Nutritional Nursing Care

Nurses’ interactions with the patient, the team and the organization
Mona Wentzel Persenius

Nutritional Nursing Care

Nurses’ interactions with the patient, the team and the organization
Mona Wentzel Persenius. *Nutritional Nursing Care - Nurses’ interactions with the patient, the team and the organization*

DISSERTATION

Karlstad University Studies 2008:41
ISSN 1403-8099
ISBN 978-91-7063-201-3

© The Author

Distribution:
Faculty of Social and Life Sciences
Nursing Science
651 88 Karlstad
054-700 10 00

www.kau.se

Printed at: Universitetstryckeriet, Karlstad 2008
Vi är varandras gåva.
vi är varandras ansvar
ABSTRACT

Nutritional Nursing Care. Nurses' interactions with the patient, the team and the organization.

The overall aim of the thesis was to gain a deeper understanding of nutritional nursing care in municipal care and county council care, with specific focus on enteral nutrition (EN) in intensive care.

Quantitative and qualitative methods were used. Telephone interviews regarding assessment of the nutritional status of patients were carried out with special medical nurses (CNs) (n = 14) in municipalities in one county and first line managers (CNs) (n = 27) in one county council. Registered nurses (RNs) in municipalities (n = 74) and county councils (n = 57) answered a questionnaire about nutritional assessment and documentation (I). RNs (n = 44) at three different intensive care units answered a questionnaire about responsibility, knowledge, documentation and nursing interventions regarding EN. Observations (n = 40) on nursing care interventions for patients with EN were carried out (II). RNs (n = 8), enrolled nurses (n = 4) (III) and patients (n = 14) (IV) were interviewed and nutritional nursing care was observed (III-IV) at an intensive care unit.

The results showed that assessment of nutritional status was not performed on all patients, according to RNs/CNs. Malnourished patients were estimated to occur to a varied extent. Sixty-six percent of RNs/CNs answered that there were no guidelines for nutritional care and 13% that they did not know if there were any. RNs saw the VIPS model as a guide in nursing care, but also as an obstacle to information exchange (I). A majority of RNs answered that there were guidelines for EN. There were differences between the RNs’ opinions about their responsibility, knowledge and documentation. Deviations from recommended nursing care interventions occurred (II). The developed substantive theory of nurses (RNs and enrolled nurses) concerns and strategies of nutritional nursing care for patients with EN, includes the core category “to have and to hold nutritional control – balancing between individual care and routine care” and the categories "knowing the patient”, “facilitating the patients’ involvement”, “being a nurse in the team”, “having professional confidence” and “having a supportive organization”. In order for RNs and enrolled nurses to have a sense of control over the patients’ care in relation to nutrition, a balance between routine care and individual care was required (III). The developed substantive theory regarding the patients’ experiences of nutritional care includes the core category “grasping nutrition during the recovery process”. The core category is reflected in, and dependent on, the categories “facing nutritional changes”, “making sense of the nutritional situation” and “being involved with nutritional care”. The patients alternated emotionally between worry, fear and failure, and relief and hope. The patients experienced a turning point and felt an improvement in their condition when their appetite returned, when the stomach and gut were functioning and when the feeding tube was removed (IV).

The conclusion is that quality and safety in relation to nutritional nursing care is dependent on the interactions between the nurse and patient, between the nurse and the team, and the nurse and the organization.

Keywords: assessment, documentation, enteral nutrition, intensive care, intervention, malnutrition and nutrition.
SAMMANFATTNING

Nutritionsomvårdnad. Sjukssköterskor och undersköterskor interaktion med patient, team och organisation.

Det övergripande syftet med avhandlingen var att erhålla en djupare förståelse av omvårdnad relaterat till nutrition inom kommunernas och landstingets hälso- och sjukvård, med speciellt fokus på enteral nutrition (EN) inom intensivvård.

Kvantitativa och kvalitativa metoder har använts. Telefonintervjuer om bedömning av patienters nutritionstillstånd genomfördes med medicinsk ansvariga sjukssköterskor (n=14) i fjorton kommuner inom ett län och första-linjenchefer (n=28) i ett landsting. Sjukssköterskor i kommuner (n=57) besvarade en enkät om nutritionsbedömning och dokumentation (I). Sjukssköterskor (n=44) av patienter med pågående EN genomförde observationer (II). Sjukssköterskor (n=8), undersköterskor (n=4) (III) och patienter (n=14) (IV) intervjuades och omvårdnad relaterat till nutrition observerades vid en intensivvårdsavdelning.


Konklusionen är att kvalitet och säkerhet i relation till omvårdnad vid nutrition omfattas av interaktion mellan sjukssköterskor och undersköterskor och patient, mellan sjukssköterskor undensköterskor och teamet, samt mellan sjukssköterskor/undersköterskor och organisationen.

Nyckelord: bedömning, dokumentation, enteral nutrition, intensivvård, nutrition, omvårdnadsåtgärder och undernäring.
## CONTENTS

### ABSTRACT......................................................................................................................... 5

### SAMMANFATTNING .......................................................................................................... 6

### INTRODUCTION................................................................................................................ 10

#### THE PATIENTS’ NEED OF FOOD AND NUTRITIONAL CARE ........................................ 11

  - History ................................................................................................................................. 11
  - Malnourished patients .......................................................................................................... 12

#### NUTRITIONAL CARE ....................................................................................................... 14

  - Ethical and legal aspects and responsibility ........................................................................ 14
  - Recommendations and guidelines ....................................................................................... 16

#### Nursing documentation .................................................................................................. 18

  - Screening and assessment ................................................................................................... 18
  - Nutritional support .............................................................................................................. 20

#### Nutritional care in the ICU ............................................................................................. 23

  - Who does what (nutritionally) in an ICU? ........................................................................ 25

  - The patients’ nutritional experience ................................................................................. 26

#### RATIONALE FOR THE THESIS ........................................................................................ 27

#### GENERAL AND SPECIFIC AIMS .................................................................................... 28

### METHODS .......................................................................................................................... 29

#### STUDY DESIGNS (I-IV) .................................................................................................... 29

  - Setting and participants (I and II) ......................................................................................... 30

#### Telephone interviews ...................................................................................................... 31

  - Questionnaires ................................................................................................................... 31

#### DATA COLLECTION (I and II) .......................................................................................... 33

  - Interview guide, questionnaires and protocol ...................................................................... 33

#### PROCEDURE (I and II) ...................................................................................................... 33

#### STATISTICAL ANALYSIS (I AND II) ............................................................................... 34

  - Qualitative content analysis (I) .......................................................................................... 35

#### RELIABILITY AND VALIDITY (I AND II) ........................................................................ 35

#### TRUSTWORTHINESS (I) ..................................................................................................... 36

#### GROUNDED THEORY (III AND IV) ................................................................................... 36

  - Setting, participants and data collection .............................................................................. 36

  - Analysis ............................................................................................................................... 38

#### Trustworthiness ................................................................................................................. 40

#### ETHICAL CONSIDERATIONS ............................................................................................. 40

### MAIN FINDINGS .................................................................................................................. 43

#### STUDY I .............................................................................................................................. 43

  - Occurrence of malnutrition and awareness of guidelines ......................................................... 43

  - Assessment of nutritional status ............................................................................................ 43

  - Nursing documentation ....................................................................................................... 44

#### STUDY II .............................................................................................................................. 46

  - Responsibility, knowledge and documentation .................................................................... 46

  - Prescription of enteral nutrition ........................................................................................... 48

  - Enteral nutritional nursing care ............................................................................................ 49

#### STUDY III ............................................................................................................................ 51

#### STUDY IV ............................................................................................................................ 54

#### COMPREHENSIVE UNDERSTANDING ............................................................................. 56

### DISCUSSION ......................................................................................................................... 57

#### GENERAL DISCUSSION .................................................................................................... 57

  - Nutritional nursing care and the nurse-patient interaction ................................................... 57

  - The patients’ nutritional condition ...................................................................................... 57

  - Thinking and reasoning ....................................................................................................... 59

  - Involvement ......................................................................................................................... 61
Original papers
This thesis is based on the following papers, which will be referred to by their Roman numerals:


Reprints were made with permission from the publishers.
INTRODUCTION

Having access to a safe and healthy variety of nutrition is a fundamental human right for all patients (Council of Europe, 2003) irrespective of caregiver. A high-quality nutritional care is needed where patient safety is an important foundation (SFS 1982:763; SOSFS 2005:12; Ödegård, 2006).

Nutrition is essential for health promotion and disease prevention (Mowe et al., 2008). Already when admitted to hospital (Kyle et al., 2003; McWhirter & Pennington, 1994) and municipal care (Christensson et al., 2002), some patients are malnourished. Treatable malnutrition often goes under-recognized and under-treated (Elia et al., 2005). The nutritional status may further deteriorate during admission (Bruun et al., 1999; McWhirter & Pennington, 1994; Saletti et al., 2005; Ulander et al., 1998), with negative consequences for the patients' quality of life (Brantervik et al., 2005) and wellness (Dudek, 2006). Medical treatment and nutritional nursing care are important for patients' nutritional condition and may prevent malnutrition (Kondrup et al., 2003).

Most patients in the intensive care unit (ICU) are unable to fulfil their own nutritional needs. Therefore, they are at high risk to develop energy deficit. Early enteral nutrition (EN) is today considered standard care in most intensive care units (ICUs), but when insufficient, the deficit should be supplemented parenterally (Kreymann et al., 2006).

Registered nurses' (RNs') skills and knowledge are crucial when creating secure care for the patient (SSF, 2007). This places RNs in a unique position to secure good nutritional nursing care.

In this thesis, nutritional nursing care is in focus, with one study within municipal care and county council care (hospital wards), and three studies in intensive care.
BACKGROUND

The patients’ need of food and nutritional care

History

According to the third and fifth book of Moses in The Bible, the Israeli people were pioneers regarding diet in public health. In ancient times the Egyptians introduced medical specialization and outpatient medicine. Dietary treatment was prescribed for patients under the direction of a nurse (Bullough & Bullough, 1979). In Egypt they also used nutrient enemas of wine, milk, whey and broths of spelt three days a month in order to preserve health according to Bliss (1882) quoting Herodotus Euterpe (about 480-420 BC). Hippocrates (about 460-370 BC) prescribed a healthy diet to either prevent illness or to aid recovery from illness, because; "a slender and restricted diet is always dangerous in chronic diseases, and also in acute diseases, where it is not requisite” (Clendening, 1942 p 15).

From a nursing perspective, Florence Nightingale highlighted the patients' needs of nutritional care. She urged the importance of adequate food intake in recovery from illness and encouraged the nurse to "have a rule of thought about your patient’s diet; consider, remember how much he has had, and how much he ought to have to-day” (Nightingale, 1969 p 68).

Virginia Henderson (1991) described basic nursing as helping the patient with activities or providing conditions under which the patient can perform them unaided. The 14 nursing activities described contribute to health or its recovery and include such things as: breathe normally, eat and drink adequately, eliminate body wastes, and sleep and rest. These activities could also be viewed as fundamental human needs and basic needs of the patient, e.g. the needs of food and fluid. Keeping a patient well nourished during a long comatose period is one of the most difficult arts within nursing.

Nutrition is ever-changing during the life cycle and along the wellness-illness continuum (Dudek, 2006). Aside from a physiologically point of view, it is also important psychologically, socially and culturally. Food brings family and friends together, since food symbolizes love, care, concern, security, friendship and life itself (Kayser-Jones, 2002).
Malnourished patients

Malnourished patients are common across different health care settings around the world (Meier & Stratton, 2004). Aside from complications and suffering for the patient, malnutrition also affects the work load for the health care professionals, as well as costs for the society.

Malnutrition is a broad term including protein-energy malnutrition (both over- and under-nutrition) and malnutrition of other nutrients. There is no consensus of the definition and recognition of malnutrition (Meier & Stratton, 2004). It is suggested that malnutrition can be defined as: "A state of nutrition in which a deficiency or excess (or imbalance) of energy, protein and other nutrients causes measurable adverse effects on tissue/body form, function and clinical outcome" (Elia, 2000 p 52). Just recently another definition has been proposed: “A subacute or chronic state of nutrition in which a combination of varying degrees of over-or undernutrition and inflammatory activity have led to a change in body composition and diminished function” (Soeters et al., 2008 p 3). In this thesis, the concepts malnutrition and undernutrition are used interchangeably.

The average frequency of malnutrition in 24 Swedish studies covering 3914 patients in municipal care and hospital care during the 1980-90ths was 36% (Elmståhl, 2000). Despite this high prevalence, a total of 168 patients within adult hospital care in Sweden were diagnosed as being undernourished in 1997. In 2007 the equivalent number was 134 patients (Socialstyrelsen, 2008).

However, comparisons between different countries and different health care settings are hindered by lack of a universally agreed way to detect risk for malnutrition (Meier & Stratton, 2004). There are several reasons for this: information about the patient’s specific condition is missing and there is a lack of comprehensive comparison of malnutrition prevalence in different diseases and conditions using common criteria. The staff also uses different criteria when defining the prevalence of malnutrition (Stratton et al., 2003).

The effects of malnutrition include considerable changes in mental function, cardiovascular and renal function, respiratory function, function of the gastrointestinal tract, thermo-regulation, immunological function and wound healing (Barendregt et al., 2004). Concurrent stress situations like trauma, sepsis, inflammations and burns accelerate the loss of tissue mass and function and may result in death. The interaction of nutrition and disease is known;
disease may cause secondary malnutrition and malnutrition may influence the underlying disease (Jeejeebhoy, 2000). If special attention is paid to patients' nutritional care and if guidelines for nutritional screening is followed, malnutrition can be prevented and treated (Kondrup et al., 2003; Mowe et al., 2008).

The consequences for the patient being malnourished is associated with impaired quality of life (Brantervik et al., 2005; Larsson et al., 1994), increased mortality (Correia & Waitzberg, 2003) complications, mainly infections (Correia & Waitzberg, 2003; Villet et al., 2005), slower convalescence (Allison & Stanga, 2004; Lumbers et al., 1996) and prolonged length of stay in hospital (Correia & Waitzberg, 2003; Giner et al., 1996). A high prevalence of malnourished patients may lead to increased work load for the personnel (Elia et al., 2005). It can also influence health care costs (Correia & Waitzberg, 2003; Eckerlund & Stig, 2000).

It is obvious that malnutrition is found to be a significant problem. Therefore it is of utmost importance that a condition such as malnutrition is identified and treated (Elia et al., 2005).
**Nutritional care**

Nutritional care is a concept including different aspects that need to be handled in a seamless way. The patient is entitled to the right kind of individual nutritional support at the right time and in the right place. Successful nutritional care is dependent on careful management supported by an effective infrastructure (Howard et al., 2006).

In the Swedish State of the Art Report (Socialstyrelsen, 2000) it is concluded that nutritional care forms part of successful medical treatment and nursing care. Nutrition is a strong and integral part of nursing care (Dudek, 2006), which can be named nutritional nursing care. Furthermore, nutritional care must be taken into consideration during the entire care process (Akner et al., 2000) and should perhaps be considered as necessary for a successful medical intervention (Mossberg, 2006). In this thesis, the concepts nutritional care and nutritional nursing care are used interchangeable.

**Ethical and legal aspects and responsibility**

Nutritional care is based on ethical principles, scientific knowledge and proven experience (Beauchamp & Childress, 2001; Unosson, 2000a). Access to a safe and healthy variety of food is a fundamental human right (Council of Europe, 2003). Nutritional nursing care is therefore guided by four ethical principles (Beauchamp & Childress, 2001; SSF, 2007), with the intention to do what is good and what is right for the patient with respect for the patients integrity and autonomy. Complex nutritional situations needing special measures may arise and ethical aspects will need special attention (Unosson, 2000a).

In Sweden, the assignment of nutritional responsibility to different professionals is described in the State of the Art Report: the physician has an overall nutritional responsibility, whereas responsibility for evaluation of the patient’s nutritional status, documentation and passing nutritional information to next caregiver is jointly shared by physicians, RNs and dieticians. The physician prescribes nutritional treatment in consultation with other personnel. Furthermore, nutritional teams consisting of RNs, physicians, dieticians and other co-workers are recommended (Cederholm & Rothenberg, 2000). The RNs have an autonomous responsibility for the patients’ nursing care in line with the nursing process care through assessments, nursing prescription, planning, accomplishing, evaluation and documentation of the patients’ care.
RN's competence also includes ability to communicate and interact, with patients, next of kin, personnel and others with respect, sensitivity and empathy. Furthermore, to reflect on, motivate and participate in developing a good care environment (Socialstyrelsen, 2005).

Usually RNs and enrolled nurses collaborate regarding the patients' nutritional care, with the RN acting as a supervisor for the enrolled nurse. Hereby, they have unique opportunities to influence the efficiency and safety of the patients' nutritional care. Each nurse, RNs as well as enrolled nurses, is responsible for his or her own activities (SFS 1998:531). However, even with a collective responsibility, studies show that only few professionals are actively engaged in nutritional care (Lindorff-Larsen et al., 2007; Mowe et al., 2006).

The special medical nurse and the first-line nurse manager have a general responsibility to provide safe and appropriate nursing care of good quality in accordance with science and reliable experience (SFS 1998:531; SFS 2008:355; SOSFS 1997:10; SOSFS 2005:12).

There have been some changes regarding the responsibilities in Swedish social services and health care since the beginning of the 1990s, which in turn have had influence on the nutritional care. In 1992, the Community Care Reform came into force, shifting the responsibility for care of the elderly population from the county councils to the municipalities. During the 1990s, the county councils restricted their hospital care substantially, with a reduction of hospital beds leading to increasingly shortened mean lengths of stay, more admissions and a greater turnover of patients (Socialstyrelsen, 2007a). This made it difficult for the municipalities to meet up with the resources, competence and organization needed, and nutritional competence was not transferred (Socialstyrelsen, 2003). This was in turn jeopardizing the medical security (Lundman et al., 2001) and shortcomings in nutritional nursing were reported, for example lack of assistance with eating and lack of evaluation of intake (Socialstyrelsen, 2002). The amount of work, responsibilities for and demands on first-line managers increased, which has been discussed as a problem, since they are supposed to be the ones responsible for the nursing care including nutritional care (Furäker & Berntsson, 2003).
Recommendations and guidelines

There are both international and national recommendations and guidelines regarding clinical nutrition, providing a path for nutritional care in different health care settings. In 1999, the Council of Europe’s Committee of Ministers established a European network describing five common European factors which seem to be the major barriers for proper nutritional care in hospitals: 1) lack of clearly defined responsibilities in planning and managing nutritional care, 2) lack of sufficient education with regard to nutrition among all staff groups, 3) lack of influence and knowledge of the patients, 4) lack of cooperation between different staff groups, 5) lack of involvement from the hospital managers (Beck et al., 2001). In November 2003, the Council of Europe’s Committee of Ministers adopted a resolution on nutritional care in hospitals (Council of Europe, 2003). Specific nutritional guidelines were developed by The European Society of Clinical Nutrition and Metabolism (ESPEN) regarding nutritional screening (Kondrup et al., 2003). Furthermore, in 2006 enteral nutritional guidelines were published for different conditions and contexts, for example within intensive care, regarding indications, application, route and type of formula (Kreymann et al., 2006). According to the ESPEN guidelines, the essence of the nurse’s key role regarding nutrition is the care of the patient relating to the intended administration of nutritional support (Howard et al., 2006), but it is also emphasized that team work is equally important throughout the admission.

Practical aspects of nutrition and an evaluation of available literature on the treatment of malnutrition in connection with various medical conditions are presented by the State of the Art Report (Socialstyrelsen, 2000). There are also national nutritional guidelines within health care and municipal care (Larsson et al., 2004; Livsmedelsverket, 2003; Sjukvårdsrådgivningen, 2005). In addition, there are several local guidelines.

The use of algorithms, clinical practical guidelines and quality indicators could reduce variations and facilitate best practice, as well as improve the quality of care at reasonable costs (Adam, 2000; Christensson et al., 2007; Natsch & van der Meer, 2003). Thus, the gap between scientific evidence and clinical practice could be minimized (Woolf et al., 1999).

The majority (75%) of ICUs across Europe uses a clinical protocol or guideline for enteral feeding, but many of them do not conform to international...
guidelines, and there are limitations in nutritional practices and procedures across European ICUs (Fulbrook et al., 2007). After implementing nutritional guidelines in ICU, studies have shown enhanced early initiation of EN (Rice et al., 2005), increases in the amount of EN delivery (Spain et al., 1999; Wøien & Bjørk, 2006), greater consistency in nursing practice regarding aspiration of gastric contents and rate of increment in EN (Wøien & Bjørk, 2006), shorter mean stay in hospital, and a trend towards reduced mortality (Martin et al., 2004). But there are also reports of no improvements in clinical outcomes (Jain et al., 2006), that the number and duration of interruptions in EN is unchanged (Rice et al., 2005) and that guidelines are used in varying degree within the health care team (Hansson & Wenström, 2005). Lack of evidence-based nursing practice (Williams & Leslie, 2004; Williams & Leslie, 2005), nutritional knowledge among nurses (Hansson & Wenström, 2005; Lindorff-Larsen et al., 2007; Mowe et al., 2008), and unclear responsibility regarding nutritional issues (Hansson & Wenström, 2005) seems to be hampering nutritional nursing practice.

In Sweden, health care professionals do not always follow the guidelines from the Council of Europe regarding how disease-related malnutrition should be assessed and treated (Johansson et al., 2006). In a recent review of current nutritional guidelines, it was found that the area of nutrition is complex and that the target group is heterogenic. There is already an extensive amount of regulations and standardizations, but there is a lack of application in practice (Socialstyrelsen, 2007b).
**Nursing documentation**

In accordance with the Swedish Patient Act (SFS 1985:562) and the Patient Data Act (SFS 2008:355) there are demands on documentation within all health care settings. Documentation should hold information that ensures good quality and safe care of patients. However, a more detailed description of what exactly should be documented regarding the patient’s nutrition is not given (Socialstyrelsen, 2003). A nursing documentation model called VIPS (an acronym for wellbeing, integrity, prevention and security) follows the structure of the nursing process and is widely used in Sweden (Ehnfors et al., 1991; Ehrenberg et al., 1996).

Despite the demands on documentation and the use of the VIPS model, nutritional issues are still sparsely documented. Important nutritional notes have been found missing in Swedish studies (Ehrenberg & Birgersson, 2003; Söderhamn et al., 2007). Notes on nutrition were made in 87% of acute medical care records, while this was quite rare in municipalities (Emanuelsson & Lindencrona, 2000). Reasons for the low frequency of documentation might be that the patients’ nutritional problems remain unidentified by the RNs (Florin et al., 2005) and that nutritional care is considered unimportant (Lennard-Jones et al., 1995). There might also be a lack of nutritional knowledge among the RNs (Hansson & Wenström, 2005; Kowanko et al., 1999; Lindorff-Larsen et al., 2007; Mowe et al., 2008).

**Screening and assessment**

In order to prevent and treat malnutrition it is important to identify patients in need of nutritional care. Nursing responsibility includes identification of the patients’ nutritional problems and needs, including risk factors (Socialstyrelsen, 2005; Unosson, 2000a).

There is no consensus on the optimal method for performing nutritional screening and assessing nutritional status (Soeters et al., 2008), and the use of terms like nutritional status, nutritional screening, malnutrition and nutritional assessment are used differently in the nursing literature (Lyne & Prowse, 1999). The lack of clarity in definitions of terms and the assumption of a simple relationship between the level of risk of nutritional compromise and actual nutritional status is troublesome. According to Lyne and Prowse (1999), screening for risk factors means to estimate the degree of exposure to risk of
nutritional compromise. The desired result is to categorize patients in accordance with their need for further nutritional assessment and support. Assessment of nutritional status is made with the purpose to plan, provide and supervise the supply of nutritional support.

According to the ESPEN guidelines the purpose of nutritional screening is to predict the patient’s probability of a better or worse outcome due to nutritional factors, and to find out whether or not nutritional care influences this. The outcome of screening may lead to that the patient is found to be a) not at risk for malnutrition, but may need to be re-screened, b) that the patient is at risk, needing a nutrition plan to be worked out, c) that the patient is at risk with metabolic or functional problems preventing a standard plan to be carried out, or d) that there is a doubt that the patient is at risk. A nutritional screening of all patients is the first step in the nutritional assessment process. It can be conducted by admitting staff at the hospital or in municipal care. If the patient is found to be at risk to develop malnutrition, nutritional assessment is advocated as the next step, and should include a detailed examination of the patient’s nutritional history, clinical examination and laboratory tests by a nutrition nurse, an expert clinician or dietician (Kondrup et al., 2003).

There are many available nutritional assessment/screening tools to screen or assess the nutritional status of a patient (Green & Watson, 2005). However, an analysis of 44 assessment/screening tools showed that they were published with insufficient information regarding their intended use and method of derivation, and with an inadequate assessment of their effectiveness (Jones, 2002). Examples of tools are the Subjective Global Assessment (SGA) (Detsky et al., 1987), the Mini Nutritional Assessment (MNA) (Guigoz et al., 1994) and its short form (SF-MNA) (Rubenstein et al., 1999), the Malnutrition Universal Screening Tool (MUST) (Elia, 2000) the Nutritional Risk Screening 2002 (NRS-2002) (Kondrup et al., 2003) and the Nutritional Form for Elderly (NUFFE) (Söderhamn & Söderhamn, 2001; Söderhamn & Söderhamn, 2002).

A minimum level of screening has been recommended, including BMI, weight loss, and mouth and eating problems (Unosson & Rothenberg, 2000). However, a Swedish expert group in nutrition recommends a further simplification which is a combination of BMI, weight loss and eating difficulties (Larsson et al., 2004) without scoring and specific documents (Cederholm, 2006). According to the Swedish national guidelines for health care
(Sjukvårdsrådgivningen, 2005) the patient’s nutritional status can be assessed/measured through weight and length and by calculating body mass index (BMI). Screening/assessment tools, body composition and biochemical markers may be helpful.

The VIPS model is not a guideline in itself, but it includes suggestions of what should be documented regarding nutrition. The heading status is used to capture a description of the current situation for the patient, including the patient’s experiences, next of kin’s descriptions and the nurse’s assessment. The patient’s nutritional status is found under the heading status with is the search term for nutrition. Here, various aspects of nutrition can be found, for example appetite, thirst, eating habits at mealtime, status of the mouth cavity, underweight, overweight, patient experience, nausea and vomiting (Ehnfors et al., 2000).

**Nutritional support**

To prevent or treat malnutrition, different forms of nutritional support can be provided and a combination may be needed during the course of the patient’s illness. Ordinary food should always be the first option, but there are occasions when the intake of food is insufficient or contradicted (Howard et al., 2006). According to the ESPEN guidelines, nutritional support includes food fortification, oral nutritional supplements (ONS), tube feeding and parenteral nutrition (PN) (Fig 1). The concept enteral nutrition includes ONS as well as tube feeding via nasogastric, nasoenteral or percutaneous tubes (Lochs et al., 2006). In this thesis, enteral nutrition is used in the meaning of tube feeding.

![Figure 1. Nutritional support, in accordance with ESPEN guidelines, modified from Lochs et al., 2006.](image_url)
Normal diet and special diet are not considered nutritional support in the ESPEN guidelines (Lochs et al., 2006), while in Sweden, the concept nutritional support includes normal food, enriched energy-protein diets, dietary supplements, liquid dietary supplements, vitamin and mineral supplements, enteral nutrition and parenteral nutrition (Rothenberg, 2000). While tube feeding is considered medical treatment, ONS is sometimes considered medical care and sometimes basic care in Europe. Provision of food and drink by mouth, as well as feeding assistance, is in most instances considered basic care (Korner et al., 2006).

Together with co-workers, RNs are responsible for the delivery of nutritional support and regular diet. Aside from assessing the patient’s needs and problems, the RNs must ensure that the right food and fluid is served to the right patient in a pleasant and appetizing manner and that patients receive necessary assistance when eating. Oral care, instructions and training are important nursing interventions. Respecting the patients’ wishes regarding companionship and seclusion during mealtime, creating an atmosphere that facilitates the intake of food and establishing empathy, trust and confidence are other essential nursing interventions. Co-operation between different health care professionals, instructions and planning ahead of transfer, as well as a positive attitude, are all factors contributing to good nutritional care (Unosson, 2000a).

The findings of McWirther and Pennington (1994) that nutritional screening of patients at risk for depletion was not a routine procedure are echoed many years later. A recent study found that nutritional assessment and intervention were not sufficiently applied, neither by nurses, physicians nor medical students (Bavelaar et al., 2008). When investigating nutritional practices in different hospital settings in relation to ESPEN standards among Scandinavian nurses and physicians, a discrepancy between nutritional attitudes and practice was found. While 93% said that body weight measurement should be routine, 45% said that body weight actually was measured in all patients. Overall, 89% said that nutritional assessment should be routinely performed, while only 26% said that it was routine (Mowe et al., 2006). In a Swedish study it was found that 94% of RNs and physicians thought that calculating the energy requirement of a patient at risk of becoming malnourished should be routine, but only 29% answered that it was done. The calculation of energy was considered difficult according to half of them (52%) (Johansson et al., 2006).
Nursing interventions based on individual nutritional requirements, resources and desires have been found to improve nutritional status and functional capacity among older people with malnutrition (Christensson et al., 2001). The implementation of a written food and meal policy stabilized the weight of the residents in a Danish nursing home (Kuosma et al., 2008). Serving energy-dense food to elderly in different types of institutional care had a positive impact on activity of daily living function, while adding an additional evening meal had no effect on energy intake, body weight or health-related quality of life (Ödlund Olin, 2004). A summary of systematic reviews on nursing related issues in twenty-nine studied with 4021 participants found that the use of oral supplements added to normal diet can reduce undernutrition, improve weight and arm muscle circumference in elderly patients (Vanderkroft et al., 2007).

Clinical nutrition does not fulfil accepted standards (Johansson et al., 2006; Lindorff-Larsen et al., 2007; Mowe et al., 2006) and it is obvious that it is difficult to implement good clinical practices (Mowe et al., 2006). However, a significant positive change occurred after seminars, initiation of studies, pamphlets and catalogues offering advice and ideas (Lindorff-Larsen et al., 2007). A nutritional team (nurse and dietician), which attended to patients and staff for motivation, detailed a care plan, assured delivery of food and gave advice on EN or PN led to an increase of protein and energy intake of nutritionally at-risk patients. This in turn led to a shortening of the part of the length of stay that was considered to be sensitive to nutritional support among patients with complications (Johansen et al., 2004).

Insufficient knowledge is the main barrier for good nutritional management, according to nurses and physicians in Sweden, Denmark and Norway (Mowe et al., 2008). Also, lack of interest and responsibility in combination with difficulties in making nutrition plans influence the implementation of good nutritional care (Lindorff-Larsen et al., 2007).
**Nutritional care in the ICU**

During the 1990s, intensive care was more specialized and the work load of RNs expanded (Strömberg, 2004). Between 1998 and 2001 the work load in intensive care units increased with 20% (Lindberg & Rosenqvist, 2005). There were several reasons for the increased work load: RNs participated more in the curing tasks and took over parts of the caring responsibilities, the latter due to a reduction in the number of enrolled nurses. The expansion of medical technology was another reason of the changes (Strömberg, 2004). In addition the patients have become more severely ill and older than previously (Bergbom, 2007).

Most patients in the ICU are unable to maintain their own nutritional needs. Patients with trauma, sepsis and multiple organ failure are both catabolic and hypermetabolic, which leads to rapid development of malnutrition (Mossberg, 2000). The provision of nutritional support is of great importance. Early enteral nutrition (EN) via feeding tube is a recommended and common nutritional strategy for intensive care patients who are not expected to be taking full oral diet within three days. When the patient cannot be fed completely enterally, the deficit should be supplemented parenterally (Kreymann et al., 2006; Kreymann, 2008). Early enteral nutrition (<24 hours) improves gastrointestinal permeability, improves wound healing, minimizes bacterial translocation and reduces complications (Heyland, 1998). That there actually is a bacterial translocation from the gastrointestinal tract to normal sterile tissue (such as the mesenteric lymph nodes and other internal organs) initiating sepsis and organ failure in human beings was recently showed in a study over a 13 year period (MacFie et al., 2006).

Many studies report underfeeding among patients with EN (Adam & Batson, 1997; Binnekade et al., 2005; Elpern et al., 2004; McClave et al., 1999) and oral feeding, often used at the end of the ICU stay (Berger et al., 1997; Villet et al., 2005). The energy deficit is often built up during the patient’s first week in the ICU and ventilated patients are more likely to be underfed than non-ventilated patients (Kyle et al., 2006). This delay of nutritional support exposes the patients to energy deficits that cannot be compensated later on and is correlating with an increasing number of complications, mainly infections (Villet et al., 2005), impaired ventilator drive and weakened respiratory muscles (Pingleten, 2001). Delayed feeding is also associated with prolonged ventilator dependency and increased length of stay (Nguyen et al., 2008).
The two main causes to underfeeding of the patient in the ICU are underprescription by physicians and inadequate delivery/interruptions in feeding. Studies have shown that physicians prescribe between 65%-78% of the patients’ required amount of calories. Out of this, between 71% and 78% is effectively delivered (De Jonghe et al., 2001; McClave et al., 1999). Factors associated with low prescription rate is administration of vasoactive drugs, central venous catheterization, and the need of extra renal replacement (De Jonghe et al., 2001). Other reasons for underprescription may be lack of enthusiasm, personal bias and individual practices (McClave et al., 1999). The interruptions in delivery of EN have many reasons: feeding intolerance, surgery, procedures and various diagnostic examinations within and outside the ICU (Adam & Batson, 1997; Berger et al., 1997; De Jonghe et al., 2001; Elpern et al., 2004) as well as problems with the feeding tube (Engel et al., 2003).

Routine nursing care such as baths, dressing changes, changes of linen, management of tracheostomy tubes and changing of empty infusion bags contributes to up to 30% of all cessations (McClave et al., 1999). Precautionary interruptions in enteral feeding, administration of medications (Elpern et al., 2004) and measurement of gastric residual volumes (GRV) (Marshall & West, 2006) are other nursing procedures that contribute to interruptions.

There are variations and limitations in nutritional practices and procedures across European ICUs (Fulbrook et al., 2007; Roynette et al., 2008). The majority of ICUs (86.5%) do not use a nutritional risk score, and a daily nutritional assessment (mostly in the form of body weight and serum albumin) is only conducted by 35.4%. A minimal involvement of RNs performing nutritional assessment or developing guidelines was found. The position of the feeding tube following insertion was checked mainly by injecting air (72.6%), followed by abdominal/chest X-ray (34.9%) (Fulbrook et al., 2007).

Gastrointestinal tolerance was assessed every day according to 79.4% of the European ICUs (Roynette et al., 2008).

According to nurses, the use of nutritional feeding pumps, daily changes of administration set, frequency of checking GRV and management of EN when diarrhea occurs, varied when ICUs in five different hospitals in Belgium were compared (Ista et al., 2002). Furthermore, checking the flow rate of EN, flushing the feeding tube, methods of unlogging obstructed tubes, checking GRV and administrating medications through feeding tube are all nursing
practices that vary, according to RNs in critical care and medical-surgical care at a Midwestern university medical centre (Mateo, 1996).

When clinical, multidisciplinary nutritional guidelines were updated and implemented, the evaluation showed variations in usage. Practical aspects of nutritional support seemed to have a unified approach, whereas areas of nutritional assessment and routine nutrition orders demonstrated a lack of knowledge and unclear role responsibility (Hansson & Wenström, 2005).

Who does what (nutritionally) in an ICU?

The physician, usually an anaesthesiologist in the ICU, has an overall nutritional responsibility, making sure that an assessment is performed and prescribing nutritional treatment (fluid, energy, nutrition, choice of nutrition route) in consultation with co-workers (Cederholm & Rothenberg, 2000). Especially when it comes to tube feeding and oral intake, teamwork around the planning and calculation is more common. Planning and calculation of the daily need of energy, fat, protein and carbohydrates is documented in different kinds of documents; medical records, nursing care records, special nutritional charts, flow sheets and sometimes in all of them together (Martensson & Fridlund, 2002). The RN’s area of competence includes identifying, assessing and documenting the critically ill patient’s nutritional problems and need of nutritional interventions, suggesting and carrying out interventions and evaluating and revising the care plan. Furthermore, they continuously monitor and evaluate functional status, give information and initiate medical interventions. They also give counselling regarding nutritional care to colleagues within and outside of the ICU (Socialstyrelsen, 1996). The enrolled nurses’ qualifications are nursing and medical interventions, but also service tasks and collaboration with co-workers. Their work includes for example feeding assistance, observations, recording and reporting of what the patient eat and drinks (Nyman, 2001; Socialstyrelsen, 2006; Thunborg, 1999), and on delegation from the RNs, enteral tube feeding (SOSFS 1988:25). In the ICU, the enrolled nurses also document observations, measurements and provided care on the flow sheet.
The patients’ nutritional experience

When reviewing the literature during a 30 year period, from 1967 to 1997, regarding patients’ experiences of being in the ICU, Stein-Parbury et al (2000) found 28 articles reporting 26 studies. Initially, the studies were based on the assumption that the experiences were of a problematic origin. From the 1990s, the focus shifted toward more open-ended experiences, indicating that patients expressed positive as well as negative experiences. The positive experiences included a sense of safety promoted mainly by nurses. Negative experiences included impaired cognitive functions and discomfort mainly in the form of problems with sleeping, pain and anxiety, but also with thirst (Ballard, 1981; Bradburn & Hewitt, 1980). Thirst among the patients in the ICU is also found in later research (Hofhuis et al., 2008a; Magarey & McCutcheon, 2005; Samuelson et al., 2007). Weight loss was a concern raised in a study focusing on the patient’s body awareness and body image when mechanically ventilated (Johansson & Fjellman Wiklund, 2005). They also found that the patients had experienced weakness that affected holding the knife and fork when eating. At ICU discharge, eating has been found to be significantly impaired when compared to pre-ICU, hospital discharge and 6-months post-discharge (Elliott et al., 2004). There are several studies regarding the patients’ experiences of their ICU stay, but there are few studies focusing on the patients’ experiences of nutritional care.
Rationale for the thesis

Nutrition is essential for patients’ health. It is obvious that malnutrition is a significant problem in different health care settings. Nutritional nursing care is important for the patients’ nutritional condition and may prevent malnutrition. Previous studies have found that nutritional screening and assessment is not yet a routine procedure. Few interventions are applied and nutritional documentation is sparse. There is limited knowledge of patients’ nutritional status, nutritional nursing documentation and screening/assessment tools, as perceived by RNs, special medical nurses and first-line nurse managers (CNs), within municipal care and county council care.

The patients in the ICU are at risk to develop malnutrition. Early EN is today considered standard nutritional support for the patients in ICUs, but inadequate delivery of energy and a cumulative energy deficit are implied. Most previous research in ICUs focusing on nutritional care to patients with EN has revealed obvious variations and limitations, lack of evidence-based care, unclear role responsibilities and lack of knowledge. There are few studies regarding EN focusing on nursing in an ICU. RNs have an overall responsibility for the patients’ nutritional nursing care. On delegation from RNs, enrolled nurses often administer the enteral feeding in ICU. Minimal attention has been paid to how nutritional care is experienced by patients and perceived by RNs and enrolled nurses.
General and specific aims

The overall aim of the thesis was to gain a deeper understanding of nutritional nursing care in municipal care and county council care, with special focus on enteral nutrition in the ICU.

The specific aims of the four studies were to:

I. study, within municipal care and county council care, 1) chief nurses’ (CNs) and registered nurses’ (RNs) perceptions of patient nutritional status assessment and nutritional assessment/screening tools, 2) registered nurses’ perceptions of documentation in relation to nutrition and advantages and disadvantages with the VIPS model.

II. examine 3) the registered nurses’ (RNs) perceptions of responsibility, knowledge and documentation focusing on enteral nutrition and 4) nursing practice regarding enteral feeding in the intensive care unit.

III. provide a theoretical understanding of the concerns and strategies of nutritional nursing care for patients with enteral nutrition (EN) in ICU.

IV. provide a theoretical understanding of nutritional experiences for patients with enteral nutrition (EN) during their ICU stay.
METHODS

Study designs (I-IV)

To obtain perceptions among special medical nurses, first-line nurse manager (CNs) and RNs about patient nutritional status assessment and documentation, a combination of quantitative and qualitative methods were used in study I. To examine the RNs perceptions of responsibility, knowledge, documentation and nursing practice with focus on EN in the ICU, a quantitative approach was chosen in study II. Grounded theory (GT) was used to explore RNs and enrolled nurses’ perceptions (III) as well as patients experiences (IV) of nutritional care in ICU. The method was chosen because this was unexplored areas. For an overview of the studies, see Table 1.

Table 1. Overview of the studies.

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Method</th>
<th>Care setting</th>
<th>Participants</th>
<th>Data collection</th>
<th>Methods of analysis</th>
</tr>
</thead>
</table>
| I     | Descriptive| Quantitative| Municipal care          | 27 first-line nurse managers  
                                              | 14 special medical nurses  
                                              | 131 RNs                     | Interviews    | Statistics          | Qualitative content analysis |
|       |            | Qualitative| County council care     |                                           | Questionnaire   |                      |                      |
| II    | Descriptive| Quantitative| Three ICUs              | 44 RNs                                   | Questionnaire   | Statistics          |                      |
|       |            |            |                         |                                           | Protocol        |                      |                      |
|       |            |            |                         |                                           | Bedside observations |                      |
| III   | Explorative| Qualitative| One ICU                 | 8 RNs  
                                              | 4 enrolled nurses | Interviews   | Grounded theory  |                      |
|       |            |            |                         |                                           | Observations   |                      |                      |
| IV    | Explorative| Qualitative| One ICU                 | 14 patients                               | Interviews     | Grounded theory  |                      |
|       |            |            |                         |                                           | Observations   |                      |                      |

To strengthen the overall design and increase the ability to interpret the findings, triangulation was used in this thesis. The strengths of one method may compensate for the weakness of another, confirming the validity of the findings (Speziale & Carpenter, 2007). Denzin (1970) described four types of triangulation: data triangulation, investigator triangulation, theory triangulation and method triangulation. A fifth type, multiple triangulations, was also suggested. Later, even a sixth type of triangulation was described: analysis triangulation (Kimchi et al., 1991).

In this thesis, data triangulation and method triangulation were used. Data triangulation was performed in the form of person and space triangulation. In person triangulation, data was collected from special medical nurses, first-line
nurse managers and RNs (I) and RNs and enrolled nurses (III) and patients (IV). In space triangulation, the participants represented both municipal care and county council care (I) and three different hospitals (II).

Method triangulation was used in the form of between-method and within-method. Between-method triangulation was used since both quantitative (I and II) and qualitative methods (I, III and IV) were used. Within-method triangulation was used as observations and questionnaires were used in study II; and observations, interviews and memos were used in study III and IV. By combining different methods, a more complete understanding and description of the phenomenon (nutritional care) could be provided (Glaser & Strauss, 1967; Speziale & Carpenter, 2007).

**Setting and participants (I and II)**

Study I was conducted within municipal care and county council care in one county in Sweden. At first, special medical nurses in municipal care and first-line nurse managers in county council care, in the studies referred to as chief nurses (CNs), were interviewed via a semi-structured interview guide. At second, the RNs responded to a questionnaire (Figure 2).

![Flow-chart of participants in study I](image)

Figure 2. Flow-chart of participants in study I.
### Telephone interviews

In municipal care, 15 special medical nurses (CNs) participated, representing 15 out of 16 municipalities. One of the special medical nurses declined participation in the study and another accepted to participate in the interview, but would not let us proceed with questionnaires to the RNs within her municipality. These dropouts were due to an ongoing local process to develop new nutritional guidelines, and the present study was felt to intervene with this.

In county council care, 27 first-line nurse managers (CNs), representing 28 wards from the three acute care hospitals, accepted participation in both being interviewed themselves via telephone and by distributing questionnaires to the RNs.

### Questionnaires

As there was no database for RNs available, and the staffing in special housing may vary considerably (from one to several RNs per special housing, while one RN also can be responsible for one or several special housings), they were therefore selected in different manners.

In municipal care, the special medical nurses were instructed to distribute the questionnaires to one RN (on duty for the time of the study) per special housing. In 2002, there were 502 RNs in municipal care within the county under study (Andersson, 2004). This means that approximately one fifth of the nurses were included in this study. In county council care, the first-line nurse managers distributed the questionnaires to every fifth active RN on the 28 wards. In total, about 20% of the RNs in the hospital wards and in municipal care were included. For demographic data, see table 2.

<table>
<thead>
<tr>
<th>Table 2. Demographic data regarding the RNs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Total (n = 131)</td>
</tr>
<tr>
<td>Municipalities (n = 74)</td>
</tr>
<tr>
<td>County council (n = 57)</td>
</tr>
<tr>
<td>Student’s t-test</td>
</tr>
<tr>
<td>p-value</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Age M/SD</td>
</tr>
<tr>
<td>44.82/10.23</td>
</tr>
<tr>
<td>47.05/10.01</td>
</tr>
<tr>
<td>41.96/9.87</td>
</tr>
<tr>
<td>2.895</td>
</tr>
<tr>
<td>0.004</td>
</tr>
<tr>
<td>Years as an RN M/SD</td>
</tr>
<tr>
<td>16.71/10.81</td>
</tr>
<tr>
<td>18.9/10.34</td>
</tr>
<tr>
<td>13.86/10.83</td>
</tr>
<tr>
<td>2.692</td>
</tr>
<tr>
<td>0.008</td>
</tr>
<tr>
<td>University education in nutrition 7.5-15 ECTS (n)</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>Non-university education in nutrition (n)</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>
Study II was conducted at three ICUs in three hospitals within one county council. The conditions regarding the three ICUs were somewhat different. Intensive care patients (surgical/medical), cardiac intensive care patients and recovery and post-operative patients were admitted to the ICU in hospital A. The number of ICU beds was six and it was possible to have two patients on a ventilator at the same time. To the ICU in hospital B, intensive care patients (surgical/medical) and postoperative patients were admitted. Eight beds and eight ventilators were available. Cardiac intensive care patients were admitted to a separate ward in the hospital. To the ICU in hospital C, intensive care patients (surgical/medical), cardiac patients, internal medicine and postoperative patients were admitted. There were six to eight beds. One ventilator was available for a longer time, two ventilators for a shorter period. In hospital A, a combination of paper-based records and Electronic Patient Record (EPR) was used, in hospital B paper-based records were used and in hospital C, EPR was used.

Data was collected by means of questionnaire distributed to all RNs (n = 63) who worked in the three ICUs. Forty-four RNs answered the questionnaire (70% response rate). The response rates for the three hospitals A, B and C were 50%, 71% and 100% respectively. For demographic data, see table 3.

<table>
<thead>
<tr>
<th></th>
<th>Total (n = 44)</th>
<th>Hospital A (n = 10)</th>
<th>Hospital B (n = 22)</th>
<th>Hospital C (n = 12)</th>
<th>Kruskal-Wallis test</th>
<th>Mann-Whitney U-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Age</td>
<td>42.8</td>
<td>7.74</td>
<td>47.6</td>
<td>5.21</td>
<td>40.6</td>
<td>6.65</td>
</tr>
<tr>
<td>Years of practice as an RN</td>
<td>17.4</td>
<td>9.54</td>
<td>19.1</td>
<td>11.41</td>
<td>15.3</td>
<td>9.26</td>
</tr>
<tr>
<td>Years of practice as an ICU nurse</td>
<td>10.9</td>
<td>8.93</td>
<td>16.5</td>
<td>11.27</td>
<td>8.4</td>
<td>7.55</td>
</tr>
<tr>
<td>Years of experience at present ICU</td>
<td>9.2</td>
<td>8.56</td>
<td>12.5</td>
<td>11.42</td>
<td>7.4</td>
<td>7.45</td>
</tr>
</tbody>
</table>

RNs in hospital B were significantly younger than RNs in hospital A, otherwise no statistical difference was found.

Observations (n = 40) of enteral nutritional nursing interventions were performed in one of the three ICUs. The ICU with no cardiac intensive care was chosen in order to maximize the events of tube feeding.
Data collection (I and II)

*Interview guide, questionnaires and protocol*

The interview guide (I), the questionnaires (I and II) and the protocol (II) were developed purposely for the studies. The items were formulated based on literature, research and professional experience (I and II). In study I the interview guide comprised six items, and the questionnaire ten items. The interview guide for CNs comprised items that were in accordance with the questionnaire for the RNs: occurrence of malnutrition, nutritional assessment, assessment/screening tools and guidelines. In addition, four items regarding documentation were directed solely to the RNs.

The questionnaire in study II comprised 49 items and focused on the RNs' opinions in the following areas: knowledge of responsibility for nutrition, source of knowledge regarding EN, responsibility, knowledge, documentation and enteral feeding interventions. A type of five-point Likert scale (Likert, 1952) from 1 (never) to 5 (always) or from 1 (to a very small extent) to 5 (very great extent) was used in the questionnaires (II).

Different fixed response alternatives and open-ended questions were used in the interview guide (I) and in the questionnaires (I and II).

A research protocol influenced by a Swedish version of the Rush Medicus Nursing Process Methodology (Ehrenberg, 1986) was constructed by the authors (II). The research protocol consisted of 17 items concerning nursing interventions regarding the following areas: tube-related problems, gastrointestinal problems, aspiration and mix-up. In the protocol, the results of the bedside observations were noted as yes/no/not applicable. Backrest elevation, defined as the height of the head of the bed in degrees of elevation above horizontal, was measured using a protractor.

*Procedure (I and II)*

The telephone interviews (I) were conducted by two of the authors (MWP and CB). Each interview lasted between 20 and 30 minutes. We followed the semi-structured interview guide and the answers were documented during the interview. CNs distributed the questionnaires and gave the participants oral and written information about the study. The data was collected during three weeks in April, 2002. Two reminders were needed to achieve an acceptable response.
rate. The questionnaires were returned anonymously in the addressed return envelopes enclosed (stamped in municipal care, free local delivery within county council care).

The observations (II) were performed by one of the authors (MWP) at daytime, during both the morning and afternoon shifts, and took about 10-15 minutes each. The CNs informed the RNs and distributed the questionnaires (II). Three reminders were needed to achieve an acceptable response rate. The RNs were instructed to answer the questionnaire in relation to care performed during April 2001. In this way, questionnaire and bedside observations reflect the same month.

**Statistical analysis (I and II)**

For statistical analyses the Statistical Package for Social Sciences (SPSS) version 14.0 (Norusis, 2006) was used. 

*Parametric statistical test.* Students $t$-test was used for independent samples (I).

*Non-parametric statistical tests.* Differences between two independent groups were analyzed using Mann Whitney $U$-test (I and II), Chi-square test (I) and Fisher’s exact test (I) when appropriate. Kruskal-Wallis test was used to compare differences between more than two groups (II). When a statistically significant difference was found, further comparisons were performed using the Mann-Whitney $U$-test.

*P-value.* Statistical results (of bivariate analyses) were interpreted with the level of significance set at $p < 0.05$ (Polit & Hungler, 1999; Streiner & Norman, 2003).

*Bonferroni.* When three pair-wise comparisons were analyzed (II), the Bonferroni correction was used to protect against type 1 errors (Munro, 2001). This involves dividing the desired level of significance by the number of comparisons that were made ($0.05/3 = 0.0167$).

*Logistic regression analysis.* As RNs in municipal care were significantly older than RNs in county council care, an adjustment for the age regarding three items (occurrence of malnutrition, assessment of malnutrition and documentation of nutritional judgement) was performed with logistic regression analysis.

*Homogeneity* was assessed with the Cronbach’s alpha coefficient (II) (Cronbach, 1951).
Qualitative content analysis (I)

In study I, the qualitative content analysis was made in line with the steps proposed by Graneheim and Lundman (2004) to reveal manifest and latent content regarding strategies used by RNs when deciding which patients should be nutritionally assessed, and advantages and disadvantages with the VIPS model. First, all notes (varying from a few words or phrases to several sentences), which constituted the unit of analysis, were read through to obtain a sense of whole. The text was divided into meaning units that were condensed, abstracted and labelled with a code. Then the various codes were compared based on differences and similarities and sorted into categories, and subcategories when appropriate. As a category mainly refers to a descriptive level of content, it is considered an expression of the manifest content. The first author and two of the co-authors (BWL and MLHL) compared the categories and revised them until agreement was reached and the latent content of the categories, which is a thread of the underlying meaning on an interpretative level, was formulated into a theme.

Reliability and validity (I and II)

The interview guide (I), questionnaires (I and II) and protocol (II) were tested for face validity, content validity and clarity. Experienced RNs were asked to judge whether the issues appeared to be reasonable, covering relevant and important data with clarity (Polit & Beck, 2004; Streiner & Norman, 2003). In study I, the four RNs were recruited from both municipal care and county council care. In study II, four experienced ICU nurses and one registered nurse teacher with long experience of intensive care were recruited according to personal knowledge. The internal consistency, measured by Cronbach’s alpha, was regarding responsibility 0.86, knowledge 0.90 and documentation 0.86 (II).

In accordance with the Rush Medicus Nursing Process Methodology (Ehrenberg, 1986), different aspects of what should be considered good care regarding EN (II) were identified. During the bedside observations, performed by the author, it was noted whether these aspects had been considered or not.
Trustworthiness (I)

Measures proposed by Graneheim and Lundman (2004) to achieve trustworthiness in qualitative content analysis include credibility, dependability and transferability. In order to achieve credibility, RNs from various care settings were included. Furthermore, all relevant data and quotations were used. During the whole analysis, the first author and two of the co-authors were judging similarities and differences between categories. For dependability all RNs received exactly the same open-ended questions and there was a limited time for responding. To facilitate transferability, the contexts, the included informants, the study process and the result with its quotations, have been clearly described.

Grounded theory (III and IV)

Since the aims of the studies (III and IV) were to provide theoretical understanding of nutritional nursing care, the GT approach was used. The specific nature of GT is the four criteria set on the relation between theory and data; that the theory must fit, work, be relevant and be possible to modify (Glaser, 1978).

Setting, participants and data collection

The last two studies were carried out in hospital B (for description, please see study II). The chief physician, an anesthetist, had the legal responsibility for the overall care in cooperation with the patient’s physician from the ordinary unit. RNs and enrolled nurses were usually caring for one to two patients, with the enrolled nurses functioning under the supervision of the RNs. Following the RNs’ three years of university studies, where a Bachelor’s degree is earned and a licence is executed by The National Board of Health and Welfare, one additional year of nursing specialization in intensive care nursing is required for working in an ICU. For enrolled nurses educated in an upper secondary school health care programme for three years, there is limited access to intensive care training.

In study III, the choice of informants was decided by their bedside presence in the ICU. In the text, all informants are referred to as nurses, when not specified. Data obtained was based on interviews with nurses and observations of nursing care related to nutrition. Informants in study III were initially
recruited from study IV, but for a deeper understanding related to the analysis progress, further RNs and enrolled nurses were interviewed (theoretical sampling). A total of eight RNs and four enrolled nurses were interviewed, all but one female, ranging from 33 to 51 years (Md 39.5 years). Years as a nurse ranged from 6 to 29 (Md 14 years) and years in the ICU ranged from <0.5 years to 28 (Md 8). Years as a specialist RN in intensive care ranged from <0.5 years to 16 years (Md 7 years).

In study IV the nurse managers identified patients who met the inclusion criteria (see below) and then approached the RN in charge of the patient for confirmation regarding the inclusion criteria. The nurse manager obtained informed consent from the patients. All but one patient agreed to participate. The inclusion criteria for the patients were that the patients had to be ≥ 18 years old and Swedish speaking with a period of at least three days of treatment in the ICU, had experience of ongoing or recently discontinued enteral nutrition, and that the patient had to be conscious, oriented in space and time and judged by the RN in charge to be in such a condition that they could respond to questions and provide informed consent.

A total of 14 patients were interviewed; eleven women and three men (Md 65 years), ranging from 38 to 80 years old. Eight patients were interviewed once, while follow-up interviews were made with six of the patients (five were interviewed twice and one three times). The follow-up interviews were made within one day from the first interview. The reasons for the ICU admission were surgery or pulmonary, cardiovascular and infectious diseases. Number of days from admission to interview ranged from 5 to 39 days (Md 21 days). All patients were on oral fluids, but some were allowed to eat as well. Four of the patients had a combination of oral, enteral and intravenous nutritional delivery. Six patients had oral and enteral nutrition, two oral and intravenous, and two managed solely on oral nutrition. The patients interviewed were cared for in two-bed rooms.

Data collection was carried out from December 2005 until June 2008 (III), and from December 2005 until January 2008 (IV). In the data collection, the multimethod principle, the multisensory principle and the principle of aesthetic distance were used to increase the theoretical sensitivity (Starrin et al., 1997). The use of more than one method was considered particularly beneficial, as it provides multiple perspectives on an issue, supplies more information on
emerging concepts, allows for cross-checking and yields stronger substantiation of structures (Glaser & Strauss, 1967). In addition, the use of as many senses as possible during the data collection and to be neither too distant nor too close in relation to what is studied, encourages perception abilities and increases the capacity to sort information (Starrin et al., 1997).

The observations of nutritional aspects regarding nutritional care (III and IV), made by the researcher (MWP) as an observer, were later followed up in the interviews. The observations were not identical, but varied depending on each situation and could vary between 45 minutes to several hours. Field notes were made during or immediately following the observation. The observer made 21 observations of 14 patients during different shift and with different nurses, regarding nutritional care (III and IV) of what was experienced at bedside, in expedition, during reporting between nurses and during rounds, and was, when appropriate, later followed up in the interviews.

The interviews started with the patients' experiences of their intake of food and fluid (IV) and how the nurses had experienced nutritional care of the patients (III). The themes of the questions and the topics that the informants addressed during the interviews guided relevant follow-up and probing questions. The observations were followed up, when relevant, during the interview in order to compare and contrast. Observational data is not considered to be enough, as it is the meaning of the informants' actions that are of interest (Glaser, 1992). The interviews were further developed in line with analyzing and emerging results, so that categories and their dimensions could be more fully explored. The interviews (patients/nurses) were audiotape-recorded, transcribed verbatim and analyzed before the next interview was made by the researcher (MWP).

Analysis

Basic principles in GT include the constant comparison of analyses, theoretical sensitivity, theoretical sampling, theoretical saturation and memo writing (Glaser & Strauss, 1967). In this thesis, data was analyzed (III and IV) consecutively by the first author (MWP) according to “the constant comparative method of analyses”, meaning that data collection and data analysis were carried out concurrently (Glaser & Strauss, 1967). The process moved back and forth between data and emergent pattern, constantly moving between inductive and deductive thinking, yet trying to stay open, and
categories were reviewed, renamed and consolidated during the whole analysis. The emergent categories from observations and interviews were constantly compared and contrasted with the subsequent data to see if they worked, fitted and were relevant and theoretically saturated (Glaser & Strauss, 1967).

Memos about the researchers’ ideas, reflections and hypothesis based on the data, were noted during the analysis, since the use of memos increases the theoretical sensitivity (Glaser, 1978) and is considered a vital link between coding and the emerging of a theory or model (Glaser & Strauss, 1967). In accordance with the grounded theory methodology, observational and interview data were coded into two types of codes: substantive and theoretical. While substantive codes conceptualize the empirical substance, theoretical codes conceptualize how substantive codes may relate to each other as hypotheses to be integrated into the theory (Glaser, 1978). In open coding, data was analyzed line by line along with a constant coding of each sentence carrying meaning into substantive codes. Effort was put on coding different incidences into as many substantive codes as possible. These substantive codes were compared for similarities, differences and grade of consistency and codes with similar meanings were clustered into broader, more comprehensive and abstract categories. The set of questions asked of the data were: “What is this data a study of?”, “What category does this incidence indicate?” and “What is actually happening here?”.

The core category was central, coped with the entire data, and seemed to be wise. Open coding ended when the core category was discovered and the selective coding begun. From now on, only those categories that related to the core category in sufficiently significant ways were used (Glaser, 1978). The core category became a guide to further data collection, so that categories and their dimensions could be more fully explored, and continued until saturation was reached. The relations between the core category and its categories were searched for and described by theoretical codes. Then a preliminary substantive theory was outlined. The analysis was performed mainly by MWP, but all authors discussed the codes and categories during the whole process.

The research process, including the data collection, the data analysis, and theory building, were all related. By using the “constant comparative method of analysis” (Glaser & Strauss, 1967), the analysis also guided the data collection and new ideas inspired new questions to be asked. The nurses (III) were
initially recruited from the patient study (IV), that is nurses caring for patients being interviewed, and volunteered to participate in the study. However, the analysis guided an interest for interviewing certain nurses; so called theoretical sampling. The initial plan was to let the analysis guide which patient should be interviewed next, but the limited amount of patients made us include all available patients.

**Trustworthiness**


According to Glaser and Strauss (1967), credibility can be seen as inherent in the method, as the emerging theory is based on the method of constant comparison, in which concepts and categories repeatedly emerge and guide the continuing research. Furthermore, they suggest two main criteria for judging the adequacy of the emerging theory, which is that it must fit the substantive area to which it will be applied, here the ICU, and that it works. Only when carefully induced from diverse data, the theory will be closely related to the daily realities. In this way the theory will make sense and be understandable.

Using the multimethod principle (Glaser & Strauss, 1967; Starrin et al., 1997) was another way to improve the credibility, and the combination of observations, interviews and memos made our data rich and extensive. Furthermore, the analysis has been discussed by the authors throughout the process.

**Ethical considerations**

All studies were conducted according to common ethical principles applied in human clinical research, i.e. the principle of respect for autonomy, the principle of non-maleficence, the principle of beneficence and the principle of justice (Beauchamp & Childress, 2001; Northern Nurses Federation, 2003; World Medical Association Declaration of Helsinki, 1964). Potential ethical issues were considered when planning ahead of the studies.
The principle of respect for autonomy

The first principle to take into consideration is the principle of respect for autonomy. Information about the first two studies was given to special medical nurses (I) and first-line nurse managers (I and II), who in turn informed the RNs. The RNs and enrolled nurses were informed during staff meetings about the last two studies (III and IV). The oral and written information about the studies, given to all possible participants, included a short rationale, aim of the studies, method, responsible researcher and contact person. Information also included the confidentiality policy and information about that the participants were participating on a voluntary basis and could withdraw from the study at any time (I-IV). The first-line nurse manager obtained informed consent from the patients (IV). Autonomy also entails respect for privacy and confidentiality of personal data. This was obtained by coding the questionnaires and transcribing interviews and keeping the transcripts locked away safely. During the interviews, the use of names was avoided. The interviews with the RNs and enrolled nurses took place in rooms chosen by the informants (III). The patients were interviewed in the patients' room (IV).

The principle of non-maleficence and the principle of beneficence

The consequences of being interviewed must be given attention (III and IV). Therefore, great concerns for the patients' physical and psychological condition were addressed during the interviews. The researcher has not been involved in the care of the patients. Even if the patients in the second study did not fill the role of a subject (II), they did require significant consideration while observing nursing interventions carried out at bedside. Patients and relatives present during the observations were given oral information about the study. Prior to the studies, the researcher had worked as an RN at one of the ICUs and was hereby well acquainted with the context; the situation of the patients, next of kin and health professionals, as well as the care and environment. In addition, both co-authors have previous experience of carrying out research within the ICU context. The findings may be biased when the researcher is familiar with the actual setting, here an ICU, but it can also be seen as an advantage, as it makes it possible to identify and reflect on nutritional matters that might have escaped the attention of a researcher without such a background (Lykkeslet & Gjengedal, 2007).
The principle of justice

The special medical nurses in 16 municipalities in one county and Chief of Departments of 32 wards in the three hospitals in one county council were invited to participate (I). As there was no available database for RNs, the selection procedure differed in municipal care and in county council care. But approximately one fifth from both areas were addressed in the study. All active RNs at the intensive care units in one county council were included according to the same criteria (II). The three groups of informants, RNs, enrolled nurses (III) and patients (IV), may be considered equal, as the same themes were discussed in all interviews, creating opportunities for comparisons and mirroring. Furthermore, the researchers have also considered the risks versus benefits of the studies.

Approvals

In county council care, eight Chief of Departments representing 28 wards from the three acute care hospitals, accepted participation in the study, while two, representing four wards, declined participation for unknown reasons. Permission to conduct the other studies was obtained from the Chief of Department of Anaesthesia and Intensive Care (II) and the Chief of Department of Anaesthesia and Intensive care and The Head of Department of Anaesthesia and Intensive Care (III and IV). Approvals by the ethical research committee at Karlstad University were obtained (document number F 49/01 regarding study II and C 2005/421 regarding study III and IV). At the time of study I it was not considered necessary to have ethical approval, as the study did not include patients, but was directed to health care staff, and did not comprise questions that could be considered ethically problematic.
MAIN FINDINGS

In this section, the main findings from each study are presented separately and consecutively, followed by a comprehensive result.

Study I

Firstly, the results of CNs’ and RNs’ perceptions of occurrence of malnutrition, awareness of guidelines and assessment of nutritional status are presented, then the results from the RNs exclusively (nursing documentation and assessment/screening tools).

Occurrence of malnutrition and awareness of guidelines

Malnourished patients occur to a varying extent, according to the perceptions of CNs and RNs. In municipal care this ranged from 43% (CNs) to 58% (RNs) and in county council care from 80% (CNs) to 87% (RNs). There were significantly more CNs/RNs in county council care ($p = 0.001$) who answered that malnourished patients occur in their field of activity, compared to CNs/RNs in municipal care. According to the majority of CNs/RNs (66%), there were no guidelines, while 13% did not know (all RNs) if there were any. In county council care CNs/RNs answered that they had guidelines significantly more ($p = 0.005$).

Assessment of nutritional status

In municipal care, performance of nutritional assessment of all patients ranged from 13% (CNs) to 18% (RNs) and in county council care from 32% (RNs) to 44% (CNs). Significantly more CNs/RNs in county council care ($p = 0.008$) nutritionally assessed all patients compared to CNs/RNs in municipal care. Among the CNs/RNs ($n = 115$) who answered that not all but significant patients were nutritionally assessed, 88% specified which these patients were. When analyzing the answers, content analysis was used to reveal the theme “exposed/vulnerable patients are subject for assessment of nutritional status”. The theme derived from four categories: the patient’s condition, diagnosis, care/treatment and age (Figure 3).
Figure 3. RNs’ and CNs’ perceptions of assessment of nutritional status.

The CNs and RNs also reported when the assessment of the patients had been performed. Most respondents assessed the patients on admission and/or during special housing stay/hospital stay, but seldom at discharge.

The use of assessment/screening tools was sparse. Two out of twelve respondents named the tools MNA and SGA. Furthermore, one CN mentioned a nutritional chart and another CN a combination of documentation of food intake and BMI. Remaining respondents mentioned unspecified tools.

**Nursing documentation**

The majority of the RNs documented nausea/vomiting, ability to eat and drink, diarrhea and difficulties in chewing and swallowing. Energy intake, BMI, metabolic changes and subcutaneous fat/muscle mass were items rarely documented. It was also found that when caring for patients with a feeding
tube, reflux in feeding tube and gastric residual volume was documented by 18% of the RNs.

Another issue was whether or not the RNs documented their clinical judgement of the nutritional status. The result showed that 23.9% of the RNs in municipal care replied that they always and 59.2% sometimes documented that patients were malnourished. In county council care, 14.5% of the RNs replied that they always and 56.4% sometimes that they documented the corresponding data.

All of the RNs in county council care (100%) and the majority of RNs in municipal care (97%) used the VIPS model for nursing documentation. In municipal care, the original VIPS model was used by 51%, while a modified version for primary health care, the Prim-VIPS, was used by 42%. For RNs, perceived advantages and disadvantages with the VIPS model where formulated as two themes: “Guidance” and “Obstructs exchange of information” (Figure 4). The results also indicated that there were relations between the categories. By facilitating the writing, the patient’s condition was easy to grasp when reading, and nursing care was supported. If the RNs were annoyed with the notes, the reading gave no clear picture of the patient, which in turn could have a negative impact on nursing care.

<table>
<thead>
<tr>
<th>Guidance (Advantage)</th>
<th>Obstructs exchange of information (Disadvantage)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Writing</strong></td>
<td></td>
</tr>
<tr>
<td>At ease when writing</td>
<td>Annoyed when writing</td>
</tr>
<tr>
<td>- Gives adequate content/structure</td>
<td>- Headlines</td>
</tr>
<tr>
<td>- Is unified</td>
<td>- Confusing when choosing</td>
</tr>
<tr>
<td>- Is easy to use</td>
<td>- Are not specific enough</td>
</tr>
<tr>
<td>- Is organized in accordance with the nursing process</td>
<td>- Do not cover everything</td>
</tr>
<tr>
<td></td>
<td>- Does not fit with the practice</td>
</tr>
<tr>
<td></td>
<td>- Is time consuming</td>
</tr>
<tr>
<td></td>
<td>- Is circumstantial</td>
</tr>
<tr>
<td></td>
<td>- Is repeatedly used</td>
</tr>
<tr>
<td></td>
<td>- Is rigid</td>
</tr>
<tr>
<td><strong>Reading</strong></td>
<td></td>
</tr>
<tr>
<td>Makes the patient’s condition easy to grasp when reading</td>
<td>Gives no clear picture of the patient when reading</td>
</tr>
<tr>
<td>- It is easy to find information about the patient</td>
<td>Makes it difficult to find information about the patient</td>
</tr>
<tr>
<td>- It is well arranged</td>
<td>Makes it difficult to get a comprehensive picture of the patient</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Caring</strong></td>
<td></td>
</tr>
<tr>
<td>Supports nursing care</td>
<td>Makes nursing care fade out</td>
</tr>
<tr>
<td>- Evaluation is made easier</td>
<td>Impaired evaluation</td>
</tr>
<tr>
<td>- The nursing care is made local</td>
<td></td>
</tr>
</tbody>
</table>

Figure 4. RNs’ perceived advantages and disadvantages with the VIPS model.
Study II

The results from the RNs’ responses to the questionnaires are presented first, and then the bedside observations.

Responsibility, knowledge and documentation

The majority of RNs (91%) answered that there were written guidelines regarding EN in their ICU and that there was a nurse responsible for nutritional issues. RNs’ primary sources of knowledge were consultation with colleagues. In hospital A, no RN answered that there was a nutritional team in their ICU, in hospital B all RNs answered that there was a nutritional team, and in hospital C, two out of 12. RNs from hospital B scored higher in relation to knowledge from in-service training compared with nurses from the other two hospitals. The Swedish Handbook of Pharmaceuticals (FASS) was the primary source of information and knowledge regarding administration of medication through feeding tube, according to 30 out of 44 (68%), while 18 RNs (41%) consulted a brochure from the pharmacy. Physicians and colleagues were consulted by 14 (32%), and 3 (7%) consulted the pharmacy service about recommended techniques.

To what extent (mean value) the total group of RNs and RNs from each hospital perceived to have responsibility, knowledge and support from the documentation structure, in relation to the nutritional nursing process, is shown in figure 5-7.

Responsibility. RNs from hospital B scored significantly higher regarding responsibilities for prevention of complications (A vs B: Z = 2.640 p = 0.008; B vs C: Z = 2.683 p = 0.007) and evaluation (A vs B: Z = 3.510 p = 0.001; B vs C: Z = 3.477 p = 0.001) compared with the RNs from the other two hospitals.

Knowledge. The RNs from hospital B scored significantly higher regarding knowledge about assessment (B vs C: Z = 2.427 p = 0.015) and goal (B vs C: Z = 3.458 p = 0.001) than the RNs from hospital C, and for prevention of complication (A vs B: Z = 2.506 p = 0.012; B vs C: Z = 2.650 p = 0.008) and evaluation (A vs B: Z = 0.001 p = 0.001; B vs C: Z = 3.107 p = 0.002) compared with the RNs from hospital A and C.

Documentation. The RNs from hospital B felt significantly higher support from the documentation regarding assessment, (B vs C: Z = 2.431 p = 0.015), planning and implementation of interventions (B vs C: Z = 2.405 p = 0.016), planning and evaluation (B vs C: Z = 3.438 p = 0.001) than the RNs from hospital C.
Scales could range from 1 (very small extent) to 5 (very great extent).

Figure 5-7. RNs’ perceptions of responsibility, knowledge and documentation in relation to assessment, goal, planning and implementing interventions and evaluation (mean value, total group and hospital A, B and C).
Prescription of enteral nutrition

The planning of the patients’ nutritional care in the ICU was made on a daily basis. According to the majority of RNs, the physicians prescribed lactobacillus and the amount, type and rate of EN for the patients (Figure 8). About half of the RNs considered themselves involved in decisions regarding type, rate and lactobacillus. Dieticians, enrolled nurses and others (the kitchen staff) were rarely involved.

Figure 8. Who is prescribing the amount, type and rate of EN, and lactobacillus.
**Enteral nutritional nursing care**

The results from the questionnaire showed to what extent (mean value) enteral feeding interventions were performed in accordance with what was considered good nutritional nursing care. Scores could range from 1 (never) to 5 (always) (Figure 9). A low score was considered good regarding “medications that should not be crushed are administered in crushed form through feeding tube”. A continuous feed, with a night rest, was preferred ahead of bolus feed, at the time of the study, and checking of gastric residual volumes was not recommended. Confirmation of tube placement before delivery was almost always performed.

RNs from hospital A ($Z = 2.805; p = 0.005$), and B ($Z = 3.230; p = 0.001$), to a significantly higher extent than RNs from hospital C, answered that the feeding schedule allowed for a night’s rest. RNs from hospital B cleaned the syringe after use to a significantly higher extent than RNs from hospital A ($Z = 3.546; p = 0.000$).

![Figure 9. RNs’ perceptions of enteral nutritional nursing care (mean value, total group and hospital A, B and C).](image)

49
The results from the questionnaires also showed that most RNs, 42 out of 44 (95%), answered that they used a specific position for patients during enteral feeding, but only 11 RNs specified the backrest elevation to be 30 degrees or more. An open question about how the small bore tube position was checked after insertion, revealed that the majority of the RNs, 38 out of 44 (86%), auscultate over the abdomen with a stethoscope, while insufflating air through the tube. Thirty-two out of 44 (73%) responded that the position of the tube was checked by x-ray. Less than one fourth, 23%, aspirated gastric contents. Other answers were that the RNs “check pH level” and “put the tube in water”.

The results from the observations showed that the feeding tube was always securely fastened without risk of damaging the eye or being taped over damaged skin. In all observations except one, the feeding tube was positioned in such a way that it did not strain the nose. The feeding tube was taped onto the cheek in one observation. A small bore feeding tube was used on seven occasions on two different patients. There was no case of percutaneous endoscopic gastrostomy or gastrojejunostomy during the study. None of the feeding tubes were labelled in accordance with recommendations.

An infusion line for enteral nutrition was always used. All feeding pumps used (n = 37) during bedside observations were labelled “for enteral use only” but only 18 in Swedish. A syringe was used at bedside (for administering enteral nutrition, medications and checking GRV) in 38 out of 40 observations. The syringe was replaced within 24 hours in 30 out of 38 observations, according to the labelling of date and time for replacement. The syringe was labelled “for enteral nutrition” in 31 out of 38 observations.

Seven out of 40 bedside observations revealed a backrest elevation of 30 degrees or more. Mean backrest elevation was 20.7 (SD 8.9). Twenty-nine out of 40 observed patients were mechanically ventilated and only 3 out of those 29 had an elevation of the head of 30 degrees or more. Mean backrest elevation was 19.2 (SD 6.92). There were no significant differences in backrest elevation between ventilated and non-ventilated patients. Patients positioned on right lateral position (n = 5) had significantly lower backrest elevation compared to patients positioned on their back (n = 29) (Z = 2.413; p = 0.016). The endotracheal tube was cuffed so that no air leakage could be heard.
Study III

The developed substantive theory of RNs and enrolled nurses concerns and strategies of nutritional nursing care for patients with EN, includes the core category “to have and to hold nutritional control – balancing between individual care and routine care” and the categories “knowing the patient”, “facilitating the patients’ involvement”, “being a nurse in the team”, “having professional confidence” and “having a supportive organization”. All five categories are related to the core category and to each other.

To have and to hold nutritional control over the patient’s nutritional care was found to be balancing between individual care and routine care. When having balance between individual care and routine care, nurses felt that the patient’s well-being, security and quality of care improved. In addition, it made the nurses feel proud and satisfied that they did a good job. When the balance was not achieved, or when it was disturbed, such as when the routine care was felt to take precedence over the unique patient’s individual care, disappointment was expressed.

To know the patient’s nutritional history, needs and preferences, and feeding tolerance in combination with professional confidence and collaboration within the health care team, helped nurses to facilitate patient’s involvement in nutritional care. By creating options for nutritional choices and encouragement the patient could take part in decisions. The next of kins were invited to participate and thereby further enhance the patient’s nutritional intake. Nurses connected the individual patient’s nutritional need and preferences to their earlier experiences and knowledge of similar types of patients. The patients’ general condition was also taken into consideration. Being aware of one’s own knowledge regarding nutritional matters, gave nurses confidence in their own ability. Limited knowledge and experiences in combination with an open mind for new solutions led them to seek dialogue and cooperation with team members. The team was ruled by responsibilities, providing influence, but also challenging the nurses through attitudes and values. Within the organization some important factors were highlighted, such as the environment, tools, continuity and channels of information.

The nurses’ daily nutritional care was based on knowing the patient. Being familiar with the nutritional history of the patient was of importance, as it often had an impact on the actual situation in the ICU. Next of kin were contributing with information about the patient’s nutritional history. To know the patient’s
individual nutritional needs and preferences continuously during the ICU stay, was considered of great importance, giving the nurses a base for providing nutritional care. The patients’ individual need of energy, preferably measured via indirect calorimetric, gave the nurses feelings of security and control, as this measure could be compared with the actual intake. The patients’ feelings of hunger and appetite were welcomed signs of nutritional improvement; it emerged as a milestone in the nutritional care as the nurses then felt that the patients “were feeling better”. A close monitoring and evaluation of the patients’ individual feeding tolerance was another property. The feeding tolerance varied according to the patient’s condition, leading to adjustments in the nutritional care.

**Facilitating the patients’ involvement.** Creating options for choices and decisions were of importance, as these nutritional decisions could be some of the few decisions the patients were able to make. Giving time for reflection was a strategy used by the nurses when creating options for choices and decisions. The strategies for encouraging intake of food and fluids were to listen carefully to what the patient said and to explain things in a clear manner. An effort was made to motivate the patient, to make him or her realize that they must give it a try. Sometimes distractive maneuvers were performed. The nurses felt that they sometimes abandoned the encouraging maneuver. When the patients started to eat and/or drink, the next of kins were invited to participate. The nurses encouraged the next of kins to talk about food and fluid with the patient, to find out what the patient wanted now and what they were yearning for.

**Being a nurse in a team.** The nurses were seeking dialogue and cooperation regarding nutritional matters among or outside their own profession. The teams were of various constellations and shifted from time to time. Even the staff at the ward was sometimes part of the team mentioned, as a kind of extended team. However, the nurses were also aware that the nutritional knowledge among fellow workers could vary something that could affect the safety of the nutritional care. One strategy used to handle this and hereby secure the care, was to remind each other about what to do. The nurses were challenged by attitudes and values in their daily nutritional work. They felt that nutrition in general was not considered as important as other treatments. Yet, nurses with long experience had noticed an increase in positive attitude among all staff members towards nutritional issues. The nurses felt that nutritional nursing care must be more than just about which pump to use. Going beyond the routine
could be a dilemma. The nurses had experienced that they were ruled by responsibilities within the team. Enteral feeding was often delegated from the RNs to the enrolled nurses, while the RNs were mainly handling the parenteral nutrition. This routine is a way of sharing responsibility, which worked smoothly and securely, but some RNs experienced a loss of control when EN was delegated to the enrolled nurse. Some enrolled nurses had experienced loss of control when RNs took over the checking of the location of the feeding tube. Communication and trust in each other was needed. Having influence within the ICU team meant that the nurses could suggest improvements. They were pleased when they felt that there was an open atmosphere to express wishes. Ahead of the patients' transfer to their home ward, extended concerns were raised regarding the nutritional care.

Having professional confidence in the form of having knowledge was of importance in the daily nutritional care. With awareness of the complexity of the patients' conditions, however, and the rapid changes that could occur, the nurses expressed openness for new ways of solving problems. Having experience of different types of patients helped the nurses to separate the standard patient, or the so-called “easy ones” in need of standard care, from the more ill or specific patient, in need of special attention. It made them confident enough to sometimes go beyond the framework, to deviate from guidelines and attitudes. Lack of former experience, expressed by nurses with short experience of intensive care, made it more difficult to know what to expect.

The nurses addressed several factors within the supportive organization as valuable for nutritional care. The environment, such as placing the patient in an ICU module, in an armchair during meals and serving the food and fluid in an attractive way had impact on the patients’ nutritional intake. Tools like guidelines, documentation and feeding pumps were all supportive to the nutritional care, but they could also be an obstacle. Guidelines regarding nutrition and gut motility were considered clear. Deviations from current guidelines were also described and observed. The use of nutritional feeding pumps led to slower, continuous delivery, leading to fewer complications such as diarrhoea. Malfunctioning pumps caused a lot of irritation putting patients at risk. Continuity in the nurses’ schedules, enhanced nutritional care of the patient and having channels of information was needed in order to provide secure care, while lack of appropriate information channels led to rumours and confusion about what to do.
Study IV

The patients’ experiences of nutritional care within intensive care is here presented in the form of a substantive theory, based on one core category and three categories, all related to each other. The core category “grasping nutrition during the recovery process” was reflected in and related to the categories “facing nutritional changes”, “making sense of the nutritional situation” and “being involved with nutritional care”. While grasping the nutritional situation, the patients were emotionally shifting between worry, fear and failure, and relief and hope.

Grasping nutrition during the recovery process became a goal for the patients in order to return to their normal lives or to come through the ICU period. They found themselves facing nutritional changes they could not solve themselves, indicating their dependency of care. The nutritional changes differed according to their general health condition and treatment, meaning that the problems could come and go, succeed one another or be present all at the same time. Feelings of relief were expressed when certain cutting points were reached, giving hope for further improvements. When making sense of what was going on nutritionally, the patients reflected on the meaning of nutrition as a whole and in relation to their present condition and their ability to get well. They used their former and present experiences of nutritional care. Ever-new challenges in their nutritional condition were compared and evaluated according to their earlier experiences, resulting in feelings of satisfaction or dissatisfaction. Being involved with nutritional care was described as a progression from handing over nutritional care to the health care professionals to having a voice of choice. Furthermore, the patients involved their next of kin to take part in their nutritional care. The patients’ ability to be involved with their care also varied in accordance with their nutritional status.

The nutritional changes they were facing were of varying degree and could come and go in accordance with their general health condition during the recovery process. Inherent in the awareness of having nutritional changes was also their awareness of need of care. Being thirsty was a prominent problem and strong feelings of longing to quench their thirst were expressed. Once allowed to drink, patients felt relief and hope. They also experienced difficulties in eating and swallowing. Their eating difficulties showed a wide range of impairments that affected their ability to eat, from handling food on the plate and to the mouth, handling it in the mouth, to swallowing. Changes in their appetite were
also expressed, from having no appetite at all and thereby not wanting to have anything to eat, to being so hungry that the food could not be served fast enough. The smell and taste of enteral feeding formula as well as of food and fluid had an impact on their appetite. Nicely served food enhanced their appetite. Having abdominal discomfort, like changed bowel activity, bad smelling wind and pain was other unpleasant experiences. Turning points were regaining the appetite, getting rid of the feeding tube and regaining a functioning gut.

The patients put a lot of effort into how to make sense of their nutritional situation, and of what they had experienced, by deliberately using different strategies. Feelings that were expressed ranged from being dissatisfied to being satisfied. When considering the meaning of nutrition they found that food and nutrition was essential in their lives in general and a must for their recovery process. The patients’ former experience of nutritional impairments and care was a source of knowledge, for recognition and comparison, and could make their nutritional situation comprehensible and understandable during their ICU stay. The outcome of nutritional care during the ICU stay was mentioned in relation to having their nutritional needs satisfied, their weight kept stable and experienced support from health care professionals, resulting in feelings of satisfaction or dissatisfaction. The patients emphasized the importance of being informed, listened to and encouraged. This made them feel at ease, supported and safe.

Being involved in nutritional care was reflected in a gentle progression from not being involved at all to being somewhat involved in the nutritional care. This progression was intertwined in their general condition and trust in the health care professionals. Some patients are handing over their nutritional care to the health care professionals because they were too ill and could not manage, or they did not want to. Having a voice of choice was experienced when they had been given opportunities to make choices and were invited to take part in nutritional decisions and care. When the patients were being served food and fluid they did not like, they were getting more specifically involved in the nutritional care, by setting limits. The patients were involving their next of kin by asking them to bring them their favourite food and fluid and to assist them when eating.
Comprehensive understanding

When analyzing the four studies as a whole, the findings show that nutritional nursing care is related to the interactions between the nurse and the patient, between the nurse and the team members, and between the nurse and the organization.

Nutritional nursing care and the nurse-patient interactions
Assessment, intervention, evaluation and documentation of nutritional nursing care are important for the patients' nutritional condition and experiences. The patients and nurses are thinking and reasoning, using their experiences and knowledge in relation to nutritional nursing care. Patients express two different facets of involvement in nutritional nursing care. The nurses encourage the patients' involvement in nutritional nursing care.

Nutritional nursing care and the nurse-team interaction
Individuals and the team(s) are interwoven in the nutritional nursing care. Within the team the nurses are both supporting and challenging. Depending on the team members' knowledge, experience, attitudes, values and decisions the nutritional nursing care may vary. Nurses are seeking dialogue and cooperation among the team members and are being ruled by responsibilities.

Nutritional nursing care and the nurse-organization interaction
The nurses interact with different factors of importance for the nutritional nursing care, provided and maintained by the organization. Guidelines, documentation, assessment/screening tools, environment, nutritional team and continuity can all be supportive. If the factors are not fully implemented, being insufficient or not individually adjustable, they might have a negative impact on the nutritional nursing care.
DISCUSSION

General discussion

The overall aim of the thesis was to gain a deeper understanding of nutritional nursing care in municipal care and county council care, with special focus on enteral nutrition in the ICU. When analyzing the four studies as a whole (I-IV), nutritional nursing care appears in interaction processes between the nurse and the patient, between the nurse and the team, and between the nurse and the organization. Interaction is a central concept in nursing. Interaction is important for building relationships with the patient and for assessment of the patient’s needs and resources (Meleis, 2007; Travelbee, 1971).

Study IV showed that grasping the nutrition during the recovery process can be a way to regain some control in a situation where the patients are highly dependent on professional care. Being treated in an ICU is an extreme life situation as the threat of death overshadows everything and perforates the patients’ existence (Almerud et al., 2007). Therefore, having control of one’s life is an important part of feeling safe in the ICU (Hupcey, 2000). To have and to hold nutritional control – balancing between routine care and individual care was found to be the core category of nutritional nursing care according to the nurses (III). Having control is known to be central to expert clinical and ethical judgement (Benner et al., 1999) but in study III this was found among nurses, whether they were beginners or had worked at the ICU for a long time.

Nutritional nursing care and the nurse-patient interaction

The patients’ nutritional condition, patients’ and nurses’ thinking and reasoning, and patients’ involvement are parts of nutritional care and the nurse-patient interaction.

The patients’ nutritional condition

Facing nutritional changes like thirst, changed appetite and hunger, eating and swallowing difficulties, and abdominal discomfort were bothersome experiences for the patients in the ICU (IV). This is a more nuanced picture than described earlier. Nutritional support, like EN and PN, is considered standard care during the ICU stay (Kreymann et al., 2006). However, along the recovery process, the patients are also likely to start with fluid and food orally
(Berger et al., 1997; Villet et al., 2005). Interestingly, PN did not cause the patients any worries, while EN and oral nutrition did (IV). Changes in appetite-related gut hormones in patients in the ICU have been found, which might explain the continuing nutritional deficits (Nematy et al., 2006). This might in turn explain why it was such a relief when the appetite returned (IV). Recently, Karlsson and Forsberg (2008) found that when patients who were conscious during ventilator treatment in the ICU started to feel better, the first sign of yearning became evident in the form of yearning for different tastes and smells.

In study I an assessment of a patient’s nutritional condition was not always performed. According to the RNs and the special medical nurses and the first-line nurse managers (CNs) less than half of all the patients in municipal care and county council care were routinely assessed. Instead, the patient’s condition, diagnosis, care/treatment and age were taken into consideration as reasons for assessment. A low performance of nutritional assessment was also found recently among nurses in Amsterdam (29.9%) (Bavelaar et al., 2008) and in Denmark (40%) (Lindorff-Larsen et al., 2007).

The RNs in the three ICUs scored low for the first phase of the nursing process; the assessment, with regard to knowledge, responsibility and documentation, when compared with other phases of the nursing care process (II). This finding is not in accordance with another study which found that nutritional assessment was considered a nursing responsibility (Perry, 1997). Our results might indicate a focus on treatment and preventive interventions rather than assessment, and that the assessment may be a weak link in nursing. The reasons might be found in inadequate knowledge and skill, or perceived lack of resources, such as assessment tools and structured documentation specialized for nutritional assessment. In addition, nurses might think that nutritional assessment is not part of their role, something which has been discussed recently (Adams et al., 2008).

Assessing the patient’s feeding tolerance is a concern for nurses in the ICU, because impaired gastrointestinal motility, altered cough and gag reflex, and endotracheal and nasogastric tubes increases the risk of aspiration (Marshall & West, 2004). Despite this, there is no consensus regarding assessment of feeding tolerance (Reintam et al., 2008). The management of monitoring tolerance to enteral feeding, like withholding EN in patients with diarrhea and ceasing EN when GRV is high, may result in inadequate delivery of nutrition.
(Marshall & West, 2004). Further research addressing the assessment and management of feeding tolerance is therefore required.

Knowing the patients' nutritional conditions was the basis of the nurses' daily nutritional care in the ICU (III). RNs and enrolled nurses considered the return of the patients' appetite as a milestone in their recovery. However, the patients' appetite should not only be assessed. A care plan has to be set up and followed, but individual testing of the patient's favourite foods and fluids is also an important nursing task that can help enhance the intake. The congruence in perception of nutritional needs between nurses and patients was not studied here, but Florin (2005) found that nutritional problems, described as severe or very severe by patients, were not identified by RNs in acute setting (Florin et al., 2005).

Feelings of worry and fear were bothersome for the patients (IV) and the nurses talked about the importance of information and to really listen to the patient (III). Nursing caring behaviour, like relieving the patient from worry and fear, is found to be most valuable to the patients (Hofhuis et al., 2008b).

**Thinking and reasoning**

The patients' ability to recognize former experiences enabled them to react when different experiences occurred in a new situation. The patients put a lot of effort into making sense of what was going on nutritionally and to avoid bothersome experiences (IV). This is of importance to the patients in order to find out if they possess the motivation and desire to cope with their nutritional changes (Antonovsky & Elfstadius, 2005). To help the patients find meaning in these experiences and to cope with them, is crucial in nursing care (Travelbee, 1971). RNs have a key role in preventing and reducing the bothersome experiences and in strengthening the patient's own ability to handle the situation.

The patients were considering the outcome of the nutritional care provided during the ICU stay and they thought that their needs of nourishment had been satisfied (IV). This is interesting, as this phase is associated with low energy delivery according to the literature (Adam & Batson, 1997; Binnekade et al., 2005; McClave et al., 1999; Villet et al., 2005). It is also known that patients expect the nurses to be familiar with their condition, to provide them with
adequate care all the time and to always be there when needed (Staniszewska & Ahmed, 1999). Apart from weight changes and feelings of being sated, the outcome in form of safe, supportive nutritional care, reflecting successful nutritional care was expressed (IV). A feeling of safety among patients reflects supportive care settings (Edvardsson et al., 2005), which may decrease the patients’ vulnerability (McKinley et al., 2002).

The RNs’ and enrolled nurses’ combination of knowing the patients condition over time and being aware of, and reflecting over their own knowledge in connection with former experiences regarding nutritional care, gave confidence in how to handle the present situation (II). This confirms the findings of Benner (1996), who found that nursing actions in the ICU were response-based, relying on intuition of what had worked in similar situations in the past, individually modified in accordance with the patient’s individual response. Furthermore, the nurses were proud of their achievements regarding the patients’ nutritional care. Having confidence when dealing with patients, next of kins and other professionals is of importance (Endacott, 1999).

The RNs and enrolled nurses were also aware that they did not always fully embrace the patient’s complexity of problems and needs, or the options of nutritional care (III). They admitted that they might not know everything regarding nutrition and were trying to find new solutions, which could lead them to seek dialogue with fellow workers. According to Benner (1999), they remain open to the fact that they might be wrong and make an inaccurate judgement, and they admit that their preconceptions must be reconsidered. Being able to recognize when one does not have a good grasp of a situation is a perceptual skill. A good clinician is thinking in action and reasoning through transitions in the patients’ condition.

The RNs’ primary source of knowledge about EN in study II was consultations with colleagues, while scientific journal articles and study programme in nursing contributed to a small extent. Also in municipal care the use of research findings in daily practice is low (Boström, 2007). The team share knowledge from each other, because it is not only individual knowing that is needed to carry out intensive care (Wikström & Larsson, 2004). When looking into what counts as evidence in nursing care, it was found that effective patient-centred nursing care can be achieved by not only using research, but also by clinical experience, patient experience, and information (Rycroft-Malone et al., 2004).
A common cause for insufficient nutritional care is the lack of knowledge (Hansson & Wenström, 2005; Lindorff-Larsen et al., 2007; Mowe et al., 2008; Olsson et al., 1998; Perry, 1997) and insufficient education (Council of Europe, 2003). In nursing education in Sweden, nutritional content and extent varies. Nutrition is usually integrated with other topics and under different headings (Unosson, 2000b).

**Involvement**

The findings showed that there were two different facets for patients’ involvement in the nutritional care. The patients were either involved in at least some nutritional decision, or they were handing over the care to professionals. Having a voice of choice meant that the patients had been informed about alternatives and options so that they could choose, for example between different types of dishes and fluids, size of portions and rate and amount of enteral feeding (IV). Another study found that patients in an ICU do not want to feel responsible for control over medication or care instructions, while everyday things, such as personal hygiene and position in the bed were important to have some influence over (Wåhlin et al., 2006). Perioperatively, the patients deliver themselves over to the hands of the staff, resulting in feelings of well-being when being received and protected by the staff (Lindwall, 2004). Even patients in an infectious disease ward preferred a rather passive role in clinical decision-making in general nursing care (Florin et al., 2006). Within the area of withdrawing or withholding life-sustaining treatment, patients in the ICU are involved in decisions regarding nutritional support (Happ et al., 2007). Study III showed that nurses perceived that the patients were involved in the daily nutritional care. Encouraging and stimulating the patient’s own ability and will to eat (III) may be a part of strengthening and stimulating the patient’s inherent joy of life and will to fight while being in the ICU (Wåhlin et al., 2006).

The findings also showed that there sometimes was a dilemma between doing good and taking the patient’s own will/autonomy into account. Strictly following nutritional guidelines and traditions could sometimes contradict the patient’s own will (III). The nurses felt that they sometimes abandoned the encouraging maneuver, even if they did not like to do so, in favour of a very persistent pressing to make the patient drink or eat. It is known from other areas that when the patient’s own will is not obvious, the staff is using the
principle of doing good, while situations where the patient’s will is clearly grasped, the more respectful the staff becomes about the patient’s right to self-determination (Jansson & Norberg, 1989; Jansson & Norberg, 1992).

The next of kins were found to be invited to participate in the nutritional care by both patients (IV) and nurses (III). Finding a niche appeared to be important for the next of kins, as it provided them with a sense of control and enabled them to support and look after the patient. The next of kin expressed a need to participate in the daily care in some way, because they wanted to do something more than just being there (Hupcey, 1999). Next of kin contributed with information about the patient’s eating habits and preferences, which made it easier for the nurses to individualize the care for the patient (III). The next of kins are found to be of importance for both the patient and the staff in the ICU and are actually taken for granted (Engström & Söderberg, 2007). Regarding the next of kin as contributors in nutritional care, this involvement is a highly relevant nursing issue. Nurses need to look after this opportunity and understand how their actions can help to improve this collaboration.

**Nutritional nursing care and the nurse-team interaction**

Seeking dialogue and cooperation, being challenged by attitudes and values and being ruled by responsibilities, are all parts of the nutritional nursing care and the nurse-team interaction.

**Seeking dialogue and cooperation**

Being a nurse among team members was a support for RNs and enrolled nurses (III). They were seeking dialogue and cooperation regarding nutritional matters, among or outside their own profession. Within the ICU team, it is known that communication, teamwork and mutual support are factors of importance for the care (Wilkin & Slevin, 2004). Also nurses’ own abilities to see the problems and the environment, and finding relevant supporting ways of dissolving the problems are also crucial (Wikström & Larsson, 2004).

There is greater nurse-physician collaboration among critical care nurses compared to generalist nurse colleagues (Chaboyer & Patterson, 2001). Enrolled nurses collaborate mainly with RNs in the ICU, while the RNs also collaborate with other RNs and physicians in the ICU, as well as with RNs and physicians on other wards (Thunborg, 1999).
Depending on the team members taking part in the rounds or which RN and enrolled nurse that worked the shift before, decisions and care vary (III). Nurses experienced how ranks within the team influenced the quality of the decision-making (Gurrey et al., 2006). Different levels of skills and acquisitions to function as a team member have been found to be barriers for teams working in acute health care. Assertiveness and confidence are essential skills that are needed in order to function as an effective team member (Atwal & Caldwell, 2006).

**Challenged by attitudes and values**

The nurses were challenged by attitudes and values of nutritional issues in the team, which influenced the daily nutritional care (III). Nutritional issues are found to have low priority among health care professionals (Lennard-Jones et al., 1995; Xia & McCutcheon, 2006). Another study found that the attitude of the staff towards nutritional nursing care was overall positive, mainly regarding the importance of food. (Christensson et al., 2003). In another study, RNs and nurse aids did not show an unequivocally positive attitude regarding their nutritional responsibility (Bachrach-Lindström et al., 2007). In our study though, RNs and enrolled nurses with long experience emphasized that nutrition had higher importance nowadays than before. Increased awareness and knowledge, along with the introduction of a nutritional team on the ward, were factors mentioned as the reason for this (III).

**Ruled by responsibilities**

The division of responsibility led to different feelings, and highlighted the demands on communication and trust, because if that failed, they expressed feelings of fear of losing control (III). Despite the fact that nutritional responsibility is divided between several health care professionals, the nurses scored higher for having responsibility compared with having knowledge (II). Having a sense of control over nutritional care and being supported within the team is an important cornerstone in nutritional care, because minimal control and little support from colleagues results in increased stress among nurses (Berland et al., 2008). Team work involves not only one's own role, but also the role of other team members. Understanding the multidisciplinary concept and agreeing on common purposes is needed to become an effective team. The team also needs to value each individual contribution to the team. Leaders must
allow team members to express their opinions, even controversial ones (Atwal & Caldwell, 2006).

A wish of having a prolonged nutritional responsibility ahead of a patient’s discharge from the ICU was expressed. The RNs and enrolled nurses were concerned with the patient’s nutritional well-being, even after transfer to the ward (III). There may be some justification for their concern, because patients transferred from ICUs to surgical wards have expressed a significant shift in security. Despite stressful situations in the ICU, the patients felt safe, while after transfer to the ward feelings of insecurity dominated (Hoghaug & Fagermoen, 2007).

Nutritional care is complex and coincides partly with other health care professionals. Therefore, a multi-professional working team is fundamental in nutritional care. Having a patient-centred approach, using evidence-based care, procedures and protocols, paying attention to records, monitoring progress and outcomes, communication, ability to maximise the individual attributes of each team member, having a collaborative approach, creativity, and supportive culture are some factors mentioned as important in the ESPEN guidelines (Howard et al., 2006).

**Nutritional nursing care and the nurse-organization interaction**

Guidelines, documentation, assessment/screening tools, the nutritional care environment, nutritional team and continuity are parts of the nutritional nursing care and the nurse-organization interaction.

**Guidelines**

The study of enteral feeding interventions (II) showed some deviations from the current guidelines. The use of a backrest elevation of 30 degrees or greater was for example minimal, a finding correlating with other studies (Grap et al., 1999; Grap et al., 2003). The reason for this could be the difficulties in estimating the bed angle (McMullin et al., 2002), but yet another study found that RNs are accurate in estimating backrest elevation (Dillon et al., 2002). This indicates that there might be other explanations, such as insufficient awareness of its benefits, real and perceived deterrents, poor agreement about
implementation responsibility and lack of enabling and reinforcing strategies (Cook et al., 2002).

The nurses considered the guidelines regarding nutrition used in the ICU to be clear, available, uniform, easy to handle and well used, and hereby supportive in the daily care of the patients. Some deviations were deliberately made to better suit the patients’ needs, while other routines were simply not followed due to forgetfulness (III). When reviewing the diffusion of innovations in organizations, it was found that there is little research regarding why and how people and organizations reject an innovation after adopting it (Greenhalgh et al., 2004).

Interestingly, the result of study I showed that, among RNs, special medical nurses and first-line nurse managers (CNs), there was a low awareness of guidelines regarding malnutrition, while the majority of RNs working in the three ICUs in study II answered that there were guidelines about EN. Being familiar with guidelines does not automatically mean that they are used (Wallin et al., 2000). RNs and physicians do not always adhere to nutritional guidelines (Mowe et al., 2006; Rasmussen et al., 1999). Guidelines are unlikely to change practice without an active implementation strategy. Evidence, context and facilitation are found to be the three elements for successful implementation in health care (Kitson et al., 1998; Rycroft-Malone et al., 2002). Implementing clinical guidelines is a dynamic and complex process. It involves motivation of initiating, facilitation, factors influencing compliance and use, motives and necessity of evaluation and values of successful implementation (Bahtsevani, 2008).

Nutritional guidelines in Europe are mostly developed by physicians (54%) when compared to nurses (21%) and multiprofessionals (16%) (Fulbrook et al., 2007). The development of nutritional guidelines is further challenged by the lack of evidence supporting nutritional nursing practice recommendations (Williams & Leslie, 2004; Williams & Leslie, 2005). Despite this, The National Board of Health and Welfare just recently found that there is already an extensive amount of regulations and standardizations regarding nutrition (Socialstyrelsen, 2007b). This implies that RNs need to intensify the use of already existing guidelines, but also that RNs should consider both standards and individual judgements as important to the patient’s nutritional safety (Berland & Natvig, 2005). The education of RNs, physicians and enrolled
nurses must be ongoing in order to promote the use of guidelines (Bourgault et al., 2007).

Documentation and assessment/screening tools

The result of study I showed that the minimum level of recommended nutritional assessment and documentation, including BMI, weight loss, mouth and eating problems (Unosson & Rothenberg, 2000), all allowed in the VIPS model, were not fulfilled. Important nutritional notes have been found missing in other studies (Ehrenberg & Birgersson, 2003; Söderhamn et al., 2007). Emanuelsson (2000) found that notes on nutrition were made in 87% of acute medical care records, while the notes on nutrition in municipality care were rare. The majority (84 %) of health care staff in a neurological intensive care unit thought that the fluid balance was documented in accordance with guidelines, but commented that the nutritional content could be poorly documented (Hansson & Wenström, 2005). The two major risk factors for malnutrition in elderly hospitalised patients; recent weight loss and appetite, were poorly documented in a recent study (Adams et al., 2008).

Reasons for the low frequency of documentation (I) might be that nutritional problems remain unidentified by the RNs (Florin et al., 2005) and that there is a lack of nutritional knowledge (Hansson & Wenström, 2005; Kowanko et al., 1999; Lindorff-Larsen et al., 2007; Mowe et al., 2008). The complexity of documenting nutritional issues were further highlighted in study II, where RNs scored highest for documentation of planning and implementation of interventions and lowest for documentation of assessment. This indicates that some parts of the structure of the documentation may be more supportive than others or more known than others.

The finding that the VIPS model is a guide (I), according to the RNs in municipal care and county council care, is in agreement with the aim of the model, while perceiving the model as obstructing information exchange in writing, reading and care are new phenomena, as far as we know. It is also striking that what is praised can also be criticized, and that those who talked about advantages and disadvantages were not separated into different groups. On the contrary, RNs who noted advantages also noted disadvantages. This may reflect that RNs are familiar with the model’s strengths and weaknesses, but also that nursing documentation needs further development. For example,
the flow sheet did not cover all important nutritional issues (II). Finding important information is difficult due to the amount of routine nursing notes (Törnvall & Wilhelmsson, 2008). The structure of the VIPS model influences the scope of thinking and actions of the individual nurse in various ways (Söderhamn & Köhler, 2005). If notes relevant to the patient’s nutritional status are not recorded, patients at risk may not be identified (Söderhamn et al., 2007) and it is difficult to verify on what grounds decisions and interventions have been made (Karkkainen & Eriksson, 2005).

One reason for the limited use of assessment/screening tools (I), confirmed by other studies (Alfengård & Klevsgård, 2005), could be that they maybe not so easy to use (Söderhamn, 2006) and that there is a lack of instructions and guidelines (Kondrup et al., 2002). Another reason could be that the special medical nurses/first-line nurse managers (CNs) and RNs simply trust their clinical judgement and therefore abandon the tools.

However, according to the majority of the RNs, with or without assessment/screening tools they documented whether the patient was well-nourished, at risk of being malnourished or malnourished (always or sometimes) (I). In another study where the nutritional notes in the nursing documentation were compared with the results of a screening instrument (NUFFE), deficiencies were found, which indicated that patients at risk of becoming malnourished were not identified (Söderhamn et al., 2007). There is a positive impact on nutritional documentation and an increase of nutritional care when using assessment/screening tools, but it may not be the magic bullet to improve nutritional outcome (Jordan et al., 2003). Nutritional screening and assessment tools should support, but never replace, the nurse’s clinical judgement (Weekes et al., 2004) and be linked to a care plan (Elia et al., 2005). Interestingly, the patients in study IV were well aware of nutritional documentation and thought it made nutritional care more secure.

Nutritional team

The lack of a nutritional team in the ICU (II) is in line with other studies (Bottoni et al., 2008; Preiser et al., 1999). Furthermore, only 9.7% of the nutritional teams in Europe are led by nurses (Fulbrook et al., 2007), and nurses often view their role in the nutritional team as incidental (Rodriguez, 2004). According to the majority of RNs, there was a nurse with nutritional
responsibility in all three ICUs (II), but this does not compensate for the lack of nutritional teams.

The nutritional care environment

The patients' intake of fluid increased when fluid was served in attractive ways, for example with nice glasses on foot and with decorations, according to the nurses (III), and this made the patients more satisfied (IV). In nursing home settings it is found that drinking glasses and meals served on dishes at the table have a significant impact on the intake (Nijs et al., 2006). Having the equipment for serving the meals in a nice way made the nurses pleased with their care (III). This was hopefully mirrored in the care, because it has been found that within a positive environment, the patients feel safe, are receiving extra care and participate in their care (Wåhlin et al., 2006). Reflecting on routines and adjusting them in accordance to the patient's needs and creating cozy eating environments are prerequisites for improved nutritional intake and well-being (Sidenvall, 2003).

Continuity

Having continuity in the nurses' schedules was experienced as making them take more responsibility. Continuity made them more aware of the patient's nutritional need and they made sure that the patients' gut motility was in order, thereby facilitating the delivery of enteral feeds (III). When evaluating organizational changes in ICU in the form of dividing nursing staff into caring teams, the amount of care each patient required affected the number of patients each nurse was responsible for. The quality of care improved according to the changes (Boström et al., 1992).

Leadership

The leadership was not explicitly revealed in this thesis, neither by nurses nor by patients. This might be explained by the constant referring to the team, that they include the leaders in the team, but also by an invisible leadership in nutritional issues. Leadership is however known to be closely related to organizational change, improvements in care (Kitson et al., 1998; Rycroft-Malone et al., 2004; Wallin, 2003), work satisfaction (Gardulf et al., 2008) and research use (Boström et al., 2007; Kajermo et al., 2001). However, the
implementation of evidence-based nursing care into practice is a complex activity involving not only individual but also organizational factors (Boström et al., 2007). There is a significant link between the context and the research utilization, meaning that the better the contextual conditions are, the higher the use of research findings (Kitson et al., 1998; Wallin et al., 2006). Creating strategies for supporting nurses’ professional development (Kajermo et al., 2008) and having a learning and supportive professional environment that involves staff in decision-making at the unit level are factors that improve the organizational potential of getting research into practice (Wallin et al., 2006).
Methodological considerations

Multiple data sources or data triangulation in the form of space triangulation were used in study I. With another design, we could have strengthened this form of triangulation further. It has been argued that simply collecting data from multiple sites, without cross validation, is not considered actual use of space triangulation (Halcomb & Andrew, 2005). Another form of data triangulation was used in study I and III, called person triangulation. Data was collected from two levels of RNs, comparing RNs and special medical nurses/first-line nurse managers (I). In study III data was collected from RNs and enrolled nurses. Data was used from one level of nurses to validate data from the other level of nurses, which increased understanding and gave a more nuanced picture.

Methodological triangulation at design level is referred to as between-method triangulation, and at data collection as within-method triangulation (Denzin, 1970). In this thesis, a design with both qualitative and quantitative methods in different studies was used to reflect the nutritional care (between-method triangulation). When using the within-method triangulation, the weaknesses of the questionnaire (I) were somewhat compensated for by the strengths of the qualitative content analysis of the open-ended question regarding nutritional assessment. Hereby a greater insight into the meaning behind the findings obtained from the closed-ended questions regarding nutritional assessment was achieved. In the same way, bedside observations and questionnaires (II) partly compensated each other. The combination of observations, interviews and memos (III and IV) is common in GT and strengthens the credibility.

The number of participants in our studies might be considered low, yet some interesting results were noted. Perhaps designs with larger sample sizes could have been desirable.

Response rates of 76% (municipal care) and 67% (county council care) in study I and 70% in study II are considered sufficient (Polit & Tatano Beck, 2008). The combination of initial covering letter, addressed return envelopes (stamped in municipal care, free local delivery within county council care), two (I) and three (II) follow-ups, and personal information about the studies from the special medical nurses (I) and the first-line nurse managers (I and II) might have motivated the RNs to participate in the study (Polit & Tatano Beck, 2008;
Streiner & Norman, 2003). In addition, only RNs on duty at the time of the study were included, which ruled out those who were sick or on leave. However, in study I the external dropouts might be due to high workload and lack of time, which several RNs commented in returned, but unanswered questionnaires. Due to anonymous responses, no analysis of dropouts could be performed. Internal dropout rates were low for questions with fixed response alternatives, ranging from 2% to 16% (with one exception: tools 49%), and from 17% to 50% for open-ended questions (I).

The varying response rates between the three hospitals in study II might be due to organizational changes during 2001. After all, they do participate a on voluntary basis. The age of all RNs who worked in the studied ICU was compared to the responding RNs and no significant differences were found. Other factors, such as education, personality and experience could also have influenced the result. In study II, the time gap between the month under study and the return of the questionnaires was longer for some respondents than others and might therefore have affected the results.

Special medical nurses and first-line nurse managers (CNs) were chosen for the telephone interviews because of their overall nutritional nursing responsibilities in municipal care and county council care respectively. The concept chief nurse was used for both special medical nurses and the first-line nurses, because they were analyzed together (I).

Telephone interviews (I) were chosen because it can be seen as a convenient method for collecting specific information for the relatively brief semi-structured interview guide that was used, and it combines low costs (Polit & Tatano Beck, 2008) with high response rates (Streiner & Norman, 2003). Furthermore, the telephone interviews gave a broad representative sample of special medical nurses and first-line nurse managers, the number of omitted items was reduced, open-ended questions could be asked, and it saved time (Streiner & Norman, 2003). The challenge of maintaining participant involvement and clear communication was kept in mind during the whole interview (Musselwhite et al., 2007).

The questionnaires proved to be useful, cost saving, offered anonymity, and reached a large and geographically diverse sample (Polit & Tatano Beck, 2008). It could however be discussed whether some response alternatives could have
been more specific. In study I, for example, when answering the question about assessing the patient ahead of discharge, there should have been separated response alternatives for a patient discharged at home and for another caregiver. The questions concerning the VIPS model were not specifically concerning nutrition. However, one of the areas in the VIPS model is nutrition. In study II, some questions were related to the nursing process, but a modification was made. Nursing diagnosis was excluded, since the patients' problem and needs were documented under the subheading status in the studied ICUs (Feldt, 1999). A question about prevention of complications was added, since prevention is an important nursing task. If planning and implementation would have been separated, differences between these phases might have been noted.

The use of observations was a way to collect data about nutritional care, but there is always a risk of observational bias (Polit & Tatano Beck, 2008). The various findings, however, might indicate that this was not the case.

From literature, research and professional experience, an interview guide (I), a protocol (II) and questionnaires (I and II) were specifically devised and tested for face validity, content validity and clarity, which can be seen as a strength of the studies (Polit & Tatano Beck, 2008). In addition, the use of an interview guide that includes very much the same items as the questionnaire can be seen as a way to validate the content and clarity of the items. Both questionnaires and bedside observations reflected the same month in study II, something that strengthens the validity. The internal consistency regarding responsibility, knowledge and documentation was acceptable (II), because normal value is between 0.70 and 0.90 according to Streiner and Norman (2003). Perhaps the relatively high value could be due to redundancy from two items asking almost the same question, namely, complications and planning/implementation. Items regarding sources of knowledge and enteral feeding interventions were not considered to be measuring the same aspects, which is why homogeneity was not analyzed. By using an observational procedure, including established criteria in study II, bias regarding observer reliability has been eliminated as much as possible.

The result of the scores on the Likert type scale (II) was not considered severely skewed. Therefore, data was analyzed as if there were intervals without introducing severe bias, despite the fact that there are no guarantees that the
true distance between successive categories are the same. The reliability drops as fewer categories are used, therefore (the minimum of) five categories was used in the scale (Streiner & Norman, 2003).

Since three pair-wise comparisons were made (II), we needed to consider the chance of a type 1 error. To protect against that error, we used a Bonferroni correction (Munro, 2001). The main weakness with Bonferroni is that the interpretation of a finding depends on the number of other tests performed (Perneger, 1998). For small numbers of comparisons (up to five) the use of Bonferroni is reasonable, but for large numbers it is highly conservative and would suggest poorly specified research objectives (Altman, 1991). Another problem is that type I errors cannot decrease without inflating type II errors (Perneger, 1998).

A combination of latent and manifest content analysis makes the analysis richer, and interviews and observational protocols are considered the optimum units of analyses (Graneheim & Lundman, 2004), but in our case, the responses from open-ended questions were analyzed. A limitation might be that RNs sometimes tend to write quite briefly, which in a sense makes some of the answers condensed already and more difficult to interpret (I).

To achieve trustworthiness in the form of credibility, we chose to include special medical nurses from all municipalities and first-line nurse managers and RNs from a broad spectrum of contexts. When analyzing, we selected the most suitable meaning unit. Furthermore, the first author and two of the co-authors (BWL and MLHL) compared the codes and revised them until agreement was reached. Dependability in this study was achieved in that all respondents were given the same information and that the data collection period was quite short. The findings in the study may be transferable to similar Swedish municipalities and county councils (I). This is in the eye of the beholder. Furthermore, an effort was also made to achieve confirmability, the fourth concept, often used within trustworthiness, by clearly illustrating the evidence and analysis process that led to the final result (Speziale & Carpenter, 2007).

A limitation might have been that RNs and enrolled nurses (III) and patients (IV) from only one ICU participated in the GT studies. An over-representation of women in the study is not in accordance with the ICU in focus, where there is an over-representation of men, something that might have influenced the
The median age of 65 years is close to female patients in the studied ICU during 2006, while the median age was 64 years (men 58 years). Corresponding for the whole country was 61 years for both women and men (Nolin & Mårdh, 2007).

The reason for interviewing patients with ongoing or recently discontinued EN (IV), while still in the ICU, was to make sure that the nutritional experiences dealt with their ICU stay and were not mixed up with nutritional care at the ward. The data collection period was long, as it was difficult to find patients alert enough to participate. In study IV, the initial plan was to let the analysis guide who should be interviewed next (theoretical sampling), but the small group of patients lead to the decision of including all of them. The difficulty to find patients also had impact for choosing informants among the nurses. This highlights one of the problems of studying this group of patients. The interviews with often performed with one or two enrolled nurses and/or an RN present in the room during the interviews with the patient. This might have had an inhibitory effect and influenced the results, but their presence did not seem to be disturbing, and the result shows a nuanced picture of the nutritional experiences.

Conducting interviews with patients with communication difficulties can be challenging and therefore needs extra attention (Philpin et al., 2005). When the first author, experienced in intensive care and communicating with people with speech difficulties, such as those following a tracheostomy tube and general weakness, conducted the interviews, some practical strategies were used. Despite careful planning of the timing of the interview together with the patient, the RN and the enrolled nurse, there were unavoidable interruptions during almost every interview. For example, the patients started to cough and needed suction or they felt uncomfortable and needed assistance to change position in bed. In addition, the interview as a scientific method might be tiresome for a vulnerable patient in an ICU. When a patient became tired or felt uneasy in some way, the conversation was discontinued and the patient was allowed to rest. In three out of six interviews with patients who had a tracheostomy tube, a follow-up interview was carried out to continue interrupted interviews. For some of the patients the use of their “speaking valve” was of great help. For others, miming, writing on a paper or using a pointing board was more convenient.
In GT, credibility may be seen as inherent in the method, as the emerging theory is based on the method of constant comparison in which concepts and categories repeatedly emerge and guide the continuing research (Glaser & Strauss, 1967). In this study, the use of the multi-method principle was a way to further improve the credibility, and the combination of observations, interviews and memos made the data rich and extensive. In addition, the analysis and preliminary results were continuously discussed with the two co-authors.

Prior to these studies, the researcher had worked as an RN at the ICU in focus (III and IV). Being familiar with the actual ICU can be seen as an advantage, as it makes it possible to identify and reflect on nutritional matters that might have escaped the attention of a researcher without such a background (Lykkeslet & Gjengedal, 2007). But the findings may also be biased due to this pre-understanding. In GT, it is of importance to be aware of one's pre-understanding, but also to be able to put it aside. Again, the strength is that there were ongoing discussions in the research group during the analysis process.

When saturation was achieved, another two interviews were performed. Had not this been the case, additional informants might have been necessary. All participants were Swedish (III and IV), something which might have influenced the results. There is little known about how persons from other cultures experience nutritional nursing care in ICU.

However, the studies do not have the ability to embrace every aspect of nutritional care in an ICU. More research is therefore needed in other ICU settings to further develop these substantive theories.
CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

In conclusion, the findings of this thesis show that the quality and safety of nutritional nursing care is related to the interactions between the nurse and the patient, between the nurse and the team members and between the nurse and the organization.

**Nutritional nursing care and the nurse-patient interaction**

- The patients’ efforts to make sense of their bothersome nutritional changes in combination with their involvement indicate a need for nutritional nursing care focusing on physical, emotional and social needs. Nurses have a key role in preventing and reducing these bothersome experiences and in strengthening the patient’s own ability to handle the situation.
- RNs’ assessments of the patients’ nutritional condition seems to be a weak link in the nutritional nursing care. Nutritionally compromised patients may hereby remain unidentified and thus not properly cared for. Furthermore, the results of the screening and assessment must be a base for the patient’s care plan.
- The return of the appetite was identified as a milestone in the recovery process, by the patient and the nurses.
- The patients’ ability to grasp their nutritional situation in different ways can be promoted by continuous information and explanations to the patient from an early stage, and throughout the whole recovery process. It is important to listen to the patient’s preferences and offer options, so that the patient can make choices. Encouraging the involvement of next of kins can also be a way of involving the patient.
- In order to have and to hold nutritional control, nurses need to balance between individual care and routine care.

**Nutritional nursing care and the nurse-team interaction**

- The teamwork can be both challenging and supporting to the maintenance and development of nutritional nursing care.
- Good communication between the team members is important for the patient’s safety.
• Nurses and the team members need continuous time for reflection, development and training in nutritional nursing care.
• Providing safe, supportive nutritional nursing care is indeed a challenge for nurses and team members.

Nutritional nursing care and the nurse-organization interaction
• Guidelines are more well-known among RNs/CNs in county council care compared to municipal care. Nurses must be aware of and intensify the use of already existing guidelines.
• Assessment/screening tools are used to a small extent in county council care and municipal care. The VIPS model can be a guide in the nursing care for the RNs, but also obstruct the information exchange, indicating a need for further development. Nutritional nursing care needs to be improved regarding assessment, screening, intervention and documentation.
• The quality and safety of nutritional nursing care could be improved by having a care organization, creating opportunities for continuous reflection, education and training.
Future research

- A quantitative study with a larger sample size to examine nurses' perceptions of responsibility, knowledge, documentation and nursing practice regarding enteral nutrition.
- Qualitative and quantitative studies from patients' as well as nurses' and nurse managers' perspectives on how safe nutritional care is maintained from ICU to discharge from the hospital.
- A qualitative study focusing on the next of kin's involvement in nutritional care within the ICU.
- Qualitative studies on how RNs, enrolled nurses and nurse managers deal with nutritional matters.
- Further, to develop the substantive theories in other ICU settings.
- Intervention studies, focusing on nutritional nursing care in relation to interactions between the nurse and the patient, the nurse and the team members and the nurse and the organization.
SUMMARY IN SWEDISH

Bakgrund

Det övertygande syftet var att erhålla en djupare förståelse av omvårdnad relaterat till nutrition inom kommunernas och landstingets hälso- och sjukvård med speciellt fokus på enteral nutrition inom intensivvård. Olika designer och metoder har använts. Avhandlingen omfattar fyra delstudier vilka refereras till i texten med romerska siffror (I-IV).

Tillgång till adekvat, säker nutritionsvård av hög kvalitet är en fundamental rättighet för patienter inom kommunernas och landstingets hälso- och sjukvård. Tidigare studier visar att bedömning, åtgärder och dokumentation av patienters näringsstillstånd inte alltid görs. Trots tillgång till riktlinjer, olika former av näringsbehandling och ett multiprofessionellt arbetssätt upptäcks inte alltid undernärda patienter.


Metod

Kvantitativa och kvalitativa metoder har använts. Telefonintervjuer om bedömning av patienters nutritionstillstånd genomfördes med medicinskt ansvariga sjuksköterskor (MAS) (n=14) i fjorton kommuner inom ett län och första-linjenchefer (n=27) på 28 avdelningar inom ett landsting. Sjuksköterskor i kommunerna (n=74) och landstinget (n=57) besvarade en enkät angående nutritionssvårigheter och dokumentation (I). Sjuksköterskor (n=44) vid tre intensivvårdsavdelningar besvarade en enkät om ansvar, kunskaper, dokumentation och omvårdnadsåtgärder för patienter med EN. Observationer (n=40) av omvårdnadsåtgärder till patienter med pågående EN genomfördes.
(II). Sjuksköterskor (n=8) (III), undersköterskor (n=4) (III) och patienter (n=14) (IV) intervjuades (III) och nutritionsvården observerades (III-IV) vid en intensivvårdsavdelning.

Huvudresultat

Studie I

I kommunerna var det enligt MAS 43% och enligt sjuksköterskorna 58% av patienterna som var undernärda. Inom landstingets hälso- och sjukvård var motsvarande siffror för första-linjcheferna 80% och för sjuksköterskorna 87%. Totalt sett var det signifikant fler undernärda patienter inom landstingets hälso- och sjukvård jämfört med kommunal vård ($p=0.001$).

Patienternas nutritionstillstånd bedömdes inte alltid. I kommunerna var det 13% av MAS och 18% av sjuksköterskorna som svarade att samtliga patienter bedömdes. Inom landstinget svarade 44% av första-linjcheferna och 32% av sjuksköterskorna att samtliga patienter bedömdes. Signifikant fler inom landstinget svarade att en nutritionsbedömning gjordes ($p=0.008$). Av de 115 chefer/sjuksköterskor som svarade att det endast var särskilda patienter som bedömdes, angav 88% att det var patientens tillstånd, diagnos, vård/behandling och ålder som var avgörande för om patienterna bedömdes eller inte. De flesta bedömningarna genomfördes vid ankomsten och/eller under vårdtiden.

Sextiosex procent av cheferna/sjuksköterskorna svarade att det inte fanns riktlinjer för nutritionsvården och 13% svarade att de inte kände till om det fanns riktlinjer. Det var framförallt chefer/sjuksköterskor inom landstinget som svarade att det fanns riktlinjer ($p=0.005$).

Samtliga sjuksköterskor inom landstinget (100%) och flertalet i kommunerna (97%), svarade att de använde VIPS-modellen för att dokumentera patienternas omvårdnad. Sjuksköterskor uppfattade VIPS-modellen som en vägledning i omvårdnadsarbetet men också som ett hinder för informationsutbyte.

Det som vanligtvis dokumenterades angående patienternas nutritionstillstånd var illamående och kräkning, förmåga att äta och dricka, diarré och svårigheter att tugga och svälja. Vid omvårdnad av patienter med EN var reflux och kvarvarande vätskemängd i ventriken sällan dokumenterade. Inom
kommunerna svarade 23,9% av sjuksköterskorna att de alltid och 59,2% att de ibland dokumenterade om patienterna var undernärda. I landstinget svarade 14,5% av sjuksköterskorna att de alltid och 56,4% att de ibland dokumenterade motsvarande uppgifter.

Användandet av instrument för bedömning/screening var lågt inom såväl kommunal som landstingets hälso- och sjukvård.

Studie II
Flertalet sjuksköterskor vid tre intensivvårdsavdelningar svarade att det fanns skriftliga riktlinjer för enteral nutrition (EN) och att det var en sjuksköterska med särskilt ansvar för nutritionsfrågor på intensivvårdsavdelningen. Sjuksköterskornas kunskaper om EN hade erhållits framförallt av kollegor. Det var skillnader mellan sjuksköterskornas uppfattningar med avseende på deras ansvar, kunskaper och dokumentation vid de olika intensivvårdsavdelningarna.

Sjuksköterskorna hämtade information om medicinering genom sond från FASS (68%), broschyr tillhandahållen av apoteket (41%), läkare och sjuksköterskor (32%) och apoteket (7%).

Efter nedläggning av sond kontrollerade sjuksköterskorna sondläget genom inblåsning av luft i sonden samtidigt som de med ett stetoskop lyssnade över magen (86%). Sondens läge kontrollerades också med röntgen (73%), eller genom aspiration av magsäcksinnehåll (23%).

Flertalet sjuksköterskor (95%) svarade att patienterna placerades i en speciell ställning i sängen under tiden EN pågick. Det var elva procent som specificerade att patientens huvudända höjdes till 30 grader eller mer. Observationerna visade att huvudändan var höjd 30 grader eller mer vid sju av 40 observationer. I genomsnitt var höjningen av huvudändan 20.7 grader.

Observationerna visade att sonden tejpades fast ordentligt. Vid 39 av observationer var sonden tejpad så att den inte “drog” i näsan. Sonden var dock inte märkt vid någon av observationerna.

Vid samtliga observationer användes sondmatningsaggregat och alla sondmatningspumparna var märkta med “endast för sond”, dock inte alltid på
Svenska. Trettioen av 38 sondmatningsprutor var märkta med “endast för sond” och 30 av 38 observationer visade att sondprutan var bytt inom det senaste 24 timmarna.

**Studie III**
En substantiv teori utvecklades över sjuksköterskors och undersköterskors omsorg och strategier avseende deras omvårdnad relaterat till nutrition för patienter med EN inom IVA. Denna inkluderar kärnkategorin ”att få och behålla kontroll över nutritionen – en balans mellan individuell vård och rutinstyrd vård” och kategorierna ”känna patienten”, ”underlätta patientens medverkan”, ”vara en i teamet”, ”vara trygg i yrkesrollen” och ”ha en stödande organisation”. För att sjuksköterskor och undersköterskor ska uppleva kontroll över patientens omvårdnad in relation till nutrition krävs balans mellan rutinstyrd och individuell vård. När balansen uppnås, känner sjuksköterskorna och undersköterskorna att patientens välmående, trygghet och vårdkvalitet ökar. När balansen inte uppnås, exempelvis när den rutinstyrda vården tar över den individuella vården, känner sjuksköterskorna och undersköterskorna sig inte nöjda.


**Studie IV**
En substantiv teori utvecklades över patienters erfarenheter av nutritionsvård. Teorin inkluderar kärnkategorin ”att få grepp om nutritionen under tillfrisknandet” och kategorierna ”möta nutritionsförändringar”, ”förstå nutritions situationen” och ”delta i nutritionsvården”. Patienterna skiftar känslomässigt mellan oro, rädsla och
misslyckande och lättad och hopp. När aptiten återvänder, sonden avlägsnas
och magen och tarmarna kommer igång upplevs det som vändpunkter och att
de är på bättringsvägen. Resultatet visar att det är ett mål för patienterna att få
*grepp om sin egen nutrition* under tillfrisknandet. Nutritionsutmaningarna varierar
och kan komma och gå beroende på deras allmänna hälsotillstånd. Patienterna
försöker förstå sitt nutritionsstillstånd och sina upplevelser, genom att medvetet
använda sig av olika strategier. Deras involvering i nutritionsvården speglar en
process som går från att inte alls vara involverad till att delvis vara involverad
och som hänger ihop med patienternas allmänna tillstånd.

*Nutritionsförändringar* gör patienterna medvetna om att de behöver
nutritionsvård. Att vara törstig är ett uttalat bekymmer, förenat med en stark
långtan efter att få dricka sig otörstiga. Det är därför en stor lättad när de får
börja dricka, även om det visar sig vara svårt att dricka tillräckligt. Patienternas
äprobler varierar från att ha svårigheter med att hantera maten på tallriken,
föra maten till munnen samt att svalja. Rädsla för misslyckanden beskrivs. Att
ha förändrad aptit innebär allt från att inte ha någon aptit alls till att vara väldigt
hungrig. Hur maten luktar och smakar, liksom på vilket sätt den serveras, är av
betydelse för patienternas aptit. Besvär i form av illaluktande gaser, magsmärtor
och problem med tarntömning, diarre och förstoppning upplevs som
obeagligt och påverkar ätaandet negativt. Att försöka *förstå* nutritionsstillståndet
behövs för att återfå något av greppet om nutritionen. När patienterna
reflekterar över sin situation finner de att mat och näring är en viktig del i deras
liv och för att tillfriskna. Nutritionsvården jämförs med deras tidigare
erfarenheter. Patienterna vill också förstå i vilken utsträckning de får sitt
näringsebehov mättat och hur vikten påverkas. Känslorna under denna fas
pendlar mellan oro och trygghet. Att *delta i nutritionsvården* är ytterligare en
strategi som beskrivs för att återfå greppet om nutritionen. Det finns patienter
som inte vill vara med och ta några beslut beträffande sin nutritionsbehandling.
Detta överlåter de till personalen. Beslutet baseras på att de är för sjuka, inte
orkar eller inte vill, samtidigt som de litar på personalen. Andra patienter gör sin
stämma hörd och påverkar exempelvis vilken mat och dryck de ska äta, samt
hur stora portionerna ska vara.
**Sammanfattningsvis** visar resultaten av avhandlingen att kvalitet och säkerhet vid omvårdnad relaterat till nutrition omfattas av interaktion mellan sjuksköterska/undersköterska och patient, mellan sjuksköterska/undersköterska och teamet, samt mellan sjuksköterska/undersköterska och organisationen.

**Omvårdnad relaterat till nutrition och interaktionen mellan sjuksköterska/undersköterska och patient**

- Patientens försök att erhålla förståelse för sina obehagliga nutritionsförändringar i kombination med deras egen delaktighet indikerar att det finns behov av omvårdnad i relation till nutrition med fokus på fysiska, känslomässiga och sociala behov. Sjuksköterskor har en viktig roll i att förebygga och minska dessa obehagliga erfarenheter och att stärka patientens egen förmåga att hantera situationen.

- Sjuksköterskornas bedömningar av patienternas nutritionstillstånd framstår som en svag länk i omvårdnaden relaterat till nutrition. Patienter med försämrad nutrition kan därmed förblir oidentifierade och inte få adekvat omvårdnad. Patientens vård ska planeras och genomföras utifrån bedömningarna.

- När patienterna återfår sin aptit betraktas det som en milstolpe för tillfrisknandet, av såväl patienter som sjuksköterskor och undersköterskor.

- Patienternas förmåga att förstå sitt nutritionstillstånd kan underlättas om patienterna får kontinuerlig information under hela vårdtiden. Det är viktigt att lyssna på patientens önskemål och erbjuda alternativ. Att uppmuntra närståendes delaktighet kan också vara ett sätt att engagera patienten.

- För att kunna behålla kontrollen över nutritionen behöver sjuksköterskor ochundersköterskor balansera mellan individuell vård och rutinstyrdat vård.
Omvårdnad relaterat till nutrition och interaktionen mellan sjuksköterska/undersköterska och teamet

- Teamets samarbete kan både vara utmanande och stödjande för att upprätthålla och utveckla omvårdnad relaterat till nutrition.
- Bra kommunikation mellan medlemmarna i teamet är viktigt för patientsäkerheten.
- Sjuksköterskor, undersköterskor och övriga medlemmar i teamet behöver tid för kontinuerlig reflektion, utveckling och träning.
- Att tillhandahålla säker och stödjande nutrition är en utmaning för sjuksköterskor, undersköterskor och övriga teammedlemmar.

Omvårdnad relaterat till nutrition och interaktionen mellan sjuksköterska/undersköterska och organisationen

- Fler sjuksköterskor/första-linjenchefer inom landstingets hälso- och sjukvård känner till att det finns riktlinjer för nutritionsvård jämfört med sjuksköterskor/MAS inom kommunal vård. Sjuksköterskorna måste bli medvetna om och i större omfattning använda existerande riktlinjer.
- Kvaliteten och säkerheten avseende omvårdnad relaterat till nutrition kan förbättras om det finns en organisation som möjliggör kontinuerlig reflektion, utbildning och träning.
ACKNOWLEDGEMENT

This thesis was carried out at the Department of Nursing, Karlstad University. I wish to express my sincere gratitude to all those who have supported me in the studies. In particular I am grateful to:

All the respondents who participated in the studies. Without you, this research would not have been possible.

Associate Professor Marie Louise Hall-Lord, my principal supervisor (initially my supervisor) and Professor Bodil Wilde-Larsson, my supervisor (initially my principal supervisor) for excellent scientific guidance and mentorship, and for sharing your knowledge, experience and wisdom.

Mrs Annelie Ekberg-Andersson for years of invaluable help with reference, articles, EndNote and RefWorks. Mrs Katarina Wiberg-Hedman for statistical guidance. Mrs Ellinor Larsen for language revision throughout the work. Also Jeanette Palm for revising a manuscript. Camilla Pålsson for IT support. Anki Ramberg for administrative help.

The University of Karlstad, Faculty of Social and Life Sciences, Department of Nursing. Professor Elsy Athlin for accepting me as a doctoral student and Professor Gun Nordström, thank you for giving me the opportunity to complete my PhD. Thank you both for sharing your scientific knowledge during seminars. Head of Department Anki Normarker for interest and support. All senior lecturers, lecturers and administrative staff, thank you for your support and friendship.

My former colleagues at the ICU, the Central Hospital in Karlstad, for support in my research and for friendship over the years. It was here my interest for nutritional nursing care and documentation began and was allowed to expand.

Carina Bååth, my co-author and friend, for your interest in nutrition and assessment and for lively discussions about everything under the sun.

Fellow doctoral students during the years: Ann-Kristin “Fia” Sandin-Bojö, Anna Josse Eklund, Anna Nordin, Ann Karin Helgesen, Bente Thyli, Bente Weimand, Carina Bååth, Catarina Wallengren-Gustavsson, Cecilia Olsson, Ingrid From, Karin Högberg, Kaisa Bjuresäter, Kristina Rosengren, Lina Palmér, Linda Kvist, Maria Larsson, Maria Henriksson, Monica Björkström, Patrice Anderberg, Randi Ballangrud, Reidun Hov, Sepideh Olausson, Sigrid Wangensteen and Vigdis Abrahamsen-Gröndahl. Thank you for all the lively, inspiring discussions and valuable criticism at seminars.

Bo Nilsson for support and interesting discussions about research.

My family and friends. Thank you for all your support, nice get-togethers and fun. You gave me energy when I needed it most.
Inga my mother, for always believing in me and being caring and supportive. My
dear sister Marie with family. Thank you for support and happy moments
throughout the years.

Max and Yvonne, thank you for all your encouragement and interest in my
research and for all the fabulous football matches you have involved me in. Thank
you for reminding me what is important in life.

Andreas and Erik, for always being positive and supporting.

Daniel, for marrying me in the midst of my studies, for always being there, patient,
listening, encouraging and loving. I love you!

Wilma, our Newfoundland dog, a friend indeed.

Lastly I would like to express my gratitude for financial support received from the
Centre for Clinical Research at the Central Hospital of Karlstad, the Swedish
Association of Health Professionals, the County Council of Värmland and Karlstad
University.
REFERENCES


Svensk förening för Klinisk Nutrition; SWESPEN (Swedish Society Clinical Nutrition and Metabolism).


trial. *Journals of Gerontology Series A: Biological Sciences & Medical Sciences, 61A*(9), 935-942.


Söderhamn, U. (2006). *Nutritional screening of older patients: developing, testing and using the nutritional form for the elderly (NUFFE)*. Diss Linköping: Department of Medicine and Care, Division of Nursing Science, Faculty of Health Sciences Linköping University.


Nutritional Nursing Care

Mona Wentzel Persenius is a registered nurse, with a Master’s Degree in nursing, specialized in anaesthesia and intensive care. She has worked for several years in medical wards and intensive care units in Sweden and Saudi Arabia. She has also worked at the Unit of Elderly Care at the National Board of Health and Welfare. For the past few years, she has been engaged in doctoral studies in combination with teaching at the nursing programme at the Department of Nursing at Karlstad University.

Nutrition is essential for patients’ health. It is obvious that malnutrition is a significant problem in different health care settings. Nutritional nursing care is important to the patient’s nutritional condition and may prevent malnutrition. Therefore, the overall aims of this thesis was to gain a deeper understanding of nutritional nursing care in municipal care and county council care, with special focus on enteral nutrition in intensive care.

Quantitative and qualitative methods were used in this thesis. The results showed that assessment of nutritional status was not performed on all patients. Malnourished patients were estimated to occur to a varied extent. There were differences between the registered nurses’ opinions about their responsibility, knowledge and documentation. Deviations from recommended nursing care interventions occurred. In order for registered nurses and enrolled nurses to have a sense of control over the patients’ care in relation to nutrition, a balance between routine care and individual care was required. It was important for the patients to grasp nutrition during their recovery process. The patients alternated emotionally between worry, fear and failure, and relief and hope during the process.

The thesis shows that quality and safety in relation to nutritional nursing care is dependent on the interaction between the nurse and the patient, between the nurse and the team, and between the nurse and the organization.