

The trauma continuum

Experiences from injured persons and critical care nurses

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Nursing



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ABSTRACT

The overall aim of this thesis was to explore experiences within the trauma continuum from the perspectives of injured persons and critical care nurses. This was done by describing trauma patients' experiences of helicopter emergency medical services (I) and critical care nurses' experiences of nursing trauma patients (II), by exploring experiences of suffering a multiple trauma (III) and trauma patients' health-related quality of life and perceptions of care the year following discharge (IV).

Data were collected through focus group discussions with 12 critical care nurses (II), individual interviews with 12 trauma patients with experiences of helicopter emergency medical services (I) and nine patients diagnosed with multiple trauma (III). Data for Study IV were retrieved from the SweTrau Registry and consisted of patient and system characteristics, health-related quality of life assessment using EQ5D and an open-ended question. The qualitative data (I-IV) were analysed using qualitative content analysis. The numerical data (IV) were analysed using descriptive and analytical statistics.

The findings show that trauma patients are confused and distressed, as they are afraid of the potential seriousness of their injuries (I, III) and do not know what to expect of their recovery (III, IV). When cared for in the helicopter, the patients felt secure and prioritised and viewed the staff as a 'close-knit team' that were attentive to their needs (I). The critical care nurses viewed themselves as an important constitute for the continuity of care, as they followed the patients from their arrival to the trauma room to further observation and care. During early trauma management, the critical care nurses recognized that the patients (and their families) needed their time and attention due to the shock of suffering a trauma (II). The patients experienced a lack of understanding and guidance in both in-hospital and post-discharge settings and requested more comprehensive care that addressed their needs (III, IV). Post-discharge, patients who were either more severely injured, assessed as GOS 3 or discharged to other care institution reported problems with health to a greater extent. Although health overall improved (with the exception of 'mobility'), the majority (63.7%) of the patients reported problems with 'pain/discomfort' at 12 months post-discharge (IV).

In conclusion, this thesis found that although the trauma patients' health improved over time, their needs and expectations of health care in the

non-acute phase were unmet. Further efforts must be made to optimise all outcomes, including maintaining and enhancing humanity and dignity. Nurses, as well as other health care professionals, must be attentive to trauma patients, and in a shared understanding with the patient, identify needs and resources, design interventions and evaluate desired outcomes. This thesis calls for further research exploring post-discharge settings in the trauma continuum to understand how nurses, having a central role in the trauma continuum, can work to further optimise outcomes of trauma patients.

Keywords; Focus group discussions, Health-related quality of life, Injury outcome, Nursing, Physical trauma, Qualitative content analysis, Qualitative interviews, Recovery, Trauma care, Trauma registry

ABBREVIATIONS

ASA American Society of Anesthesiologists physical classification

- 1 A normal healthy person.
- 2 A patient with a mild systemic disease.
- 3 A patient with a severe systemic disease.
- 4 A patient with a severe systemic disease that is a constant threat to life.
- 5 A moribund patient who is not expected to survive without the operation.
- 6 A declared brain-dead patient whose organs are being removed for donor purposes.

ATLS Acute trauma life support

CCN Critical care nurse

ED Emergency department

EMS Emergency medical services

ER Emergency room

FGD Focus group discussion

GOS Glasgow Outcome Scale

- 5 *Good recovery*: resumption of normal life, although there may be minor neurological and psychological deficits.
- 4 *Moderate disability*: independent in 'daily life' (for example, use public transport). Able to maintain self-care and 'activities in daily life'. Considerable family disruption possible.
- 3 *Severe disability*: dependent on daily support because of physical and/or mental causes.
- 2 *Persistent vegetative state*: unresponsive and speechless for weeks or months after acute brain damage.
- 1 *Death*.

HEMS Helicopter emergency medical services

ICU Intensive care unit

NISS New Injury Severity Score

0-9 *Minor injury*: extra observation/minor treatment and potentially causing minimal harm.

9-15 *Moderate injury*: further treatment, possible surgical intervention or transfer to other setting, potentially causing short-term harm.

16-75 *Major/severe injury*: potentially life-threatening and permanent or long-term harm.

SIR Swedish Intensive Care Registry

WHO World Health Organisation

LIST OF ORIGINAL PAPERS

This thesis is based on the papers presented below, which are referred to in the text by their Roman numerals. In order to visualise the trauma continuum, they are presented in a chronological order by the chain of care.

- I. Sandström, L., Nilsson, C., Juuso, P. & Engström, Å. (2017).
The helicopter as a caring context: Experiences of people suffering trauma. *International Emergency Nursing*, 32, 34-38.
- II. Sandström, L., Nilsson, C., Juuso, P. & Engström, Å. (2016).
Experiences of nursing patients suffering from trauma—preparing for the unexpected: A qualitative study. *Intensive and Critical Care Nursing*, 36, 58-65.
- III. Sandström, L., Engström Å., Nilsson, C. & Juuso, P. (Submitted).
Experiences of suffering multiple trauma: A qualitative study. *Intensive and Critical Care Nursing*.
- IV. Sandström, L., Engström, Å., Nilsson, C., Juuso, P. & Forsberg, A. (Manuscript). Patients' health-related quality of life and perception of care: A longitudinal study based on data from the Swedish Trauma Registry.

Paper I and II have been reprinted with permission from the journals.

PREFACE

After saying goodbye to his wife and children, a middle-aged man left home for work. He was halfway to his job, riding his bike, when he suddenly gets hit by a car at high speed. Those witnessing the accident called for an ambulance, and due to severe injuries to his head and upper body, he was quickly transferred to the closest ER, where they choose to sedate him. Having to undergo surgery, he woke up several days later at an intensive care unit. Not remembering the accident and that he was the only one injured, his first thought was whether his family was still alive.

He was told that his recovery could take as long as five to six years. He then received in-hospital treatment for several months at different hospitals and multiple wards before being discharged. Once at home, he needed a walker. Although his physical strength improved, and he was becoming more mobile, he suffered from pain and severe mental fatigue when engaging in everyday activities.

Working as a nurse (in wards and in operating rooms), I have encountered patients who need care due to a traumatic injury. Some of them gave me the impression that they felt lucky and that ‘it could have been worse’. Others were more worried and puzzled, as if they were not quite certain of what to make of the accident. Curious to learn more about how a physical trauma can influence one’s life and how care could be improved, I seized the opportunity to become a PhD student within a project focusing on trauma patients.

DEFINITIONS

Health Care Professionals

Refers to all professional caregivers who are employed in health care to provide care (i.e. registered nurses, specialist nurses, physicians, nursing assistants). It is synonymous with the term health care personnel.

Trauma

In this thesis, trauma refers to a physical and traumatic injury where living tissue is damaged (for example, causing wounds, fractures or internal organ damage) by external factors, and the effect is either transient or persistent. The terms trauma and injury are used interchangeably.

Trauma care

Care that is provided within structured care settings, such as pre-hospital care, acute care hospitals, rehabilitation centres and community health systems (cf. Richmond & Aitken, 2011).

Trauma continuum

Extends from time of injury, throughout recovery, and to the final outcome.

Trauma nursing

Trauma nursing is care provided by professional nurses to injured patients throughout the trauma continuum.

Patients

In this thesis, persons who have suffered an acute injury will be referred to as 'patients'. This is a pragmatic choice and is in no way intended to reduce a person to their injuries (making them inferior to other persons, i.e. health care professionals) or objectify them as passive targets of care (cf. Ekman et al., 2011; Slater, 2006).

Needs

Needs can be basic or abstract (i.e. not objectively measurable, such as hope and self-esteem) and explicit or implicit. What they have in common is that they originate from the patients' experiences of daily life. Complex needs in this thesis refer to basic and/or abstract needs of a certain magnitude, such as a trauma patient with co-morbidities, pain and/or feelings of fear/hopelessness.

INTRODUCTION

Through a nursing perspective, this thesis intention is to deepen understanding of the trauma continuum, which extends from time of injury, throughout recovery, and to the final outcome. This thesis aims to increase knowledge about the trauma continuum by exploring trauma patients' and critical care nurses' experiences within acute care setting, and by exploring what suffering a trauma entails for the injured person and how care following trauma can be improved.

A global estimation by the World Health Organisation (WHO, 2014) has shown that more than five million people die each year as a result of injuries. Major causes of death are road injuries (29.1%), self-harm (17.6%), falls (11.6%) and violence (8.5%) (Haagsma et al., 2016). Given the magnitude of deaths due to trauma, it is understandable that the primary focus of research within trauma care has been to reduce mortality, and, as such, morality has been a vital outcome by which trauma care has been evaluated. However, injury-related deaths only show “the tip of the (injury) iceberg”. To illustrate, global estimations show that for each death, there are 10 persons who are admitted to a hospital and another 190 persons who attend an emergency department (ED) (Alberdi, Garcia, Atutxa & Zabarte, 2014). In comparison, for each death due to injury in Sweden, there are approximately 30 persons who sustain severe injuries and 200 persons who sustain minor injuries (Swedish Civil Contingencies Agency, 2007). Following this, researchers have emphasised the need to explore trauma outcomes by other ways than measuring mortality (Garratt, Schmidt, Mackintosh & Fitzpatrick, 2002; Gruen, Gabbe, Stelfox & Cameron, 2012; Porter et al., 2016; Turner et al., 2019).

Nursing trauma patients has been described as complex, as it requires not only an understanding of the trauma systems involved but also an understanding of advanced technical skills, extensive in-depth knowledge of mechanisms of injury,

physiological responses to trauma and structured injury management (Whiting & Cole, 2016). Studies have shown that vital trauma nursing components lie in the psychosocial care of the trauma patients and their families, and that nurses who care for trauma patients must be capable of providing complete emotional care to both (Curtis, Caldwell, Delprado & Munroe, 2012; Holbery, 2015; O'Mahoney, 2005; Whiting & Cole, 2016). Studies have further shown that caregivers, in addition to family members, have an essential role in supporting and giving injured patients hope of recovery (Harms, 2004; Ogilvie, McCloughen, Curtis & Foster, 2012; Tutton, Seers & Langstaff, 2012; Van Horn, 2013; Warwick, 2012). Moreover, as nurses across different specialities (e.g. emergency care, critical care, perioperative care, primary care) may encounter the trauma patient throughout the trauma continuum, they are in an optimal position to enhance the patient's recovery following a traumatic injury (Ekeh, 2016; Halcomb & Davidson, 2005; Richmond & Aitken, 2011). In this thesis, trauma care refers to care that is provided within structured care settings, such as pre-hospital care, acute care hospitals, rehabilitation centres and community health systems (cf. Richmond & Aitken, 2011), whereas trauma nursing is care provided by professional nurses to injured patients throughout the trauma continuum.

BACKGROUND

SUFFERING A TRAUMA

It is known that merely seeking emergency care has an emotional impact on patients. Many patients are under the perception that their injury or condition is serious or life-threatening, which makes them feel fearful, vulnerable and stressed (Gordon, Sheppard & Anaf, 2010). Patients have described themselves as being ‘at the mercy of the health care organisation’ because they feel a lack of control (Elmqvist & Frank, 2015). In addition, during initial care, trauma patients often become physically restrained by a spine board and/or neck collar, rendering them fully immobilised and exposed to sometimes painful examinations of their bodies (Granström, Strömmer, Falk & Schandl, 2018). When suffering a traumatic injury, the patient’s initial response includes both fear and panic due to lack of knowledge and uncertainty of the extent of the injuries (Skene, Pott & McKeown, 2017). Previous studies have described how becoming injured entails suddenly being faced with one’s own mortality (Harms, 2004; Richmond, Thompson, Deatrick & Kauder, 2000; Skinner, Rahtz & Korszun, 2019), and 79% of traffic trauma survivors even viewed it as the most traumatic experience of their lives (Harms, 2004).

PRIMARY TRANSPORT

Patients within pre-hospital settings have emphasised the importance of both being allowed to communicate how they experience their problems and acquire comprehensive, understandable and accessible information from their caregivers. Furthermore, when patients felt that they could share their problems whilst being provided with clear information, the opportunity for a truthful and trusting relationship opened up in the early chain of care (Norberg Boysen, Nyström, Christensson, Herlitz & Wireklint Sundström, 2017). A recent review

(n=78) exploring ambulance services (Wireklint Sundström, Bremer, Lindström & Vicente, 2018) has demonstrated that the pre-hospital environment has a crucial impact on caring, and that it is a challenge for ambulance professionals to create trustworthy relations with their patients whilst providing urgent and acute care; they not only need to balance the demands of medicine and nursing care, but they also need to provide good and safe care under conditions that are partly beyond their control. A study with nurses that explored dignity within pre-hospital emergency care showed that ambulance nurses who meet patients face-to-face find themselves in exposed and unique situations in which they need to be aware of their ethical positions, as they can either preserve the patient's dignity (i.e. show respect and be there for the patient whilst making professional decisions) or humiliate the patient (i.e. disrespect and ignore the patient) (Abelsson & Lindwall, 2017). In addition, another study exploring ambulance nurses' self-rated perception of ability to provide trauma care show that they, to a lesser extent, perceive that they have sufficient ethical knowledge and skills for trauma care, compared to their theoretical and practical knowledge and skills to provide trauma care (Abelsson, Lindwall, Suserud & Rystedt, 2018).

Wireklint Sundström et al. (2018) highlighted that the ability to show compassion within ambulance services tends to be lacking, and that care was mostly experienced as 'transportation'. They further found that research with a clear patient perspective within the context of ambulance services is sparse. Moreover, to ensure high quality trauma care in areas that are sparsely populated and where adequate resources are distant, helicopter emergency medical services (HEMS) are frequently used (Kristiansen et al., 2010; Swedish Agency for Health and Care Services Analysis, 2018). In 2018, 8.0% of all trauma patients arriving at university hospitals and 3.4% arriving at county hospitals did so by HEMS (SweTrau, 2018). In addition to this, it can be assumed that the care environment in the HEMS poses additional challenges, as professionals have described the difficulties in evaluating patients due to noise interference,

turbulence and vibration (Milligan, Jones, Helm & Munford, 2011; Reimer & Moore, 2010), as well as its limiting effect on communication with the patient (Alfes, Steiner & Rutherford-Hemming, 2016; Senften & Engström, 2015). However, the patient perspective of HEMS has remained unexplored.

TRAUMA TEAM

A study of trauma patients' experiences of being cared for by the trauma team has shown the importance for patients to be treated with respect and not left alone. The patients further expressed that, when witnessing the trauma team working, they felt a strong sense of safety and reassurance, perceiving the trauma team as efficient whilst expressing compassion toward them (Skene et al., 2017). In addition, a study with trauma patients with minor injuries showed that the trauma team members had different modes of being and could, thus, shift between being instrumental and attentive. Shifting between the instrumental mode, focusing on rapid assessment of the physical condition, and the attentive mode, a more holistic care where the staff initiated a more conversational dialogue with the patient, was found to be reassuring and comforting. Although all the caregivers presented different modes of being with the patient, the trauma team nurse was highlighted as being the one who foremost represented the attentive mode of being and showed a continuous and empathic commitment (Wiman, Wikblad & Idvall, 2007).

It have been found that nurses perceive caring for trauma patients to be different from attending to other patients, as the trauma patients have no time to psychologically contend with their situation or no sense of predictability regarding the consequences of the injuries on their health. The unpredictability of the patients' progress and the uncertainty of their outcomes also influences the nurses' ability to inform the patients and their relatives, which requires a skilled and experienced nurse (Alzghoul, 2014). Furthermore, a study of trauma team

members has shown that the situation in the trauma room can trigger a great amount of stress, especially when failing to act as a cohesive team (Berg, Harshbarger, Ahlers-Schmidt & Lippoldt, 2016). In addition, Wisborg et al. (2005) highlighted that, in sparsely populated and highly developed countries, most trauma patients are cared for at hospitals with a relatively low caseload of severe trauma. Furthermore, an increasing sub-specialisation of both professions and institutions has been argued to risk fragmenting the early management of trauma patients (Kristiansen et al., 2010; Swedish Agency for Health and Care Services Analysis, 2018). The composition of the trauma team varies both nationally and internationally and is based on the hospitals' resources; most often, a surgeon acts as a team leader who coordinates care in adherence with the Advanced Trauma Support (ATLS) guidelines. In addition, a basic composition may include an anaesthetist, one or two ED nurses and a radiology technician (Tiel Groenestege-Kreb, Van Maarseveen & Leenen, 2014). In Sweden, it is not uncommon for a nurse with specialist education to be part of the trauma team in addition to ED nurses; this can be seen as a favourable utilisation, since trauma teams require members with a strong background in emergency and critical care (Gunnels & Gunnels, 2001; Lafferty, 2011). However, the way this utilisation is experienced by the specialist nurse and its perceived effect on nursing trauma patients has remained unexplored.

PLANNING AND INTEGRATING CARE

Several researchers have identified the role of the nurse as central in the trauma continuum (Ekeh, 2016; Halcomb & Davidson, 2005; Richmond et al., 2000). Following this, Richmond and Aitken (2011) presented and discussed a model to advance nursing science in trauma practice and injury outcomes. I have chosen to highlight three important contributions from their discussion paper. First, their definition on focal points of long-term outcomes which encompasses the following: a) enhancing survival and reducing morbidity, b) maintaining and enhancing humanity and individual dignity, and c) maximising quality of life and physical, functional and psychological recovery.

Table 1. Long-term outcomes and associated nursing priorities.

Long-term outcomes	Nursing priorities
Survival is enhanced and morbidity is reduced	Establish physiological stability from the injury and responses to the injury Diagnose injuries and definitively treat in a timely manner Prevent complications that will worsen morbidity both acutely and over the long-term
Humanity and individual dignity are maintained and enhanced	Optimally manage pain and suffering Treat as a sentient human being who is able to make decisions about him/herself and care at the highest level possible Provide care in the pre-existing social and family structure that is supported and enhanced during vulnerable times
Physical, functional, psychological recovery and quality of life are maximized	Treat with dignity and to have a voice throughout all aspects of care Maximize physical mobility and function, and independent activities and roles Prevent bad memories, recognize and address psychological consequences that emerge after or worsen because of the injury event Support patient and family in anticipating challenges and issues that will arise across phases of postinjury recovery

Table 1 is reprinted with permission from the authors (Richmond & Aitken, 2011) and from Journal of Advanced Nursing, where it was originally published.

Regardless of where the nurses encounter trauma patients in the trauma continuum, care needs to be designed with an aim to optimise these long-term outcomes. ‘Maintaining and enhancing humanity and individual dignity’ is, according to the authors, likely to get lost or be viewed as a ‘soft’ (i.e. ‘less important’) outcome. However, they added that this outcome particularly needs to be a nursing priority, as the injured patients’ memories are directly affected by

the way they have been treated. The second contribution of their discussion paper stresses the importance of considering the patient in the context of their social, economic, cultural and physical environment, seeing that it is a prerequisite to better support a trauma patient's recovery and long-term outcome. The authors stressed that it is *the needs of the injured persons* and their families that drive interventions, and, thus, decide what the desired outcomes are. For example, by meeting the patients' *individual needs*, they can be reintegrated into *their* pre-injury lifestyles, including aspects such as returning to family, work, community, education and leisure. The authors' third contribution discusses the criticism of care being solely focused on 'episodic phases' of care, referring to care focused on short-term outcomes that are limited to the care setting in which the care is performed. To ensure an optimal long-term outcome, they argued that in addition to setting short-term goals, nurses and other providers need to focus on meeting health needs across different care settings (e.g. in-hospital, post-discharge).

THE ALTERED LIFE FOLLOWING TRAUMA

A synthesis of studies (n=13) exploring the experience of surviving a life-threatening injury has shown that trauma patients go through a 'shifting and iterative process' in the time following their accident: *a time of chaos*, where the person is physically and cognitively overwhelmed; *a time of negotiating injury*, where the patient is facing the reality of the injuries and modifies his/her response to it; and *a time of reconciling with injury*, when the consequences are somewhat clear and stable, and the person can make changes and re-establish continuity in his/her life (Ogilvie et al., 2012). Furthermore, suffering an injury has been described as a transition, as it is a passage that denotes a change (of health, role relation, expectations, abilities, etc.) in patients' lives (Meleis & Trangenstein, 1994). It has also been described as the start of a trajectory

(Halcomb & Davidson, 2005) or a journey (Richmond et al., 2000) towards recovery.

Nasirian, Olsen and Engström (2018) explored experiences amongst patients with minor physical trauma and described the process of recovery as a strive to return to everyday life. Returning to work was seen as vital, not only was the daily interaction socially satisfying as their colleagues were supportive, but also as they felt that they contributed to the work itself and to society at large. In a study by Claydon, Robinson and Aldridge (2017), major orthopaedic trauma patients similarly viewed recovery to entail ‘regaining a sense of normality’. Moreover, instead of looking back on their state prior to their injuries, the patients often re-aligned their expectations and redefined their sense of self. Recovery was thus described as accepting this new sense of self and, by extension, included restoring independence by being able to enjoy and complete activities with confidence. Furthermore, Kruithof et al. (2018) explored trauma perception of short- and long-term consequences on quality of life (QoL) and found that in the first month/s post-injury, pain, anxiety, physical limitations and independency had a determining impact. Similarly to the studies presented above, in the long-term, the trauma patients experienced that QoL was correlated to the difficulties with accepting the consequences of their remaining disabilities and their new lives.

POST-ACUTE TRAUMA CARE

Richmond et al. (2000) demonstrated that within a population of seriously injured patients (n=63) with no spinal cord injury or brain injury, the expectations that were typically communicated to them expressed that broken bones and surgical wounds would heal, and that they would be able to quickly return to their everyday lives. However, studies have shown that following injury, patients experience psychological distress (Aitken, Chaboyer, Schuetz, Joyce & Macfarlane, 2014; Skogstad et al., 2014), anxiety, depression and post- 15

traumatic stress disorder (Wiseman, Curtis, Lam, & Foster, 2015; Wiseman, Foster, & Curtis, 2013), and that injured patients report cognitive, social, relational and financial impacts due to their injuries (Wiseman, Foster, & Curtis, 2016). In addition, a study by Fakhry et al. (2017) found that 42% of trauma patients did not know how or where to seek help to cope with negative emotions following their injuries.

Although trauma patients have expressed gratitude and appreciation of the health care systems in which they have received care (Gabbe et al., 2013; Skene et al., 2017), care following injury has also been perceived as depersonalising (Sleney et al., 2014; Suhonen et al., 2008) and inadequate in providing emotional and psychological support (Kellezi et al., 2015; Wiseman et al., 2016). Trauma patients have expressed feeling discarded by the discharge process, perceiving it to be largely influenced by organisational pressure to move patients out (Conn et al., 2018). Studies have also shown that trauma patients feel abandoned once discharged (Ringdal, Plos & Bergbom, 2008), and that there are significant gaps in information regarding their prognosis, injury management and where to turn to for help (Kellezi et al., 2015). Studies have further shown that patients following trauma has an extensive use of health care services (Cameron, Purdie, Kliever & McClure, 2006; Gabbe, Sutherland, Williamson & Cameron, 2007; Mitchell, Cameron & McClure, 2017; Mitchell, Cameron & McClure, 2016). To illustrate, of those who require hospital admission due to an injury, 36.7% visited an ED over the following 12 months post-injury, compared to only 15.7% of non-injured cohorts (Mitchell et al., 2016). A study spanning over 10 years post-injury showed that injured compared to non-injured individuals have a significantly higher use of health care services (Cameron et al., 2006). In addition, injured patients have expressed that primary care does not successfully provide information and services to help with their needs (Christie et al., 2016). A study with brain injured patients showed that the most frequently unmet needs are reported to be within emotional (65%), vocational (62%) and cognitive (58%)

domains (Andelic, Soberg, Berntsen, Sigurdardottir & Roe, 2014). Moreover, research has shown that, over time, trauma patients are faced with new challenges that change their views on recovery (Clay, Shourie, Robinson, McKenzie & Kerr, 2014). Subsequently, it can be presumed that their needs also change over time. The changing needs were further illustrated in a study by Harcombe, Langely, Davie and Derrett (2015), who found that although patients attained pre-injury functional status, some patients (18-26%) did not maintain this progress at one year post-injury.

OUTCOMES FOLLOWING TRAUMA

It is known that many trauma survivors suffer life-long impairments and disabilities (EuroSafe, 2016) and are in need of care, both institutional (i.e. long-term hospital care, rehabilitation) and ambulatory (e.g. physiotherapy, psychotherapy). Injury types that are a major component of the population health burden include: fracture of the head and neck, fracture of the lower limb, poisonings, intracranial injury, fracture of the upper limb and fracture of skull (McClure, Cameron, Purdie & Kliwer, 2005). The long-lasting and most serious consequences have been attributed to traumatic brain injury (Alberdi et al., 2014) and spinal cord injury (Laursen & Helweg-Larsen, 2012), whereas the main contributor (29.3%) to disability-adjusted life years (DALYs) due to injury have been identified to be road injuries (Haagsma et al., 2016). A study with 1,517 injured patients showed that 29% reported that their injuries still affected them at 12 months post-injury (Kendrick et al., 2013). In a cohort study of 2,757 seriously injured patients, the prevalence of ongoing health problems at three years post-injury was found to remain high (21-50%) (Gabbe et al., 2017). These findings support a previous meta-analysis of general health status from 10,496 injured patients, showing that recovery is often incomplete and takes more time than estimated (Black, Herbison, Lyons, Polinder & Derrett, 2011).

In addition to this, reviews (Derrett, Black & Herbison, 2009; Rosenberg, Stave, Spain & Weiser, 2018) have shown that about 80% of previous studies of patient-reported outcomes have focused on specific injuries, most commonly traumatic brain injury (32%), spinal cord injury (31%) and burns (32%) (Rosenberg et al., 2018). Moreover, apart from being injury-specific, studies of outcomes following trauma have often been restricted to only major trauma. The benefits of these criteria have been argued to facilitate comparisons (Ringdal et al., 2008); however, they have also been criticised as limited, as even less severe injuries can pose a significant threat of disability (Aitken, Chaboyer, Kendall & Burmeister, 2012; Harcombe et al., 2015; Langley, Derrett, Davie, Ameratunga & Wyeth, 2011). In addition to this, trauma registries have been identified as a vital source of data to further improve the understanding of traumatic injuries and how care can alleviate suffering for those who are injured (Ardolino, Sleat & Willett, 2012; Moore & Clark, 2008; Stelfox, Bobranska-Artiuch, Nathens & Straus, 2010), however, few trauma registries have routinely collected outcomes other than mortality (Sleat, Ardolino & Willett, 2011).

Researchers have highlighted that there is a gap between the understanding of the impact of injury on personal and population *health* (Polinder et al., 2010), and that knowledge of patients' perceptions of their own *quality of life* (QoL) can enable nurses to see the patients' needs and address them with appropriate nursing actions (Mandzuk & McMillan, 2005). In addition, *health-related quality of life* (HRQoL) has been described to facilitate understanding of patients' perspectives of health, on what is gained or lost as a result of treatment of a disease/illness (or injury) (Jackowski & Guyatt, 2003). Hays (2010) provided a more detailed definition of HRQoL, describing it as "how well a person function in their life and his or her perceived wellbeing in physical, mental and social domains of health", where function refers to the person's ability to carry out activities of daily living and well-being to his/her subjective feelings.

Distinguishing between health, QoL and HRQoL has been recognised as somewhat difficult, as the three terms are sometimes used interchangeably (Karimi & Brazier, 2016; Lin, Lin, & Fan, 2013; Moons, Budts & De Geest, 2006). The difficulties in distinguishing between the terms also become apparent within the research of the trauma population; for example, experts from the Trauma Audit and Research Network (TARN) and the Cochrane Injuries group clearly recommend the EQ-5D instrument (amongst others) as a valid and reliable measurement of *quality of life* (Ardolino et al., 2012). However, the EuroQol Group that developed the EQ-5D refer to it as “a measure of *health status*” (EuroQol Research Foundation, 2015). Karimi and Brazier (2016) pinpointed the difficulties in distinguishing between HRQoL and its relation to both QoL and health status by referring to the different definitions of HRQoL. Whilst some definitions resemble health status, there are others that resemble QoL. By reviewing research within trauma, HRQoL has been found to be described as a measurement of “the health impact of non-fatal injuries” (Lyons, 2010) and as a “general measure of health status...suited to the assessment of outcomes of injury” (Derrett et al., 2009). In a systematic review exploring studies (n=41) that measured HRQoL amongst general injury populations, the authors (Polinder et al., 2010) summarised that “different HRQoL instruments assess different dimensions of health”. This would indicate that within trauma research, HRQoL is more commonly associated with the term health than with QoL. As such, it may be worth noticing the suggestion that traditional HRQoL measurements (i.e. SF-36 and EQ-5D) should be classified as measures of *self-perceived health status* (Karimi & Brazier, 2016; Moons, 2004).

As the literature review above shows, recovery following trauma is complex, and research on outcomes following trauma has implied a focus on health status. Following this, researchers have argued that to gain a comprehensive picture of the outcomes following trauma and ensure that care is designed, improved and maintained according to trauma patients’ wants and needs, further research that

captures both patient-reported outcomes and patient experiences is needed (Ardolino et al., 2012; Brohi, Cole & Hoffman, 2011; Nilsson, Orwelius & Kristenson, 2016; Turner et al., 2019).

A NURSING PERSPECTIVE

I have chosen to describe what constitutes a nursing perspective based on four defining characteristics presented by Meleis (2011). First, the underlying assumption is that nursing is a human science, as it is concerned with “the life experiences of human beings and their meanings, with health and illness matters and their significance in their life” (p.89, Meleis, 2011). Munhall (2012) explained that, within human sciences, ‘meaning’ can be seen as supreme (p.41), and the essential base of nursing knowledge concerns “coming to know and coming to discover rather than verify” (p.49). However, no singular paradigm is unequivocally superior to another within nursing research, as accumulating knowledge from different paradigms is valuable for theory development (Warelow, 2013; Weaver & Olson, 2006), and methods ought to be seen as complementary in their limitations and strengths (p.12, Polit & Beck, 2017). Therefore, this thesis presupposes a methodological pluralism, underpinned by the assumption that the complexity of health, well-being and suffering cannot be satisfactorily achieved by adhering to a single paradigm (cf. Weaver & Olson, 2006).

Secondly, nursing is practice-oriented, as the goal is to understand the nursing care needs of people and learn how to better care for them and enhance their well-being (Meleis, 2011), health and quality of life (p.3, Polit & Beck, 2017). Practice-oriented further involves supporting and strengthening patients’ health processes (p.33, Dahlberg, 2014). Thus, in order to do this, it is of crucial value for nurses to know what patients view as meaningful and supportive nursing care (Meleis, 2011).

Third, a fundamental part of nursing is caring (Finfgeld-Connett, 2008; Meleis, 2011). Caring as a concept can be described by five perspectives: caring as a human state, caring as a moral imperative/ideal, caring as an affect, caring as an interpersonal relationship and caring as a nursing intervention (Morse, Solberg,

Neander, Bottorff & Johnson, 1990). This thesis primarily addresses caring as a moral imperative and as an interpersonal relationship. Snellman and Gedda (2012) have suggested that the value ground in nursing is anchored in two ethical principles: the first is seeing people as equals and the second is viewing all people as having the right to experience a meaningful life. Furthermore, Finfgeld-Connett (2008) explained that a fundamental part of caring is acknowledging patients' experiences. It is a "context-specific interpersonal process" that, when practiced, improves the patients' physical well-being as well as enhances the mental well-being amongst both patients and nurses.

Fourth, nursing is a health-oriented discipline, as changes in health, unexpected or progressive, are often the focus of nursing care (Meleis & Trangenstein, 1994). Through the process of nursing care, nurses uncover patients' health strengths and resources to help the patient take charge of his/her illness or injury (p.94, Meleis, 2011). Moreover, as health can be viewed and defined in different ways, Meleis (1990) advocated that a single definition of health is neither appropriate, possible nor useful. Instead, a diversity of health definitions is favourable, as nursing is practiced in many different clinical areas.

RATIONALE

To be able to meet the needs of trauma patients, nurses are identified to have a central role in the trauma continuum. The long-term goals of trauma nursing are to enhance survival and reduce morbidity, maintain and enhance humanity and individual dignity and maximise quality of life and physical, functional and psychological recovery. Suffering a trauma has been described as being faced with one's own mortality and research show the importance of creating a truthful and trusting relationship with the patient already during initial care. It is not uncommon for trauma patients to receive primary transport by the HEMS, which has been described as constituting a challenging care environment (i.e. vibrations, turbulence, loud noise) that inhibits surveillance of and communication with patients. Therefore, exploring the context of HEMS from the perspective of trauma patients would be valuable to bring awareness and further knowledge of their needs and the care they receive during initial trauma care. Furthermore, trauma nursing has been described as complex, requiring a trained, skilled and experienced nurse. As such, utilising CCNs to participate in trauma teams can be favourable. However, further knowledge of the CCNs' experiences in such a utilisation could improve trauma nursing by identifying challenges and trauma patients' needs in said context. In addition, research has shown that recovery following trauma is complex, and that post-acute care following trauma has failed to meet trauma patients' needs. Therefore, further research is needed that captures both patient-reported outcomes and patients' experiences of the trauma continuum to strengthen nurses' (and other health care professionals') abilities to anticipate and subsequently address trauma patients' needs.

THE AIM OF THE DOCTORAL THESIS

The overall aim of this thesis was to explore experiences within the trauma continuum from the perspectives of injured persons and critical care nurses. The specific aims were as follows:

- To describe trauma patients' experiences of helicopter emergency medical services [HEMS].
- To describe critical care nurses' [CCNs'] experiences of nursing trauma patients.
- To explore the experience of suffering multiple trauma.
- To explore health-related quality of life by using the EQ-5D amongst adult trauma patients and (i) describe patients' perceptions of the care they received (ii).

METHODS

This thesis includes three studies with a qualitative design (I-III) and one study with a mainly quantitative design (IV) to explore the experiences of adult trauma patients and CCNs.

Table 1. Overview of aims and methods

Study	Aim	Participants	Data collection	Data analysis	Setting
I	Describe trauma patients' experiences of helicopter emergency medical services [HEMS]	Persons in need of HEMS (n=13)	Individual interviews	Qualitative content analysis	Pre-hospital
II	Describe CCNs' experiences of nursing trauma patients	Critical care nurses (n=15)	Focus group discussion	Qualitative content analysis	In-hospital
III	Explore the experience of suffering multiple trauma	Persons suffering multiple trauma (n=9)	Individual interviews	Qualitative content analysis	In-hospital Post-discharge
IV	Explore health-related quality of life by using the EQ-5D amongst adult trauma patients and (i) describe patients' perceptions of the care they received (ii)	Adult trauma patients (n=210)	SweTrau Registry Questionnaire (EQ-5D, open-ended question) at 3, 6 and 12 months post-discharge	Descriptive and analytic statistical analyses	In-hospital Post-discharge

CONTEXT

In the studies included in this thesis, trauma patients were identified according to: activation of a trauma alarm (I, II), diagnosis of multiple trauma (III) and suffering a moderate or severe injury (NISS \geq 9) (IV). To differentiate the severity of injury, an anatomical injury score was used (New Injury Severity Score [NISS]). The participants in this thesis had received HEMS in the north of Sweden (I), worked at a mid-size hospital in the north of Sweden (II) or had received care there (III), or had received care at a hospital (n=9) located in the south of Sweden (IV). As a note, although the participants were recruited from the settings described below, the full extent of care they had received following their trauma was not restricted to those settings.

Paper I

The HEMS based at a mid-size hospital in the north of Sweden performs around 300 primary transports each year and covers an area with about 250,000 inhabitants (Government offices of Sweden, 2008). Approximately half of their dispatches are due to medical conditions (e.g. stroke/sepsis) and the remaining due to trauma (Swedish Association of Local Authorities and Regions, 2012). The helicopter has room for two patients and a total of six passengers, consisting of two pilots, one anaesthesiologist and one nurse (specialised either in intensive care or anaesthesia). When not manning the helicopter, the medical staff are at the hospital during the day. The patients receiving HEMS would either stay at the hospital for further care or, depending on the severity of the injuries, receive stabilising measurements before further transport to a more specialised hospital.

Papers II and III

The CCNs worked at a mid-size hospital in the north of Sweden where they receive approximately 300 trauma calls per year. According to standard

procedure, one CCN carries a trauma pager; if paged, he/she immediately joins the trauma team at the ER and most often continued to follow the patient for further care (e.g. x-rays, surveillance/care). The CCNs have a rotation schedule, meaning they either man the intensive care unit (ICU) (with space for up to 10 patients) or the conjunction postoperative ward (with space for up to 15 patients). When paged, the remaining staff (either in the ICU or in the post-operative ward) would take over the care of the CCN's patients.

At the same hospital, system and patient characteristics for all patients treated at the ICU/postoperative ward are registered in the Swedish Intensive Care Registry (SIR), including trauma patients diagnosed with multiple trauma (III).

Paper IV

The Swedish Trauma Registry (SweTrau) started collecting data in 2011, and in 2018, almost every trauma-receiving hospital in Sweden participated (52 of 55) by registering patients categorised according to the following criteria: trauma call activation or when the patient arrives to the hospital by secondary transport due to trauma. In 2013, SweTrau initiated a project to gather post-discharge data on trauma patients in addition to the collection of system and patient characteristics for pre- and in-hospital settings. Nine hospitals located in the south of Sweden participated in the project for one or more years between 2013 and 2016. The hospitals were of varying sizes with different conditions for conducting highly specialised care. Of the nine hospitals in total, there were two university hospitals, three rural hospitals and four county hospitals.

PROCEDURE AND PARTICIPANTS

Paper I

A purposive sampling was applied (Patton, 2015; Polit & Beck, 2017), meaning that participants were selected based on their experience of the topic (i.e. HEMS) and, thus, ability to answer the aim of the study. The inclusion criteria were: having suffered an unintended physical injury, receiving primary transport by HEMS from the scene of the accident to the hospital and being over the age of 18. To exclude patients with considerable memory loss, the following exclusion criteria were added: being diagnosed or suspected of suffering a substantial head injury and/or assessed as unable to participate due to the accident. A head nurse was commissioned to select participants by examining medical records of patients arriving at the hospital's emergency department (ED). Thirty persons were found to fit the criteria, and a written inquiry for their participation was sent out. Those who wanted to participate were instructed to reply to the researchers by sending their written consent, including their contact information, to arrange a time and place for individual interviews.

Of the participants (n=13), there were four women and nine men. Median age was 33 (21–76 years). Five of the accidents were vehicle-related (snowmobile/quadricycle), seven were fall-related (five of these downhill-skiing/snowboard) and one caused by a sharp object. Time between the accident and interview varied between four and six months. Six participants had ongoing rehabilitation and were on sick leave on a part- or full-time basis, and three were retired.

Paper II

A purposive sampling was applied (Patton, 2015; Polit & Beck, 2017) with the following inclusion criteria: experience working on an ICU and nursing trauma patients (which included carrying a trauma pager and assisting in trauma team).

Participants were recruited with the help of the head of the department at an ICU/postoperative ward, who informed all employed CCNs (n=40) of the study aim and inclusion criteria. The CCNs who fit the criteria and wanted to participate reported their interest to the head of the department, who then forwarded written information from the researchers regarding the procedure for data collection to the participants. Four occasions for focus group discussions (FGDs) were then scheduled and performed. For the participants' convenience, the FGDs were held at the hospital where the CCNs worked. The FGDs were carried out in 2014 between February and April, at which time their written consent was also gathered.

All participants (n=15) were women, and years of experience working as a CCN varied between 1.5–28 years (median 10 years). Median age was 42 years (31–64 years).

Paper III

A purposive sampling was used (Patton, 2015; Polit & Beck, 2017). The inclusion criteria were: 18 years or older at time of the accident and diagnosed with multiple trauma (i.e. Two or more lesions in at least two different parts of the body caused by accidents. These injuries may affect one or more body systems and pose a risk to individually or together constitute a life-threatening condition). A CCN was given instructions to search for participants who had been diagnosed/registered with multiple trauma in SIR at the hospital. A first search was conducted in April 2016 and included patients treated between April 2015 and February 2016. Those who fit the criteria were sent a request letter asking to participate, and a reminder letter was sent out after two weeks. Four persons replied wishing to participate in the study, and individual interviews were performed in May and June 2016. The collection of data was found insufficient as new information was uncovered at each interview; hence, to gain data saturation (p.271, Patton, 2015), a second search amongst patients treated between November 2013 and April 2015 was performed in October 2016. Five

persons replied wishing to participate in the study, and individual interviews were performed in November 2016.

Of the participants (n=9), there were three women and six men. Median age was 50 years (21-81 years). Four of the accidents were vehicle-related, three were fall-related and two work-related (blunt force and explosion). Time between the accident and interview varied between 2 months and 2 years 11 months. Five participants were on sick-leave on a part- or full-time basis, and two were retired.

Paper IV

Data were retrieved from SweTrau in January 2018. Below is a description of SweTrau's procedure for data collection.

For practical reasons, SweTrau chose to narrow the number of trauma patients eligible for post-discharge follow-up. Hence, a consecutive sampling (Polit & Beck, 2017) was performed in which each hospital recruited participants in one month each year instead of all year round. The following inclusion criteria were set for patients to be included in the follow-up: over 18 years of age, New Injury Severity Score (NISS) ≥ 9 and able to either write or speak Swedish.

From the nine hospitals, there was a total of 839 eligible trauma patients between 2013 and 2016. There were 239 patients who met the criteria. At the time of discharge, they were informed of the SweTrau project and asked to participate in a follow-up where they would assess their own health status at 3, 6 and 12 months and be asked about the care they had received following their trauma. During the first year, 2013, a nurse connected to SweTrau contacted the participants by phone at 3, 6 and 12 months post-discharge and received their replies via phone. The following years, the same nurse sent out a written questionnaire, at the same intervals, which the participants then returned via post. Of the 239 who met the

criteria, 210 responded, and the rest either declined to participate or were lost to follow-up. All replies were documented using SPSS.

Table 2. Participant and system characteristics (n=210)*

Gender, n (%)	Men	151 (72.2)
	Women	58 (27.8)
Age, m (SD \pm)		48.2 (\pm 19.1)
Occupation at time of injury, n (%)	Working	115 (56.1)
	Unemployed	9 (4.4)
	Retired	57 (27.8)
	On sick leave	11 (5.4)
	Student	11 (5.4)
	Other	2 (1.0)
ASA, pre-injury, n (%)	ASA I A normal healthy patient	123 (59.7)
	ASA II A patient with mild systemic disease	62 (30.1)
	ASA III A patient with severe systemic disease	20 (9.7)
	ASA IV A patient with severe systemic disease that is a constant threat to life	1 (0.5)
Mechanism of injury, n (%)	Vehicle	97 (46.9)
	Shot or injured by sharp object	16 (7.7)
	Blunt object injury	10 (4.8)
	Fall, low energy	16 (7.7)
	Fall, high energy	61 (29.5)
	Other	7 (3.4)
Trauma call, n (%)	Activated	167 (79.9)
NISS, m (SD)		21.2 (\pm 12.1)
	9–15, n (%)	81 (38.6)
	>15, n (%)	129 (61.4)
Highest level of in-Hospital care, n (%)	Intensive Care	90 (42.9)
Glasgow Outcome Scale [GOS] at discharge from hospital, n (%)	Good recovery (5)	43 (21.5)
	Moderate disability (4)	86 (43.0)
	Severe disability (3)	68 (34.0)
	Persistent vegetative state (2)	3 (1.5)
Destination after discharge from hospital, n (%)	Home	116 (56.0)
	Rehabilitation	62 (30.0)
	Other ICU (higher-level care)	3 (1.4)
	Other ICU (same-level care)	5 (2.4)
	Other care department	16 (7.7)
	Other care	5 (2.4)

*The internal loss was less than 4.8%.

DATA COLLECTION

Individual interviews (I and III)

Data were gathered by individual interviews to gain information-rich knowledge of the participants' perspectives (Patton, 2015). Most interviews were conducted face-to-face; however, seven of the interviews in study I (n=13) were conducted by phone due to the participants' preferences or geographic distance. To strengthen coverage of the topic in all interviews, an interview guide with open-ended questions was used for respective study (cf. Patton, 2015). By using an interview guide, the interviews became semi-structured (Polit & Beck, 2017), making it possible to obtain specific information whilst giving the participants the freedom to choose what they wish to illustrate and/or elaborate upon (p.510, Polit & Beck, 2017). For study I, the interview guide was based on two prior articles (Senften & Engström, 2015; Zarei, Yarandi, Rasouli & Rahimi-Movaghar, 2013). The length of the individual interviews varied between 35-70 minutes (I) and 30-105 minutes (III).

Focus group discussions (II)

Data were gathered by FGDs, as they made it possible to obtain the viewpoints of many participants in a short time and allow participants to react to each other's experiences, thus leading to deeper expressions of opinions (cf. Polit & Beck, 2012). Qualitative data collected by focus groups are commonly termed either 'focus group interviews' or 'focus group discussions' (Boddy, 2005). In this thesis, the term 'focus group discussion' is used as 'discussion' indicates that the direction of interaction is *between* participants, whereas an 'interview', implies that the moderator controls the group and that the discussion is mainly directed to the moderator rather than between the participants. The groups were homogeneous (all were CCNs), which promotes a comfortable group dynamic (cf. Polit & Beck, 2017), as sharing a familiar background usually makes one feel

more at ease to express ones views. Morgan (1997) suggested that a ‘rule of thumb’ is to have six to ten participants in each group; however in the four FGDs conducted in this study, there were between three and five CCNs (n=15). Despite having smaller groups, there was still an active and vivid interaction, and rich information could be collected. Morgan (1997) defined two distinctive features for focus groups as a qualitative method: the group’s interaction and the reliance on the researchers’ focus. Hence, to strengthen the reliance, two researchers were present at each FGD. One researcher acted as a moderator and used a discussion guide based on previous studies (Boström, Magnusson & Engström, 2012; Curtis, 2001) to ensure that topics relevant to the aim were discussed. The other researcher had the task of recording the FGDs, to pose follow-up questions when necessary and to overview that all participants were active in the discussions. The length of each FGD varied between 50 and 85 minutes.

Questionnaire (IV)

At 3, 6 and 12 months post-discharge, the participants were asked to assess their health-related quality of life using the EQ-5D. The EQ-5D is a generic instrument with a descriptive system that includes five dimensions measuring different areas of health: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. In this version, the EQ-5D-3L, there are three statements for each dimension that illustrate the level of health (for example, the three statements for mobility are: “I have no problems in walking about”, “I have some problems in walking about” and “I am confined to bed”). The respondents rate their health by choosing/ticking the statement they agree with most. Common to all dimensions, the levels are ordinal and differentiate between: ‘no problems’, ‘some problems’ and ‘extreme problems’ (EuroQol Research Foundation, 2015). The EQ5D is recommended for assessing health among general trauma population and for studying injury-related disability (Galvagno,

2011). It's validity and reliability has been found acceptable (Coons, Rao, Keininger & Hays, 2000) and the instrument have also been tested for specific injuries, such as lower limb injury and burn injuries (Hung et al., 2015; Öster, Willebrand, Dyster-Aas, Kildal & Ekselius, 2009).

In addition to the EQ-5D, the participants were, at all occasions, given an opportunity to answer the following question: "Looking back at the care you have received in conjunction to your injury, what could have been done better?" Included in the data withdrawal from SweTrau was the participants pre- and in-hospital characteristics (i.e. gender, activation of trauma call).

DATA ANALYSIS

Qualitative content analysis (I-IV)

Qualitative content analysis (Graneheim & Lundman, 2004; Patton, 2015) was used to describe and explore experiences (I-IV) by analysing transcribed FGDs (II) individual interviews (I, III) and answers to the open-ended question (IV). Patton (p.553, 2015) described that content analysis “involves identifying, coding, categorising, classifying and labelling the primary patterns in the data” (p.553). It is through a logical process of sense-making that core consistencies and meanings are identified in a volume of qualitative material.

The steps for analysing the transcribed data (I-III) were similar, starting by reading all the transcribed text (FGDs or interviews) in each study as a whole to gain a sense of the content. Following this, meaning units consisting of one or several sentences that corresponded to the aim were extracted. These were then condensed, meaning they were shortened whilst preserving the core. Next, condensed meaning units were stepwise grouped according to similarities and differences. Guiding the grouping of data (I-IV) were the concepts of manifest and latent content as described by Graneheim and Lundman (2004). The manifest content, composed of visible and obvious components, was labelled as categories when grouped. Whereas, the latent content requiring more interpretation and a process of making sense of the underlying meaning, was labelled as themes when grouped. Patton (p.541, 2015) gives a similar description of the content analysis process, beginning with identifying patterns (the descriptive findings) and then interpreting the meaning of the pattern.

In Study I, the characteristics of the transcribed data were more concrete; hence, a grouping of categories was made in several steps before resulting in three final themes. The transcribed data in Studies II and III were richer and more

expressive, thus, the grouping came to involve a higher-level interpretation resulting in sub-themes and one final theme.

The analysis of the open-ended question (IV) differed from the other analysis. The data from each participant (n=91) consisted of one or a few seemingly fragmented sentences and in addition to answering “What could have been done better?” they gave answers regarding “What was good”. Thus, after reading all answers, the next step of the analysis was to extract sentences and sort them into one of two content areas (‘satisfying experiences’ or ‘unsatisfying experiences’) that were identified with little interpretation (cf. Graneheim & Lundman, 2004). Sentences were then sorted and coded according to context (‘overall view of care’, ‘in-hospital’ or ‘post-discharge’). Following this, the sentences were stepwise grouped based on similarities and differences. In correspondence with the aim (“*What* could have been done better?”), the grouping was performed with a low level of abstraction and interpretation, thus resulting in three categories responding to the question.

Conducting a qualitative content analysis always requires some level of interpretation (Graneheim, Lindgren & Lundman, 2017; Patton, 2015; Sandelowski, 2010). Hence, a challenge throughout the analysis was to keep abstraction levels and interpretation degrees logical and congruent (Graneheim et al., 2017). To ensure a rigorous process, all steps (I-IV) were consistently cross-reviewed against the original texts and previous steps to remain logical and congruent, i.e. not exclude or misinterpret relevant content. All authors (I-IV) took part and discussed the findings until an agreement of the most probable interpretations was reached.

Statistical analyses (IV)

The statistical analysis for Study IV was carried out using the SPSS version 25.0.0.1. Descriptive and analytical statistics were performed. Categorical data were presented as proportions (%), and numerical data were presented as means and standard deviations (m, SD). As the EQ-5D-3L consist of an ordinal three-level scale ('no problems', 'some problems' and 'extreme problems'), the Mann-Whitney's U-test was used to test for differences in median scores between groups (men-women, receiving intensive care or not, etc.) for each of the five dimensions and occasions (3, 6 and 12 months). A two-sided p-value of 0.05 was considered statistically significant. In Table 3 in the manuscript, the ordinal three-level scale was dichotomised into 'no problems' and 'problems' (including both 'some problems' and 'extreme problems'). Dichotomising the levels was suitable because the number of participants who reported 'extreme problems' was low overall (cf. EuroQol Research Foundation, 2015).

ETHICAL CONSIDERATIONS

The studies were approved by the regional ethical review board (Dnr: 1828-13 and Dnr: 2017/179-32). All participants (I-III) received written and verbal information of the aim of the study, potential benefits and risks, procedure for data collection, the voluntary premise of the studies, and the right to withdraw at any time before giving their written informed consent. According to Miskimins, Pati and Schreiber (2019), it can be a challenge to provide informed consent in such a way that a patient, being in an emotionally charged situation after becoming severely injured, can comprehend the potential benefits and risks. However, as all trauma patients (I, III) were approached after discharge, we judged the risk to be small compared to them being approached in adjunction to their hospitalization. In addition to this, Mundall (p.496-497, 2012) argued that informed consent should be an ongoing process, as unexpected events or consequences may arise during the data collection. Hence, in each situation (interview/FGD), I strived for an ethical manner in which I remaining sensitive to the participants.

The data in Study IV, which were retrieved from the SweTrau registry, were de-identified prior to our withdrawal. Although we never had access to any key for identification, there was information in the free-text answers that could make it possible for others to identify individuals. The written informed consent and data (I-IV) were confidentially processed, meaning that only authorised persons (i.e. the researchers responsible for the project) had access to the information, which was subsequently stored at Luleå University of Technology (SFS 1990:782). All presentations of findings were reviewed to ensure that individuals could not be identified. Before conducting a study, potential risks and benefits need to be weighted. The benefits from the studies included in this thesis were assessed to outweigh the risks. The standpoint of this thesis is that there lies a

greater risk of harm by avoiding exploring experiences within the trauma continuum than what would emerge by conducting these studies.

Papers I and III

Prior to the implementation of the studies, consideration was given to whether the participant could be negatively affected by reminiscing their accident. We concluded that since participation was voluntary and the request to participate was issued by letter, the risk of it was small. If participants had been asked in person by the researcher/s, they may have felt obliged to participate, and, presumably, there would be a greater risk of causing them discomfort, stress or even pain. The procedure in which participants were recruited meant that at the time of the interview, I did not know the circumstances of the accident, e.g., if the accident involved the deaths of others or had been self-inflicted. During these interviews, I strived to be attentive and receptive to the person in front of me, as I assumed that this could have been a sensitive topic for the participants.

Paper II

As data were collected through FGDs, the participants (CCNs) within the group were not anonymous to each other. To encourage a free discussion and allow for everyone's voice to be heard, the participants were asked to keep what was said within the room. It was highlighted that everyone's experiences and reflections were welcomed, as these could contribute to knowledge about the topic. There was no way that we, the researchers, could guarantee or prevent the participants from sharing what they had heard with others once leaving the room. However, we assessed the risk of harmful exposing of shared experiences as small, given that they were familiar with each other and as the topic involving a prevalent event at their workplace.

Paper IV

All patients received information of the SweTrau Registry at the hospital where they were treated. They were informed that patient and system characteristics

were automatically registered until time of discharge, and that they had the right to request to be excluded from the registry and were given instructions on how to do so. They were further informed of the follow-up project with an additional data collection at 3, 6 and 12 months post-discharge, which they offered to participate in voluntarily. Regardless of their choice to be excluded and/or refuse to participate in the follow-up, they were informed that the care they received would not be affected. Previous studies (Joffe, Cook, Cleary, Clark & Weeks, 2001; Mann, Schmidt & Richardson, 2005) indicate that at best, only 25–46% of all patients leaving the ED, fully understand the study (or its main reason) in which they had been enrolled in. Considering this, future data collection may consider offering participation sometime after discharge. For the follow-up, one of the inclusion criteria was that the patient could either speak or write in Swedish. The choice to do so is pragmatic; as it was a limited project, it would be easier to only use the Swedish version of the questionnaire. However, from an ethical standpoint, it can be questioned, as this probably excluded newly arrived Swedish residents. Furthermore, we could speculate that they, due to language, have difficulties in expressing how they perceive their own health. These persons who may need care the most are ever so important to learn more about, as the aim of the registry and, by extension, this study is to gain knowledge to improve care for all trauma patients.

FINDINGS

Table 3. Overview of aim, main findings and clinical context in Studies I-IV.

Study	Aim	Main findings	Setting
I	Describe trauma patients' experiences of helicopter emergency medical services [HEMS]	The patients viewed the staff as 'a close-knit team', and as the staff remained attentive and close, they felt they could 'hand themselves over' to the staff. Although the patients were afraid of the potential seriousness of their injuries, the care they received by HEMS made them feel secure and prioritised.	Pre-hospital
II	Describe CCNs' experiences of nursing trauma patients	The CCNs expressed how they constitute a continuity for the trauma patient, as when they assist in a trauma alarm, they remain close to the patient throughout initial examination and for further surveillance/care. CCNs felt that the trauma patients (and relatives) needed time and attention invested in them, as they were in a state of shock. Nursing trauma patients could be emotionally challenging and the CCN could feel overwhelmed by taking on their feelings and/or recognising themselves as family members.	In-hospital
III	Explore the experience of suffering multiple trauma	The patients did not know what to expect of their recovery process and felt both confused and distressed, as they perceived a lack of understanding and guidance. It was a challenge to come in contact with care-givers post-discharge, and due to fear of being abandoned, they turned to family and friends for support.	In-hospital Post-discharge
IV	Explore health-related quality of life by using the EQ-5D amongst adult trauma patients (i) and describe patients' perceptions of the care they received (ii)	HRQoL improved over time, except within the dimension 'mobility', where an increase (+1.6%) occurred between 6 and 12 months. Participants most frequently reported problems with 'pain/discomfort' (78.4%-63.7%). Those assessed at GOS 3, NISS>15 and those discharged to other care institutions reported problems to a greater extent. Based on the participants' perceptions of care, three improvements areas were identified; 'facilities', 'communication and connection with caregivers' and 'comprehensive follow-up'.	In-hospital Post-discharge

Paper I

The aim was to describe trauma patients' experiences of HEMS. The analysis resulted in three themes: being distraught and dazed by the event, being comforted by the caregivers and being safe in a restricted environment.

They patients reported being in a state of shock when the HEMS arrived, and that they did not realise the seriousness of the situation. Whilst they felt distraught and hesitant regarding the severity of their injuries, they expressed curiosity and excitement for the flight itself, describing it as a combination of joy and fear. During their transport, they did not feel the need to have any family or friends present because they felt fully cared for by the staff that manned the helicopter. They expressed how the staff had a soothing effect on them, as the staff seemed to be a close-knit team, making the patients feel that they could "hand themselves over to their care". Even though the communication was limited by headsets, they did not view this as an obstacle because the caregivers remained attentive and close by during the flight. The patients expressed feeling that HEMS was a sign of 'seriousness', which, to some extent, made them feel afraid. In addition, they believed that HEMS was the fastest and most secure way to get to a hospital, which, in turn, made them feel prioritised; as such, they expressed gratitude for being taken seriously. Upon arrival to the ED, some patients experienced complete relief, as they saw it as a guarantee of survival. Other patients described it in contrast to the care they received by the HEMS; at the ED, they were left alone, feeling confused and uninformed of what would happen next.

Paper II

The aim was to describe CCNs' experiences of nursing patients suffering from trauma. The analysis resulted in one overall theme: preparing for the unexpected.

CCNs nursing trauma patients strived to do their best in acute and unpredictable situations that demanded their skills. They expressed that although they were competent, they might feel inadequate as a result of being left alone with a more seriously injured trauma patient during X-rays, and that they also felt inadequate after leaving critically ill patients at the ICU when responding to a trauma alarm. Furthermore, the CCNs felt unsatisfied with the care environment, as it could have a negative impact on care. For example, the arrival of trauma patients at the postoperative ward caused turmoil because the patients and their relatives required much attention due to shock, which the CCNs did not always have time to address. The CCNs expressed that their nursing practice was based on their communication with others. As such, it was important to employ well-functioning communication; it is important for CCNs to be able to 'speak up' when, for example, assisting in a trauma team. Good communication enabled more flexible care, meaning that the care was more adapted according to the trauma patients' needs. Furthermore, when care in the trauma room was finished, the CCNs often felt relieved to hand over the trauma patient to another CCN, which disrupted the continuity of care given by the same CCN. They expressed how they felt drained from their work due to it being emotionally challenging, as they worried for the trauma patient or took on the feelings that the trauma patients' relatives conveyed.

Paper III

The aim was to explore experiences of suffering multiple trauma. The analysis resulted in one theme: a detour in life.

After becoming injured, the patients felt they did not know what to expect of their recovery process and as such they could merely hope for the best. In addition, they lacked understanding and guidance from health care professionals, which made the process challenging. Some questioned the lack of shared understanding between themselves and the health care professionals. Their

questioning came from feeling that their needs were not taken under proper consideration, or from feeling misinformed, leading to unrealistic expectations regarding their recovery. The multiple trauma patients strived to focus on the present and continue with their lives, although, at times, they felt limited, helpless and weak. After hospital discharge, they often felt confused and distressed, since they did not know whom to turn to with their questions regarding rehabilitation and recovery. Trying to come in contact with caregivers post-discharge was time-consuming, and, at times unachievable, which made them feel powerless and desperate. They felt emotionally exhausted when they repeatedly needed to explain and emphasise their needs to new caregivers. As such, they turned to friends and relatives, seeking support on how they could best explain or express their needs for different health care services (e.g. second opinion, specialist care, rehabilitation measurements). They were afraid that if they did not push forward and demanded care for themselves, they would not receive any.

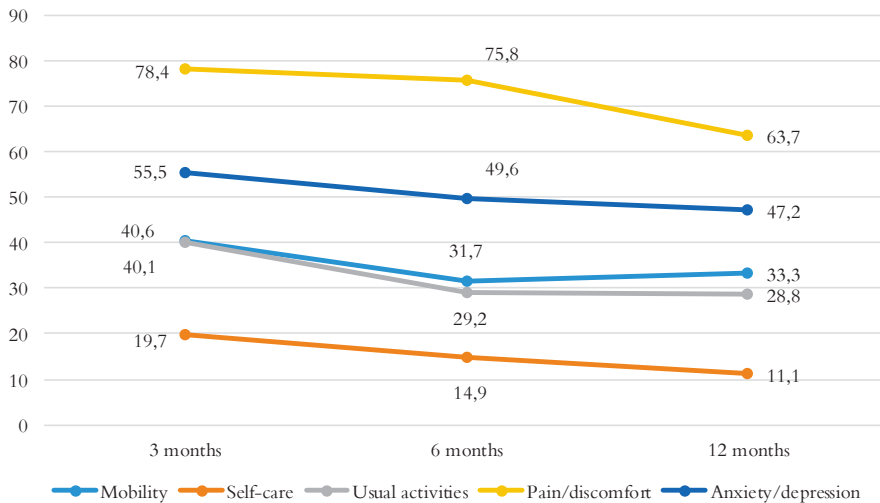
Paper IV

The aim was to (i) explore health-related quality of life by using EQ-5D among adult trauma patients and (ii) describe patient-reported perceptions of the care they received. The research questions were: What patterns in the assessment of health-related quality of life emerged at 3, 6, and 12 months? Were there any differences depending on groups divided according to age, gender, injury severity, ICU admission, GOS, and destination after discharge? What needs for improvement regarding their care did patients perceive?

Trauma patients' HRQoL improved overall the year following discharge (Table 4) with the exception of 'mobility', where an increase of (some or extreme) problems (+1.6%) were seen between six and 12 months post-injury. Between three and six months, 'usual activities' improved the most as problems decreased by 10.9%. During the same time, 'pain/discomfort' improved the least (problems

decreased 2.6%), whereas between 6 and 12 months, ‘pain/discomfort’ improved the most (problems decreased 12.1%).

Figure 1. Participants’ (%) ratings of some or extreme problems.



The most significance (i.e., four times or more) was found comparing GOS at discharge (GOS 3 vs. GOS 4–5), injury severity (NISS 9–15 vs. NISS>15), and discharge destination (home vs. other care institution), showing that trauma patients who were assessed at GOS 3, had a more severe injury, or were discharged to other than home reported problems to a higher extent. The participants (n=91) had both satisfying and unsatisfying experiences of care following trauma. Three improvement areas were identified: ‘facilities’ (e.g., being placed on an appropriate ward, one-bed rooms with TV, better food, etc.), ‘communication and connection with caregivers’, and ‘comprehensive follow-up’. When hospitalized, they could feel both alone and neglected by staff who were not attentive to their needs and who avoided answering their questions. They emphasized wanting more jointly information from caregivers to avoid confusion and contradictions and that communication between staff/wards

needed to be more rapid as it tended to delay the transfer of information. In post-discharge settings, the trauma patients experienced staff as inattentive to their present or their baseline status and thus experienced that the care they received did not suit them. They wanted to remain in contact with a doctor/specialist to learn more about the consequences of their injuries and suggested that a follow-up should be planned prior to discharge and to include more/several occasions more timely rehabilitation, and information on overall recovery and mental health/signs of depressions.

DISCUSSION

The overall aim of this thesis was to explore experiences within the trauma continuum from the perspectives of injured persons and critical care nurses. Describing trauma patients' experiences of primary transport by HEMS shows that although they were in a frightening situation, they felt secure and prioritized and could 'hand themselves over' to their caregivers (I). Describing CCNs' experiences of nursing trauma patients' shows that they felt torn in providing care to the most critically ill patients; they viewed all trauma patients to be in need of support, which was not always possible considering the care environment (II). Exploring trauma patients' experiences shows that they found it difficult coming into contact with caregivers and that they lacked understanding and guidance, which resulted in feelings of distress and insecurity regarding what to expect from their recovery (III). Exploring trauma patients' HRQoL showed that although their health status improved overall (with the exception of 'mobility'), they reported a high frequency of problems one-year post-discharge, and in addition, they advocated that care could be improved in several areas (IV).

MET AND UNMET NEEDS

This thesis provides further knowledge of the trauma continuum as it shows that trauma patients felt relief and were content with their care in the HEMS (I), but that the CCNs felt they did not have time to meet all their needs due to other patients (II). It also showed that when hospitalized and after discharge, the trauma patients felt that health care professionals were inattentive to their needs (III, IV) and might fear being abandoned (III). As the health care professionals manning the HEMS often care for a single patient, there are no other patients with greater needs or whose 'demandingness' requires attention and forces them to ration their care (cf. Rooddehghan, Yekta & Nasrabadi, 2018). In addition,

Nortvedt (2001) argues that when care is focused on one patient alone, the nurses will due to their closeness of the patients' needs and suffering, intuitively take responsibility for that patient. Hence, it can be understood that having one patient in the HEMS would enable caregivers to prioritize the trauma patient (I). Organisational and resource barriers have been designated to limit health care professionals' ability to provide what they view to be 'ideal' care (i.e., timely, equitable, effective, and holistic) following a traumatic injury (Beckett et al., 2014). Similarly, this thesis showed that CCNs were not always able to support trauma patients considering the care environment (II). Research has previously pointed out that nurses feel that they don't have time to care for their patients in accordance with nursing philosophy (de Veer, Francke, Struijs & Willems, 2013; Harvey, Thompson, Pearson, Willis & Toffoli, 2017), that there is an unbalance between work responsibility and moral obligations (Cronqvist, Theorell, Burns & Lutzen, 2004), and that decisions made because of rationing jeopardize professional values (Vryonides, Papastavrou, Charalambous, Andreou & Merkouris, 2015), which in turn has been argued to be an indicator of fundamental and structural inequities in the heart of contemporary health care (McCarthy & Gastmans, 2015). It has also been expressed that nurses are left without control over the care process or the quality of care (Harvey et al., 2017), which is also illustrated by the CCNs as they feel 'competent but inadequate'(II).

As this thesis demonstrates, trauma patients felt a lack of shared understanding between themselves and their caregivers (III), and they wished for better communication and connection as they could experience health care professionals as inattentive and feel that care was not designed according to their needs (IV). These finding could partially be understood as a consequence of nursing absence as an integrative review (n=54) shows that among the top five most frequently unfinished activities among nurses were emotional support, care coordination and discharge planning, care planning, and timeliness of care (Jones,

Hamilton & Murry, 2015). Furthermore, the review showed that between 55–98% of all nurses leave one or more than one activities unfinished. Based on this finding, they concluded that due to nursing priorities and rationing of care, patients are particularly vulnerable to unmet psychosocial, emotional, and educational needs. Moreover, as trauma patients report a high proportion of ‘anxiety/depression’ (55.5–47.2%) (IV), describe feeling alone and confused, and are asking for more guidance (III–IV), it implies that by preventing nursing absence/rationing of care, care following a traumatic injury could improve.

Richmond et al. (2011) highlighted that nursing priorities directed towards ‘maintaining and enhancing humanity and individual dignity’ are particularly needed in trauma practice. They stated that this required the trauma patients to ‘have a voice throughout all aspects of care’ and that each patient was treated ‘as a sentient human being who is able to make decisions about him/herself and care’. Based on Richmond et al. (2011), the findings of this thesis can be understood as a loss of dignity as trauma patients experienced health care professionals as ‘inattentive’ to their needs (III–IV), and as such, they felt powerless when trying to come into contact with them, some even expressing that they needed to demand care in order to receive it (III). The findings are also similar to those of studies that have explored patients’ perceptions of dignity, showing that dignity includes ‘receiving attention’, ‘reservation of authority’, and ‘respectful atmosphere’ (Hosseini, Momennasab, Yektatalab & Zareiyan, 2018) and that dignity was influenced by ‘communication behaviors’ and ‘staff conduct’ (i.e, professional commitment) (Manookian, Cheraghi & Nasrabadi, 2014) or ‘staff attitude and behavior’ (Lin, Watson & Tsai, 2013). Moreover, this thesis showed that trauma patients could question their care or be of the opinion that the care did not suit their needs (III–IV), which could furthermore be viewed as something that counteracts dignity. Barclay (2016) states that health care professionals show respect for the patients’ dignity when they refrain from infringing on the individual patient’s standards and values and, in addition,

refrain from forcing the patient to veer away from his or her standards and values. To bring clarity to the concept of dignity within the health care context, Leget (2013) discusses three versions: intrinsic, subjective, and social/relational dignity. He argues that the three versions sustain each other and help achieve what neither one can do on its own. Subjective dignity rests upon what the individual says he or she feels, and social/relational dignity depends on being approached in a way that makes the individual feel respected (which aligns with the idea of a caring relationship between health care professional and patient). Dignity as such is an intersubjective category, constituted and upheld by persons who are interrelated in caring relationships. Leget (2013) argues that there is always a problem with the stability and continuity of the two as they are dependent on cultural practices. Hence, the notion of intrinsic dignity provides a powerful moral ideal that could be used when the others (being affected by culture) fail. Based on this, it can be concluded that health care professionals within the trauma continuum must apply a reflective approach wherein both the patients' views of what is meaningful to them and the notion of intrinsic dignity must be utilized in order to counteract a poor culture that risks undermining dignity (cf. Caldeira, Vieirac, Timmins & McSherry, 2016; Leget, 2013; Snellman & Gedda, 2012).

IMPAIRED HEALTH-RELATED QUALITY OF LIFE

This thesis shows that suffering a trauma implies a sudden detour in life (III), with feelings of helplessness and an impaired status of health in a long-term perspective (III, IV). McMurray, Theobald and Chaboyer (2004) point out that when measuring HRQoL (or QoL), it is difficult to assess the impact of any one profession (i.e., physician, nurse) because of the number and complexity of factors that influence patient care. In addition, in-hospital nursing interventions have shown to decrease injury-related physical symptoms and increases patients'

positive perception of being in control of their post-injury condition (Lee, Chien, Hung & Chou, 2015), hence, it could be assumed that nursing interventions post-discharge could have similar affects. Yet, a study performed in Belgium showed that all outpatient health care professionals except nurses provided more care compared to baseline for patients who were in a road traffic accident (Van Belleghem et al., 2018). This thesis does not show whether this can be generalized to the Swedish health care context, but it would be of further interest to explore.

Lacking a baseline measure prior to the trauma, the findings (IV) will be compared to a previous study that measured HRQoL using the EQ5D among the general Swedish population (Burström, Johannesson & Diderichsen, 2001). In comparison, this thesis (IV) shows that trauma patients report problems to a larger extent within all dimensions, where ‘pain/discomfort’ was the most frequently reported problem (78.4% at 3 months to 63.7% at 12 months). Although ‘pain/discomfort’ was also the most frequently reported problem among the general Swedish population aged 20–88, the proportions are clearly smaller (44.3%) (Burström et al., 2001). A review by Goldsmith, Curtis, and McCloughen (2016) shows that although the knowledge that pain is common among recently discharged trauma patients, treatments are inadequately prescribed and also poorly used due to inadequate discharge information. Moreover, trauma patients report low confidence regarding pain management at home and are as such ill-equipped to manage and make effective decisions about their pain management (Goldsmith, McCloughen & Curtis, 2018a). It has been argued that thorough documentation and education on pain management is needed at time of discharge as trauma patients have a lack of realization about the need to use analgesics and a limited understanding of why, when, and how to use them (Goldsmith, McCloughen & Curtis, 2018b). This thesis also provides knowledge that problems with ‘pain/discomfort’ improved the least between

three and six months, but that, consequently, it improved most between six and 12 months (IV). However, it would be of further interest to know whether this is due to less pain or to better pain management.

Between 55.5% and 47.2% of trauma patients reported problems with ‘anxiety/depression’ (IV) during the year following their injury, compared to 29.1% among the general Swedish population (Burström et al., 2001).

Furthermore, this thesis showed that trauma patients express feeling distressed, helpless, and insecure about their recovery (III), and highlighted a need for more information on mental health and signs of depressions (IV). Other research indicates that there is impaired mental health following a traumatic injury (Bryant et al., 2010; Bryant et al., 2015; Kenardy et al., 2018; Wiseman et al., 2015; Wiseman et al., 2013). In addition, symptoms of anxiety and depression have been identified as predictive factors for persistent pain following traumatic musculoskeletal injury (Rosenbloom, Khan, McCartney & Katz, 2013).

Although this thesis did not explore relationships between the different dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression), it does however show that some groups reported problems to a greater extent (especially those more severely injured, assessed with severe disability using GOS, and those discharged to other care institutions). Moreover, it would be of value to further explore how measurements like these can be used in clinical practice; and if they could be used for assessments of the individual trauma patient prior to discharge in order to better assess and understand possible patterns of recovery.

HOW CAN CARE BECOME MORE COHERENT?

This thesis adds to existing knowledge of the trauma continuum showing that CCNs do not feel they have time for trauma patients (II) and that the trauma patients experience a detour in life (III) in which they do not know what to

expect of their recovery and want guidance from healthcare professionals (III, IV). As shown in the background of this thesis, the altered life following trauma entailed facing the reality of their injury and modifying their response to it before they could make changes and re-establish continuity in their lives. Hence, when advocating for more coherent care following trauma, one may also need to consider the patients' need to 'make sense' of their traumatic injury due to its suddenness. As shown in a study by Stayt, Seers, and Tutton (2016), who explored the process of story construction among ICU-patients, patients strive to make sense of their experiences by seeking temporal or causal coherence in order to construct an understandable story. They sought for reasons, reviewed chronologically the events leading up to their enrollment, and needed other persons to help fill in memory gaps and to sort out real memories from the unreal or distorted ones. This may be one way of understanding why trauma patients wished to remain in contact with the doctor/s who treated them when hospitalized (IV). Moreover, Stayt et al. (2016) found that patients searched for familiarity as it provided them with a sense of reassurance and comfort that helped them formulate and understand their own experiences, which were often unfamiliar and terrifying. Hence, we can understand why, for example, ICU-diaries and debriefings and follow-up visits have been shown to facilitate a sense of coherence (Åkerman, Ersson, Fridlund & Samuelson, 2013; Engström, Rogmalm, Marklund & Wälivaara, 2018) and have the potential to strengthen well-being.

This thesis also shows that as the trauma patients did not know what to expect of their recoveries (III, IV), they could merely 'hope for the best' (III). This could be understood by a study by Brooks, Rogers, Sanders and Pilgrim (2015), who found that it could be a necessity for patients with long-term conditions who had ambitious hopes for the future to focus on the here and now. In addition, Parashar (2015), who explored the importance and the continuum of hope following a spinal cord injury, found three distinctive themes that evolved over

time: hope for a complete recovery, hope for self-reliance despite the injury, and hope for an optimum quality of life. As expectations of recovery are embedded in both hopes and fears, it has been highlighted that clinicians need to address both in order to negotiate realistic goals and when educating patients (Carroll, Lis, Weiser & Torti, 2016). This furthermore shows the importance of a shared understanding between the trauma patient and caregivers (III) as it can be assumed that not addressing expectations and hopes of recovery may lead trauma patients to have unrealistic (high or low) expectations, thereby causing them unnecessary suffering.

This thesis adds to existing knowledge that trauma patients found it challenging to come in contact with caregivers (III) and that information received could be confusing and contradicting (IV) or lead them to have unrealistic hopes of recovery (III). This could also be understood as a deficient continuity of care, which Haggerty et al. (2003) described as the ‘degree to which a series of discrete healthcare events is experienced as coherent, connected and consistent with the patients’ needs and context’. Furthermore, care following a traumatic injury could be understood to contradict what Ekman et al. (2011) describes as person-centered care (PCC) as the findings presented above indicate that the trauma patient is not fully engaged as an active partner in his/her care and treatment. Moreover, trauma patients emphasized that care following discharge was unsatisfactorily planned (IV), and as such, they repeatedly had to explain their situation and their needs to new caregivers (III). Ekman et al. (2011) proposed the following routines to ensure that PCC is systematically and consistently practiced. First, a partnership needs to be *initiated*, as the patient’s (person’s) view about his/her life situation and condition always is at the center of care. By inviting the patients to share their experiences, feelings, beliefs, and preferences, caregivers also show acknowledgement to the patient that their view is important. Secondly, the partnership needs to be *integrated* (or operationalized),

meaning that once a partnership is initiated, learning from the patients' experiences gives professionals a basis for discussion and planning care and treatment with the patient and for defining (and achieving) agreed upon goals. Third, in order to *safeguard* this, the patients' preferences, beliefs, and values, as well as their involvement in care and decision-making, need to be documented as it both gives legitimacy to the patients' perspectives and facilitates continuity in care by making the patient-caregiver interplay transparent.

The findings of this thesis imply that the critique of 'episodic phases' of trauma care (i.e., lack of focus on meeting health needs across different care settings) raised by Richmond et al. (2011) is warranted. In addition, as trauma patients perceive care as inaccessible and limited (III-IV), they suggested that a comprehensive follow-up could improve care following trauma (IV). A review by Branowicki et al. (2017) found that 85% (n=17) of studies assessing the effectiveness of hospital-initiated post-discharge interventions (most commonly telephone follow-up or home visits) were associated with a lower likelihood of readmission. However, hospital readmissions do not give a comprehensive understanding of the potential benefits or effectiveness of follow-up on HRQoL and recovery. Thus, there is a need for further research that explores follow-up interventions and their effect on trauma patients' HRQoL and recovery.

METHODOLOGICAL CONSIDERATIONS

Sampling

The studies included in this thesis employed either a purposive sampling (I–III) or a consecutive sampling (IV). Purposive sampling aims to give insight into the phenomenon, not to empirically generalize to a population (Patton, 2015). However, how many participants are required to provide insight into the phenomenon? Prior to conducting the studies (I–III), the initial plan was to recruit 10–15 participants for each study. To assess if there were enough participants and whether the data had given adequate insight into the phenomenon, data was scrutinized based on its saturation. Data was judged as saturated when the same things were being said by each new interviewee (cf. Patton, 2015). By achieving data saturation, the credibility (i.e., truth of the data and interpretations) of the studies was strengthened (Lincoln & Guba, 1985; Polit & Beck, 2012). According to Patton (2015), there can be a risk of ‘false’ data saturation if the sampling is too narrow (participants are homogenous), the researchers’ analytical perspective is too skewed/limited, or the researcher/s is unable to obtain in-depth knowledge from the interviewee. Hence, all authors discussed and subsequently assessed the risk of ‘false’ data saturation to be low before concluding that no new participants had to be recruited.

No power analysis was done for study IV as it had mainly a descriptive design. Study IV only included 210 participants, who were consecutively sampled from nine hospitals (of 55 trauma treating hospitals in Sweden) located in the south of Sweden, therefore, the extent to which the participants are representative of the trauma population at large is questionable (cf. Polit & Beck, 2012). However, age and gender (IV) are very similar to those of trauma populations in other studies (Innocenti et al., 2015; Rainer et al., 2014). Lossius, Kristiansen, Ringdal and Rehn (2010) also highlighted the potential risk of not being able to capture data due to trauma patients who require inter-hospital transfers and hence fail to

be included or become lost to follow-up. Thus, it can be viewed as a strength that the nine hospitals were of different sizes (ranging from rural to university hospitals) because had it only been rural hospitals, it can be assumed that the group of trauma patients who were lost to follow-up represented those more severely injured.

The eligible participants (IV) were limited to one month each year (October or November), which could present a potential bias due to seasonal fluctuations on for example mechanism of injury (cf. Polit & Beck, 2017). Furthermore, 25.3% (n=71) either failed to be captured or declined to participate, however, this can be viewed as a relatively small loss, as a review show that an average loss to follow-up in studies collecting data (surveys) from individuals are 47.4% (Baruch & Holtom, 2008). The level of non-response rate can, but need not, induce non-response bias, hence we acknowledge that as the non-respondents were not further analysed, it may bring into question the representativeness of the sample and, by extension, the validity of the conclusions (cf. Shivasabesan, Mitra & O'Reilly, 2018; Cook, Heath & Thompson, 2008).

Some consideration should be given to the inclusion criteria's 'activation of trauma call' (I) and 'carrying a trauma pager' (i.e, activated by trauma calls) and the system characteristic, 'activation of trauma call' (IV), does not necessarily mean that equivalent criteria for trauma calls have been practiced. Prior to 2017 and the presentation of national trauma call criteria (County Councils' Mutual Insurance Company, 2016), the use of triage scales differed between hospitals (Göransson, Ehrenberg & Ehnfors, 2005). Thus, this ought to be taken into consideration when designing and performing future studies and when comparing future findings to the studies in this thesis.

Data collection and analysis

Some of the interviews (I) were done by phone, which Novick (2008) suggests may entail a potential bias as the researcher may miss an opportunity to ask further questions due to the absence of visual cues. However, my experience was that I, with greater focus on their voice alone, could quite easily find verbal cues (hesitations, pauses, emphases, etc.) that opened up further questions. According to Graneheim et al. (2017), both data and interpretation of data are co-creations, either between the researcher and the interviewee (applicable in studies I–III) or between the researcher/s and the text (applicable for studies I–IV). In addition, Patton (2015) stresses that interpretations are dependent on values as they entail attaching significance to what is found. Hence, throughout the analysis process, I strived to remain open to and reflective of my own pre-understandings and how I perceived the content of the data to minimise the risk of misinterpreting and/or excluding potential meanings. In addition, all the authors had dialogues to strengthen a consistent judgement throughout the analysis process. To strengthen both credibility and dependability (i.e., the stability of data and consistency in analysis) (cf. Graneheim & Lundman, 2004; Lincoln & Guba, 1985), the study's procedures are described in detail, and there are illustrative quotes (original data) in all papers that enable readers to repeat the study and/or assess the interpretations.

In study IV, the internal loss ranged between 15.7–30.5% (3, 6, and 12 months). As the same nurse (connected to SweTrau) was in charge of collecting the data, it can be assumed that this was consistently performed and that loss was probably due to participants' reluctance to respond or due to incorrect contact information (i.e., phone number or address). It is worth noting that although the validity and reliability of EQ-5D have been deemed adequate, the instruments' face validity has been questioned for groups with movement disorders (e.g., spinal cord injuries), when 'moving a wheelchair' has been interpreted as equal

to ‘having some problems in walking about’ (Ghislandi, Apolone, Garattini & Ghislandi, 2002). The Mann–Whitney U-test was used, as it allows for tests even among unevenly distributed populations, thus being an applicable test when comparing means in study IV. However, there is a risk of type-II errors when comparing relatively small groups, which potentially could mean that significances remained undetected. Subsequently, the detected differences found in the study are interpreted as true.

As the findings from study IV show, trauma patients have an impaired HRQoL the year following injury compared to the general Swedish population (Burström et al., 2001), thus, it can be concluded that one year is too short to fully uncover patterns of recovery. It could be argued that a more recent study of the general population (Burström et al., 2001) would have been more accurate for comparison. It was, however, to our knowledge the only study that explored the general population in Sweden using EQ-5D.

Transferability and generalizability

This thesis explored experiences of trauma patients and CCNs within the trauma continuum (i.e., from time of injury, throughout recovery, and to the final outcome). The findings of this thesis contribute to a contextual understanding (cf. Polit & Beck, 2010) of trauma patients’ experiences of suffering trauma, of the care they received, and of nursing in the trauma continuum (I–IV). The extent to which the findings can be transferred to different settings (i.e., primary care, rehabilitation care, EDs) remains up to the reader. The extent to which the findings (improvement over time and comparisons between groups) regarding trauma patients’ HRQoL (IV) can be generalized to the trauma population at large should be done carefully with respect to the limited patient and system characteristics. However, this does add to previous research showing that trauma patients overall have a lower HRQoL compared to the general population.

CONCLUDING REMARKS

The overall aim of this thesis was to explore experiences within the trauma continuum from the perspectives of the injured persons and critical care nurses. By discussing the findings against literature, the main conclusions from this thesis are:

- Suffering a trauma implies a sudden detour in life, with feelings of helplessness and an impaired status of health in a long-term perspective.
- Patients suffering from trauma have unmet needs of continuity and accessibility, especially after discharge from hospital.
- Nurses are due to their expertise in nursing, including human sciences knowledge, and proximity to the trauma patient, in a prime position to offer guidance.
- Nurses working with trauma patients need to design a care based on humanity and dignity according to the individual patients' needs and wishes.
- A better planning and documentation of care could enable a more coherent care for the trauma patient.

Further research within the trauma care continuum is needed to understand the role of nurses in non-acute care and explore how they can support recovery and long-term outcome following a traumatic injury. Exploring the utilization of health care in Sweden following a traumatic injury may also provide knowledge of where interventions can be most rewarding. In order to better predict possible patterns of recovery and identify patients' who may need more support after discharge, it would also be beneficial to explore how measurement tools (i.e. GOS, NISS) can be used in clinical practice.

SUMMARY IN SWEDISH – SVENSK SAMMANFATTNING

Traumaförloppet – ur de skadades och ur intensivvårdssjuksköterskors perspektiv

Introduktion

I den här avhandlingen syftar trauma till en fysisk skada. Att drabbas av en traumatisk skada som kräver akutsjukvård har beskrivits som omtumlande och skrämmande. Patienter har uttryckt att de lägger sina liv i vårdpersonalens händer, ovetandes om skadornas omfattning och dess eventuella konsekvenser. Forskning visar att olyckor såsom fordonsolyckor, fallolyckor etc. är globalt sett en stor orsak till livslång invaliditet, hälsoproblem och lidande. Forskning har också visat att vård efter trauma har upplevts fragmenterad, att patienter saknar information om sina skador och hur de ska hantera dessa i sin vardag. För att få kunskap om hur vård efter trauma kan förbättras behöver vi ta del av traumapatienternas erfarenheter.

Forskning visar även att vårdmiljön inverkar på personalens förmåga att ge en god vård och att de som vårdar traumapatienter kan ställas inför etiska utmaningar i stressiga situationer. Sjuksköterskans roll har beskrivits som central i vårdkedjan efter trauma, då en god omvårdnad bidrar till att minska dödlighet och sjuklighet till följd av trauma, stödjer traumapatientens fysiska, funktionella och psykiska återhämtning och maximera deras livskvalitet samt stärker traumapatientens värdighet genom att ta del av patientens förutsättningar och önskligheter kring hur vården ska utformas. Det finns en brist på forskning ur ett humanvetenskapligt perspektiv som fokuserar på erfarenheter av att ha drabbats av ett trauma och vård efter trauma, både ur patienters och sjuksköterskors perspektiv. Ytterligare forskning behövs för att förbättra omvårdnaden för patienter som drabbats av trauma genom att klarlägga vilka behov som behöver mötas.

Detta är en sammanläggningsavhandling som består av fyra delstudier.

Delstudie I

Tidigare forskning har visat att vård i ambulanshelikopter är hämmad av turbulens, vibrationer och oljud som gör det svårare för vårdpersonal att undersöka, övervaka och vidta åtgärder. Vi kan spekulera i att detta påverkar patientens upplevelser av omhändertagandet negativt. Dock så har vi inte hittat några studier som visar hur vården i ambulanshelikoptern upplevs av patienter.

I delstudie I var syftet att beskriva traumapatienters upplevelser av vård i ambulanshelikopter efter att de skadats i en olycka. Individuella intervjuer

gjordes med 13 patienter som till följd av en traumatisk skada aktiverat ett traumalarm med efterföljande ambulanshelikoptertransport från olycksplatsen till sjukhus. Data analyserades med kvalitativ innehållsanalys.

Resultatet visade att patienterna som fått vård i ambulanshelikopter kände att deras skador togs på allvar, de kände sig prioriterade och trygga. Direkt efter olyckan var många patienter osäkra på hur svårt skadade de var och för vissa var det en överraskning att de prioriteras vara i behov av ambulanshelikopter. Detta skrämde dem till viss del, men de beskrev samtidigt att de kände sig trygga då ambulanshelikoptern vara det "bästa, snabbaste och säkraste" sättet att ta sig till sjukhuset. Under helikoptertransporten skedde kommunikation via headset, både med patienten och mellan vårdpersonalen. Vårdpersonalen upplevdes som ett kompetent och sammansvetsat arbetslag, vilket gjorde att patienten kände sig väl omhändertagen. Vidare så beskrev patienterna att vårdpersonalen visade dem hänsyn genom att vara uppmärksam på deras behov, de förmedlade detta både via verbal och kroppslig kommunikation. Majoriteten uttryckte att det inte fanns behov av anhöriga i helikoptern eftersom vårdpersonalen hela tiden fanns intill dem. Många som hade anhöriga med sig vid olyckan beskrev att de var till större hjälp om de stannade och löste det "praktiska"; meddela berörda om olyckan eller omhändertog personliga tillhörigheter vid olycksplatsen. Flera av patienterna hade aldrig tidigare åkt helikopter och trots att ambulanshelikoptern signalerade att situationen var allvarlig beskrev flera att det var en spännande upplevelse att åka helikopter. Dock var flera patienter fixerade i rygggläge p.g.a. sina skador vilket var mycket obehagligt då de samtidigt blev illamående av lukten av avgaser.

Slutats: Tidigare forskning har främst lyft nackdelar med vårdmiljön i ambulanshelikoptern. Denna studie visar dock att det finns många fördelar; patienten känner att denne blir tagen på allvar och trots det begränsade utrymmet i helikoptern (och rygggläge), så bidrog vårdpersonalens närvaro till att patienten kände sig trygg.

Delstudie II

Både i Sverige och internationellt är det vanligt att en traumapatient som anländer till sjukhus möts upp av ett traumateam. Att inkludera en intensivvårdssjuksköterska (IVA-sjuksköterska) i traumateamet ses som fördelaktigt, då denna har specialistkunskaper i att vårda kritiska patienter. Dock så har vi inte hittat några studier om IVA-sjuksköterskans upplevelser av att delta i traumalarm och hur det påverkar vården av traumapatienter.

I delstudie II var syftet att beskriva IVA-sjuksköterskors erfarenheter av att vårda traumapatienter i anslutning till att de går på trauma larm. På det sjukhus där denna studie gjordes så bär en IVA-sjuksköterska enligt rutin en traumasökare under sitt arbete på den kombinerade intensivvårds/postoperativa avdelningen. Då traumasökaren aktiveras så lämnar IVA-sjuksköterskan sina uppgifter på avdelningen och ansluter till ett traumateam vid akutmottagningen och följer därefter traumapatienten för vidare vård och övervakning. Fyra fokusgruppdiskussioner hölls med totalt 15 IVA-sjuksköterskor. Data analyserades med kvalitativ innehållsanalys.

Resultatet visade att IVA-sjuksköterskorna kände sig kompetenta och lämpade för att vårda även de svårt skadade traumapatienterna. Samtidigt var det en situation där de ibland kände sig otillräckliga, eftersom de omedelbart vid ett traumalarm var tvungna att lämna avdelningen och sina patienter där. Känslan av otillräcklighet kunde även uppstå när ansvaret blev för stort, t.ex. när traumateamet splittrades och det föll på IVA-sjuksköterskan att ensam övervaka patienten. IVA-sjuksköterskorna ansåg att de utgjorde en kontinuitet för traumapatienten, då de fanns vid dennes sida från ankomst vidare till fortsatt övervakning och vård. Då de jobbade i traumateam så var det viktigt med en god kommunikation, även gentemot patienten, t.ex. om traumaledaren fick god kontakt med patienten kunde detta främja en god kommunikation fortsättningsvis. De framhöll vikten av att utforma kommunikation utifrån patientens behov, så att de som ville ha kontroll och veta så mycket som möjligt fick detta och att de som föredrog att "lämna över sig" inte behövde överösas med information. Då traumateamets arbete var klart och patientens fortsatta vård skedde på intensivvård/postoperativ avdelning, så bedömde IVA-sjuksköterskorna att den skadade personen, och även dennes anhöriga, var i behov av deras uppmärksamhet och tid p.g.a. den omtumlande händelsen. IVA-sjuksköterskorna kände att de inte alltid hade tid till detta p.g.a. att de ansvarade för flera patienter utöver traumapatienten. I sådana situationer så handlade det om att göra det bästa utifrån de förutsättningar som fanns. Att vårda traumapatienter kunde vara emotionellt krävande, dels för att patienten/anhöriga krävde deras uppmärksamhet men också för att de ibland "tog över" patientens/anhörigas känslor och blev tagna av situationen. Vid dessa tillfällen valde IVA-sjuksköterskorna att byta patienter i syfte att avlasta varandra. IVA-sjuksköterskorna kände att det ibland fanns ett behov av att i efterhand reflektera över vården kring traumapatienten. Ibland räckte det med att få berätta för en kollega hur de kände över situationen medan de i vissa fall önskade en större

uppföljning av patienten för att utvärdera och få kunskap om de kunde ha gjort något annorlunda.

Slutsats: Vårdmiljön påverkar vården av patienten och för att IVA-sjuksköterskan inte ska känna sig otillräcklig (inte kunna se till alla sina patienters behov behövs resurser i form av mer personal. Därtill så behövs det en uppföljning för personalen för att möjliggöra en utvärdering av vården och ett tillfälle att diskutera etiskt svåra situationer.

Delstudie III

Tidigare forskning visar att traumapatienter inledningsvis befinner sig i chock där de är fysiskt och mentalt överväldigade av situationen. Först då skadornas omfattning och konsekvenser är någorlunda klarlagda är det möjligt att förstå hur dessa kommer att påverka deras liv. Att komma till insikt med hur skadorna påverkar deras liv och att lära sig leva med dessa skador är inte ett linjärt förlopp. Forskning visar att traumapatienters mentala och fysiska återhämtning kan ta flera år och att de under den tiden även kan stöta på nya problem och utmaningar.

I delstudie III var syftet att utforska traumapatienters erfarenheter efter multiple trauma, dvs. en olycka där personen fått flera skador. Individuella intervjuer gjordes med 9 traumapatienter. Tid mellan olyckan och intervjuerna varierade, från 2 mån upp till 3 år. Data analyserades med kvalitativ innehållsanalys.

Resultatet visade att traumapatienterna kände sig vilsna och att de inte visste vad de skulle förvänta sig, varken av sjukvården eller av sin återhämtning. Även om de uttryckte en tacksamhet inför det svenska sjukvårdssystemet upplevde de att vården inte alltid tog hänsyn till deras behov. Traumapatienterna poängterade vikten av samförstånd mellan de själva och vårdpersonal, eftersom viss information ledde till missförstånd, vilket i sin tur kunde göra att de hade orealistiska hopp om återhämtning. Efter att ha varit med om en olycka försökte många fokusera på nuet, eftersom att blicka framåt var svårt då de inte visste om de skulle återfå sina förmågor så att de till exempel kunde återgå till jobb eller återuppta det vardagliga livet så som innan olyckan. De beskrev att återhämtningen var en tidskrävande och långsiktig process och att de behövde vara 'tjurskalliga' för att förmå sig att fortsätta då de ofta upplevde motgångar i form av smärta och oförmåga att nå återhämtningsmål. Traumapatienterna beskrev att det var svårt att veta vem de skulle vända sig till med frågor gällande rehabilitering och återhämtning. Det var även tidskrävande och känslomässigt utmattande att försökte komma i kontakt med vårdgivare och att träffa ny

vårdpersonal då de var tvungen att förklara sin situation gång på gång. Vissa kände att de inte fick något gehör för sina problem och sina behov och vände sig då till familj och vänner för att få stöd och hjälp i sin kontakt med vården.

Slutsats: För att kunna förutse och tillmötesgå traumapatienters behov så behöver hälso- och sjukvårdspersonal ta hänsyn till individen, vad denna uttrycker och vilken livssituation denna befinner sig i. Det visar även på vikten av att sätta kortsiktiga mål för återhämtning och att utvärdera dessa så att traumapatienten kan få stöd och riktning. En bättre dokumentation av behov, målsättningar och överenskommelse mellan traumapatienten och vårdpersonal kan också möjliggöra en bättre övergången (t.ex. mellan slutenvård och primärvård och mellan de olika individer som arbetar inom hälso- och sjukvård och som är involverade i traumapatientens vård).

Delstudie IV

Tidigare forskning visar att traumapatienter har sämre livskvalitet jämfört med befolkningen i stort. Forskning har också visat kopplingar mellan livskvalitet och skadans allvarlighetsgrad samt skillnader mellan män och kvinnor. Tidigare studier har ofta begränsats till att enbart utvärdera påverkan efter mycket stora skador eller till att undersöka påverkan hos personer med isolerade skador, vanligtvis ryggmargsskador eller hjärnskador. För att få övergripande kunskaper om traumapatienters skador och dess konsekvenser så har forskare betonat vikten av att följa upp traumapatienter utifrån hela skadespektrumet, eftersom även mindre allvarliga skador kan ha långgående konsekvenser.

I delstudie IV var syftet att utforska hälso-relaterad livskvalitet bland vuxna traumapatienter och beskriva deras erfarenheter av vården. Data inhämtades från ett svenskt traumaregister (SweTrau) som samlat in data via en enkät vid tre tillfällen (3, 6 och 12 månader) efter att patienten skrivits ut från sjukhus). I enkäten skattade traumapatienterna sin egen hälsa/förmåga inom 5 dimensioner: rörlighet, hygien, vardagliga aktiviteter, smärtor/besvär samt oro/nedstämdhet. Beskrivande och analytisk statistik genomfördes. Patienterna fick också vid varje tillfälle följande fråga: "Om du ser tillbaka på sjukvården som du fått i samband med din skada: vad anser du kunde gjorts bättre?" vilket analyserades med kvalitativ innehållsanalys.

Resultat visade att traumapatienters självskattade hälsa förbättrades överlag året efter utskrivning. Det fanns bara ett undantag, vilket var "mobilitet", där deras problem ökade (+1.6%) mellan 6 och 12 månader. Under året efter utskrivning

så var det mest förekommande problemet 'smärta/obehag' (78.4%, 75.8% och 63.7%) och näst mest förekommande var problem med 'ångest/depression' (55.5%, 49.6% och 47.2%). Minst problem hade traumapatienterna inom dimensionen "egenvård". Enkäten visade att mellan 3 och 6 månader så förbättrades deras förmåga till 'vardagliga aktiviteter' mest och mellan 6 och 12 månader så förbättrades (dvs. minskade) 'smärta/obehag' mest. Jämförelser mellan grupper (ålder, kön, skadans allvarlighetsgrad osv.) visade att det fanns skillnader, dvs. det var större sannolikhet att vissa grupper rapporterade problem. Analyser visar att de personer som i störst utsträckning hade problem var de som var; mer allvarligt skadade (kontra lättare skada), personer som var utskrivna till annan vårdinrättning (kontra utskrivna hem) och personer som skattats som GOS 3 vid utskrivning (dvs. svårare skallskada kontra mild/ingen skallskada). Jämfört med den svenska populationen i stort så visar denna studie att traumapatienterna har sämre hälsa även ett år efter utskrivning.

På frågan om 'vad som kunde ha gjorts bättre?' så svarade vissa att de var nöjda, medan andra svarade att de var missnöjda eller så framkom det att de var nöjda respektive missnöjda med olika delar. Resultatet visade att det fanns tre förbättringsområden: 'faciliteter' (förbättringsförslag; enkelsal, TV i alla rum, skoskydd för hygien, bättre mat etc.); 'kommunikation och kontakt med vårdare' samt 'en mer sammanhängande uppföljning'. Då de var inneliggande på sjukhus beskrev traumapatienterna att de kunde känna sig ensamma och försummade av vårdpersonal p.g.a. att dessa inte var lyhörda inför deras behov och att de inte svarade på deras frågor. De efterfrågade mer information, som förslagsvis gavs gemensamt eftersom de upplevde att olika individer (hälso- och sjukvårdspersonal) kunde ge motsägelsefull information. Efter utskrivning uppmärksammade traumapatienterna liknande problem; att vårdpersonal inte var uppmärksamma på deras behov och att de inte tog hänsyn till deras grundtillstånd, vilket gjorde att de föreslagna åtgärderna inte alltid kändes passande för dem. De föreslog att uppföljning skulle planeras före utskrivning samt framhöll att de önskade ha kvar kontakt med den läkare som behandlat dem under sjukhusvistelsen. Uppföljningen kunde vidare förbättras genom att; inkludera fler tillfällen, mer information om återhämtning överlag och om mental ohälsa/depression. De framhöll också vikten av att få rehabilitering i rätt tid.

Slutsats: Denna studie tyder på att traumapatienter har sämre hälsa än den svenska populationen i stort. Denna studie visar att vissa traumapatienter i större utsträckning har problem, det bör därför närmare undersökas om/hur bedömningsverktyg kan användas i kliniskt arbete för att bättre kunna förutse

vilka traumapatienter som riskerar att en lång/svår återhämtning. Vi kan anta att det till viss del är ofrånkomligt att en traumapatient kommer att träffa flera individer som arbetar inom hälso- och sjukvård, dock, för att möjliggöra en kontinuitet och säkerställa att vården anpassas utifrån patientens behov och önskningsar så behövs en bättre dokumentation som möjliggör en bättre övergång mellan vårdpersonal.

Slutsatser

Den här avhandlingen stödjer tidigare forskning, som visar på att vård efter trauma är fragmenterad och att patienternas behov inte alltid blir bemötta. Trots att vården i ambulanshelikoptern var tillfredställande, så uppmärksammar IVA-sjuksköterskorna att när traumapatienten anländer till avdelningen för fortsatt vård så finns det inte alltid tid för dem på grund av att IVA-sjuksköterskorna måste prioritera andra patienter. Forskning visar att då sjuksköterskor måste prioritera sina arbetsuppgifter så blir åtgärder så som att ge patienten emotionellt stöd och planering av fortsatt vård ofta åsidosatta. Eftersom traumapatienterna dels har mer 'ångest/depression' (55.5–47.2%) än den svenska befolkningen i stort (29.1%), samt att de uppger att de känner sig vilsna och inte vet vad de ska förvänta sig av sin återhämtning, eller av sjukvården, så kan vi anta att emotionellt stöd och planering av fortsatt vård är viktigt för traumapatienterna.

Denna avhandling argumenterar att en bättre dokumentation skulle kunna minska fragmenteringen och bidra till att stödja traumapatienterna mer långsiktigt. För att detta ska vara möjligt bör dokumentationen innehålla; vad patienten anser viktigt, vilka överenskommelser som finns mellan patient-vårdgivare, målsättningar med vården samt en plan för hur dessa ska utvärderas.

För att vård efter trauma ska kunna bli än bättre finns det behov för fortsatt forskning; till exempel för att utveckla kliniska bedömningsverktyg med vilket vårdpersonalen på sjukhuset kan göra en riskbedömning av traumapatienterna, och på så vis vidta ytterligare åtgärder som stödjer deras återhämtning. Vidare vore det av värde att kartlägga hur och vilka vårdresurser som används av traumapatienterna efter utskrivning och om t.ex. införandet av en kontaktperson (liknande den funktion som t.ex. diabetessjuksköterskor har, som gör uppföljningar av personer med diabetes) skulle kunna stödja och möjliggöra en snabbare återhämtning.

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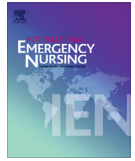
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The helicopter as a caring context: Experiences of people suffering from trauma

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ABSTRACT

Introduction: When emergency medical services (EMS) are needed, the choice of transport depends on several factors. These may include the patient's medical condition, transport accessibility to the accident site and the receiving hospital's resources. Emergency care research is advancing, but little is known about the patient's perspective of helicopter emergency medical services (HEMS).

Aim: The aim of this study was to describe trauma patients' experiences of HEMS.

Method: Thirteen persons (ages 21–76) were interviewed using an interview guide. Data were analyzed using qualitative content analysis.

Findings: The analysis resulted in three themes: *Being distraught and dazed by the event* – patients experienced shock and tension, as well as feelings of curiosity and excitement. *Being comforted by the caregivers* – as the caregivers were present and attentive, they had no need for relatives in the helicopter. *Being safe in a restricted environment* – the participants' injuries were taken seriously and the caregivers displayed effective teamwork.

Conclusion: For trauma patients to be taken seriously and treated as 'worst cases' enables them to trust their caregivers and 'hand themselves over' to their care. HEMS provide additional advantageous circumstances, such as being the sole patient and having proximity to a small, professional team.

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1. Introduction

Suffering a trauma results in a sudden change to one's everyday life and, initially, not knowing the extent of one's injuries [21]. Injury due to trauma may require emergency medical services (EMS) to assist in transferring the victim from the pre-hospital location to a hospital, as he or she may require specialist care and specific medical technology [7]. EMS-assisted transfers are done mostly with help from ground ambulances [34], but centralization of highly specialized care is expected to increase the need for airborne transport [33]. However, patients' experiences of helicopter emergency medical services (HEMS) are rarely studied.

2. Background

Sweden has approximately 700 ground ambulances [31] and 9 ambulance helicopters [30]. There are three priority levels for

alerting EMS: acute life-threatening symptoms or an accident; urgent but not life-threatening symptoms; other assignments for care or supervision needs where a reasonable period is not expected to affect a patient's condition [32]. Choice of transport and destination are decided based on a patient's status, the receiving hospital's clinical capabilities, transfer time from the scene of the accident, the accessibility of the accident site and weather conditions [13]. According to the Swedish trauma registry's annual report for 2014 (2015), 9.4% of trauma patients arriving at regional hospitals and 3.5% arriving at county hospitals did so by HEMS. There is an ongoing discussion regarding the cost effectiveness of HEMS and to what extent they contribute to reducing morbidity and mortality compared to ground ambulances. HEMS' greatest advantage is significantly faster speed compared to ground ambulances if the distance exceeds 10 miles [4]. This includes the ability to avoid traffic delays and obstacles on the ground [38], resulting in faster transport to a hospital. However, research also shows disadvantages including difficulties evaluating patients, noise interfering with monitoring and management, turbulence, vibration and acceleration in the cabin [15,16,26,28]. These can result in difficulties detecting audible alarms [18] and being unable to hear

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respiratory sounds, making it necessary to rely more on visual observation [16,25]. Furthermore, the high noise level limits the oral communication [2,19,25,29], and the confined space and turbulence can complicate repositioning patients [29,2]. It is argued that HEMS can provide more-advanced care than ordinary ground ambulances, as medical crews on board are often more skilled in advanced care [8,13]. Surveys of the Nordic countries [13,12] show that HEMS in Sweden are usually manned by two pilots, one anesthesiologist and one nurse, often a nurse anesthetist, and alternatively with a single pilot and an additional nurse or paramedic. Critical care nurses (CCNs) can also be on board, as found in Senften and Engström's [29] article about experiences of nursing critically ill patients during helicopter transport. The CCNs described HEMS teamwork as good, as they worked in small teams without significant hierarchical relationships. Studies [25,29] stress that in order to provide safe nursing care in HEMS, it is important to have a plan for the patient during the transport and continuously evaluate it to minimize risks. Furthermore, to be able to evaluate the patient and ensure safety in HEMS requires specific knowledge of standard helicopter safety procedures and about how to perform care in this particular environment [2,8,26].

In summary, HEMS are an integral part of Swedish EMS and research suggests that caregivers must be attentive to the specific environment in order to provide safe care. However, to the best of our knowledge, research about how patients experience HEMS is scarce, and we found none that explored the trauma patient's perspective. The views of injured persons are important to gain understanding about their experiences and create awareness about possible ways HEMS can adapt nursing-care interventions.

2.1. Aim

The aim of this study was to describe trauma patients' experiences of HEMS.

3. Methods

3.1. Design

We used a qualitative approach aimed to provide an in-depth, holistic and contextual understanding (cf. [24]) of trauma patients' experiences of HEMS. The participants were purposely selected and data collected by means of individual interviews with open-ended questions (cf. [24]).

3.2. Procedure

The inclusion criteria were: over 18 years of age, having suffered a trauma (defined as unintended physical injury) and having received primary transport from the accident scene to a hospital by HEMS. The trauma should have occurred less than 6 months prior to the data collection, as longer time could lead to reduced memory of the event. Exclusion criteria were: being diagnosed or suspected of suffering an influencing head injury and/or assessed as unable to participate due to the accident. A head nurse at a midsized hospital in Northern Sweden was commissioned to select participants by examining medical records of patients from the hospital emergency department (ED). A written inquiry was then sent to those who met the criteria, and those who chose to participate responded by sending a signed letter with their informed consent to the researcher. Of the 30 persons who received information, 13 chose to participate.

3.3. Participants

In all, 13 people participated, four women and nine men ages 21–76 ($Md = 33$); all were in good health before the accident. Of

Table 1
Interview guide.

Tell me about the accident
Tell me about the care you received
How did you experience the helicopter? What were your thoughts?
How did you experience the healthcare staff?
Was there, overall, anything special you would like to point out?
Follow up questions were, for example: How did you feel? Can you elaborate or give an example?

the participants, three were retired, one was studying at university, one was unemployed, and the others were working in tourism, healthcare or industry. Eight of the participants had been injured in leisure activities, such as downhill skiing or snowmobiling; others had been injured in a fall or in crashes involving cars/quadracycles and one using a circular saw. Two were diagnosed with multiple trauma (more than one injury); six had either fractured vertebrae or a fracture of the femur, radius or humerus. One suffered a tracheal injury due to blunt trauma, and one lost the fingers of one hand using a circular saw. Four received surgical interventions. The time that had elapsed between the accident and the interview varied between 4 and 6 months. Six participants were having ongoing rehabilitation and were still on sick leave on a part- or full-time basis.

3.4. Data collection

The first author (L.S.) conducted individual interviews with open-ended question (cf. [24]); the questions were developed from an interview guide (Table 1) based on two previous articles [29,37]. Six participants were interviewed in person and seven by telephone because of geographic distance and/or participants' preferences. The interviews lasted between 35 and 70 min and were digitally recorded and transcribed verbatim by the first author (L.S.).

3.5. Data analysis

To reduce and make sense of the transcribed texts, we chose content analysis (cf. [24]), beginning with reading the text several times to discover patterns of experiences. Then we organized and categorized texts according to similarity of the core content (internal homogeneity) or exclusive differences (external heterogeneity). The categories were then interpreted as themes that revealed the meanings of the descriptive patterns. During the analysis process, different themes were tested until the authors reached consensus about the themes that best corresponded to the data (cf. [23]) (see Table 2).

3.6. Ethical considerations

The study received approval from the Ethical Review Board in Umeå (Dnr 1828-13) before being conducted. Participants received oral information about the study when contacted to schedule interview times and the researcher guaranteed their confidentiality and informed them of their right to withdraw from the study at any time without explanation. They were encouraged to contact the researchers after the interviews if any questions arose, but none did.

4. Findings

The analysis resulted in three themes describing the meanings of trauma patients' experiences of HEMS. When the trauma happened, some participants realized its seriousness and described a

Table 2

Schematic overview of themes, categories and patterns.

Theme	Category	Pattern
Being distraught and dazed by the event	Being in a state of shock and unsure about the severity of the injuries	Being in a state of shock Unsure about the seriousness and treatment of the injuries The helicopter ride was 'an experience' Wanting to see more
	Being excited about the flight	
Being comforted by the caregivers	Being cared for/looked after by the caregivers	Relatives could help 'sort out practicalities' Handing myself over to healthcare Healthcare staff adapted to me
	Viewing helicopter ambulance as an asset	The 'fastest, safest and smoothest' way A sign of 'seriousness'
Being safe in a restricted environment	A restricted environment	Unpleasant environment – vibrations, nausea from fuel vapors
	Viewing the caregivers as professional	Professional staff, effective teamwork

fear of dying and struggling to stay alive. Others described that they realized they were injured, but were unsure about how serious it was and felt embarrassed about calling EMS, not knowing if it was necessary. Table 2 shows a schematic overview of the analysis. A description of each theme is presented under the respective heading and illustrated by quotes from the participants.

4.1. Being distraught and dazed by the event

When HEMS arrived, most of the participants had received some care measures from regular ambulance staff or local health professionals; venous access had been secured; they had received some pain relief; and most had been restrained on a spinal board. Participants stated that they were in a state of shock during this initial stage and in the helicopter ambulance, and did not realize the seriousness of the situation. They described the flight as an exhilarating experience that they had wondered about and wished they could have sometime but not under these circumstances. Two participants had earlier experiences of helicopters, one from working as a pilot and another from working with outdoor tourism. They viewed their flights as pleasant. HEMS were described by the others as something special, as it evoked curiosity and excitement and they wanted to indulge in the experience. Some added that this excitement was a combination of joy and fear simultaneously.

"I have lived in the mountains for some time, and I thought to myself, 'Now that I'm in a helicopter I'm gonna see how it looks!' and seeing the surroundings was an experience. I am a bit afraid of heights... but they (the staff) were so calm. Looking down and recognizing the hospital before landing made me full of laughter... afterwards a neighbor told me 'how lucky you were to get to ride a helicopter, I've always wanted to do so!' (laughter), but I guess the reason wasn't all that fun."

[(P10, accidental fall, fractured humerus)]

Participants who were restricted on spinal boards expressed that when their desire to see more was unattainable, the flight became uneventful. They suggested having a small window or mirrors on the ceiling to enable them to see outside. Experiencing HEMS was seen as something special and was remembered in awe, but they acknowledged that the reason for this experience was terrible.

4.2. Being comforted by the caregivers

Most participants did not feel the need to have relatives or someone they knew present during the helicopter transfer. Whatever they needed was provided by the staff, and there was little a relative could have done. They expressed that relatives who had been close by were more helpful elsewhere in 'sorting out practicalities'. This could be taking care of the situation that arose when they had to leave quickly, arranging for belongings to be transported from their accommodation, or gathering things they might need at the hospital. It was also a relief for the injured person when someone he or she knew stayed behind to contact their relatives; they could then relax and focus on themselves a bit more. The participants expressed that they 'handed themselves over' to the helicopter staff. They felt cared for as the staff showed consideration for their situation and were constantly present and available for them. Although communication was constrained due to the loud noise and the headsets, they did not experience this as worrisome. The staff gave the impression that they had been colleagues for a long time and worked together as a closely knit team, and their confiding presence had a positive and soothing effect.

"The response (of the helicopter staff) was just fine, I liked them. They seemed 'welded', as if they had worked together for some time and gave me a secure feeling... they talked to me in a kind way with warmth. I got... a very positive experience during my care in the helicopter."

[(P7, ski accident, fractured vertebrae)]

To be restrained on a spinal board was viewed as troublesome. This was a precaution for suspected spinal injuries but was described as very limiting and uncomfortable. The vibrations of the helicopter and the exhaust fumes caused some to feel physically ill with nausea, which was expressed as truly worrisome since they feared suffocating if they vomited.

4.3. Being safe in a restricted environment

The participants described seeing HEMS merely as a way to get to a hospital. Some of them recalled feeling anxiety when they understood they would receive HEMS, as they viewed this as a serious action that frightened them regarding the potential severity of their injuries.

"The paramedics started talking about me going to the hospital, which wasn't surprising – but then they talked about me flying there. Then I realized that 'this is for real'. I might be severely injured. And that freaked me out. I was terrified of being paralysed."

[(P6, ski accident, fractured vertebrae)]

For participants, the transport was one of blissful unawareness since only when they arrived at the hospital could they learn more about their injuries and what to expect thereafter. Although they saw HEMS foremost as transportation, they highly valued it, as they viewed it as the best transport possible in terms of being the fastest and most secure way of traveling to a hospital.

"I felt that the helicopter was the best and fastest way to get to the hospital... and in a way that was important 'cause I really felt vulnerable."

[(P9, fall accident, fractured vertebrae)]

Retrospectively, the participants viewed being prioritized by healthcare positively since HEMS indicated that they were cared for and treated as a 'worst case scenario'. Some participants expressed that they became worried about receiving HEMS,

thinking it was an unnecessary action and a waste of EMS resources, to the extent that they experienced relief later when their need for specialized care was confirmed.

In addition to their experiences of HEMS, the participants commented that their experiences of the care they received at the ED stood somewhat in contrast. At the ED, some felt frustration and confusion because they were left alone; they felt they weren't informed about what would happen next. They experienced that the staff at the ED, and later at the receiving wards, often did their best and genuinely cared for them, but that staff were sometimes inexperienced regarding their injury. However, for some, arriving at the hospital was a complete relief because they believed it was the safest place to be and a guarantee of survival.

5. Discussion

The aim of this study was to describe trauma patients' experiences of HEMS. The findings showed that the participants found it difficult to assess and realize the seriousness of their injuries. The use of HEMS indicated that, in fact, they were serious, and that made participants somewhat frightened about the extent of their injuries. At the same time, the participants were appreciative of HEMS, as healthcare staff took the situation seriously.

The findings also show that, in their encounters with HEMS, trauma patients 'handed themselves over' to the caregivers; thus, once inside the helicopter, they were able to rest as they felt cared for and in safe hands. Ahl and Nystrom [1] show that non-urgent patients in ambulances are ambivalent regarding 'giving oneself completely and unconditionally into care' and may even question the ambulance staff's capacity to help. When suffering a trauma, the sudden trajectory of care that follows can render the victim to experience an unfamiliar and uncontrollable existence [27] that may manifest itself in a strong need for both privacy and emotional care [5]. This would imply that trauma patients who experience a sudden unintentional injury become more vulnerable and presumably more willing to 'give oneself over' to caregivers as they are in need. While the victim is feeling an 'unfamiliar and uncontrollable existence', it is important for nurses to be present and caring so that patients feel they are being taken care of and being cared for [27]. Ringdal et al. [27] argue that performing caring actions in regard to the patient can support the accumulation of positive memories instead of negative memories following a trauma. Franzén et al. [6] studied injured persons' perspectives following a traffic accident and explained that positive memories can be related to experiencing trust and support as a patient, while negative memories can be attributed to feeling a lack of security and support. In the present study, the participants had positive memories overall, and they clearly expressed their beliefs that HEMS were a great asset and provided security. Having a sense of trust a priori the encounter itself can presumably lead trauma victims to more easily 'hand themselves over' and trust caregivers. Although we believe that preconceived perceptions cannot be the sole determinant, the situation puts great responsibility on caregivers and their ability to meet trauma patients' needs for trust, support [6], privacy and emotional care [5]. Wiman et al. [37] labeled modes of trauma teams' encounters as experienced by trauma patients as instrumental, attentive or uncommitted. They concluded that high-quality encounters demanded that caregivers shift between the instrumental and attentive mode by showing flexibility between the physical and psychosocial care. According to Iqbal et al. [10], when caregivers within ambulatory services have a professional approach and reassure the patient, it has a calming effect. Physical contact and/or talking to the patient increases his or her confidence and provides comfort, in addition to reducing pain [10]. The participants in the present study voiced that their caregivers remained close by them at all times in the

helicopter and that the space inside the cabin was small and confined. Liljeroos et al. [14] show that when the physical environment provides privacy, it also promotes trust, as patients are more able to voice their thoughts and feelings. Moreover, for the patient to know that he or she is the only one being cared for at the time may contribute to allowing him or her to express thoughts and feelings more freely. Nyström et al. [20] studied encounters at an ED and found that many patients hesitate and feel embarrassed about asking for attention since they are aware that the nurses have many other patients. The findings in the present study showed that the staff provided the participants with a sense of ease in the unfamiliar environment of the helicopter ambulance. Based on Iqbal et al. [10], the ease they provided is interpreted as a result of experiencing the staff foremost as professional and well-organized, and as such, able to provide rapid care, making patients feel cared for in an effective and efficient manner. It can also be a result of feeling that the caregivers had time for them and that they were given privacy in the helicopter ambulance [20], cf. [14]. Experiencing the team in the helicopter ambulance as 'closely knit' can also have promoted the feelings of trust that trauma patients had in their caregivers. According to Holmberg et al. [9], the 'togetherness' of the staff team positively influences the patients' beliefs in their caregivers' ability to manage the situation. In summary, one can argue that as those suffering a sudden injury find themselves in an uncontrollable and unbalanced state (in a state of initial shock), the patient's trust is a prerequisite for the staff to be able to provide comfort and allow the patient to 'hand himself or herself over' and enable the formation of positive memories.

The present study showed the importance for the participants to feel that their situations were taken seriously, that they were cared for and that they could trust their caregivers. It is known that approximately one-third of HEMS missions involve trauma patients [22,35], and Kaufmann et al. [11] found that, of all patients treated by HEMS, 37% had suffered leisure-related injuries. Furthermore, a meta-analysis by Bledsoe et al. [3] showed that the majority of trauma patients transported from the scene of the accident by HEMS suffer non-life-threatening injuries. It is suggested that there is a lack of uniformity in the use of dispatch criteria for trauma victims, although there are protocols since the choice of sending an ambulance helicopter can be affected by, for example, dispatchers training and the alerting bystander's response, subsequently resulting in overtriage (cf. [36]). Most of the participants in the present study were injured during outdoor leisure activities and were discharged from the hospital within one week. The majority were also men, which can be seen as representative as, compared to women, men are more likely to be injured [17]. The findings in the present study are assessed to be transferable to other contexts regarding those who suffer trauma and then receive care by HEMS. Readers should, however, note that all participants in the present study were involved in single-person accidents; trauma involving multiple victims may result in other findings.

6. Conclusions

Patients who suffer traumatic injuries are in a vulnerable situation, shocked by their sudden injury and unsure of its severity. HEMS are viewed as serious responses taken by EMS, as the patients experience it as the 'best way to get to a hospital'. Being taken seriously lays the foundation for patients to be able to trust in caregivers. HEMS provide advantageous circumstances for a positive caring environment, such as often being the sole patient to care for, having close proximity during transport between the patient and the caregivers, who consist of a small team of staff that conveys a secure and professional approach. As the participants added, their experiences at the ED stood in contrast to their

experiences of HEMS, indicating a need for further research that explores trauma patients' experiences of suffering a trauma and receiving care.

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Conflict of interests

The authors declare there is no conflict of interest.

Author contributions

Study design: LS, ÅE, CN, PJ. Data collection: LS. Data analysis: LS, ÅE, CN, PJ. Manuscript preparation: LS, ÅE, CN, PJ.

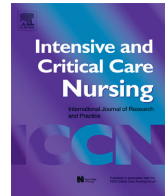
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III



ORIGINAL ARTICLE

Experiences of nursing patients suffering from trauma – preparing for the unexpected: A qualitative study



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KEYWORDS

Critical care nurses;
Experience;
Nursing;
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analysis;
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Trauma care

Summary

Settings and objectives: A midsize hospital in the north of Sweden with a high-tech intensive care unit and space for up to 10 patients, with an attached postoperative ward for up to 15 patients. The wards are manned by critical care nurses who are also responsible for carrying a trauma pager. When the alarm goes off, the critical care nurse leaves her/his duties and joins a trauma team. The aim of the study was to describe critical care nurse's experiences of nursing patients suffering from trauma.

Method: A qualitative descriptive design was used. Data were collected through four focus group discussions with 15 critical care nurses analysed using qualitative content analysis.

Findings: One theme: Preparing for the unexpected with four subthemes: (1) Feeling competent, but sometimes inadequate; (2) Feeling unsatisfied with the care environment; (3) Feeling satisfied with well-functioning communication; and (4) Feeling a need to reflect when affected.

Conclusions: Nursing trauma patients require critical care nurses to be prepared for the unexpected. Two aspects of trauma care must be improved in order to fully address the challenges it poses: First, formal preparation and adequate resources must be invested to ensure delivery of quality trauma care. Secondly, follow-ups are needed to evaluate care measures and to give members of the trauma team the opportunity to address feelings of distress or concern.

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Implications for Clinical Practice

- Further research is needed to ascertain optimal organisation of a trauma team and evaluate the outcome of present constellations where the participating critical care nurse simultaneously work at an intensive care unit/postoperative ward.
- Prioritise debriefing as it enables reflection for the individual critical care nurse which may lead to increased understanding and improved trauma care.
- Calls for interventions that make it possible for the trauma patient to remain close to their relatives and achieve privacy without hindering the staff's monitoring.
- Calls for interventions that make it possible for the staff to remain close to the trauma patient and their relatives when needed in order to facilitate a more person-centred care.

Introduction

Critical care nurses (CCNs) are accustomed to providing complex nursing care in a highly technological environment. They perform nursing care to a wide range of patients, young and old, those in need of intensive care due to a progressive lifetime of illness and those with sudden injury or acute illness. With their range of competencies it is common for CCNs to work in contexts other than intensive care units (ICU). They can be found as part of a mobile intensive care unit/group (MICU/MIG) or rapid response team (RRT) in assisting wards with critically ill patients (Al-Qahtani and Al-Dorzi, 2010; Mackintosh, 2006). This study explores the context in which CCNs are stationed at an ICU/postoperative ward and leave to assist in a trauma team. The aim of this study was to describe CCNs' experiences nursing patients who suffer from trauma. Previous research (Freeman et al., 2014) has shown that nursing patients suffering from trauma can be problematic as it can cause negative feelings about the patients, such as disrespect, fear or bad assumptions. These are feelings that are incongruent with nursing philosophy and can lead to bad consciences among the CCNs. Supportive relationships are important for the trauma nurses to maintain their abilities to continue nursing trauma patients (Alzghoul, 2014). Parker and Magnusson (2016) not only conclude that adequate training should ensure the best outcome for the patient, but also suggest it will reduce associated mental anguish among nurses who care for trauma patients.

Background

Using triage protocols and a trauma system increases the likelihood of rapid definitive care and of achieving an optimal long-term outcome (Price et al., 2003). Despite this, failing to achieve a continuum of care has been identified as a problem in trauma care (Aitken et al., 2014; Calleja et al., 2011; Curtis, 2001; Richmond and Aitken, 2011). Factors that have been identified as significant in order to provide good care to trauma patients are: teamwork training (Buljac-Samardzic et al., 2010; Capella et al., 2010; Kilner and Sheppard, 2010; Miller et al., 2012) and multi-disciplinary knowledge and skills (Christensen et al., 2011; Tutton et al., 2008). Moreover, trauma teams require participants with strong backgrounds in emergency and critical care (Gunnels and Gunnels, 2001; Lafferty, 2011), and therefore utilising CCNs can be seen as favourable.

In Sweden, the specialist nursing education required to become a CCN provides most students with training on trauma nursing care, including management of acute trauma with the intention of minimising injury and securing adequate treatment. This education is in line with the Advanced Trauma Life Support concept (ATLS) (ATLS Subcommittee et al., 2013), the Trauma Nursing Core Course (TNCC) and the Advanced Trauma Nursing Course (ATNC).

To the best of our knowledge, the present study is the first to focus on CCNs' experiences of assisting in a trauma team and nursing trauma patients. Boström et al. (2012) showed that CCNs who nursed trauma patients in the ICU experienced feelings of responsibility for the patient and a need to be in control of the situation, which they achieved by closely monitoring the patient's condition. According to Tunlind et al. (2015) the daily work in an ICU contains interruptions due to the unpredictable nature of the patient's illness and their required treatment, which can be sources of stress and frustration for CCNs due to their lack of control. We can assume that leaving the ICU to be a part of a trauma team is a major interruption that introduces work challenges concerning, for example, communication, leadership and respect for ethical values. These aspects are important when providing high-quality care (O'Brien and Fothergill-Bourbonnais, 2004; Pfrimmer, 2009; Rosengren et al., 2007; Wiman et al., 2007). Even when the trauma teams form a rapport before they meet the patient, it is rarely completely comprehensive (Crystal et al., 2004). In order to improve trauma nursing and the CCNs' abilities to meet the individual needs of the patient suffering from trauma, knowledge about CCNs' experiences of nursing patients suffering from trauma in different contexts is important.

Aim

The aim of this study was to describe CCNs' experiences of nursing patients suffering from trauma.

Method

Design

A descriptive qualitative approach (Polit and Beck, 2012) was used in this study as the aim was to describe CCNs' experiences of nursing trauma patients.

Context

The study was performed at a midsize hospital in the north of Sweden with a high-tech ICU and space for up to 10 critically ill patients. The ICU also includes a postoperative ward for up to 15 patients. The CCNs staff both wards on a rotating schedule. The number of trauma calls per year at the hospital is about 300. The CCNs in this ICU regularly nurse severely injured/ill patients in the ICU or mildly injured/ill patients in the postoperative ward. A trauma pager is always carried by one of the CCNs. When a trauma call occurs, the CCN leaves her/his duties and joins the rest of the trauma team, consisting of a surgeon, anaesthesiologist, acute ward nurse and acute ward nurse assistant at the emergency room (ER). Depending on the severity of the patient's injuries, the CCN either follows the patient to the operating room or to X-ray for further examinations and then to the postoperative ward or, if in need of critical care, to the ICU. If the call is cancelled, the CCN goes back to their duties in the ICU/postoperative ward.

Participants and procedure

A purposive sample was used (cf. Polit and Beck, 2012). The criteria for participation were experience working on an ICU and nursing patients suffering from trauma. All 40 CCNs working at the ICU were verbally informed of the study by the head of the ICU. Those who were interested in participating and were able to be present at one of the four suggested and scheduled focus group discussions (FGDs) were given both verbal and written information about the study from the head of the ICU and from the researchers before they were accepted as participants by signing a consent form. The FGDs were scheduled at shift change in a conference room at the hospital. Fifteen female CCNs participated with an average age of 45 (31–64) years. Most of them had completed the course (Trauma Nursing Core Course).

Data collection

In this study, four FGDs with three to five participants were included ($n=15$). The FGDs were carried out between February and April 2014. Two researchers participated in each FGD. The first author acted as a moderator, who encouraged participants to interact and guided them through the topics using a discussion guide (cf. Morgan, 1997) that was designed based on previous research (Boström et al., 2012; Curtis, 2001). The discussion guide addressed experiences of nursing trauma patients (Table 1). The second researcher had the task of posing follow-up questions if necessary. At the end of each FGD, a short summary was given by the moderator, giving participants an opportunity to add anything they felt was missing. The length of each discussion varied between 50 and 85 minutes. All discussions were digitally recorded and transcribed verbatim by the first author.

Table 1 Discussion guide.

Describe the division of labour at a trauma call.
What are your feelings when you are heading to the ER? Can you give an example of a situation?
Tell us about cooperation during the care of trauma patients.
Describe how you perceive the care of trauma patients, in the ICU/postoperative ward.
Describe how you experience the care environment for the trauma patient.
What are your thoughts about the needs of the trauma patients' relatives?
What do you feel about the continuity of care? Can you explain?
Describe how you perceive support, for example, the possibilities of reflection/debriefing.

Data analysis

The transcribed FGDs were reviewed together as one unit of data and were read through several times. Content analysis by Graneheim and Lundman (2004) was used to analyse patterns and themes that emerged from the transcriptions. This was done systematically by organising the data with the initial step of extracting meaning units that corresponded to the aim. In the next step, the meaning units were condensed; the text was reduced without any loss of meaning. Afterwards, the condensed meaning units with related content were progressively brought together in order to create mutually exclusive subthemes, which were discussed between all the authors. In reaching consensus, the underlying meaning was formulated into one overall theme.

Ethical considerations

The study was approved by the Ethical Review Board in Umeå (Dnr 1828-13). Prior to the FGDs, all participants were informed verbally and in writing of the following: the purpose of the study, procedure, potential benefits (for example, shared knowledge) and disadvantages (for example, negative or distressing memories and feelings). A signed consent was required to take part in the FGDs. All participants were informed about their voluntary participation and their right to withdraw at any time without further explanation (cf. Polit and Beck, 2012). All participants were encouraged to contact the researchers if they felt a need to

Table 2 Overall theme and sub-themes.

Theme	Sub-theme
Preparing for the unexpected	Feeling competent but sometimes inadequate Feeling unsatisfied with the care environment Feeling satisfied with well-functioning communication Feeling a need to reflect when being affected

talk, wanted to add something or ask questions concerning their participation after the FGDs. No participants contacted the researchers afterwards.

Findings

The analysis resulted in one theme derived from four sub-themes (Table 2).

Preparing for the unexpected

The theme 'Preparing for the unexpected' was derived from four subthemes: 'Feeling competent but sometimes inadequate,' 'Feeling unsatisfied with the care environment,' 'Feeling satisfied with well-functioning communication,' and 'Feeling a need to reflect when affected.' The findings revealed that the CCNs wanted to do their best under the existing circumstances. The CCNs were not only depending on themselves in being prepared to care for the trauma patients, in terms of having skills and a reflective approach, they were also to some extent dependent and needed to adapt their nursing practice based on their communication with others and the surrounding environment. They strived to give good nursing care to the patients suffering from trauma. In order to achieve this, time was an important consideration.

Feeling competent but sometimes inadequate

There was a consensus among the CCNs that they possessed knowledge of how to care for trauma patients and they were generally confident in assessing, prioritising and providing adequate measures. They appreciated receiving continuing education and training in order to improve their work. The CCNs viewed trauma care to be a challenge, but they felt competent in their work and that they could enjoy nursing trauma patients, even though situations could arise that caused them to feel inadequate. In contrast, they described that joining the trauma team could be frustrating if they at the same time were responsible for critically ill patient(s) in the ICU. When responding to a trauma call, the concern of the CCNs was primarily for the patient(s) and staff they left in the ICU.

CCN 1: *I don't usually think all that much on the way down [to the ER]. Because the only thing I know is that it's a trauma call and then I don't know any more until I get down there.*

CCN 2: *That's right.*

CCN 3: *At that stage you probably worry more about what you left behind and the staff situation and how they—Now they get the hassle, 'Oh God, I'm going to CT and all...'—that's probably the biggest stressor.* (FGD 3)

The CCNs could feel overridden by other staff in the trauma team, and they sometimes felt others viewed them simply as a transporter. These feelings occurred especially when they were left alone with a mildly injured patient to be cared for during the X-rays. In turn, the CCNs expressed feelings of unease and vulnerability when being left alone to care for a more severely injured patient who needed supervision during X-rays.

CCN 3: *You're not supposed to be left alone, but often the CCN is. Going to x-ray, the emergency staff rarely accompany you, our anaesthesiologists—especially some—have a tendency to pop their head in and say, 'Well, this isn't for me' or 'I'm not needed here' and then they rush off. The surgeons are about finishing writing referrals, and then they might wander into the x-ray after some time...but it's not supposed to be like that, you're not supposed to stand there by yourself.* (FGD 2)

The CCNs' feelings of insufficiency were related to their concern about wanting to sufficiently assist the patient with the greatest need, seen as the most critically ill patient.

Feeling unsatisfied with the care environment

Some CCNs expressed difficulties about not being as familiar as they wished they were with the equipment in the ER, while others had no concerns about this. Those who did experience difficulties viewed it as a stressful disturbance in preparing to receive the trauma patient. The CCNs conveyed that when a trauma patient arrived to the postoperative ward, it could cause turmoil. They viewed negative effects for both the trauma patient and for the postoperative patients when nursing them in the same room because the environment became more chaotic.

CCN 2: *I think the most important thing is that the relatives can come and see the patient, and then it gets like, 'Well...it's not suitable.' You try to shield off and give them some room in a corner, but it's like they have to be cautious, they...need to show consideration for everyone else too and it's not good.* (FGD 4)

CCN 3: *It's difficult to maintain confidentiality, especially in a stressful situation, if we have a very injured trauma patient and a full ICU, and need to take it [the patient] to the postoperative ward, it becomes a stressful situation for many of the newly operated who lays there seeing us running with blood bags and things or hearing relatives screaming and being sad.* (FGD 3)

When moving the patient to the postoperative ward, the CCNs became more involved with the relatives and viewed them as a natural aspect of their care for the trauma patient. Both the patient and relatives could, according to the CCNs, require a large amount of time and care even if the trauma had not resulted in any major consequence. Sometimes it was hard to find time for this due to the number of other patients calling for attention or demanding monitoring/medication.

CCN 4: *I think it's hard because the patient requires quite a lot. He or she is shocked and afraid. You might need to spend a lot of time to calm the patient. There may be relatives trying to enter, and you're trying to run in between and sort out the situation.* (FGD 2)

The CCNs expressed frustration when the postoperative ward became overcrowded and judged the trauma patient to have needs that did not require the level of care that was typical for the postoperative ward. Considering the unpredictability of trauma calls and the often rapid nature of

hospitalising a trauma patient required the CCNs to do their best in relation to the circumstances.

Feeling satisfied with well-functioning communication

The CCNs stated that collaboration between the staff taking part in the trauma team was affected by the individuals' characteristics. Two contributing factors to a good and quick collaboration were identified: the professional experience of those involved and if they knew each other from earlier work. In addition to this, they also stated that the severity of the injured had an impact on team collaboration, usually the more severe the injury, the better the collaboration. The CCNs said that clear and loud directives given from the team leader resulted in a better flow in the ER and that everybody knew what to do and how to prepare.

CCN 2: *It's really important that someone takes charge, then everybody becomes safe somehow, like, 'Now we know, he's standing here telling us what to do.' It's needed. Then I can focus on my thing—fixing the needle, I don't need to think, 'Did anybody do that?' or 'Did they get that?' I can do my thing and then I wait to do the next thing.* (FGD 4)

In situations where communication was inadequate, some CCNs described how they could perceive signs of disrespect from the trauma leader. Other CCNs meant that CCNs with more experience became more easily authoritative and more able to intercept and correct the lack of communication by voicing it to the team leader. Having the ability to speak up and enable good communication was considered by the CCNs to improve teamwork and the nursing care of the patient. The trauma manual used at all trauma calls gave clear directives on proceeding measures, but the CCNs said it required adaptation to the individual trauma patient. A flexible use of the trauma manual was achieved by good communication in the trauma team, something that was needed when they, for example, nursed children.

CCN 2: *Kids become affected by shock in a completely different way. They can't take in information in the same way. Then it's of special importance to talk to them in a way they understand and that we really think of the child.* (FGD 2)

Communication with the trauma patient was often initiated by the team leader, which guided the trauma patient through the examination they were exposed to in the ER. The CCNs said that the information given to the trauma patient varied, partly because patients have different needs and reactions to being suddenly injured. Some are more accepting of their situation, while others show a greater need to be in control and request more details. The communication between the trauma patient and the trauma team member also depended on the trauma leader's approach. The CCNs found honest information to be crucial so that trauma patients and their relatives knew what to expect. After initial assessment, the CCNs felt even more responsible for communicating with the trauma patient since they were continually present, following the patient via X-rays and onwards.

Feeling a need to reflect when affected

The CCNs said that being affected by nursing trauma patients was not simply limited to worrying about the effect of the injury or of the specific medical care. The CCNs felt anxious largely because of their familiarity with the afflicted family; they recognised themselves as parents or family members and took on the same feelings that the relative conveyed or that the CCNs believed they were experiencing. As one CCN expressed:

CCN 2: [Car crash with multiple victims, one severely injured teenager in the ER] First we didn't know who to call, because he had no identification. *How much wouldn't he want his mum to be there? Or how much hadn't she wanted to be there? Thinking about it was a stress. At that time there was no room for thinking of ethical reasoning. It was a mess caring for the others in the postoperative ward...it turned out his parents didn't bother to come, or couldn't get a cab or something...it was a burden and stress the whole shift, we [the staff] didn't have time to talk...I later found out he died.* (FGD 2)

Nursing children was generally expressed as more demanding. Sometimes the work done initially in the ER and X-ray was exhausting and the CCNs would feel relieved to report the trauma patient to another caregiver. The CCNs said the continuity of care given to these patients would be adapted based on staff resources, but also due to consideration of the individual CCN's feelings. They expressed that nursing trauma patients could demand a lot of them and that their feelings should be taken into account when the situation no longer was as acute as it had been initially. The CCNs described that situations that affected them reduced as a result of their working experience, which made it easier to care for the next patient. When they did feel a need to voice worries about a trauma patient, they said the best people to talk to were other colleagues because they understood them. Sometimes they felt the need to just be heard, and at other times some of the CCNs wanted to discuss their thoughts about their part in the trauma care and feelings concerning the patient. To process the event was said to be of importance in order to be prepared for another patient.

CCN 3: *I think you'll be more prepared for the next trauma call, the more you've seen...and can reflect over, what you did and what you should have done and so on. You learn a lot.* (FGD 1)

The CCNs discussed debriefing, but said official meetings were rare; and even though they could feel support from their colleagues and appreciated talking with them, they experienced a lack of opportunity for debriefing.

Discussion

Preparing for the unexpected

The aim of this study was to describe CCNs' experiences of nursing patients suffering from trauma. This was done in the context of being stationed in an ICU and assisting in a trauma team and after that nursing the trauma patient(s) in the postoperative ward/ICU. The analysis revealed one theme,

'Preparing for the unexpected,' with four subthemes. The theme illustrates the findings by showing the special situation of a CCN prepared and educated for a trauma call that might come, but unknowing of when, who the patient will be, what injuries the patient(s) sustained, or the circumstances of the accident. Seldom did the CCNs know who they will work with in the ED and for how long. According to Sundström and Dahlberg (2012), studying the ambulance service context, caregivers who do receive reports on what awaits them still have at the same time feelings of not knowing what they will face. This means there is a struggle in every new situation between expectancy/feeling certain and the unknown, where the caregivers have a desire for control and effectiveness in a care practice full of surprises.

Feeling competent but sometimes inadequate

The CCNs generally felt confident in their own abilities to take care of the trauma patient(s). Having the courage to trust oneself and feeling competent in providing professional care is, according to Thorup et al. (2012), important for nurses' ability to fully engage in care. Daring to trust oneself in arguing for and providing professional care is vital in order to start ethical discussions. The CCNs highlighted feelings of insufficiency caused by being overridden by other staff or when they felt a need to be with their ICU patient(s) rather than the trauma patient. The CCNs could feel that their competencies were misused. A study of ICU trainees (Jacques et al., 2008) demonstrated that being part of a medical emergency team had a positive effect on their training. At the same time, they viewed negative effects in the form of additional stress on the ICU staff. Whether or not the care of ICU patient(s) are adversely impacted is to our knowledge not researched; however, it would be of importance to further examine how the utilisation of CCNs in trauma care affects the care of the ICU patient(s). The ambivalent emotions the CCNs exhibited when they care for the trauma patient, due to worrying about what they have left behind, may then be appeased.

Feeling unsatisfied with the care environment

The CCNs reported feeling unsatisfied because of environmental factors that they viewed as prohibiting their delivery of nursing care. They highlighted that it was hard to find the time needed for all patients and their relatives due to the chaotic nature of their work, which is often also amplified when having a high number of patients in the postoperative ward. Studies (Hallin and Danielson, 2007; Schluter et al., 2011) describe that nurses who have a high workload are forced to take 'short cuts,' such as giving patients less attention, due to a lack of time. Furthermore, when lacking time there is a risk of losing a holistic perspective by valuing medical tasks higher than care interventions (Nystrom, 2002). Nursing in a peaceful environment without time constraints has a positive effect on care (Hallin and Danielson, 2007; Papastavrou et al., 2015; Rosenstein and O'Daniel, 2006). The CCNs expressed concern when they considered a patient suffering from trauma to not be in need of care in the postoperative ward. Making the suggestion that patient(s) suffering from trauma should best be transported to another ward solves the problem of an overcrowded ward. On the other hand, according to Wiman et al.'s (2007) description

of patients' encounters with the trauma team, patients who did not have life-threatening injuries experienced feelings of abandonment and were left with unanswered questions and feelings of unimportance. Caring about and seeing to the needs of the suffering patients and their relatives, regardless of the severity of the trauma, requires time and commitment from the caregiving nurse (Clukey et al., 2009; Wiman and Wikblad, 2004; Wiman et al., 2007). Lack of time is a concern that should be addressed by hospital management, whose priorities should be to ensure a care environment that both nurses and patients can be satisfied with.

Feeling satisfied with well-functioning communication

Open, respectful and well-functioning communication was essential in order for the CCNs to feel satisfied and prepared for what to do next. Likewise, there are several studies that show that the characteristics of the individuals in a team affect teamwork (Berlin and Carlström, 2008; Civil, 2015; Cole and Crichton, 2006; Jacobsson et al., 2012). Johnson and Cowin (2013, p. 125) emphasise 'good communication is about good communicators.' Several methods have been shown to improve communication (Hughes et al., 2014; McCaffrey et al., 2012; Roberts et al., 2014). McCaffrey et al. (2012) evaluated an educational programme combined with follow-up discussion, which helped to improve not only communication, but also attitudes among the staff. Implementing communication training like Crew Resource Management [CRM], originally developed in the aviator industry, has also been shown to improve medical team communication. Evaluations of the results of such training show that the staff were more likely to speak up when seeing something that might negatively affect the patient (Hughes et al., 2014), which this study's findings indicate are missing when the participating CCNs have less experience. According to Slatore et al. (2012), nurses working in teams, act as translators for patients and their relatives. The CCNs asserted that communication with the trauma patients was often initiated by the team leader. By extension, based on the view of the caregiving nurse as a translator, well-functioning communication is not only required to take necessary treatment measures, but also a prerequisite for forthcoming and well-functioning communication with the trauma patients and their relatives.

Feeling a need to reflect when affected

Findings demonstrated that the CCNs experienced anxiety due to their familiarity with the trauma patient and/or her/his relatives. The most difficult events were connected to nursing children, findings consistent with other studies (Adriaenssens et al., 2012; Alexander and Klein, 2001; Alzghoul, 2014). Receiving support from colleagues, preferably those who have been in the same situation, is found important (Martins and Robazzi, 2009; Nordin et al., 2014; Shorter and Stayt, 2010). Martins and Robazzi (2009) show that CCNs sometimes need to distance themselves from patients due to feeling overly involved with the consequence of suffering themselves. They also stated that quality nursing care demands collectivity and cooperation among team members in order to have a united, harmonious and committed team. According to Wiegand and Funk (2012), 38%

of CCNs who experience moral distress in a clinical situation state that they would change their practice if they were to face a similar situation in the future. This raises the question of whether changes in practice are based on an individual decision or after confiding in colleagues and taking their advice. Clarke (1986) suggests that in nursing there is always more than one reason for any action. The CCNs expressed that they sometimes worried about trauma patients and that it could be a burden if they didn't have time to voice their worries. The CCNs also stated that they could feel relieved to hand over a trauma patient to another caregiver when feeling exhausted by the situation. Rushton (2006) emphasised that when distress is expressed, it is crucial to understand its source in order for it to be affirmed; only then can it be handled and addressed with appropriate measures. Furthermore, she states that CCNs will never be spared from distressing encounters, but that by defining and addressing the causes they will have the power to rise above them.

Study strengths and limitations

The inclusion criteria and the method for collecting and analysing data were considered relevant to the aim of the study. We sought to provide a wide range of data from the interactions during FGDs and by doing so to also enhance the study's credibility (cf. Morgan, 1997). There were always at least two researchers present at each FGD with the intention to ensure reliability. According to Morgan (1997), there is always a risk of the moderator influencing the group. The interactions in the FGDs may benefit from having participants with similar work experience as this could lead to a synergy effect on the data (cf. Morgan, 1997). During the analysis, the data have been discussed among all authors before reaching consensus in order to ensure the data's trustworthiness (Graneheim and Lundman, 2004). No male CCN could or wanted to attend the FGDs, and since there were very few male CCNs working at the ICU, it was not considered restrictive.

Conclusion

To provide nursing care for patients suffering from trauma required that the CCNs prepare themselves for the unexpected. They viewed themselves as competent, but felt at times inadequate when not being able to fulfil the needs they believed the patients and their relatives had. The CCNs viewed the care environment and quality of communication as two factors that influenced their nursing ability. In retrospect, they felt a need to talk about and reflect on their experiences after being in emotional situations. In summary, to address the challenges associated with trauma care, we suggest there is a need to improve two aspects of it. The first is formal preparation and ensuring that there are enough resources in terms of sufficient staff and space within the organisation to perform adequate care for the patient suffering trauma and her/his relative(s). Secondly, a follow-up in the form of a debriefing to evaluate the outcome of the care measures that were given and to address feelings of distress among members of the trauma team is needed. It would benefit both the individual CCNs, in terms of their

feelings of preparation, and the overall quality of nursing and the continuum of trauma care.

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Conflict of interest

The authors declare that there is no conflict of interest.

Author contributions

Study design: LS, ÅE and CN. Data collection: LS, ÅE and CN. Data analysis: LS, ÅE, CN and PJ. Manuscript preparation: LS, ÅE, CN and PJ.

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