who.int/healthpromotion/about/HPR%20Glossary%201998.pdf>.
8. Dahlberg K, Segersten, K. Hälsa och vårdande i teori och praxis [Health and caring in theory and praxis]. Stockholm: Natur & Kultur; 2010.
9. Lindström BE, M. The Hitchhiker's guide to salutogenesis- Salutogenic pathways to health promotion. Helsinki: Folkhälsan Research Center [Health Promotion Research]; 2010.
10. Antonovsky A. "The salutogenic model as a theory to guide health promotion". *Health Promotion International*. 1996;11:11-8.
11. Ageing and health WHO. World Health Organization; [2016-09-25]; Available from: <http://www.who.int/mediacentre/factsheets/fs404/en/>.
12. Socialstyrelsen. Depression hos äldre. [2016-09-25]; Available from: <http://www.kunskapsguiden.se/aldre/Teman/Depressionhosaldre/Sidor/default.aspx>.
13. Socialstyrelsen. Äldres Hälsa i Folhälsorapport 2009. Available from: [http://www.socialstyrelsen.se/publikationer2009/2009-126-71/Documents/5\\_Aldres.pdf](http://www.socialstyrelsen.se/publikationer2009/2009-126-71/Documents/5_Aldres.pdf).
14. Parker MG, Thorslund M. Health trends in the elderly population: getting better and getting worse. *Gerontologist*. 2007 Apr;47(2):150-8.
15. Solomon R, Kirwin P, Van Ness PH, O'Leary J, Fried TR. Trajectories of quality of life in older persons with advanced illness. *J Am Geriatr Soc*. 2010 May;58(5):837-43.
16. Socialstyrelsen. Psykisk hälsa hos äldre personer [2016-09-25]; Available from: <http://www.kunskapsguiden.se/aldre/Teman/Psykiskohalsa/Sidor/default.aspx>
17. Sherman H, Soderhielm-Blid S, Forsberg C, Karp A, Tornkvist L. Effects of preventive home visits by district nurses on self-reported health of 75-year-olds. *Prim Health Care Res Dev*. 2016 Jan;17(1):56-71.

18. Craftman AG, Johnell K, Fastbom J, Westerbotn M, von Strauss E. Time trends in 20 years of medication use in older adults: Findings from three elderly cohorts in Stockholm, Sweden. *Arch Gerontol Geriatr.* 2016 Mar-Apr;63:28-35.
19. Sherman H, Forsberg C, Karp A, Tornkvist L. The 75-year-old persons' self-reported health conditions: a knowledge base in the field of preventive home visits. *J Clin Nurs.* 2012 Nov;21(21-22):3170-82.
20. Haider SI, Johnell K, Weitoft GR, Thorslund M, Fastbom J. The influence of educational level on polypharmacy and inappropriate drug use: a register-based study of more than 600,000 older people. *J Am Geriatr Soc.* 2009 Jan;57(1):62-9.
21. Johnell K, Fastbom J. Comparison of prescription drug use between community-dwelling and institutionalized elderly in Sweden. *Drugs Aging.* 2012 Sep;29(9):751-8.
22. Olsson J, Bergman A, Carlsten A, Oke T, Bernsten C, Schmidt IK, et al. Quality of drug prescribing in elderly people in nursing homes and special care units for dementia: a cross-sectional computerized pharmacy register analysis. *Clin Drug Investig.* 2010;30(5):289-300.
23. Morin L, Fastbom J, Laroche ML, Johnell K. Potentially inappropriate drug use in older people: a nationwide comparison of different explicit criteria for population-based estimates. *Br J Clin Pharmacol.* 2015 Aug;80(2):315-24.
24. Pirmohamed M, James S, Meakin S, Green C, Scott AK, Walley TJ, et al. Adverse drug reactions as cause of admission to hospital: prospective analysis of 18 820 patients. *Bmj.* 2004 Jul 3;329(7456):15-9.
25. Beijer HJ, de Blaey CJ. Hospitalisations caused by adverse drug reactions (ADR): a meta-analysis of observational studies. *Pharm World Sci.* 2002 Apr;24(2):46-54.
26. Mjorndal T, Boman MD, Hagg S, Backstrom M, Wiholm BE, Wahlin A, et al. Adverse drug reactions as a cause for admissions to a department of internal medicine. *Pharmacoepidemiol Drug Saf.* 2002 Jan-Feb;11(1):65-72.
27. Milos V, Rekman E, Bondesson A, Eriksson T, Jakobsson U, Westerlund T, et al. Improving the quality of pharmacotherapy in elderly primary care patients through medication reviews: a randomised controlled study. *Drugs Aging.* 2013 Apr;30(4):235-46.
28. Atkin PA, Veitch PC, Veitch EM, Ogle SJ. The epidemiology of serious adverse drug reactions among the elderly. *Drugs Aging.* 1999 Feb;14(2):141-52.
29. Bates DW, Spell N, Cullen DJ, Burdick E, Laird N, Petersen LA, et al. The costs of adverse drug events in hospitalized patients. Adverse Drug Events Prevention Study Group. *Jama.* 1997 Jan 22-29;277(4):307-11.
30. Hug BL, Keohane C, Seger DL, Yoon C, Bates DW. The costs of adverse drug events in community hospitals. *Jt Comm J Qual Patient Saf.* 2012 Mar;38(3):120-6.
31. Bensår omvårdnad. Viss - medicinskt och administrativt stöd i primärvården. Stockholm County Council; [2016-09-25]; Available from: <http://www.viss.nu/Handlaggning/Omvardnadsprogram/Bensar>.
32. Nelson EA. Venous leg ulcers. *BMJ Clin Evid.* 2011;2011.
33. Forssgren A, Fransson I, Nelzen O. Leg ulcer point prevalence can be decreased by broad-scale intervention: a follow-up cross-sectional study of a defined geographical population. *Acta Derm Venereol.* 2008;88(3):252-6.



34. Svårläkta sår hos äldre – prevention och behandling. En systematisk litteraturoversikt SBU. Swedish Council on Health Technology Assessment 2014; Available from: [http://www.sbu.se/contentassets/198b277c682b437dbaa4111b5439c020/svarlakta\\_sar\\_aldre\\_2014.pdf](http://www.sbu.se/contentassets/198b277c682b437dbaa4111b5439c020/svarlakta_sar_aldre_2014.pdf)
35. Saha SP, Whyne TF, Jr., Mukherjee DP. Current management of peripheral vascular disease: where is the evidence? *Cardiovasc Hematol Agents Med Chem.* 2011 Apr 1;9(2):128-36.
36. Ebbeskog B, Ekman SL. Elderly persons' experiences of living with venous leg ulcer: living in a dialectal relationship between freedom and imprisonment. *Scand J Caring Sci.* 2001;15(3):235-43.
37. Green J, Jester R, McKinley R, Pooler A. The impact of chronic venous leg ulcers: a systematic review. *J Wound Care.* 2014 Dec;23(12):601-12.
38. Briggs M, Flemming K. Living with leg ulceration: a synthesis of qualitative research. *J Adv Nurs.* 2007 Aug;59(4):319-28.
39. Hellstrom A, Nilsson C, Nilsson A, Fagerstrom C. Leg ulcers in older people: a national study addressing variation in diagnosis, pain and sleep disturbance. *BMC Geriatr.* 2016;16:25.
40. Linder E. Distriktssköterskan igår – idag – imorgon ett diskussionsunderlag 2003: Available from: [http://www.distriktsskoterska.se/Fammi/Distriktsskoterskan\\_igar\\_idag\\_imorgon\\_rev](http://www.distriktsskoterska.se/Fammi/Distriktsskoterskan_igar_idag_imorgon_rev)
41. Törnvall E. Carrying Out Electronic Nursing Documentation - Use and Development in Primary Health Care. Norrköping: Linköping University; 2008.
42. Arman M, Ranheim A, Rydenlund K, Rytterstrom P, Rehnsfeldt A. The Nordic Tradition of Caring Science: The Works of Three Theorists. *Nurs Sci Q.* 2015 Oct;28(4):288-96.
43. ICN:s Etiska kod för sjuksköterskor. Svensk sjuksköterskeförening [The Swedish Society of Nursing] 2014 [2016-09-16]; Available from: [http://www.swenurse.se/globalassets/01-svensk-sjukskoterskeforening/publikationer-svensk-sjukskoterskeforening/etik-publikationer/sjukskoterskornas.etiska.kod\\_2014.pdf](http://www.swenurse.se/globalassets/01-svensk-sjukskoterskeforening/publikationer-svensk-sjukskoterskeforening/etik-publikationer/sjukskoterskornas.etiska.kod_2014.pdf).
44. Nordström Torpenberg I. Strategi för sjuksköterskans hälsofrämjande arbete. Stockholm: Svensk sjuksköterskeförening; 2008.
45. The Ottawa Charter for Health Promotion. Available at: <http://www.who.int/healthpromotion/conferences/previous/ottawa/en/> Accessed 16.09.25. WHO, World Health Organization; 1986.
46. Lindström A-C. Något som inte längre är - Distriktssköterskors yrkesutövning på vårdcentral ut ett genusperspektiv. [Something that is no more - The district nurse's professional activities in the health care centre from a gender perspective] Gothenburg: The Sahlgrenska Academy. University of Gothenburg Institute of Health and Care Sciences 2007.
47. Strandberg EL, Ovhed I, Borgquist L, Wilhelmsson S. The perceived meaning of a (w)holistic view among general practitioners and district nurses in Swedish primary care: a qualitative study. *BMC Fam Pract.* 2007;8:8.
48. Wilhelmsson S, Lindberg M. Health promotion: facilitators and barriers perceived by district nurses. *Int J Nurs Pract.* 2009 Jun;15(3):156-63.

49. Förskrivningsrätt för legitimerade sjuksköterskor (SOSFS 2011:16) [The right to prescribe certain medication]. Socialstyrelsen [National board of Health and Welfare] [2016-09-25]; Available from: <http://www.socialstyrelsen.se/sosfs/2001-16>.
50. Patientjournalag (SFS1985:562) [The Swedish Patient Record Act] [2016-09-25]; Available from: [https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/patientjournalag-1985562\\_sfs-1985-562](https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/patientjournalag-1985562_sfs-1985-562).
51. Hälso- och sjukvårdslagen (SFS 1982:763) [The Swedish Health Services Law] Svensk författningssamling (in Swedish). Government Offices of Sweden [2016-09-06]; Available from: [https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/halso--och-sjukvardslag-1982763\\_sfs-1982-763](https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/halso--och-sjukvardslag-1982763_sfs-1982-763).
52. Lagen om yrkesverksamhet inom hälso- och sjukvårdens område (SFS 1998:531) [The Swedish Laws on professional responsibilities within the area of health service] Svensk författningssamling (in Swedish). Government Offices of Sweden [2016-09-06]; Available from: [https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-1998532-om-inforande-av-lagen-1998531\\_sfs-1998-532](https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-1998532-om-inforande-av-lagen-1998531_sfs-1998-532).
53. Ehrenberg A, Ehnfors M, Thorell-Ekstrand I. Nursing documentation in patient records: experience of the use of the VIPS model. *J Adv Nurs*. 1996 Oct;24(4):853-67.
54. Ehnfors M, Angermo LM, Berring L, Ehrenberg A, Lindhardt T, Rotegard AK, et al. Mapping VIPS concepts for nursing interventions to the ISO reference terminology model for nursing actions: A collaborative Scandinavian analysis. *Stud Health Technol Inform*. 2006;122:401-5.
55. Tornkvist L, Gardulf A, Strender LE. Effects of 'pain-advisers': district nurses' opinions regarding their own knowledge, management and documentation of patients in chronic pain. *Scand J Caring Sci*. 2003 Dec;17(4):332-8.
56. Hammar T, Perala ML, Rissanen P. The effects of integrated home care and discharge practice on functional ability and health-related quality of life: a cluster-randomised trial among home care patients. *Int J Integr Care*. 2007;7:e29.
57. Modin S, Tornkvist L, Furhoff AK, Hylander I. Family physicians' effort to stay in charge of the medical treatment when patients have home care by district nurses. A grounded theory study. *BMC Fam Pract*. 2009;10:45.
58. Rasjo Wraak G, Tornkvist L, Hasselstrom J, Wandell PE, Josefsson K. Nurse-led empowerment strategies for patients with hypertension: a questionnaire survey. *Int Nurs Rev*. 2015 Jun;62(2):187-95.
59. Lundh L, Rosenhall L, Tornkvist L. Care of patients with chronic obstructive pulmonary disease in primary health care. *J Adv Nurs*. 2006 Nov;56(3):237-46.
60. National Guidelines for Methods of Preventing Disease - summary. Socialstyrelsen [Swedish National Board of Health and Welfare] [2016-09-05]; Available from: <http://www.socialstyrelsen.se/nationalguidelines/nationalguidelinesformethodsofpreventingdisease>. .
61. Ehrenberg A. Äldre personers rätt till omvårdnad : behov, kompetenser, myter och evidens. Stockholm: Svensk sjuksköterskeförening; 2015.
62. Vass M, Avlund K, Hendriksen C, Philipson L, Riis P. Preventive home visits to older people in Denmark--why, how, by whom, and when? *Z Gerontol Geriatr*. 2007 Aug;40(4):209-16.

63. Stuck AE, Minder CE, Peter-Wuest I, Gillmann G, Egli C, Kesselring A, et al. A randomized trial of in-home visits for disability prevention in community-dwelling older people at low and high risk for nursing home admission. *Arch Intern Med.* 2000 Apr 10;160(7):977-86.
64. Sahlen K-G, Dahlgren L, Hellner B, Stenlund H, Lindholm L. Preventive home visits postpone mortality-a controlled trial with time-limited results. *BMC Publ Health.* 2006;6:220.
65. Förebyggande hembesök hos äldre. Erfarenheter från 21 försök med uppsökande verksamhet bland äldre. [Preventive home visits. Experience from 21 studies about preventive home visits to older people]. (2002).
66. Elkan R, Kendrick D, Dewey M, Hewitt M, Robinson J, Blair M, et al. Effectiveness of home based support for older people: systematic review and meta-analysis. *Bmj.* [Meta-Analysis Research Support, Non-U.S. Gov't Review]. 2001 Sep 29;323(7315):719-25.
67. Markle-Reid M, Browne G, Weir R, Gafni A, Roberts J, Henderson SR. The effectiveness and efficiency of home-based nursing health promotion for older people: a review of the literature. *Med Care Res Rev.* [Review]. 2006 Oct;63(5):531-69.
68. Huss A, Stuck AE, Rubenstein LZ, Egger M, Clough-Gorr KM. Multidimensional preventive home visit programs for community-dwelling older adults: a systematic review and meta-analysis of randomized controlled trials. *J Gerontol A Biol Sci Med Sci.* [Meta-Analysis Research Support, Non-U.S. Gov't Review]. 2008 Mar;63(3):298-07.
69. Fagerstrom L, Wikblad A, Nilsson J. An integrative research review of preventive home visits among older people--is an individual health resource perspective a vision or a reality? *Scand J Caring Sci.* [Research Support, Non-U.S. Gov't Review]. 2009 Sep;23(3):558-68.
70. Stuck A, Egger M, Hammer A, Minder C, Beck J. Home visits to prevent nursing home admission and functional decline in elderly people: systematic review and meta-regression analysis. *Jama.* 2002;287(8):1022 - 28.
71. Stuck AE, Egger M, Hammer A, Minder CE, Beck JC. Home visits to prevent nursing home admission and functional decline in elderly people: systematic review and meta-regression analysis. *Jama.* [Meta-Analysis Research Support, Non-U.S. Gov't Review]. 2002 Feb 27;287(8):1022-8.
72. van Haastregt J, Diederiks J, van Rossum E, de Witte L, Crebolder H. Effects of preventive home visits to elderly people living in the community: systematic review. *Bmj.* 2000;320(7237):754 - 58.
73. Bouman A, Van Rossum E, Ambergen T, Kempen G, Knipschild P. Effects of a Home Visiting Program for Older People with Poor Health Status: a Randomized, Clinical Trial in the Netherlands. *Journal of the American Geriatrics Society.* 2008;56(3):397-04.
74. Mayo-Wilson E, Grant S, Burton J, Parsons A, Underhill K, Montgomery P. Preventive home visits for mortality, morbidity, and institutionalization in older adults: a systematic review and meta-analysis. *PLoS One.* 2014;9(3):e89257.
75. Theander E, Edberg A. Preventive home visits to older people in Southern Sweden. *Scand J Public Health.* 2005;33:392 - 00.
76. Stijnen MM, Jansen MW, Duimel-Peeters IG, Vrijhoef HJ. Nurse-led home visitation programme to improve health-related quality of life and reduce disability among potentially frail community-dwelling older people in general practice: a theory-based process evaluation. *BMC Fam Pract.* 2014;15:173.

77. Toien M, Bjork IT, Fagerstrom L. Older Users' Perspectives on the Benefits of Preventive Home Visits. *Qual Health Res.* 2014;1-13.
78. Bleijenberg N, Ten Dam VH, Steunenbergh B, Drubbel I, Numans ME, De Wit NJ, et al. Exploring the expectations, needs and experiences of general practitioners and nurses towards a proactive and structured care programme for frail older patients: a mixed-methods study. *J Adv Nurs.* 2013 Oct;69(10):2262-73.
79. Clark J. Preventive home visits to elderly people. *Bmj.* 2001;323(7315):708.
80. Behm L, Ivanoff SD, Ziden L. Preventive home visits and health - experiences among very old people. *BMC Public Health.* 2013;13(1):1-10.
81. Yamada Y, Vass M, Hvas L, Igarashi A, Hendriksen C, Avlund K. Collaborative relationship in preventive home visits to older people. *Int J Older People Nurs.* 2011;6(1):33-40.
82. Behm L, Ziden L, Duner A, Falk K, Dahlin-Ivanoff S. Multi-professional and multi-dimensional group education - a key to action in elderly persons. *Disabil Rehabil.* 2013;35(5):427- 35.
83. Liebel DV, Friedman B, Watson NM, Powers BA. Review of nurse home visiting interventions for community-dwelling older persons with existing disability. *Med Care Res Rev.* 2009 Apr;66(2):119-46.
84. Bergman-Evans B. AIDES to improving medication adherence in older adults. *Geriatr Nurs.* 2006 May-Jun;27(3):174-82; quiz 83.
85. Roose SP. Compliance: the impact of adverse events and tolerability on the physician's treatment decisions. *Eur Neuropsychopharmacol.* 2003 Sep;13 Suppl 3:S85-92.
86. MacLaughlin EJ, Raehl CL, Treadway AK, Sterling TL, Zoller DP, Bond CA. Assessing medication adherence in the elderly: which tools to use in clinical practice? *Drugs Aging.* 2005;22(3):231-55.
87. Metlay JP, Cohen A, Polsky D, Kimmel SE, Koppel R, Hennessy S. Medication safety in older adults: home-based practice patterns. *J Am Geriatr Soc.* 2005 Jun;53(6):976-82.
88. Ulfvarson J, Adami J, Bardage C, von Bahr C, Wredling R. Drug use and perceived health in recently hospitalized older people. *Br J Community Nurs.* 2005 Oct;10(10):469-74.
89. Hutchison LC, Jones SK, West DS, Wei JY. Assessment of medication management by community-living elderly persons with two standardized assessment tools: a cross-sectional study. *Am J Geriatr Pharmacother.* 2006 Jun;4(2):144-53.
90. Dimitrow MS, Mykkanen SI, Leikola SN, Kivela SL, Lyles A, Airaksinen MS. Content validation of a tool for assessing risks for drug-related problems to be used by practical nurses caring for home-dwelling clients aged  $\geq 65$  years: a Delphi survey. *Eur J Clin Pharmacol.* 2014 Aug;70(8):991-1002.
91. Dolder CR, Lacro JP, Warren KA, Golshan S, Perkins DO, Jeste DV. Brief evaluation of medication influences and beliefs: development and testing of a brief scale for medication adherence. *J Clin Psychopharmacol.* 2004 Aug;24(4):404-9.
92. Gusdal AK, Beckman C, Wahlstrom R, Tornkvist L. District nurses' use for an assessment tool in their daily work with elderly patients' medication management. *Scand J Public Health.* 2011 Jun;39(4):354-60.

93. Management of Chronic Venous Leg Ulcers - A National Clinical Guidelines SIGN. Scottish Intercollegiate Guidelines Network.; [2016-05-20]; Available from: <http://www.sign.ac.uk/pdf/qrg120.pdf> ;
94. Guideline for management of wounds in patients with lower-extremity venous disease Wound, Ostomy and Continence Nurses Society (WOCN); [2016-08-28]; Available from: <https://www.guideline.gov/summaries/summary/38249/guideline-for-management-of-wounds-in-patients-with-lowerextremity-venous-disease>.
95. Läkemedelsboken. Bensår, fotsår hos diabetiker och trycksår. Läkemedelsverket [Medical Products Agency]; 2016 [2016-09-16]; Available from: [https://lakemedelsboken.se/kapitel/hud/bensar\\_fotsar\\_hos\\_diabetiker\\_och\\_trycksar.html](https://lakemedelsboken.se/kapitel/hud/bensar_fotsar_hos_diabetiker_och_trycksar.html).
96. Vårdhandboken: Venösa bensår [The Handbook for Healthcare] [2016-08-24]; Available from: <http://www.varldhandboken.se/Texter/Sarbehandling/Venosa-bensar/>.
97. EWMA Position Documents (2002-2008) EWMA Secretariat; [2016-08-28]; Available from: <http://ewma.org/resources/for-professionals/ewma-documents>.
98. Weller C, Evans S. Venous leg ulcer management in general practice--practice nurses and evidence based guidelines. *Aust Fam Physician*. 2012 May;41(5):331-7.
99. Sinha S, Sreedharan S. Management of venous leg ulcers in general practice - a practical guideline. *Aust Fam Physician*. 2014 Sep;43(9):594-8.
100. Öien RF, Åkesson N, Forssell H. Assessing quality of life in patients with hard-to-heal ulcers using the EQ-5D questionnaire. *Journal of Wound Care*. 2013;22(8):442-7.
101. Weller CD, Buchbinder R, Johnston RV. Interventions for helping people adhere to compression treatments for venous leg ulceration. *Cochrane Database Syst Rev*. 2013;9:CD008378.
102. Hjelm K, Nyberg P, Apelqvist J. Chronic leg ulcers in Sweden: a survey of wound management. *J Wound Care*. 2000 Mar;9(3):131-6.
103. Edwards H, Finlayson K, Courtney M, Graves N, Gibb M, Parker C. Health service pathways for patients with chronic leg ulcers: identifying effective pathways for facilitation of evidence based wound care. *BMC Health Serv Res*. 2013;13:86.
104. Ylonen M, Stolt M, Leino-Kilpi H, Suhonen R. Nurses' knowledge about venous leg ulcer care: a literature review. *Int Nurs Rev*. 2014 Jun;61(2):194-202.
105. Friman A, Klang B, Ebbeskog B. Wound care by district nurses at primary healthcare centres: a challenging task without authority or resources. *Scand J Caring Sci*. 2011 Sep;25(3):426-34.
106. Silva MH, Jesus MC, Merighi MA, Oliveira DM. Limits and possibilities experienced by nurses in the treatment of women with chronic venous ulcers. *Rev Esc Enferm USP*. 2014 Aug;48 Spec No:53-8.
107. Eskilsson C, Carlsson G. Feeling confident in burdensome yet enriching care: Community nurses describe the care of patients with hard-to-heal wounds. *Int J Qual Stud Health Well-being*. 2010;5(3).
108. Tornvall E, Wahren LK, Wilhelmsson S. Advancing nursing documentation--an intervention study using patients with leg ulcer as an example. *Int J Med Inform*. 2009 Sep;78(9):605-17.

109. Khalil H, Cullen M, Chambers H, Steers N, Walker J. Implementation of a successful electronic wound documentation system in rural Victoria, Australia: a subject of collaboration and community engagement. *Int Wound J.* 2014 Jun;11(3):314-8.
110. Friman A, Wahlberg AC, Mattiasson AC, Ebbeskog B. District nurses' knowledge development in wound management: ongoing learning without organizational support. *Prim Health Care Res Dev.* 2014 Oct;15(4):386-95.
111. Wettermark B, Hammar N, Fored CM, Leimanis A, Otterblad Olausson P, Bergman U, et al. The new Swedish Prescribed Drug Register--opportunities for pharmacoepidemiological research and experience from the first six months. *Pharmacoepidemiol Drug Saf.* 2007 Jul;16(7):726-35.
112. Äldre – vård och omsorg andra halvåret 2008 [Care and services to elderly persons 30 June 2008]. Socialstyrelsen [The National Board of Health and Welfare]; 2008 [2016-08-28]; Available from: <http://www.socialstyrelsen.se/Lists/Artikelkatalog/Attachments/17780/2009-10-112.pdf>.
113. Ehnfors M, Ehrenberg, Al, Thorell-Ekstrand, I. . The VIPS Book. About a research-based model for nursing documentation in the patient's records. FoU-rapport 48. Stockholm: Vårdförbundet; 2000.
114. Patton MQ. *Qualitative Research & Evaluation Methods.* London: Sage Publications; 2002.
115. Krueger RA CM. *Focus groups: A practical guide for applied research.* Thousand Oaks, Calif.: Sage Publications; 2000.
116. Wallerstedt SM, Fastbom J, Johnell K, Sjoberg C, Landahl S, Sundstrom A. Drug treatment in older people before and after the transition to a multi-dose drug dispensing system--a longitudinal analysis. *PLoS One.* 2013;8(6):e67088.
117. WHOCC - Structure and principles. Oslo: WHO. Collaborating Centre for Drug Statistics Methodology; 2016 [updated 2011-03-25]; Available from: [http://www.whocc.no/atc/structure\\_and\\_principles/](http://www.whocc.no/atc/structure_and_principles/).
118. Fastbom J, Johnell K. National indicators for quality of drug therapy in older persons: the Swedish experience from the first 10 years. *Drugs Aging.* 2015 Mar;32(3):189-99.
119. Lindholm C. Leg ulcers. In:Sår [Wounds]. Stockholm: Studentlitteratur; 2003.
120. Läkemedelsverket. *Treatment of venous leg ulcers.* 1995.
121. Lorimer KR, Harrison MB, Graham ID, Friedberg E, Davies B. Venous leg ulcer care: how evidence-based is nursing practice? *J Wound Ostomy Continence Nurs.* 2003 May;30(3):132-42.
122. Charmaz K. *Constructing grounded theory: a practical guide through qualitative analysis.* . London: SAGE; 2006.
123. Glaser BG, Strauss, A.L.,. *The discovery of grounded theory: strategies for qualitative research* New York; 1967.
124. Krippendorff K. *Content Analysis: An Introduction to Its Methodology.* California: Sage Publications; 2004.
125. Elo S, Kyngas H. The qualitative content analysis process. *J Adv Nurs.* 2008 Apr;62(1):107-15.

126. Graneheim U, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today*. 2004;24(2):105 - 12.
127. Schneeweiss S, Seeger JD, Maclure M, Wang PS, Avorn J, Glynn RJ. Performance of comorbidity scores to control for confounding in epidemiologic studies using claims data. *Am J Epidemiol*. 2001 Nov 1;154(9):854-64.
128. Blumer. *Symbolic Interactionsism. Perspective and method*. London: University of Carlifonia Press Ltd.; 1986.
129. Glaser BG, Strauss AL. *The discovery of grounded theory : strategies for qualitative research*. New York: Aldine de Gruyter; 1967.
130. Glaser B. *Theoretical sensitivity: advances in methodology of grounded theory* Mill Valley: Sociology press; 1978.
131. Hylander I. Toward a Grounded Theory of the Conceptual Change Process in Consultee-Centered Consultation. *Journal of Educational and Psychological Consultation*. 2003 2003/12/01;14(3-4):263-80.
132. Toien M, Heggelund M, Fagerstrom L. How do older persons understand the purpose and relevance of preventive home visits? A study of experiences after a first visit. *Nurs Res Pract*. 2014;2014:1-8.
133. Metzethin SF, Daniels R, van Rossum E, Cox K, Habets H, de Witte LP, et al. A nurse-led interdisciplinary primary care approach to prevent disability among community-dwelling frail older people: a large-scale process evaluation. *Int J Nurs Stud*. 2013 Sep;50(9):1184-96.
134. Wiklund Gustin L BI. *Vårdvetenskapliga begrepp i teori och praktik*. Stockholm: Studentlitteratur; 2012.
135. Karlsson I, Ekman SL, Fagerberg I. A difficult mission to work as a nurse in a residential care home--some registered nurses' experiences of their work situation. *Scand J Caring Sci*. 2009 Jun;23(2):265-73.
136. Swedberg L, Chiriac EH, Tornkvist L, Hylander I. From risky to safer home care: health care assistants striving to overcome a lack of training, supervision, and support. *Int J Qual Stud Health Well-being*. 2013;8:20758.
137. Edvardsson D, Watt E, Perace F. Patient experiences of caring and person-centredness are associated with perceived nursing care quality. *J Adv Nurs*. 2016 Aug 17.
138. McCormack B. Person-centredness in gerontological nursing: an overview of the literature. *J Clin Nurs*. 2004 Mar;13(3a):31-8.
139. Hovstadius B, Hovstadius K, Astrand B, Petersson G. Increasing polypharmacy - an individual-based study of the Swedish population 2005-2008. *BMC Clin Pharmacol*. 2010;10:16.
140. Rhalimi M, Helou R, Jaecker P. Medication use and increased risk of falls in hospitalized elderly patients: a retrospective, case-control study. *Drugs Aging*. 2009;26(10):847-52.
141. Petersen LK, Christensen K, Kragstrup J. Lipid-lowering treatment to the end? A review of observational studies and RCTs on cholesterol and mortality in 80+-year olds. *Age Ageing*. 2010 Nov;39(6):674-80.

142. Nationella riktlinjer vid diabetesvård [National guidelines for diabetes] Socialstyrelsen [The National Board of Health and Welfare]; [2016-07-11]; Available from: <http://www.socialstyrelsen.se/nationellariktlinjerfordiabetesvard>.
143. Tada M, Kuraki T, Taooka Y, Fuchita H, Karino F, Miura K, et al. Comparison of clinical management of young and elderly asthmatics by respiratory specialists and general practitioners. *J Asthma*. 2015 Mar;52(2):162-9.
144. Morichi V, Dell'Aquila G, Trotta F, Belluigi A, Lattanzio F, Cherubini A. Diagnosing and treating depression in older and oldest old. *Curr Pharm Des*. 2015;21(13):1690-8.
145. Nurit P, Bella BC, Gila E, Revital Z. Evaluation of a nursing intervention project to promote patient medication education. *J Clin Nurs*. 2009 Sep;18(17):2530-6.
146. Griffiths R, Johnson M, Piper M, Langdon R. A nursing intervention for the quality use of medicines by elderly community clients. *Int J Nurs Pract*. 2004 Aug;10(4):166-76.
147. Clarke-Moloney M, Keane N, Kavanagh E. Changes in leg ulcer management practice following training in an Irish community setting. *J Wound Care*. 2008 Mar;17(3):116, 8-21.
148. Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. *Lancet*. [Review]. 2003 Oct 11;362(9391):1225-30.
149. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: systematic review and recommendations. *Milbank Q*. 2004;82(4):581-629.
150. Harrison MB, Graham ID, Lorimer K, Friedberg E, Pierscianowski T, Brandys T. Leg-ulcer care in the community, before and after implementation of an evidence-based service. *CMAJ*. 2005 May 24;172(11):1447-52.
151. O'Brien ML, Lawton JE, Conn CR, Ganley HE. Best practice wound care. *Int Wound J*. 2011 Apr;8(2):145-54.
152. Oien RF, Forssell H, Ragnarson Tennvall G. Cost consequences due to reduced ulcer healing times - analyses based on the Swedish Registry of Ulcer Treatment. *Int Wound J*. 2016 Oct;13(5):957-62.
153. Haram RB, Ribu E, Rustoen T. An evaluation of the leg and foot ulcer treatment provided in Oslo. *J Wound Care*. 2003 Sep;12(8):290-4.
154. Friman A, Klang B, Ebbeskog B. Wound care in primary health care: district nurses' needs for co-operation and well-functioning organization. *J Interprof Care*. 2010 Jan;24(1):90-9.
155. Van Hecke A, Verhaeghe S, Grypdonck M, Beele H, Defloor T. Processes underlying adherence to leg ulcer treatment: a qualitative field study. *Int J Nurs Stud*. 2011 Feb;48(2):145-55.
156. Salome GM, de Almeida SA, Ferreira LM. Association of sociodemographic factors with hope for cure, religiosity, and spirituality in patients with venous ulcers. *Adv Skin Wound Care*. 2015 Feb;28(2):76-82.
157. Polit D, Hungler, B. P. *Nursing Research - Methods, Appraisal, and Utilization*. Philadelphia: Lippincott-Raven Publisher; 1997.
158. Kreuger RA CM. *Focus groups: A practical guide for applied research*. London: Sage publications; 2000.



159. Guvå G, Hylander I. Grundad teori : ett teorigenererande forskningsperspektiv. Stockholm: Liber; 2003.

160. Utvärdering av metoder i hälso- och sjukvården: En handbok - SBU. Swedish Council on Health Technology Assessment 2014 [2016-09-16]; Available from: <http://www.sbu.se/globalassets/ebm/metodbok/sbushandbok.pdf>.