Medication safety in Home care Nursing

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MEDICATION SAFETY IN HOME CARE NURSING:
A SYSTEMATIC LITERATURE REVIEW

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Degree Program in Nursing
Bachelor's thesis
March, 2011

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Medication Safety in Home Care Nursing

This bachelor's thesis is part of the Research and Development (R&D) project "Empowering path" at Laurea University of Applied Sciences, in collaboration with Tapiola pharmacy and Espoo home care. The aim of this project is to explore strategies by which medication safety can be promoted by nurses in home care nursing.

The purpose: this systematic review is to discuss how resent literature describes medication safety in home care nursing. It also described methods used to promote safety in home care nursing. The research question is: "How is medication safety promoted in home care nursing"?

 Method: Data was collected through systematic database search. The study consisted of international studies and 11 obtained articles were from the years 2000-2010. Qualitative content analysis was chosen for this study.

Findings: Data analysis of literature identified four categories of concern namely, (1) nurses promoting medication safety in home care nursing, (2) the uniqueness of home care nursing, (3) evaluating safety procedures in home care nursing, (4) strategies employed in patient safety in home care nursing. The findings suggest that home care nursing present challenges different from those of institutional settings and are unregulated for the present. Nurses in home care nursing have a responsibility to promote patient safety.

This study has shown that there is a paucity of studies in home care nursing. This implies that more studies are required (1) Studies documenting medication safety promotions in home care nursing. (2) Information computerized technology (ICT) for standardized medication system in home care nursing for safety of the client, family and health professionals.

Keywords: nursing, homecare nursing, medication safety, patient/client

The Table of contents

1 Introduction

Nurses' professional responsibility is built on respect for human dignity and dedication to protect and preserve life. Medication errors occur in all healthcare settings. The issue of patient safety has been one of the primary concerns of nurses, who work at the bedside and are at the fore front of health care delivery (Newhouse & Poe 2005, 1- 2).

The prevalence of medical errors, and the wide spread recognition along with need for rapid changes in the healthcare system to reduce the incidents of adverse medical errors, has progressively grown because of the publication of two important reports from the Institute of Medicine (IOM) To err is Human: Building a safer health care system (1999). Institute of Medicine (2001) crossing the quality chasm: *A New health system for the 21th Century*. The urgency of providing safe environment for patients has been made evident through evolving research, public response and regulatory changes. Most research on patient safety has focused on patients in hospitals or other settings; whereas, much less has targeted patients in home care nursing. It is reasonable to argue that despite the lack of medication errors research in home care nursing, there are a significant number of medication errors in home care setting (Masotti, Mccoll & Green 2010, 115).

Medication errors are one of the most common types of medical errors that occur in healthcare institutions (Choo, Hutchinson & Bucknall 2010, 855). It is impossible to ignore the significance of this issue as research has shown that medication related problems negatively impact on patients, their family, health professionals and healthcare industry. Medication safety is an important skill of the professional nurse, who must understand and follow various steps in the medication process to assure patient safety. The vital nature of improving patient safety requires nurses to assume leadership roles in measuring and improving the structures, processes, and patient outcomes in home care nursing.

The topic of this study is important. The present study advances knowledge on the issue of medication safety in home care nursing, as illuminated by the literatures that have been studied in this thesis. Nurses administer the vast majority of medications and are thus in the front line of medication safety. This literature review was to promote medication safety and identify the challenges associated with medication safety in home care nursing. The goal is to create awareness on how nurses contribute in preserving and protecting patients from the adverse effects of medication errors by promoting patient safety.

My interest in medication safety dates back to my experience of losing my elder sister because of a medication error committed by healthcare professionals. My experiences as a practical nurse in Sweden have exposed me to the frequency and rate of errors that can occur in medication administration in healthcare setting. In addition, I have also had personal experience of other victims of medication errors.

My interest is to gain as much awareness and skill in this important area of my future profession. This will undoubtedly help me to promote patient safety optimally in my practice.

This study has seven sections. The first section is the introduction where the general goal of the work is described. In section the background of the work is discussed. The definitions of concepts are presented in section three. The purpose and the research question are then discussed in section four. After this, comes section five, where the methods and materials used in this study are conducted. This leads to section six where the findings from the review are presented. This is followed by section seven where a critical discussion of the findings, issues of ethics, validity, and conclusion are all presented.

2   Background

The demand for home care nursing is increasing in different parts of the world especially in the West. In most parts of Europe, North American, other industrialized nations and countries where industrialization is taking place, people are living longer. This entails a greater number of elderly people in the world. For example in Finland, the number of people between 75 and 84 years has roughly doubled during the last twenty years. It is also reported that those over 84 years of age almost tripled during the same period, and both groups are expected to grow further (Kivelä, 2004, 35). A longer life means for most of the elderly living with chronic disease living in their homes and receiving home care nursing (Beyth, 1999, 231). This is because of advances in medical science and technology. Physicians may refer patients for home care nursing, also patient or their family may request for it.

  Some studies of the elderly medication-use in Finland have found out that 67% of 75 years old used at least six different medications and 28% of that age group used at least ten different medications at the same time (Jyrkka, Vartiainen, Hartikainen, Sulkava & Enlund 2006, 151).

Registered nurses in Finland have the right to administer medication. Some who have specialized training and obtain IV license can insert IV-line, administer intravenous fluids and medications, blood transfusions and administer vaccinations. In Finland, the Ministry of Social Affairs and Health identifies the individual nurse's responsibility to exercise their professional judgment with respect to medication administration based on appropriate knowledge and skill (Safe Pharmacotherapy, 2006). There are legislations regulating the practice of healthcare delivery in Finland. Finnish legislation under the Act on the Status and rights of the patients (NO. 785/1992) ensures that every patient has a right to good quality healthcare. The Act on healthcare professionals (NO. 559/1994) further regulates on what grounds a person can practice as a nurse. Healthcare professionals are charged with promoting and maintaining health, preventing illness, curing those who are ill and alleviating their sufferings. All these are to be carried out on evidenced based premise. Within the context of the Finnish system, nurse's professional actions are directed by the Finnish legislation, guidelines and directives by the Ministry of Social Affairs and Health as well as by the Ethical Guidelines of Nursing by (Finnish Nurses Association 2006 at www.nurses.fi).

The importance of medication safety has been recognized for many years, but only recently has it reemerged as a major public health issue based on numerous recent studies and high-profile safety events. However, there are few studies on the promotion of medication safety in home care nursing. Medication error rates and safety promotions have not been determined in home care nursing. It is imperative that there should be scientific studies to validate the impressions of nurses and patients in home care nursing. This will lead to a safe medication

culture and quality care for home care patients. Nurses hold great potential to positively impact safe medication use in home care nursing. The reason is that nurses are in inherent proximity to patients. Medication safety in home care nursing is about mitigating the risks in diverse environment that are uncontrolled and unregulated (Lang & Edwards 2006, 104). In order that nurses might promote safety of their patients in medication, it is important that nurses understand the uniqueness of the home environment and engage relevant others in delivering care to patient/client. This is also why this thesis seeks to discuss some of the measures that might promote medication safety in home care nursing.

This bachelor's thesis is part of the Research and Development (R&D) project "Empowering path" at   Laurea University of Applied Sciences, in collaboration with Tapiola Pharmacy (and Espoo home care.) The aim of this project is to explore strategies by which medication safety can be promoted by nurses in home care nursing. Laurea University interest in this project is to give students the opportunity to advance their knowledge and skill in the promotion of safety for home care nursing client. In concrete, this aim is realized through studies for bachelor's theses. In this way, my study is part of the effort to promote the safety of clients from the perspective of nursing.

3   Definition of Concepts

The title of this thesis: "Medication safety in home care nursing" and the research question: "How is medication safety promoted in home care nursing reveal some major concepts namely, nursing, home care nursing, medication safety, and patients/clients. How these concepts are to be understood in this report are briefly defined.

3.1 Nursing

The mission of nursing in society is to help individuals, families and groups to determine and achieve their physical, mental and social potential, and to do so within the challenging context of the environment in which they live and work (Salvage, 1993, 123). This requires nurses to develop and perform functions that promote and maintain health as well as prevent ill health. Nursing also includes the planning and giving of care and rehabilitation, and encompasses the physical, mental and social aspect of life as they affect health, illness, disability and dying.

Nursing is an art and science that requires the understanding and application of the knowledge and skills specific to the discipline. It draws on knowledge and techniques derived from

the humanities and the physical, social, medical and biological sciences. The four major functions of nursing are: providing and managing nursing care, whether promotive, preventive, curative, rehabilitative or supportive, to individuals, families or groups (Salvage, 1993, 123).

Nurses ensure the active involvement of the individual and his or her family, friends, social group and community as appropriate in all aspects of health care, thus encouraging self-reliance and self determination. Nurses also work as partners with members of other professions and occupations involved in providing health and related services. Nursing in this thesis will be understood as the care given by a registered nurse in home care nursing (Salvage, 1993, 123).

3.2   Home care nursing

Home care nursing is a system where care is provided by healthcare practitioners to patients and their families in their homes often under the direction of a physician (Ellenbecker, Samia, Cushman & Alster 2007, Vol 1). Depending on the type of care needed, home care caregivers may be nurses, occupational therapists, social workers, physical therapists, or speech therapists. (Shuaughnessy, Hittle & Crisler 2002, 1354). In other words, home care nursing includes medical and non-medical services provided in the comfort of a person's own home. The purpose of home care nursing is often to help individuals to improve functions, to promote the clients optimal level of well-being; and to assist the patient to remain at home, avoid hospitalization or admission to long-term care institutions. Home care nursing provides health services to medically fragile children and older adults, individuals with chronic diseases, disabilities or terminal illness. (Lang, Edwards & Fleiszer 2008, 130). This enables them to live in their homes close to loved ones, family and community. Improving safety of patients, nurse and other caregivers in home care nursing is an increasing priority globally. Home care nursing safety is about reducing the risks to harm that may exist because of the particular nature of the home environment (Lang & Edwards 2006, 106).

3.3   Medication Safety

This study will address only the nursing care (medication safety) in home care nursing. This care involves medication administration/ management. These two terms will be used as synonyms in this study. Medication use is a complex process that includes medication prescribing, order process, dispensing, administration, and medication monitoring (Jones & Treiber 2010, 240). In this thesis, it will describe as including the moment when a medication nurse reviews the written medication order and selects, transcribes or prepares a medication for the pa-

tient to the actual administration of the medication to the patient, including the "five" rights and documentation of the details of event (Skibinski, White, Kueilin, Dong & Wu 2007,91).

Medication errors like the other concepts are defined in a number of ways. Some commentators define "medication errors as deviations from a physician's order. Medication errors can be as high as 1.9 per patient per day" (Fontan, Maneglier, Nguyen, Loirat & Brion 2003, 112-117). The Agency for Healthcare Research and Quality (AHRQ, 2004, 57) defines them as "mistakes made in the process of care that result in or have the potential to do harm to patients". It is defined by the (Institute of Medicine 2007) as "the failure of a planned action to be completed as intended (i.e., error of execution) or the use of a wrong plan to achieve an aim (i.e., error in planning).

3.4   Patient/Client

There are different understandings of the concept of patient. The New Oxford American Dictionary (2010) defines 'patient' as "a person receiving or registered to receive medical care." Earlier Oxford English Dictionary understands the word 'patient' to mean 'a sufferer' and 'a person who suffers from injury or disease.' In the Oxford English Dictionary, this definition is considered as 'archaic'. Here a 'patient' is a very specific kind of person, in a very specific social relation with health providers. As 'sufferer,' a patient attracts recognition of a painful condition and perhaps compassion, even under the more generic definition of 'a person receiving or registered for healthcare'. For this study, the word patient will be used interchangeably with the word client and they will refer to any one receiving care from a registered or practical nurse or from a health provider.

4   Purpose of Study and Research Question

The purpose of this final report is to promote medication safety in home care nursing and identify the challenges associated with safe medication management and patient safety in home care setting. This literature review examines the evidence relating to the causes of medication errors and methods to reduce such errors in home care nursing. It explores measures home care nurses can take to ensure patient receives medication safely.

The research question based on the foregoing is: "How is medication safety promoted in home care nursing?" The next section describes the methods used and is followed by an overview of my findings and discussion. The report is limited to how medication safety can be promoted for patients. Nonetheless, it is also important to observe that this topic is broad and safety could be promoted for patients, providers, caregivers (RN) and family.

5   Method & Material

5.1   Qualitative research method

This study was meant to focus entirely on qualitative literature review. Qualitative research method is a form of social inquiry that focuses on the way researchers interpret and make sense of their experiences and the word in which they live. In the worlds of (Holloway & Wheeler 2002, 3), it is an 'umbrella term' researchers use to explore the behavior, perspectives, feelings and the experiences of people and what lies at the core of their lives. (Holloway & Wheeler 2002, 6). Qualitative researchers initially formulate the question in more general terms and develop it during the process. Qualitative researchers generally begin with broad question in the data collection and become more specific in the end process of the research, responding to what they hear and find in the setting.

Qualitative research methods in this case were designed to direct researcher to know and understand individuals in their social and cultural contexts around their living environments. In qualitative data analysis, the major objective is to organize the gathered information to attain a conclusion and data conveyed in a research report (Polit, Beck & Hungler 2001).

From the theories gathered from the method books and the information above, this study was meant to be based on qualitative content analysis literature review and to use earlier studies to assess how the promotion of medication safety in home care nursing is described in the literature. The method and steps applied in the data collection were literature search, selection and data analysis.

5.2   Literature review as a methodology

In this study, a systematic review of literature was used as a methodology. A review of literature means an organized, critical collection, evaluation of important published literature that addresses the topic of the study. The major purpose of a literature review is to form an extensive, systematic and critical review of the most important published scholarly literature on a particular topic (LoBiondo & Haber 2006, 559). The aim of the literature review is to explore current evidence-based knowledge for the research question. The overall purpose of a research literature review is to assemble knowledge on a topic. The uses to which that knowledge is put are varied. Thus, a literature review helps to lay the foundation for a study with significance to nursing in homecare. The literature review provides readers with a background for understanding current knowledge on a topic.

After identifying the research question, the investigator review the literature consisting of all the information published and closely related to the area of the project, including both primary and secondary sources such as book references, articles, journals, published materials, and research reports related to my study (LoBiondo & Haber 2006, 559).

In this review, I sought to describe using the selected articles nurse's medication errors perception and how safety can be promoted in home health care nursing. This is a scientific method in which the critical review of existing literature helps to shed more light into the issue being discussed. In this connection, a literature review is a written argument that supports a thesis position by creating a case from reasonable evidence based on earlier research. By presenting a reasonable background about existing knowledge on the subject, it lays out a coherent case for the thesis position. Some scholars have pointed out that this is a method for gathering and processing data in accordance with systematic scientific design in order to minimize systematic bias and allow validity and reliability of a study (LoBiondo-Wood & Haber 2006, 559-560).

5.3   Literature search and strategy

In this report, 11 original studies concerning medication safety, promotion and errors and in home care nursing were reviewed. For this study, database search was conducted: CINAHL, Ovid (MEDLINE), The SAGE Journals Online, PubMed, Elsevier Science Direct, EBSCO (Academic search Elite, and BioMed Central via SCIRUS were searched simultaneously. While the Cochrane database was searched alone to identify articles related to medication safety, medication and home care nursing. Final searches of databases were completed for relevant articles on January 6, 2011, updating previous searches that were undertaken between September to December 2010. Initial searches gave no results and some produced hits far from the problem to be discussed. This led to narrowing down the search terms in order to make them more specific and limited by relating them to the major concepts and research questions.

5.4   Data selection

The systematic search was conducted using multiple variations of key terms informed by the characteristics of medication safety in home care nursing: "Medication administration in home care" OR "Promotion of medication safety in homecare"; "Medication administration in homecare by nurses" OR "promotion of medication safety in home care clients by nurses"; "promoting medication safety in homecare nursing", "nurses promoting medication safety in

home care", "medication errors by nurses in home care", "medication administration safety promotion by nurses in homecare", "medication safety promotion in nursing". Hand searches were conducted of the reference lists of retrieved articles. Search limitations were English language, Swedish and Finnish original articles published between were 2000-2010. Articles were extracted by the review author. Articles were selected by reading the abstracts. Those that were found relevant to the research question and purpose of this final report were selected. Consequently, 11 research articles were obtained. (Refer to table 1 for analysis). Although the hits from the databases retrieved vast amount of articles for example "medication safety promotion in nursing", the final number of chosen articles were relatively small. The total number of sources obtained through the search was 11 (Refer to table 2). Studies cited in the evidence table were accepted for review using the following inclusion criteria:

- The study was published between 2000 – 2010
- The research was conducted in English, Finnish or Swedish
- The study has relevance to medication administration and safety in nursing
- The article relates to home care nursing
- Fully or partially answered the research question
- Articles have relevant abstract, headings and full text

The purpose of the inclusion criteria was to ensure that the studies reviewed addressed both studies specific to home care nursing and those addressing general strategies for patient safety from nursing perspective. Although some of the articles do not specifically address safety issues in home care nursing, nonetheless, they may generate further insights of relevance for practice and research on safety in home care nursing.

5.5   Data Analysis

The next stage was to read through all the relevant articles selected. Content analysis is the tool chosen for this review. It is one of the main research techniques in the social field judged to be trustworthy because the results and findings should be replicable. This is the analysis of documents and texts in order to find their content in terms, categories and in a systematic and replicable manner (Bryman 2008, 275). The researcher has to follow a systematic and objective method and be able to limit the content of analysis. One may then say

that content analysis is a research technique that is objective and summaries rather than describes in detail a message (Neuendorf 2002, 1-2).

Content analysis is used to describe the characteristics of the document in a systematic and objective way (Polit, Beck & Hungler 2001,). This process aims to produce themes, concepts or categories which provide analytical tool and general description of the phenomena under investigation. Through content analysis data are simplified, categorized and conceptualized.

A Preliminary pool of articles was identified using the search strategies. Titles and abstracts were reviewed using the inclusion criteria resulting in the selection of some of the articles for a more detailed review. The full detail review resulted in the selection of 29 articles that were further reduced to 11 articles. The studies chosen for review were summarized. Themes, words and sentences, concepts that are relevant to the research question were grouped. Similarities and differences in the results of the findings were recorded.

 (See Table1 database search terms and phrases in the appendix 1 Page 36).

(Table 2 the accepted 11 articles used for literature review Page 16).

(See table 3 data analysis of the articles appendix 2 Page 38).

Table 2. List of 11 Accepted Articles used for literature review

AUTHORS/ PUBLICATION YEAR	ARTICLES RETRIEVED	JOURNAL SOURCES
Axelsson J., & Elmståhl S. (2004)	Home care aides in the administration of medication	International journal for quality in health care vol.16, number 3 pp. 237-243
Choo J., Hutchinson A .& Bucknall T. (2010)	Nurses' role in medication safety	Journal of nursing management vol.18, p. 853-861
Jones J.H., & Treiber L.(2010).	When the "5" rights go wrong medication errors from the nursing perspective	Journal of nursing care quality vol.25, number 3 pp.240-247
Lang, A., Edwards, N. & Fleiszer, A. (2008).	Safety in home care: a broadened perspective of patient safety	International journal for quality in health care vol.20 number2 pp. 130-135
Lee Wilder Gloria (2003)	Medication safety in home infusion care	Journal of Infusion Nursing, vol.26, number 5 p.331-318
Masotti P., Mccoll M.A.,& Green M. (2010)	Adverse events experienced by homecare: a scoping review of the literature	International journal for quality in health care vol.22, number 2 pp. 115-125
Mayo A.M.,& Duncan D.(2003)	Nurse perceptions of medication errors: what we need to know for patient safety	Journal of nursing care quality vol.19, number3 pp.209-217
Meredith S., Feldman P.H, Frey D., Hall K., Arnold K., Brown N.J. & Wayne A.R. (2001)	Possible medication errors in home healthcare patients	Journal of American Geriatrics Society 49: 719-724
Page K., & Mckinney A.A (2006)	Addressing medication errors-the role of undergraduate nurse education	Nurse education today (2007).vol.27, p. 219-224
Schelbred, AB. & Nord, R. (2007).	Nurses' experience of drug administration errors	Journal of advanced nursing vol.60, number 3 pp. 317-324
Skibinski K.A., White B.A., Kueilin L.I., Dong Y. & Wu W. (2007)	Effect of technological interventions on the safety of a medication-use system	American journal of health-system Pham- vol.64,p90-96

6   Findings

Eleven research articles were reviewed for the purpose of this report. In this section, the major findings related to the research question are explored. Content analysis of the articles resulted in 4 descriptive categories of nurses' medication safety promotion:

➢ Nurses promoting safety in home care nursing

➢ The uniqueness of home care nursing

➢ Evaluating safety procedures in homecare nursing

➢ Strategies employed in patient safety in home care nursing

These resulted in further subcategories. It is on the basis of these findings that the research question is answered. In this systematic review, the research question is to be answered from nurses' perspective.

❖ Medication errors in home care nursing

❖ Adverse medication events

❖ Physical environment

❖ Family dynamics

❖ Organization procedures

❖ Individual procedures

❖ Medication guidance(patient/family education)

❖ Medication review

❖ Medication reconciliation

❖ (ICT) information computerized technology

Medication safety promotion in home care nursing

1. Nurses promoting safety in home care nursing

2. The uniqueness of home care nursing

3. Evaluating safety procedures in home care nursing

4. Strategies employed in home care nursing

Medication errors

Adverse medication events

Organization procedure

Individual- procedure

Physical environment

Family dynamics

Medication guidance

Medication re-view

Medication reconciliation
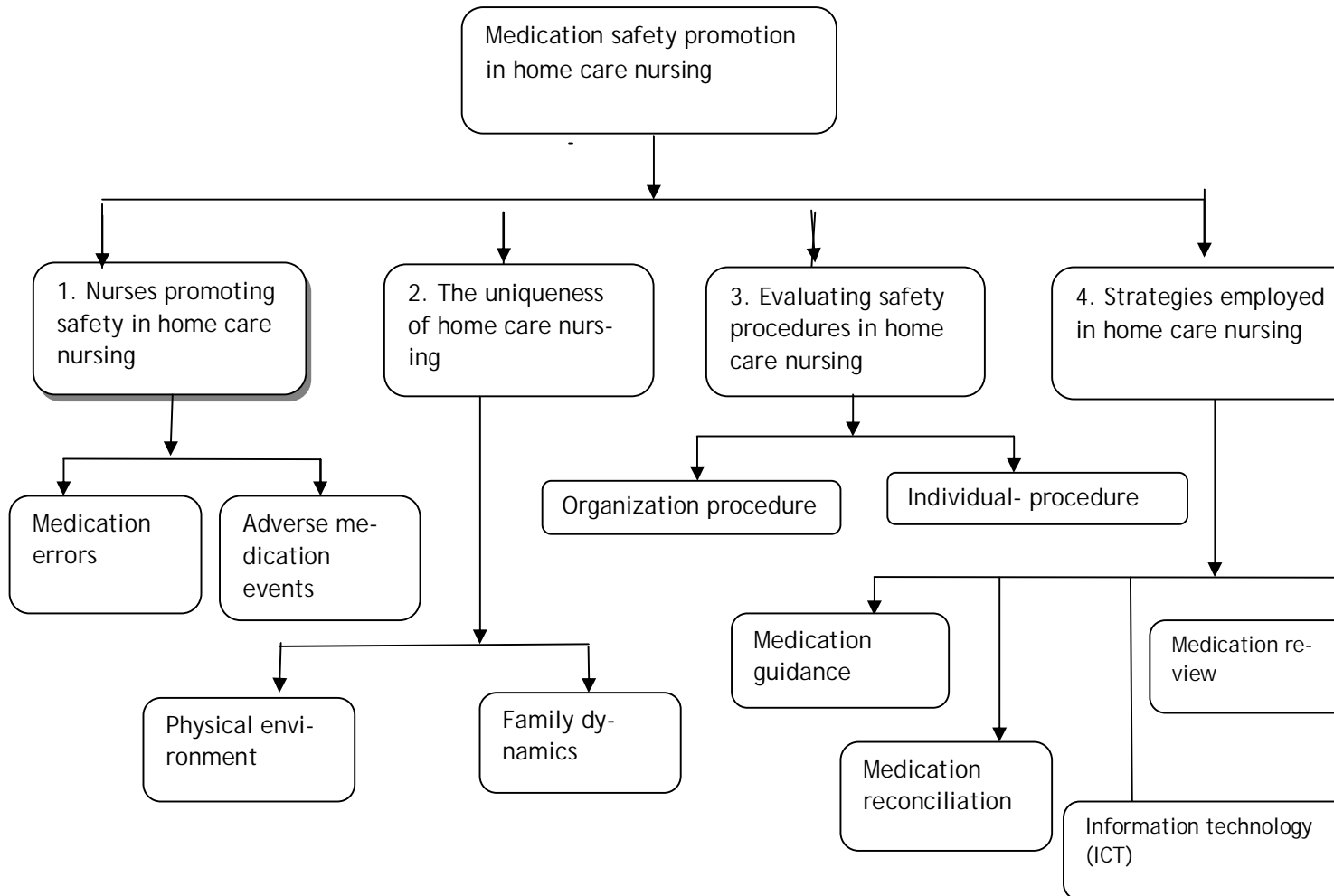
Information technology (ICT)

Figure 1 Overview of the findings

6.1   Nurses promoting medication safety in home care nursing

All the articles chosen for this review understand medication safety as an important part of nursing no matter the setting of practice (Schelbred & Nord 2007, 317). They also witness to the fact that demand for health in the home has increased substantially over the recent years (Lang et al. 2008, 130). Nurses are also seen to play a vital role in promoting patient safety during medication administration. Nurses administer the vast majority of medications (Jones & Treiber 2010, 240).

The authors chosen for this review share the view that many factors contribute to the complexity of this process. Certain variables such as the physical environment and family dynamics make it so. In addition, their study show that it is inherently risky and the potential for error makes it a grave concern because of the conditions and environments under which medications are administered (Schelbred & Nord 2007, 317). There is a general observation that promoting patient safety can benefit more from a multidisciplinary approach. However, the nurse has a special role in this process as those being in frontline of patient care (Lee Wilder, 2003, 312). It is also suggested that patient and nurse communication is an advantage of patient safety and promotion. The safety of patients is jeopardized by medication errors.

6.1.1   Medication errors in home care nursing

All the articles chosen for this review identify the prevention of medication errors as an essential part of promoting medication safety for patient in home care nursing. As Schelbred & Nord (2007, 317), in carrying out medication administration errors do occur. These errors have serious effect on the patient and the nurse. The study of Jones & Treiber (2010, 240) and Mayo & Duncan (2003, 209) describe nurses' perceptions on how and why errors occur and nurses' personal experiences with medication errors. They emphasize that it is a complex task that requires extensive knowledge and skill to perform correctly.

6.1.2   Adverse medication events in home care nursing

Masotti et al. (2010, 115) in their study indentify adverse medication event in home care nursing as being commonly associated with communication problems. The percentage of adverse medication events in the home care nursing vary from author to author and setting to setting. Nurses are on a daily bases confronted with the adverse medication events in the home care nursing. They suggest that those at risk for adverse medication events are those groups taking five or more medication concomitantly (polypharmacy) (Meredith, Feldman,

Frey, Hall, Arnold, Brown & Ray 2001, 720) Patients are dependent on nurse's skills for their safety. It is acknowledged as a patient's right and the obligation of all health professionals thus nurses in home care nursing should promote the safety of their patients. The five rights: the right patient, drug, dose, route, and time have been taught as the traditional procedure for medication safety (Choo et al. 2010, 853). Additional rights have been proposed by some researchers. Choo et al. (2010. 243) suggested documentation as a sixth right. It has been discussed if medication errors will not be prevented if nurse just follow the "Six Rights" strategy. Nurses need to be adequately trained in pharmacology to prepare them for the important task of medication safety. (Mayo & Duncan 2003, 215) " pharmacofenika"

6.2 The uniqueness of home care nursing

The studies identify that delivering primary health care in the home presents different challenges from those in bounded organizational settings such as hospital. Masotti et al. (2010, 115), may have made a pertinent point in this regard when they write that the home is not designed for the healthcare that takes place in it. Individual patient variables influence the outcome of care given. To date, most research has focused on patients in the hospitals and other settings, whereas, much less has targeted patients in home care nursing (Lang et al. 2008, 115). It is further suggested that addressing safety in home care nursing will require significant changes in the 'underlying institutionally oriented assumptions and guiding frameworks' (Lang et al. 2008, 116). In emphasizing this point, they observe that we need to consider the fact that the home is designed for living and not for home care services. The distinctive characteristics of home care nursing include the challenges of the physical environment and the family dynamics involved. These are situational variables that are unique to home.

6.2.1 Physical environment

The authors point out that when providing home care services, it is necessary to consider all factors including family dynamics, and the cognitive and physical abilities of the client and the caregivers (Masotti et al. 2010, 115). In addition, the challenges of documentation and communication, which are heightened at points of transfer across sectors, also increase the potential for inadequate medication reconciliation and its attendant risks. Moreover, the vulnerability of home care staff working predominantly without the proximal supervisory support of colleagues, and the uniqueness of each home setting cannot be overlooked. Some salient characteristics of the home care environment are the isolation from the other colleagues and supervisors points out that creating a safer environment for patient involve 'multiple processes of change, including organizational and practice change' (Lang et al. 2008, 131-132).

6.2.2 Family dynamics

Within the context of home care, in addition to self-care, other caregivers such as family members may be involved in administering medication to the patient. Caregivers, often elderly, are contending with their own health challenges and can lack sleep as they provide care almost 24 hours per day. In contrast, within the institutional scenario there are two or three shifts per day of professionals who provide care. In a stratified sample of personnel in home care nursing in the Malmö region of Sweden, it was discovered that home care aids who are involved in medication administration to a great extent lack the knowledge in the area. Such a situation portends a risk for errors (Axelsson & Elmståhl 2004, 237). This is further elucidated in the study of (Choo et al. 2010, 855) which shows that some nurses in home care lack adequate knowledge for the task.

6.3 Evaluating safety procedures in home care nursing

The studies in this view are all agreed that systems of health care provide a framework within which individual patient care is provided. Health care institutions can improve its safety culture for patients by creating a culture of safety principles both at the organizational and individual levels (Page & McKinney 2006, 219). In this regard, nurses in home care nursing need to engage actions and expectations that promote patient safety. This would include complying with regulatory standards and meeting technical requirements (Lee Wilder 2003, 331

6.3.1 Organization procedures

Medication safety for patients is dependent upon systems, process, and human factors, which can vary significantly across health care settings. A culture of safety will ensure that good safety performance is seen as a goal and valued as important (Page & McKinney 2006, 220). The healthcare institution is learning from other organizations with high risk practice such as the aviation industry. The low accident rate in the aviation industry is attributed to its emphasis on safety designs, processes and its model of crew resource management (Choo et al. 2010, 858). Patient safety is increasingly viewed as a failure of system rather than human. Increasingly, clients are seen as playing a significant role in their care (Lang et al. 2008, 132).

6.3.2   Individual procedures

Several key assumptions appeared to underlie the patient safety research in home care nurs-ing. There is need for regulated system designed for providing health care with credentialed professionals and support staff who are guided by supervisors and administrators in home care nursing. Although the literature focuses predominantly on the physical safety of patients in the home care nursing, administrators are expected to have the capacity and resources to shape the home care nursing environment socially (i.e. providing leadership for a change in the safety culture (Lang et al. 2008, 131). Choo et al. (2010, 856) for example, other factors include inadequate supervision of the supervisors in home care nursing. This may require the cultivation of a safety culture in home care nursing and the continuous evaluation of the sys-tem to ensure that proper standards and protocols are observed.

6.4   Strategies employed in patient safety in home care nursing

The goal of every health care system among other important things should be to continually improve systems to promote patient safety through preventing harm to them arising from medication errors. It is this that has made patient safety an ongoing health system priority globally; with medication safety seen as a top priority (Meredith et al. 2001, 719.)

Relatively few studies have focused on nurses promoting medication safety in home care nurs-ing from the perspective of nursing. Lang et al. (2008, 131) in their study show that there is need for a strong research base to provide direction for evidence-based safety promotion measures in the home care sector. Furthermore, Choo et al. (2010, 858) explore the nurses' role in the process of medication management and identify the challenges associated with safe medication in contemporary clinical practice. The authors in this review identify a clear need to engage the providers and recipients of care in studying and improving medication safety with collaborative approaches to exploring the nature and safety of medication safety in home care nursing (Masotti et al. 2010, 115).

Certain distinctive characteristics of home care nursing environment impact patient safety and quality outcomes. This makes it unlikely that there will be one standard of home care nursing like in the hospital. Some patients lack the resources to purchase all needed equip-ment to ensure safety. The new methods to enhance medication safety emphasize improving systems rather than blaming individuals when errors occur (Lee Wilder 2003, 312; Lang et al. 2008, 131). Such emergent shifts include the increasing recognition that patient safety is now largely seen in terms of system failure rather than a failure of humans.

6.4.1 Medication guidance (patient/family education)

The need for medication guidance is recognized in the articles reviewed in this study (Lang et al. 2008, 132). The nurse has to know the patient's total medication intake including and the effects of each medication, wanted and unwanted. This means in concrete that nurses should provide patient or family with information about medications based on medication information needs of the patient or family. Patient education including family members' services is an important means in promoting safety of a client in home care nursing (Lang et al. 2008, 132). Many patients continue their medication regimen which they have received during a hospital stay at home, and in order to prevent medication errors and increase medication safety as well as medication adherence they need to learn more (Mayo & Duncan 2003, 216; Choo et al. 2010, 857). Without an understanding of basic pharmacology, nurses will not be able to advice and guide patients appropriately. Therefore safety in practice is open to question. Page & McKinney (2006, 219) identified the need for more pharmacology knowledge for nurses in practice. They argue that improved pharmacology teaching during training might increase nurse's confidence in performing medication administration and patient education and thus promoting medication safety for patients.

6.4.2 Medication review

Many patients in home care nursing have evidence of a potential medication problem or are taking medication considered inappropriate (Meredith et al. 2001, 719). The nurse has to evaluate whether medication was achieving the desired therapeutic effect. Of importance in this regard is also the ability of the nurse to verify the correctness and appropriateness of the component of the medication process. One of the purposes of medication review is to ensure that medications are being administered properly and safely. In addition, the nurse has to check to make sure medications are being stored properly and out of reach of small children. It involves also checking to make sure prescriptions are being properly filled (Meredith et al. 2001, 719).

Paying close attention to at-risk patients is most effective; therefore, accurate documentation and review of medications during each patient encounter is important (Lang et al. 2008, 132). The evidence suggests that frequent medication reviews and collaboration with other members of the health care team, especially pharmacists, will help to prevent adverse events associated with poor medication management. The most common symptoms for adverse medication reactions in most patients are drowsiness, stupor, weakness, depression, and sleepiness, others are diarrhea, rash, nausea, changes in blood sugar levels, low heart rate, hyper-

tension, dizziness, increased edema, constipation, dry month, hypotension, irritability, pain, confusion, vomiting, incontinence, and tachycardia (Meredith et al. 2001, 720).

6.4.3   Medication reconciliation

Traditionally, nurses have been trained to practice the five 'rights' of medication, (Choo et al. 2010, 854; Jones & Treiber 2010, 244) namely, the right medication, right dose, right route, right time, and right patient. Although the 'rights' are generally regarded as a basic standard for safe medication practice, nurses make many medication errors despite having verified the five 'rights' (Lang et al. 2008, 133). This is because the 'rights offer limited guidance on medication. Medication safety involves the contributions of doctors, pharmacist and nurses. Raising awareness of the issues of safety among policy and decision-makers was seen as an essential strategy in furthering this safety agenda-because home care nursing is often the "invisible member of the healthcare sector" (Lang et al. 2008, 133).

6.4.4   Use of ICT: information computerized technology

Communication problems between health care team, between the nurse and patient/family were identified as compromising patient safety in home care nursing (Masotti et al. 2010, 120; Jones & Treiber 2010, 244). A key element of patient safety promotion is identified as effective communication between nurse and patient and among healthcare personnel. Further, communication also involves advocacy for the patient. It entails that communication has to be clear between nurses and others sharing patient data and the interpretation to ensure that a particular medication is safe or if a change in medication or dose is necessary (Choo et al. 2010, 857).

 Choo et al. (2010, 853) discuss the role and importance of new technology in the process of medication such as computer based prescription, bar coding in order to promote patient safety. Implementation of new technology into the medication safety system standardized the medication processes, decreased turnaround time for processing medication order, and increased accuracy of medication safety to patients. However, the health care industry lacks scientific studies that validate technology and, when combined with best practice, improve patient safety by reducing medication error (Skibinski et al. 2007, 90).

7   Discussion

The purpose of this systematic literature review was to explore ways nurses promote medica-
tion safety in home care nursing. Eleven researched articles considered relevant to the sub-
ject were selected, and findings were analyzed and grouped into categories and subcatego-
ries. In analyzing the data, four major categories were identified in the literature. I acknowl-
edge that other categories or sub-categories can also be discovered using different study de-
sign and methodology. In what follows, I will conduct a discussion on the basic findings from
the review. In practice, this entails discussing how these finds impact on the aim and research
question of this study. The research question answered by this literature review was; "How is
medication safety promoted in home care nursing?" The purpose of my research question is to
explore ways nurses in home care nursing can promote patient safety.

The review focused on medication safety in home care nursing. The findings show that there
is an urgent need to promote patient safety in home care nursing. One of the major issues
emerging from the findings is the identification of the uniqueness of the physical environment
and how it impacts on home care nursing. Data analysis revealed that multiple variables with-
in the nursing environment are important contributors to potential medication problems in
home care nursing. This is an important and essential element to always be aware of as it
gives home care nursing its distinctive characteristics. It has perhaps been aptly expressed in
the observation made by the articles in this review that the home is for living.

The view that both system and individual levels are important in promoting medication safety
in home care nursing is consistent with literature (Mayo & Duncan 2004, 211). Nevertheless,
individual articles demonstrate some level of incongruence in the way nurses perceive errors
and promote safety. The heterogeneity that exists between studies result from differences in
definitions of concepts, interventions, study design and methodology. Commonalities in these
studies are that errors result from a number of diverse factors both internal and external to
the nurse, reflecting individual and system-level problems (page & McKinney 2006, 219).On
the one hand, some surveys attribute errors to be the result of nursing negligence and incom-
petence while on the other, it is attributed to factors in home care nursing (Jones & Treiber
2010, 240).

Masotti et al. (2010, 115-116) amply demonstrate that safety of patient in home care nursing
should be a priority area. Medication errors are one of the most common types of medical
errors that occur in the delivery of healthcare nursing (Masotti et al. 2010, 115; Choo, et al.
2010, 854; Mayo & Duncan 2004, 209). The view that medication errors are costly in terms of
resources consumed, patient harm and lives lost is common to all the articles (Mayo & Duncan

2004, 209-210). Medication errors also have serious effects on the nurse involved (Schelbred & Nord 2007, 319). Meredith et al. (2001, 719) in their study showed that the risk of medication errors may be high in older patients in home care nursing. Such patients as they demonstrate are frequent medication users, and advance age or frailty may increase their susceptibility to adverse medication effects.

Patient safety definition within the context of home care nursing was not found. However, descriptions of patient safety contain common elements of error reduction, risk mitigation, avoidance and treatment of unsafe acts (Lang et al. 2008, 131). Against this backdrop, a first step in effectively approaching these research areas would be the development and acceptance of a standardized definition for an adverse event and for specific adverse event types. Developing and promoting consistent definitions of medication safety in home care nursing will permit appropriate comparisons between prevalence and promotion measure (Masotti et al. 2010, 120). The lack would suggest the need for an understanding of what constitute medication problem in the home. This would help in the development of framework for medication safety promotion in home care nursing. Without such a definition and framework, it may not be easy for individual nurses to promote medication safety optimally for their patients. There is a paucity of actual intervention models or intervention effectiveness trials.

Another issue that emerged in the findings was the lack of studies in home care nursing. The findings from this review suggest that there is a paucity of studies addressing patient medication safety in home care nursing. Nonetheless, many of the lapses in medication safety occur in the client's home. Unfortunately studies in patient safety have focused mainly on institutional settings that may have little applicability in the home care nursing (Lang et al. 2008, 131). This view is consistent in all the literature reviewed. At the moment, home care nursing is unregulated in many countries. As we have seen, many of the problems in home care nursing as in other health settings result both from system and individual failures. In order to address the issue effectively, evidenced based procedures would be required. This will facilitate the development of policies and framework that will help in the promotion of patient safety in home care nursing. This may require the cultivation of a safety culture in home care nursing and the continuous evaluation of the system to ensure that proper standards and protocols are observed. At the individual level, it would entail that nurses ensure that they acquire the necessary knowledge and competence needed for the execution of the important task of medication. In this light, nurses need to get enough training in pharmacology. Without sound training in this area, nurses will encounter serious difficulties in fulfill the essential tasks of medication guidance, review and reconciliation that are seen to promote patient safety in home care nursing.

While existing literature could generate knowledge and much insight into challenges and successful interventions for mitigating the risks of home care clients, this literature seldom iden-

tify the topic of safety in titles, keywords, or abstracts (Lang et al. 2008,131). Masotti et al. (2010, 115) confirm that studies in this area have rarely addressed the broad spectrum of the issues in this field. How is safety to be promoted in this diffuse environment? Several measures were identified that can help promote patient safety. Nurses are frontline persons in this process. However, health professionals, patients, family and other caregivers within the home care nursing context play significant role in this process. It was clear that the themes that emerged gave a clearer view of the activities required to promote safety.

This review underscores the need for nurses to be vigilant for the possibility of medication errors in home care setting, recognizing potential risks factors. One of the ways this could be achieved is through the use of technology. This provides many opportunities to improving communication with patients/family, health team and significant others. Further, it helps to provide accurate information to patients, to educate them about their medications, and monitor medication regimes. It was also emphasized that knowledge of the patient and paying close attention to patients at risk is one of the most effective way to promoting safety. Accurate medication documentation is another measure that is considered important.

Within home care nursing context, there is no structured system for reporting errors (Lang et al. 2008, 131-132). Whatever the context of practice, errors are reported voluntarily and nurses may be reluctant to reporting medication errors unless there exists obvious harm to the patient (Schelbred & Nord 2007, 319). However, nurses retain strong emotional responses to medication error events (Jones & Treiber 2010, 245). Generally, models of patient safety that have been suggested include improving nurse knowledge, increased patient monitoring and reporting by providers; used of computerized systems to identify potential adverse drug events; implementing required standardized reporting, improved collaboration of all those involved in medication, system level approach (Masotti et al. 2010,117)

All the 11 reviewed studies show that the factors that cause medication errors are complex and multifaceted ranging from prescription, dispensing and administering. This of course suggests that promoting patient safety can benefit more from a multidisciplinary approach. However, the nurse has a special role in this process as those being in frontline of patient care.

The studies reviewed come from different countries. While some studies suggest that countries such as Canada, USA, and Finland (caring TV project) are making efforts in bringing to light the issue of medication safety and general safety issues for patient in home care nursing. There are many issues to be explored in this area such as the role of gender and the success of particular intervention strategies in home care nursing.

7.1 Ethical considerations

Legal rights and ethical aspects are considered in all research methods, be they quantitative or qualitative studies. Researchers in nursing apply the principles that protect participants in the research from harm or risk and follow professional and legal rules which are laid down in the code of conduct (UKCC,1992), and research guidelines. Most recently, the research Governance Framework for Health and Social Care of the Department of Health (2001a) sets out standard for all those involved in the conduct of research and is not restricted to any professional group (Holloway & Wheeler 2002, 47). Therefore, the ethical guideline of Laurea University of applied Sciences, Tapiola pharmacy and Espoo home care were considered.

Since the methodology for this study does not include interviews, questionnaires or observations, in which human beings are part of the data collection process, the need for consent and privacy were not considered in this thesis. There was no risk of harm to anyone. Nonetheless, ethical consideration played a part in the process of collecting and analyzing and reporting in this review. Data collected was reported accurately by proper referencing.

7.2 Trustworthiness

As in any qualitative literature review study, the sample is too small to allow generalization and it could be argued that my sample, being self-selected, was likely to be biased in the sense that the materials chosen represent the interest of the reviewer. This suggests that validity ensures that findings are substantial and not biased (Polit & Beck 2003, p 36). In this report, validity has been pursued through a systematic literature search, selection and analysis. The search was conducted with expert assistance.

The reviewed articles presented research from different countries with a majority of the articles from the Canada and the USA, articles come from Norway, and Sweden respectively. Unfortunately, no Finnish articles were indentified and selected. Although every valid searched technique in this search should be inter-subjective and replicable, yet selection and analysis of data is always influenced by personal judgment. This entails that some important research articles may have been left out. Another problem encountered in the data analysis was partly varying terminology of different authors. By reading abstracts, studies that answered the research question were identified as potentially relevant. The selection of articles for the report was based on whether the article fulfilled the inclusion criteria. The small sample size limits generalization of this report (Polit et al. 2001; Polit & Beck 2008,). None-

theless, in the absence of many studies addressing patient medication safety from the perspective of home care nursing, the study increases the body of knowledge in this area and its findings shed light on the potential factors that may promote medication safety in home care nursing.

7.3 Nursing Implication

It is expected that nurses should always promote the safety of their patients in home care. The findings suggest that there are at the moment no frameworks for promoting medication safety in home care nursing. This means that strategies need to be developed to ensure medication safety in home care nursing. Nonetheless, this review identified a number of measures by nurses to promote patient safety in home care nursing, hence adding in the understanding of patient promotion. Nurses are in the role of gate keepers and are expected to protect patients. Further, by providing this synthesis, this thesis report contributes to on-going efforts globally to promote patient safety with particular focus on medication safety for home care nursing clients. This is all the more important as it affords nursing the opportunity to reframe the discourse on medication from nurses being portrayed as deliverer of medication errors to nursing as promoting patient safety.

Important issue that emerged in the findings are the role of the family or significant others in home care nursing. Delivering health care in home environment poses a different set of challenges than the hospital or other institutionalized settings as been observed earlier. Nurses in home care nursing are guests in people's homes where the clients, family members and caregivers are active partners in their health and safety. Ignoring or minimizing the value of family members and caregivers and their respective safety is problematic (Lang et al. 2008, 132). Sometimes, nurses could become paternalistic within other health care settings. This tendency will have a serious detrimental effect within home care nursing. Patients and their family exercise greater autonomy in home care nursing than within the hospital setting. Since the home is considered by many patients and their family as their sanctuary, any attempt on the part of the nurse to disregard this will not be welcomed by them. Nurses should ensure the active involvement of the individual and his or her family, friends, social group and community as appropriate in all aspects of health care, thus encouraging self-reliance and self determination.

In a comprehensive report, titled 'Safety in Home care nursing: Broadened the Patient Safety Agenda to Include Home care nursing', Lang et al. (2008, 131-132) identified that tackling home care nursing safety presents different challenges and require a major reexamination of

underlying assumptions and guiding frameworks that have been applied in literature on patient safety in the institutional environment.

It demonstrates that the challenges that exist in the medication by nurses in home care nursing are often very different from those that exist in hospital setting. Whereas it may be the case that the home environment is different from the hospital, it does not necessarily mean that the insights of medication safety in other health institutions cannot help in the promotion of medication safety in home care nursing. The home is a non-medical setting, and particular safeguards need to be implemented to ensure safe medication. In light of this, the assessment of safety in the home setting by the home care nurse is critical. Therefore, in delivering health care at home, it is important to consider all the factors that impact on this task, including the physical environment, family dynamics, and the knowledge and physical abilities of the patient and caregivers. (Lang et al. 2008, 131-132). Yet, there is a sense in which this may tempt the nurse to begin to think that the home care nursing is completely different from other health care settings as to reject all insights that have been gained in the promotion of patient medication safety in these other environments. Since many people may be involved in providing services to the same patient that the nurse cares for, such a context calls for a collaborative approach.

A good knowledge of the patient is crucial if a nurse is to ensure safe medication in home care nursing for the patient. It is important that the nurse provides medication guidance for the patient/family. It is in this sense the responsibility of the nurse to encourage patients to treat all medications with respect. This can be done by setting example for the patient/family to follow. This may include emphasis on certain areas such as the need for safe storage of medicines. The education of the patient about what to expect when they take their medication is important because they are the last line of defense against medication mishap (Lang et al. 2008, 133). As a role model in health education for the patient, the nurse should respect medicines at all times. It was also emphasized that knowledge of the patient and paying close attention to patients at risk is one of the most effective way to promoting safety. Accurate medication documentation is another measure that is considered important.

7.4   Research Implications

The implications for research follow directly on the discussion of practice implications. The review shows that there are not many studies on medication safety in home care nursing. It clearly demonstrates the need for further research regarding measures that can promote medication safety in home care nursing. More effective ways are required to improve medication safety in home care nursing population. Research should continue to expand the knowledge of factors that contribute to medication errors in home care nursing and determine what measures are most effective to promoting medication safety in home care nursing. This would include ensuring that interventions studies are adequately anchored to detect practical improvements in patient safety. Based on this review of the literature, it is clear that medication errors cost a lot both to the individual and health organization. When implementing interventions to improve medication safety, it is important that the most reliable and valid data available are used, and that the results of studies in this area are shared through publications to make the knowledge available to all. Research is needed on all aspects of the medication safety strategies to provide an evidence base for impacting the prevention of errors and adverse medication events.

Furthermore, there is a paucity of studies from developing countries in this area. Whereas most of the available knowledge in literature in home care nursing is from the Western world, it is in developing countries that nurse's care for most people in their homes and over the counter medication is prevalent. Within western countries, health care givers are aware of their ethical responsibility towards their patients. In most non-western countries such as Nigeria, there is little or no awareness of the dignity and autonomy of the patient among most health providers. Research is needed in these non-western countries to advance our knowledge of the reality of medication safety in home care nursing.

7.5   Conclusion

Home care nursing is increasingly growing in many parts of the world. It was clear that there are many benefits of home care nursing and medication safety. The literature study has helped to advance the knowledge of the measures nurses employ in medication safety in home care nursing. In order that nurses may become effective in their safety promotion in home care nursing, it was recommended that the unique nature of the home environment should be understood. There is equally need for a clearer conception of medication in home care nursing. Further, the knowledge of causes, potential risks and types of medication errors common in the home environment should knowledge if medication safety is to be effectively promoted.

The unique nature of the home and its complex variables was seen to present a different set of challenges than those encountered in other health care settings. It was discovered in this thesis that promoting medication safety for home care nursing clients presents unique challenge and requires a major rethinking of underlying assumptions and guiding frameworks that have been employed to examine patient safety in institutional setting. This means that we need view safety in home care nursing with a different set of framework than the one used in other health settings. Further, it will require a multidisciplinary and organizational approach. A proper system of error reporting, analyzing and monitoring is required within the home context. It also identified the adequate training of nursing staff especially in pharmacology. This is critical in helping nurses develop a culture and systems to improve medication safety for home care nursing patients.

Nurses administer the vast majority of medication. Yet patients and families are increasingly performing as much self-care medication at home. The uniqueness of the home environment with regard to high patient autonomy and situational variables particular to each home present unique challenges to the nurse. The major key element in promoting safety is nurses' constant vigilance to ensure that patients received their appropriate medication. This entails that nurses' thinking process must extend beyond rules and procedures to include interdisciplinary approach to provide safe and effective care. The new insight from other organizations such as the Aviation industry to enhance medication safety was seen as a positive development. This emphasizes improving the systems rather than blaming the individual when errors occur. Both process, structure and outcome measures must be tracked to improve medication safety for home care nursing patient. To this end the education of all those involved in the medication in home care nursing is crucial if safety for patient is to be ensured. Because of the uniqueness of the home environment, medication safety for patients cannot be achieved without including the family members and all others caregivers in the home.

The topic of this thesis is pertinent given the increasing demand for home care nursing and the growing concern to advance knowledge of the issues, challenges, and safety promoting strategies related to medication safety in home care nursing. It has presented an exploration of some of the measures nurses in home care nursing employ to ensure patient safety. Increasing research and quality of information about medication errors in home care nursing and intervention measures will require these actions.

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Appendices

Appendix 1 Database search terms and phrases

Table 1: Database search terms and phrases

Search terms/phrases	EBSCO (CINAHL)	EBSCO (Academic Search Elite)	Elsevier Science Direct	Ovid (MEDLINE)	BioMED Central via SCI-RUS	SAGE Journals On-line(Premier	PubMED	Cochrane
"Any word=(medication admin-istration in homecare by nurses) Or Any word=("promotion of me-dication safety in homecare clients by nurses"	10	105	226	0	0	0	3	2
"Any word=(medication admin-istration in homecare) Or Any ("promotion of medica-tion safety in homecare clients",	13	149	290	3	0	0	11	1
"medication safety pro-motion in nursing"	0	0	0	0	0	0	12	
"Any word=(medication admin-istration in homecare by	*10*	105	266	0	0	0	13	

nurses) Or Any word=("promotion of medication safety in homecare clients by nurses",								
"promoting medication safety in homecare nursing"	4	42	51		1	0	0	0
"Interventions for promoting medication safety in homecare nursing"	4	32	47	0	0	1	0	0
"medication administration safety promotion by nurses in homecare"	4	30	32	0	0	2	0	0
"medication safety promotion in nursing"	147	1563	2011	8	0	71	12	0

Appendix 2   Data analysis of the Articles

Table 3   Data Analysis of the Articles

AUTHOR	SOURCE	TITLE	AIM	METHODS	RESULTS	SIGNIFICANT FINDINGS TO THIS THESIS
Axelsson, J., & Elmståhl S. (2004).	International journal for quality in health care vol.16, No 3,p. 237-243	Home care aides in the administration of medication	Objective was to assess what extent home care aides within the social services are engaged in MA.	A repeated survey was carried out, 34 employees within the social services.	A change for the worse in the area of indication for common medications.	Lack of knowledge in the area, needs for additional personnel with the appropriate professional background.
Choo, J., Hutchinson, A .& Bucknall, T. (2010).	Journal of nursing management vol.18, p. 853-861	Nurses' role in medication safety	Aim was to explore the nurses' role in the process of medication management.	Literature review on medication errors and the use of electronic prescribing.	Medication management requires a multidisciplinary approach and interdisciplinary communication to reduce MAE,	Computerized medication system, adaption of safety measure during decision making.
Jones, J.H., & Treiber, L.(2010).	Journal of nursing care quality vol.25, number 3 pp.240-247	When the "5" rights go wrong medication errors from the nursing perspective	The purpose was to examine their perception of why and how errors occur and to solicit information on personal experiences with medication errors.	A descriptive design. A questionnaire using both quantitative and qualitative items.	Six surveys were returned as undeliverable. A total of 202 nurses (8.2%) responded to the questionnaire.	Prevention of medication errors requires accurate information about errors, understanding of the underlying reasons why medication administration errors occur.
Lang, A., Edwards, N., & Fleiszer, A.(2007).	International journal for quality in health care vol.20, No 2, p. 130-135	Safety in home care: a broadened perspective of patient safety	The objective was to describe the landscape of safety in home care in Canada	Literature review, 20 key informants' interviews and an invitational roundtable. Content analysis was used	Patient safety is a failure of systems rather than humans, Patients have key role to play in their safety	Research on safety In home care is needed to identify: the type and patterns of safety concerns for client, family members, caregivers and providers.
Lee Wilder, G. (2003).	Journal of Infusion Nursing, vol.26, No	Medication safety in home	The purpose is to educate clinicians about	Literature Review	Aiming to describe why medication safety	The new methods to enhance medica-

	5	infusion care.	medication safety in home infusion care.		should be linked with a non-punitive reporting system.	tion safety emphasize improving system rather than blaming individuals.
Masotti, P., Mccoll, MA., & Green, M.(2010).	International journal for quality in health care vol.22, No 2, p. 115-125	Adverse events experienced by homecare patients: a scooping review of the literature	The purpose was to summarize the results of a scoping review that focused on the occurrence of adverse events experienced by homecare patients.	The five stage methodology for conducting scoping studies developed by Arksey & O'Malley	Policy suggestions included the need to improve assessments, monitoring, education, coordination and communication.	A standardized definition of adverse events in the home care is needed and prospective cohort and intervention studies will reduce risk
Mayo, A.M., & Duncan, D.(2003).	Journal of nursing care quality vol.19, No 3, p.209-217	Nurse perceptions of medication errors: what we need to know for patient safety	The purpose was about "types of incidents" that reflected a therapeutic drug level medication scenario.	A large number of randomly selected nurses in multiple settings were examined.	Nine hundred eighty-three RNs responded to the survey, representing a 20% return rate.	Programs designed to promote medication error, eliminate barriers to reporting, ultimately ensuring the highest quality
Meredith, S., Feldman, P.H, Frey, D., Hall, K., Arnold, K., Brown, N.J. & Ray W. A. (2001).	Journal of American Geriatrics Society 49: P.719-724	Possible medication errors in home health-care patients.	Objective: was to determine the frequency of medication errors in home health care.	A cross –sectional survey and Participants home health care age 65.	A possible medication error was identified for 19% of patients according to home health criteria.	Nearly one-third of the home health care patients surveyed had evidence of potential problem.
Page, K., & Mckinney, A.A. (2006).	Nurse education Today vol.27, p. 219-224	Addressing medication errors- the role of undergraduate nurse education.	The aim is to raise awareness of the causes and risk of medication errors and strategies for their prevention	Literature Review	All members of the multi-professional team including nursing profession have a responsibility towards developing and sharing innovative ideas that lead to good practice.	"Medication safety Day" which focused on the causes of medication errors was implemented to highlight how and why medication incidents may occur.
Schelbred, AB.,&	Journal of advanced	Nurses' experience of drug	Aim: a paper report of a	An explorative, descrip-	Serious medication errors can	Strategies should be de-

Nord, R.(2007).	nursing vol.60, number 3 pp. 317-324	administration errors	study to describe the experiences of nurses who had committed serious medication errors.	tive design was adopted.	have a great impact on nurses, both personally and professionally.	veloped to so that errors can be managed in a constructive manner.
Skibinski, K.A., White, B.A., Kuei-lin, L.I., Dong,Y. & Wu, W. (2007).	American journal of health- system Pham-vol.64,	Effect of technological interventions on the safety of a medica-tion-use system	A study was conducted to assess the effects and outcomes of implementing new technolo-gy into the medication-use process	A pharmacy computer system, au-tomated dis-pensing cabi-nets, and point-of care product were implemented.	Because of the technology im-plementation, the accuracy of patient identifi-cation was in-troduced and technological design process identified.	Access to pa-tient medica-tion adminis-tration infor-mation was limited when the computer system was not operation-al.