I am a nursing instructor in Adult and Elderly Health Nursing at the School of Nursing Science, Rangsit University, Thailand. I granted a Master’s degree in caring/nursing science at Mälardalen University in 2012. I have been working as a nurse for almost 3 years and during that time I worked in medical and surgical nursing at the Department of Surgical Intensive Care Unit, Private Hospital, Thailand. I have also worked as a registered nurse at the airport of Thailand for 1 year, and as a flight nurse for almost 1 year at the Fox Flight Company and Asia Air Ambulance.

During my years as a registered nurse, I have encountered stressful situations at a workplace. This triggers my curiosity about the causes of stress in a critical care setting, and I intend to explore them. This insight has led me into this project, and I hope to be able to contribute an evidence base knowledge regarding occupational stress in emergency departments, which might be helpful for the emergency nurses and the health care organizations.
OCCUPATIONAL STRESS AMONG THAI EMERGENCY DEPARTMENT NURSES

DEVELOPMENT AND VALIDATION OF AN INSTRUMENT FOR MEASURING STRESSORS IN EMERGENCY DEPARTMENTS

Nuttapol Yuwanich

2017

School of Health, Care and Social Welfare
OCCUPATIONAL STRESS AMONG THAI EMERGENCY DEPARTMENT NURSES
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Nuttapol Yuwanich

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Akademin för hälsa, vård och välfärd
Abstract

Working at an emergency department has some characteristics, which may generate stress. In this thesis, the stressors for emergency nurses were evaluated and an instrument was developed for measuring their impact. In order to gain a deeper understanding regarding the occupational stress among emergency nurses, a descriptive qualitative design with semi-structured interviews were used in two studies (I, II), one at a private and the other at a public hospital in Thailand. Three main categories of stressors were identified, related to the activity at the emergency departments, to human factors and to perceived consequences of these factors. Nurses in both private and public hospitals frequently experienced occupational stress, which influenced their psychophysiological health, and resulted in incomplete nursing care. Since no validated instrument had been published for measuring stressors in emergency nurses’ workplace, a scoping literature review was performed and a questionnaire for this purpose was developed, based on the review and the results from the interviews (I and II). The questionnaire was validated (III) and the influence of socio-economic factors were evaluated (IV). Four-hundred and five emergency nurses in Thailand completed a questionnaire containing 59 items. The responses were analyzed using 1) item generation, 2) content and face validity and test-retest reliability and 3) evaluation of the internal consistency and construct validity of the instrument. An exploratory factor analysis was performed on 200 of these responses and a confirmatory factor analysis on the remaining 205. The analysis provided a final four-factor solution with 25 items distributed among the factors Life and death situations, Patients’ and families’ actions and reactions, Technical and formal support, and Conflicts. The statistical evaluation (Cronbach’s alpha and intra-class correlation coefficient) indicated good homogeneity and stability. The type of organization, educational level and average income were associated with stressor related to Life and Death situations. Stressor related to Patients’ and families’ actions and reactions was predicted by educational level. While sociodemographic variables had no influence on stressor related to Technical and formal support and Conflicts. Future research regarding patient safety should focus on both emergency nurses’ and patients’ perspectives regarding consequences of occupational stress related to patient safety. Different perspectives may create a knowledge-base which can be used to develop guidelines or protocols aiming at reducing nurses’ stress and prevent its consequence, such as poor patient safety.
Occupational stress among Thai emergency department nurses:  
Development and validation of an instrument for measuring stressors in emergency departments  
Nuttapol Yuwanich
Let us never consider ourselves finished nurses....

We must be learning all of our lives.

Florence Nightingale
The purpose of this dissertation is to explore the stressors for Thai emergency nurses and to develop and validate an instrument aimed at measuring specific stressors for emergency nurses. This dissertation consists of two qualitative and two quantitative research studies. Data are drawn from individual open-ended interviews (studies I, II) and cross-sectional and correlational studies (studies III and IV).

To gain a deeper understanding of occupational stress among emergency nurses, we conducted a descriptive qualitative study with semi-structured interviews (studies I and II). Twenty-one emergency nurses in a public hospital and 15 from two private hospitals in Bangkok, Thailand, were interviewed. The transcribed interviews were analysed using content analysis, and the results from the interviews were conceptualised into three main categories: emergency department-related stressors, human-related stressors and multiple perceived consequences of emergency department-related stressors. Emergency nurses in both private and public hospitals (studies I and II) frequently experienced occupational stress, which influenced their psychophysiological health and resulted in incomplete nursing care. The similarities of the occupational stressors experienced by emergency nurses at both types of hospitals may be related to the nature of emergency departments. The differences in the nurses’ experiences of occupational stress and organisational support may be due to differences in management systems, rewards systems and types of compensation in public and private hospitals.

To the best of our knowledge, there is no published, validated instrument for measuring stressors in emergency nurses’ workplace. A new instrument, therefore, was developed and validated (study III). The methodology of this study comprised three phases: 1) item generation; 2) content and face validity and test-retest reliability; and 3) evaluation of the internal consistency and construct validity of the instrument. Exploratory factor analysis with varimax rotation was performed on data from 200 emergency nurses. Thirty-one items with factor loadings > 0.60 in exploratory factor analysis were retained and further tested with confirmatory factor analysis on data from 205 emergency nurses. Cronbach’s alpha values and intra-class correlation coefficients were calculated. Exploratory factor analysis provided a five-factor solution, whereas confirmatory factor analysis provided a final four-factor solution with 25 items distributed among four factors: life-and-death situations, patients’
and families’ actions and reactions, technical and formal support and conflicts. Cronbach’s alpha values ranged from 0.89 to 0.93 per factor, and the intra-class correlation coefficient was 0.89, indicating good homogeneity and stability.

In study IV, the instrument was used to explore to what extent sociodemographic variables may influence the experience of specific stressors for Thai emergency nurses. The type of organisation, educational level and average income were associated with stressors related to life-and-death situations. Stressors related to patients’ and families’ actions and reactions were predicted by educational level, while sociodemographic variables had no influence on stressors related to technical and formal support and conflicts.

Future research regarding patient safety should focus on the perspectives of both emergency nurses and patients regarding the consequences of occupational stress for patient safety. Difference perspectives may create a knowledge base which can be used to develop guidelines or protocols aimed at reducing nurses’ stress and preventing its consequence, such as low patient safety. The potential for positive stress in emergency nurses’ workplace needs to be further explored, particularly how it affects nurses’ health and caring performance.

**Keywords:** emergency nurses, occupational stress, questionnaires, private hospitals, public hospitals, scale development, validation.
LIST OF PAPERS

This dissertation is built on the following four scientific papers, which are referred to by Roman numerals in the text.


Reprints were made with permission from the respective publishers: IOS Press (study I) and Scientific Research Publishing (study II).
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<tr>
<td>AIC</td>
<td>Akaike information criterion</td>
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<tr>
<td>ANS</td>
<td>Autonomic nervous system</td>
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<td>CFA</td>
<td>Confirmatory factor analysis</td>
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<td>CFI</td>
<td>Comparative fit index</td>
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<td>CNS</td>
<td>Central nervous system</td>
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<td>CSMBS</td>
<td>Civil Servant Medical Benefits Scheme</td>
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<td>ED</td>
<td>Emergency department</td>
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<td>EFA</td>
<td>Exploratory factor analysis</td>
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<td>GIF</td>
<td>Goodness of fit index</td>
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<tr>
<td>ICC</td>
<td>Intra-class correlation coefficient</td>
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<tr>
<td>I-CVI</td>
<td>Index of content validity</td>
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<td>JDCS</td>
<td>Job demand-control-support</td>
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<td>KMO</td>
<td>Kaiser-Meyes-Olkin</td>
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<td>SP</td>
<td>Social protection</td>
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<tr>
<td>RMSEA</td>
<td>Root mean square error of approximation</td>
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<td>SPSS</td>
<td>Statistical Package for the Social Sciences</td>
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<td>SSEN</td>
<td>Stressor Scale for Emergency Nurses</td>
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<td>SSS</td>
<td>Social Security Scheme</td>
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<tr>
<td>UCS</td>
<td>Universal Coverage Scheme</td>
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<td>WHO</td>
<td>World Health Organization</td>
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INTRODUCTION

This dissertation is aimed at contributing to knowledge in the related areas of the care sciences and health and welfare. The main objectives of the dissertation are to identify possible specific stressors for nurses in emergency departments (ED), describe their consequences for emergency nurses’ health, organisations and nursing care and to develop and validate a questionnaire for measuring stressors in EDs. A combination of qualitative and quantitative research methodologies was used to gain a broader, deeper understanding of occupational stress in EDs in the Thai context. Presently, Thai nurses face stressors in the workplace, such as high workload, excessive work tasks and low income. This situation is detrimental and has led Thai nurses to go on strike for their rights several times since 2011. The consequences of stress can affect nurses at both the individual level (e.g. ill health and burnout from stress) and the organisational level (e.g. poor patient safety, nursing staff shortages and intent to leave one’s current nursing job and low patient safety). Although the knowledge in this dissertation is derived from one specific area of nursing, it describes specific situations regarding emergency nurses’ stress and may help complete the picture of Thai nurses’ stress. The author hopes that this knowledge can be useful for those in the public and private sectors seeking to improve working conditions in EDs, reduce stress factors and develop a suitable welfare strategy for emergency nurses and perhaps nurses in general in Thailand.
BACKGROUND

This chapter on the background of this dissertation describes the health status and welfare system of the study setting and then the health care and welfare system in Thailand, followed by the health workforce in Thailand. The concepts of stress and occupational stress are described and discussed in relation to individual health. The relationships among occupations, nurses, emergency nurses and patient safety outcomes are described based on evidence from previous studies and related literature. Finally, the job demand-control-support (JDCS) model is described and linked to the methodology of this dissertation.

Health care and welfare system in Thailand

Thailand is in South-eastern Asia and has a population of approximately 67 million people. It ranked as an upper-middle-income country in 2011 (World Bank, 2011), with a total gross domestic product of $395.2 billion in 2015. Although the economic status of Thailand tends to improve annually, poverty is still present, with more than 80% of the population living in rural areas (7.3 million people). In 2017, the Thai government launched the Twelfth National Economic and Development Plan 2017–2021, which emphasises the development and reform of the social structure with the aim to achieve equality of well-being among the Thai people. Achieving sustainable development goals is the main strategy of this plan. The government wishes to maintain harmony, well-being and equality among the Thai people by implementing this plan from 2017 and expects to achieve effective outcomes within five years that last for 20 years (Royal Thai Government Gazette, 2017).

Despite existing poverty-reduction programmes, poverty remains due to inadequate governance performance (Sittha, 2012). This leads to income inequality and a lack of equal opportunities to access basic social services, such as health care, education and the old age allowance (World Bank, 2014). Buddhism is the dominant religion in Thailand (95%), while 3% of the population adheres to Islam, and the rest to Christianity, Hinduism and other religions (Sakunphanit & Suwanrada, 2011). The aging population is increasing and
makes up 13.96% of the Thai population, with a life expectancy of approximately 75 years (World Health Organization, 2014).

The welfare system in Thailand differs from the welfare systems in Western countries, such as Sweden. The Thai welfare system, which emerged as a social protection (SP) system during the economic crisis in 1997, can be categorised into two systems: contributory transfer programmes and noncontributory transfer programmes (Paitoonpong, Chawla, & Akkarakul, 2010). These programmes are aimed at providing benefits to the Thai population, including social security (social insurance), social assistance (i.e. assistance to poor families, the elderly and those with disabilities), social services (i.e. schools and health care services) and labour protection (i.e. unemployment and maternity leave) (Pongsapich, Leechanawanichphan, & Bunjongjit, 2002). Although SP is intended to provide benefits to the Thai population, it does not provide a universal benefit to the whole population as the Swedish welfare system does (Swedish Institute, 2012). In fact, the SP system provides multi-pillar benefits and social welfare, so Thai people belonging to different social classes or working in different contexts (i.e. the public and private sectors) receive different SP benefits (Paitoonpong et al., 2010).

The health care system in Thailand is focused on primary health care, and the network of health institutions provides good overall coverage. The health care system is an entrepreneurial market-driven system and comprises a mixture of public and private health care providers and financing agencies. However, most health care services are provided by a public domain supported by the government, which mostly pays salaries and makes capital investment (Sakunphanit & Suwanrada, 2011). The Thai population accesses health care services through three main schemes: the Universal Coverage Scheme (UCS), Social Security Scheme (SSS) and Civil Servant Medical Benefits Scheme (CSMBS). The UCS covers the Thai people working in the informal sector, whether rich or poor, and provides health care to those not covered by any other public health protection scheme. The SSS covers formal employees in the private sector. The CSMBS is a tax-funded programme that provides benefits for active and retired military personnel, police officers and civil servants and their parents, spouses and up to three children younger than 18 years old. In addition to these schemes, there is an alternative choice to access the health care system through private health insurance and employer-provided health insurance (National Statistical Office, 2013). The usage of private health insurance has increased from 2.3% in 2006 to 5.3% in 2013 (National Statistical Office, 2013).
Public and private hospitals

Health care services in Thailand are provided at several types of facilities, such as health care centres, private clinics and hospitals. Of these, hospitals play the most significant role in providing health care services, and most hospitals in the country are public. In 2010, there were 1,009 public hospitals under the administration of the Ministry of Public Health (88%), while the remaining 12% were under the administration of other ministries, such as the Ministry of Defence and the Ministry of Justice (Bureau of Policy and Strategy, 2011). The government’s tax revenue system is the principal source of health care funds for public hospitals. Amid economic expansion in Thailand, the private health sector has grown, contributing to an increase in private hospitals (Bennett & Tangcharoensathien, 1994; Pannarunothai & Mills, 1998; Sakunphanit & Suwanrada, 2011). The National Statistical Office (2012) reported that there are 321 private hospitals in Thailand, and of these, 98 are located in Bangkok. The financing system of private hospitals involves customer (patient) payments, either direct or indirect through private health insurance, employer-provided health insurance or the SSS (Ramesh & Wu, 2008).

Emergency care

In case of emergencies, Thai citizens may use any nearby public hospital without paying service fees to access emergency care services as the UCS covers the payment. However, if people are in need of emergency care services, and there are only private hospitals nearby, they may not freely choose any private hospital to receive emergency care. They may receive emergency care services only when their health care scheme (e.g. SSS, CSMBS or private health insurance) is registered with contracted private hospitals (Boslaugh, 2013). This pattern of accessing emergency care services can cause delayed treatment and result in high risk of death and disability for patients.

Consequently, in April 2017, the Ministry of Public Health issued the Universal Coverage for Emergency Patients (UCEP) policy, aimed at reducing the limitations on accessing emergency care services in private hospitals (National Institute for Emergency Medicine, 2017a). The UCEP policy requires that private hospitals treat emergency patients for free for the first 72 hours. Thus, emergency patients can go or be transferred to any nearby private hospital to receive emergency care services for 72 hours without paying. However, this is a pilot policy, and private hospitals that provide emergency care
services under the UCEP policy must be funded by three organisations, the National Health Security Office, Social Security Office and Comptroller General’s Department (National Institute for Emergency Medicine, 2017a). To prevent misunderstandings regarding the symptoms of emergency patients, the National Institute for Emergency Medicine (2017b) listed six symptoms/conditions that define emergency illnesses or conditions: unconsciousness; difficulty breathing; acute chest pain; drowsy, pallor, coldness and seizures; acute stroke (e.g. weakness and difficulty speaking); and any life-threatening symptoms involving the respiratory, cardiovascular or nervous system.

In conclusion, emergency patients who meet these six criteria of emergency illness or conditions may access emergency care services in either nearby public or private hospitals under the regulations of the UCEP policy. They receive free emergency care services for the first 72 hours. After 72 hours of care, patients who need further treatment are referred to hospitals where they are registered. Patients who prefer to receive ongoing treatment at the private hospitals providing them with emergency care must pay the remaining treatment costs (National Institute for Emergency Medicine, 2017a).

Emergency nursing

The ED provides a full range of medical treatment facilities and specialises in acute care around the clock for patients who present without prior appointment either on their own or by ambulance (Castledine & Close, 2010). The typical patients who attend the ED are undiagnosed and unknown to the emergency health care professionals, and most make unexpected and unplanned ED visits (Croskerry, Cosby, Schenkel, & Wears, 2009). Patients may arrive with a variety of medical symptoms; some patients present in an unconscious state, and some present with serious medical conditions and need immediate treatment. In general, most patients visiting the ED have acute illnesses, trauma or injuries from any type of accident (Croskerry et al., 2009).

Due to the variety of patients’ medical symptoms and the unlimited types of illness in the ED, a triage system is applied as a management strategy to screen and prioritise the patients who have the most urgent medical problems and need immediate treatment (Ganley & Gloster, 2011). In the past, triage systems were used on the battlefield to evaluate the injured and classify them in priority order. More recently, field triage has been adopted and applied in hospital settings and becomes an active part of most EDs (Marett, 2000). The term
Triage can be defined as a method of prioritising care of patients (or victims in the case of disasters) based on their medical condition, illness, symptoms, severity and prognosis, as well as the available resources. This method is intended to identify patients’ need for resuscitation, assign patients to the appropriate area of care or treatment, prioritise patients and initiate diagnostic or therapeutic measures as appropriate (Mace & Mayer, 2007). Many triage systems are widely used in EDs. The five-level triage system is recommended for use as it is more effective than three-level triage system (Travers, Waller, Bowling, Flowers, & Tintinalli, 2002). The five-level triage system comprises the resuscitation (critical), emergent, urgent, non-urgent and referred (fast track) levels.

Nurses in the ED, or emergency nurses, play an important role in caring for ED patients, especially those with crisis conditions. Emergency nurses are trained and educated in a specific course for emergency care. They must have competences in emergency nursing practice, which consist of triage skills; assessment; diagnosis; teamwork; provision of nursing care of a broad scope and focused on emergency care (e.g., medical, surgical, obstetric, gynaecological, paediatric, psychiatric and geriatric care); and identification of health care problems in crisis situations (Fazio, 2010). Marett (2000) suggested that emergency nurses must possess outstanding interpersonal skills as patients commonly attend the ED unexpectedly. Moreover, emergency nursing requires sensitivity, patience, flexibility and a firm respect for human beings (Marett, 2000).

Although emergency medical service has been developed in Thailand for almost ten years, there is a reported shortage of emergency physicians. Consequently, emergency nurses are the front-line health care personnel who provide care and initial treatment to patients who attend the ED. Emergency nurses must provide nursing care with specific skills, including advanced health assessment, triage, emergency nursing care, advanced cardiac life support, decision making and handover of patients to other departments and health care facilities (Vibulwong & Rittiwong, 2014). To gain these skills, nurses who intend to work in the ED need to attend training programmes.

Thai emergency nurses, whether they work in the public or the private sector, must provide nursing care under the Professional Nursing and Midwifery Act. The legislation states that they must give nursing care to individuals, families
and the community through the following actions: (1) provide education, advice and counselling and solve health problems; (2) assist individuals physically and mentally, including manage a proper environment, to solve problems associated with illness, alleviate symptoms, facilitate rehabilitation and prevent the spread of disease; (3) administer immunisations and treatment as appropriate for primary medical care; and (4) help physicians perform treatment (Thailand Nursing and Midwifery Council, 1997, p. 1).

Considering the characteristics of the ED, the fourth practice mentioned in the Professional Nursing and Midwifery Act (1997) appears to be the initial concern for Thai emergency nurse. Thai emergency nurses, therefore, can be considered to be important health personnel in the ED who assist physicians in performing treatment. Emergency nurses have become significant middle-level care providers who can fill the gap amid physician shortages and the need for cost-effective care (Pagaiya & Noree, 2009). Although the nurse–patient ratio is planned to reach 1:400 in 2019, there is a nursing shortage of approximately 43,250 positions (Srisuphan & Sawaengdee, 2012). The nursing shortage and the requirement to perform tasks beyond their competences may contribute to the high workload and stress of Thai emergency nurses and nurses in other departments (Tyson & Pongrengphant, 2004).

Stress and health

The concept of stress can be described from different angles. Commonly, its definitions fall into three main categories: stimulus-based, response-based, and interactional definitions. Stimulus-based definitions are derived from the engineering perspective and are related to the physics of the elasticity of substances. In this category, stress is defined as an aspect of the environment that causes a strain reaction to an individual exposed to the stressful stimulus (Payne & Horn, 2007). The stimulus-based definition is simple but has limited ability to explain the complexities of the stress process.

Selye (1975) offered a response-based definition of stress: an organism’s reaction to a given stimulus. Selye described this reaction through the concept of general adaptation syndrome (GAS). GAS views stimuli as stressors, and when an organism is stimulated by a stressor, a stress reaction occurs (Selye, 1975). Stress is broken down into distress, which is negative stress and results in ill health, and eustress, which is positive stress and can enhance health (Selye, 1975; Payne & Horn, 2007).
The interactional definitions of stress propose that it is an interaction between the external environment (a stimulus) and the person. The person–environment fit (P-E fit) model is a stress model related to the interactional definitions. The P-E fit model defines stress as the degree of mismatch between a person and the environment (Payne & Horn, 2007). One of the most widely used interactional definitions of stress was introduced by Lazarus and Folkman (1984). They defined stress as a particular relationship between a person and the environment that the person appraises as taxing or exceeding their resources and harming their well-being (Lazarus & Folkman, 1984). According to this concept of stress, a person perceives and interprets events in the environment as stress through making cognitive appraisals, which can be divided into primary and secondary appraisals. The primary appraisal concerns the determination and assessment of events occurring in the environment, while the secondary appraisal involves assessment of the person’s ability to cope with the event. In other words, people only experience stress if they perceive and regard events as stressful and feel that they are unable to cope with them. The stress process described through cognitive appraisals, therefore, cannot be fully understood without mentioning the process of coping (Folkman & Lazarus, 1980). Coping is defined as the process of managing the demands that an event appraised as stressful places upon the individual and is categorised into emotional- and problem-focused coping (Folkman & Lazarus, 1980, 1991; Lazarus, 2006).

**Stressors**

In the stress definitions, stressors are usually mentioned as the sources that cause stress. Selye (1975) defined stressors as stimuli from the environment surrounding an organism. Cooper et al. (2001) viewed stressors as any force that pushes a psychological or physical factor beyond its range of stability, which can produce a strain (stress) within the individual. Pacák and Palkovits (2001) described stressors as any factor or event that threatens an individual’s health or reduces normal functioning. In summary, a stressor can be seen as a source or factor that causes stress. Individuals perceive and interpret events occurring in the environment as stressors through their appraisals. Thus, people perceive and interpret stress differently, and stress can affect individual health and well-being.
Health

Health is a broad concept which has been defined differently over time. The World Health Organization (WHO, 1948) defines health as a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity (WHO, 1948). The WHO’s definition of health introduces a concept of well-being that has physical, mental and social dimensions. However, these dimensions are difficult to measure; for example, health in the social dimension is hard to define. Another criticism of the WHO’s health definition is that complete well-being in all dimensions seems impossible; therefore, no one is healthy (Larson, 1999). The WHO’s definition of health is rather old fashioned as populations have undergone demographic transitions, and the nature of disease has changed considerably since 1948. Huber et al. (2011) suggested that the WHO’s health definition should be reformulated to take into account the capacity to cope, maintain and restore personal integrity, equilibrium and sense of well-being. This definition aligns with Antonovsky’s (1996) salutogenic model, which focuses on people’s resources and capacities to create their own health. Thus, health can be a person’s perceived ability to adapt to live their life and achieve personal well-being.

Influence of stress on health

Stress can influence individuals’ physiological and psychological health (Kenny, Carlson, McGuigan, & Sheppard, 2000; Lovallo, 2005). A study provided evidence that 33.7% of nearly 186 million adults in the United States perceived stress to affect their health, both physical and psychological (Keller et al., 2012). Physiological ill health is associated with the physiological responses to stress, which are comprised of two components: neutral pathways and hormonal transmission. In the neural pathway, an individual encounters a stressful situation or perceives stress, and the hypothalamus in the central nervous system (CNS) activates the autonomic nervous system (ANS) consisting of the sympathetic and parasympathetic pathways. The two branches of the ANS tend to function in opposite ways; the sympathetic branch is involved with bodily excitation and expenditures, whereas the parasympathetic division is concerned with reducing bodily activity and saving energy (Stratakis & Chrousos, 1995). Stressful situations potentially induce the sympathetic division to activate the inner part of the adrenal gland (adrenal medulla), resulting in the secretion of the hormone catecholamine through the bloodstream. Catecholamine consists of two chemicals, epinephrine (adrenaline) and norepinephrine (noradrenaline), and contributes to increasing blood
sugar levels, cardiac output, heart rate and blood supply to the brain. These reactions prepare the body for the fight-or-flight response (Bamber, 2007; Bartlett, 1998; Kenny et al., 2000; Lovallo, 2005).

Another pathway of physiological responses to stress is hormonal transmission. The endocrine system plays an important role in secreting hormones in the human body (Stratakis & Chrousos, 1995). This stress response pathway is much slower than the neural pathway but is more closely associated with chronic (longer response) stressors. The hypothalamus in the CNS stimulates the pituitary gland, resulting in the release of hormones. The major hormone related to stress is the adrenocorticotropic hormone, which induces the cortex of the adrenal gland (the outer part of the adrenal gland) to secrete another hormone, corticosteroid (Lyons & Meeran, 1997). Corticosteroid consists of two subgroups: mineralocorticoid and glucocorticoid. Mineralocorticoid regulates bodily fluids and electrolytes, while glucocorticoid controls blood sugar and pressure, inhibits normal inflammatory responses and allergic reactions and is involved in the immune system (Lyons & Meeran, 1997; Stratakis & Chrousos, 1995).

The sympathetic pathway induces physiological responses to stress, possibly causing muscle pain and irritable bowel syndrome (Bamber, 2007; Kenny et al., 2000). Furthermore, previous studies have shown that stress is related to cardiovascular diseases (Everson-Rose & Lewis, 2005) and metabolic syndrome (Chandola, Brunner, & Marmot, 2006; Rosmond et al., 2003). The respiratory system also responds to stress, which can lead to hyperventilation (breathing faster rate than the body needs). This breathing pattern can contribute to an imbalance of the body’s acid–base control (Kenny et al., 2000). Additionally, stress can affect individuals’ psychological health and emotion (Lazarus, 1993). Stress evokes negative emotions, including anger, fright, anxiety, guilt, shame, sadness, envy, jealousy and disgust. Each emotion is the result of a different set of troubled conditions in life, and each involves different harms or threats. Individuals react to stressors and express their emotions differently depending on their appraisals (Lazarus, 1993; Lazarus & Folkman, 1984).

**Occupational stress**

Stress in the workplace, or occupational stress, has been an issue of great concern for many years. Occupational stress has increased due to the world financial crisis, which affected almost all countries, professions and categories of
workers, as well as families and societies (Mohajan, 2012). Occupational stress can be defined as the potentially deleterious psychophysiological responses that occur when job requirements do not match workers' capabilities, resources or needs (Sauter et al., 2009). Generally, the causes of occupational stress, known as psychosocial hazards, consist of job content, workload, workplace, work schedule, control, work environment and equipment, organisational culture and function, organisational role, career development, home–work interface and interpersonal relationships at work (European Risk Observatory, 2010). Cartwright and Cooper (1997) categorised six primary causes of work-related stress: organisational factors, the home–work interface, career development, factors intrinsic to the job itself, role in the organisation and relationships at work.

Occupational stress can influence the organisational level and the individual level of the worker (Beheshtifar & Nazarian, 2013; European Parliament Committee on Employment and Social Affairs, 2013). The consequences of occupational stress on the individual level include unwanted feelings and behaviour, physiological and psychological ill health and social problems, while the negative impacts of occupational stress on the workplace comprise poor or low productivity and other organisational costs (Beheshtifar & Nazarian, 2013). Occupational stress may also cause absenteeism among workers and is related to decreased organisational productivity. The Medibank Private (2008) reported that stress-related absenteeism costs the Australian economy $5.12 billion a year and another $4.48 billion a year for organisations to hire new staff. A report on work-related stress and cardiovascular disease in Europe claimed that they result in €1.06 billion in health care costs among European countries (Nichols et al., 2012).

**Occupational stress in the nursing profession**

The nursing profession involves actions to people, related to caring and helping when they are sick, including rehabilitation, disease prevention and health promotion, as well as assisting physicians to perform curative treatment. In doing so, it shall be based on scientific principles and the art of nursing. (Thailand Nursing and Midwifery Council, 1997, p. 1)

Hinglery (1984) stated that the ‘nursing profession confronts stark suffering, grief, and death as few other professions do. Many nursing tasks are mundane
and unrewarding. Many are, by normal standards, distasteful, even disgusting, others are often degrading; some are simply frightening’ (p. 19). This statement reflects the workload that nurses face and can be seen as work-related stress which affects nurses’ physical and psychological health (Happell et al., 2013).

The consequences of occupational stress for nurses include absenteeism, high staff turnover, ill health, decreased quality of care and lower job satisfaction, which is the most common consequence of occupational stress in nursing professions (AbuAlRub, 2004). Wright, Bretthauser, and Cote (2006) noted that dissatisfaction in nursing is mostly related to the quality of care provided and nursing shortages which result in increased workload. In addition to leading to absenteeism and turnover, dissatisfaction among nurses has economic consequences. According to Salmond and Ropis (2005), ‘stress has been estimated to cause half of workplace absenteeism and 40% of turnover, which is projected to cost the U.S. economy $200–$500 billion annually’ (p. 302). Gelsema et al. (2006) supported that occupational stress in the nursing profession is related to changes in work conditions and leads to changes in nurses’ health, well-being and job satisfaction, resulting in emotional exhaustion or burnout. These, in turn, lead to poor-quality nursing care and low patient safety (Hall, Johnson, Watt, Tsipa, & O’Connor, 2016; Poghosyan, Clarke, Finlayson, & Aiken, 2010).

**Patient safety and occupational stress among nurses**

Patient safety is defined as doing no harm to patients and their families and preventing errors and adverse effects for patients during health care (WHO Europe, 2017). Patient care refers to quality of care and preventable effects on patient safety. Health care providers’ health status and well-being seem to be factors related to low patient safety. For example, moderate to high levels of burnout among health care providers are associated with low patient safety, including medical errors (Hall et al., 2016; National Institute for Health Research, 2016).

Nurses are health care providers who provide care in close contact with patients, so they have a high chance of unintentionally delivering poor care and causing low patient safety, especially when they are stressed and fatigued at work (Cropley, 2015). Occupational stress and the work environment have a strong interrelationship with nurses’ stress at work. A negative or poor work
environment (e.g. low wages, shortages of necessary medical equipment and lack of adequate rest) (Lu et al., 2015) contribute to stress in nurses and affect nursing care and performance and patient safety (Kirwan, Matthews, & Scott, 2013). In contrast, positive or good work environments perceived as healthy generate many positive outcomes for nurses and patients, including high-quality patient care, staffing, communication, collaboration, respect, teamwork and job satisfaction (Ulrich, Lavandero, Woods, & Early, 2014). Excessive work hours are one factor related to negative work environments as they can be seen as a workplace policy that nurses have to follow. Working for long hours can adversely affect nursing care performance, sometimes resulting in unintended negative consequences for patient care (Bae & Fabry, 2014; Chan, Jones, & Wong, 2013). Sometimes, nurses have to work extended work hours due to workplace policy (as in Thai hospitals). Extended work hours have negative consequences for nurses (e.g. stress, poor health and emotional exhaustion) and patients (e.g. patient identification and communication error) (Kunavikul, Chitpakdee, Srisuphan, & Bossert, 2015).

Excessive work tasks are also commonly reported to be a stressor for nurses (Trousselard et al., 2016) and can be related to the job demands due to the JDCS model (Karasek & Theorell, 1990). Completing work and task demands significantly contributes to stress and negatively affect nurses’ ability to provide all the required care in a timely fashion. These demands include high physical workloads and unexpected tasks, such as phone calls, patient requests and immediate medical administration (Verrall et al., 2015).

**Occupational stress and emergency nursing**

Given the nature of the ED and the unplanned attendance and unpredictable illnesses of patients, emergency nurses provide initial treatment for a broad spectrum of illnesses and injuries. Some, such as life-threatening conditions, may require immediate attention to patient. Consequently, emergency nurses work in a high-stress environment and inevitably are simultaneously and daily confronted with crisis situations, such as sudden patient death and resuscitation, violence, injury, trauma, overcrowding and physical assaults by patients and visitors (Freeman, Fothergill-Bourbonnais, & Rashotte, 2014; Healy & Tyrrell, 2011). These factors may cause more stress and burnout among emergency nurses than nurses in other departments (Adriaenssens, De Gucht, & Maes, 2015a, 2015b; Adriaenssens, De Gucht, Van Der Doef, & Maes, 2011) and other health care professionals, such as physicians (Hamdan, Abu Hamra,
The top five causes of stress for ED nurses are handling mass casualties, caring for patients with acute illness, violence against staff, heavy workload and poor skill mix and the deaths or sexual abuse of children (Ross-Adjie, Leslie, & Gillman, 2007).

Stress influences the physiological and psychological health of emergency nurses. The physiological effects of stress include high blood pressure, increased heart rate, weight gain or loss, indigestion, coronary heart disease and gastric disorder. These effects are dependent on where the individual’s experience is on the stress continuum (Potter, 2006). The psychological effects include increased arousal, feelings of uneasiness, emotional exhaustion, depression, fatigue and burnout (Adriaenssens et al., 2015b; Freeman et al., 2014). Moreover, stress leads to absenteeism and high turnover among emergency nurses (Rugless & Taylor, 2011). Nurses can become irritable and short-tempered, creating difficulties in relationships with other health care professionals (Rosenstein & Naylor, 2012) and leading to decreased quality of care (Gates, Gillespie & Succop, 2011). Moreover, occupational stress negatively affects emergency nurses’ health behaviour; compared to nurses in other departments, emergency nurses smoke more (Berkelmans, Burton, Page, & Worrall-Carter, 2011), take more sick days, consume more alcohol and experience lower overall health and well-being (Helps, 1997).

Theoretical perspectives

*Job demand-control (-support) model*

The JDCS model, developed by Karasek (1979), posits that the relationship between job demand and job control is an essential job characteristic which influences an employee’s well-being. The goal of this model is to determine the occurrences of psychological strain in workplace contexts. The interaction of two dimensions, job demand and job control has to be considered (Häusser, Mojzisch, Niesel, & Schulz-Hardt, 2010). Job demand refers to workload or time pressure, while job control is divided into two components: skill discretion, which refers to the opportunities for employees to use their skills in the workplace, and decision authority, which refers to employees’ autonomy to make task-related choices by themselves (Karasek, 1979). Karasek (1979) described the interactions of two dimensions in job situations. High demand and low control lead to high risk of illness and reduced well-being (high strain
job). However, if a job has low demand and high control (low strain job), adverse reactions are rather unlikely, and the situation can lead to passivity and boredom.

The relationship of these two dimensions leads to two hypotheses. The strain hypothesis emphasises the increased physical or psychological strain and reduced well-being of employees who work in high-strain jobs (see the left lower quadrant in Figure 1). The buffer hypothesis predicts buffering of control, which reduces the negative impact of job demands on well-being (Karasek & Theorell, 1990). More recently, the job demand-control model (JDC) has been developed to add a third dimension of social support (Karasek & Theorell, 1990). With this third dimension, the JDC model became the job demand-control-support (JDCS) model, which predicts work situations emphasising high demand, low control and low social support (iso-strain job). The relation of these three dimensions can cause the most strain and be harmful to employee well-being (Karasek & Theorell, 1990). Generally, the JCDS model describes the interactions between demands support and control at work. High demand and low control and social support lead to high risk of stress (Choi et al., 2011; Jonge & Kompier, 1997; Karasek & Theorell, 1990; Luchman & González-Morales, 2013; Van Der Doef & Maes, 1999).

Based on the interrelations of these dimensions, this model supports three hypotheses: the strain, iso-strain and buffer hypotheses. The strain hypothesis is that high job demand and low job control cause high risk for psychological strain and physical illness. The iso-strain hypothesis holds that high job demand, low job control and low social support contribute to greater risk of psychophysiological illness. Finally, the buffer hypothesis posits that control and social support buffer the negative effect of high strain on well-being (Karasek & Theorell, 1990; Luchman & González-Morales, 2013). The JDCS model predicts that those who are exposed to high levels of psychological demand and have low levels of job control (including decision authority and skill discretion) are likely to suffer from ill health. Karasek (1979) explained that the interaction between high demand and low control creates a high-strain situation in the workplace, which may lead to negative health outcomes (Theorell & Karasek, 1996). High control is also believed to buffer the effect of high demands on health outcomes.

In summary, the JDCS model emphasises the importance of daily environmental stressors specific to the workplace (Theorell & Karasek, 1996). In this case, the stressors can be related to stimuli (Selye, 1975) and the events that
occur in the workplace environment that a person appraises (Lazarus & Folkman, 1984). Karasek and Theorell (1990) argued that job demand and job control align with the psychological dimension. This means that individuals experience stress at work when they perceive high job demand and low control in the workplace. These can be seen as stressors when a person appraises them as threats to personal health and well-being. This notion is in accordance with the cognitive appraisal described by Lazarus and Folkman (1984).

This model, therefore, is appropriate to describe the circumstances relevant to stress among nurses at work. This dissertation is focused on workplace stressors for emergency nurses. To strengthen the findings of this dissertation, the JDCS model is considered to be appropriate to describe and reflect the experiences and situations of emergency nurses related to stressors in the ED.

Figure 1. Psychological demand–decision latitude model (Theorell & Karasek, 1996).
RATIONALE FOR THE DISSERTATION

Occupational stress among nursing professionals appears to be a global problem. Presently, there is a relatively large amount of knowledge in this area. Most empirical studies on nurses’ workplaces in Asian countries, including Thailand, though, elaborate knowledge from the perspectives of nurses in more general contexts (e.g., medical-surgical units and nursing homes). Knowledge regarding emergency nurses’ stress, therefore, tends to be limited.

This dissertation marks an attempt to explore these stressors and to develop and validate an instrument to measure stressors among emergency nurses in Thailand. This analysis is intended to generate suggestions for changes in, for instance, organisation, social support and education to reduce stress among emergency nurses, which may prevent nursing errors and maintain patient safety. The studies focus on emergency nurses as they provide nursing care in an environment which can be extremely busy, constantly changes and facing unpredictable demands for patient care. These increase the chances that emergency nurses will become much more stressed than nurses who work in general areas.

Concerning stressor measurements for emergency nurses, several questionnaires measure work-related stress and measure stress among nurses. However, to the best of our knowledge, there is no instrument specifically designed to examine stressors among emergency nurses in Thailand. This leads to our objective to develop and validate an instrument to investigate emergency nurses’ occupational stress from a Thai perspective and in a Thai context. The studies in this dissertation are aimed at providing an evidence base on occupational stress in ED, which might be helpful for health care organisations concerned about job dissatisfaction, absenteeism and turnover among emergency nurses. Improvements in these areas may lead to improved nursing care quality, ultimately resulting in enhanced well-being in patients.
AIM

The overall aim of this dissertation is to explore the stressors for Thai emergency nurses and to develop and validate an instrument for measuring stressors for emergency nurses. The specific aims of each study are:

Study I To explore emergency nurses’ perceptions of occupational stress in an ED at a public hospital in Bangkok, Thailand.

Study II To explore nurses’ experiences of occupational stress in EDs in private hospitals in Bangkok, Thailand.

Study III To develop and test the psychometric properties of a questionnaire-based instrument for identifying stressors for emergency nurses.

Study IV To explore the potential relationships between socioeconomic variables and Thai emergency nurses’ experiences of specific stressors.
METHODS

The setting
EDs in both public and private hospitals in Thailand are the setting of this dissertation. Health care services in the public sector in Thailand are provided through either hospitals or health centres classified into three levels of services by the Ministry of Public Health. The first level consists of primary care units or health centres. These health care facilities are located in rural areas and intended to provide primary care, outpatient services and to transfer patients to the next level of health care facilities as needed (Wibulpolprasert, 2011). On the second level of health care facilities are community hospitals, which are located by district and are classified by the number of beds. Large community hospitals have 90–150 beds, medium community hospitals 60 beds, and small community hospitals 10–30 beds. Community hospitals provide basic medical services and transfer patients to higher-level hospitals in cases that require advanced care. The third level of health care facilities consists of general or regional hospitals (also known as the tertiary care level) that provide advanced and comprehensive medical care under one roof. General hospitals are located in provinces or main districts and have 200–500 beds. Regional hospitals are located in provincial centres and have at least 500 beds (Wibulpolprasert, 2011). The private sector applies the same classification by hospital level and size used by the Ministry of Public Health.

In this dissertation, secondary and tertiary health care facilities were the selected study setting as hospitals on these levels provide emergency care through EDs and offer a variety of treatments and health care services. The study participants working in these hospitals, therefore, were likely to have a diversity of experiences in emergency care and a broad perspective on stressful situations. For studies I and II, three hospitals in Bangkok (one public and two private hospitals) were chosen. In studies III and IV, secondary and tertiary hospitals in the four main regions in Thailand were included (Table 1).
Table 1. Number of hospitals in four main regions in studies III and IV.

<table>
<thead>
<tr>
<th>Region (n)</th>
<th>Hospital type</th>
<th>Responses</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Public</td>
<td>Private</td>
<td>Participation</td>
<td>Public</td>
<td>Private</td>
<td>Non-participation</td>
</tr>
<tr>
<td>Central (18)</td>
<td>13</td>
<td>5</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>North-eastern (15)</td>
<td>13</td>
<td>2</td>
<td>5</td>
<td>-</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Northern (4)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Southern (16)</td>
<td>10</td>
<td>6</td>
<td>10</td>
<td>6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total (53)</td>
<td>38</td>
<td>15</td>
<td>26</td>
<td>9</td>
<td>11</td>
<td>7</td>
</tr>
</tbody>
</table>

Study design

Studies I and study II had an explorative, descriptive, qualitative design with a deductive approach. Studies III and IV had a descriptive cross-sectional and correlational design using quantitative methods. An overview of the details of studies I, II, III and IV is shown in Table 2.

Table 2. Overview of the two qualitative and two quantitative studies.

<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Data collection methods</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>21 emergency nurses in a public hospital</td>
<td>Individual interviews with open-ended questions</td>
<td>Content analysis</td>
</tr>
<tr>
<td>II</td>
<td>15 emergency nurses in two private hospitals</td>
<td>Individual interviews with open-ended questions</td>
<td>Content analysis</td>
</tr>
<tr>
<td>III</td>
<td>405 emergency nurses at public and private hospitals in Thailand</td>
<td>Three phases: 1) item generation and preliminary validation of items; 2) pilot testing; and 3) evaluation of the construct validity and reliability of the instrument</td>
<td>Descriptive statistics, I-CVI, coefficient alpha, ICC, EFA, and CFA</td>
</tr>
<tr>
<td>IV</td>
<td>205 emergency nurses at public and private hospitals in Thailand</td>
<td>Stressor Scale for Emergency Nurses</td>
<td>Descriptive statistics and multiple regression analysis</td>
</tr>
</tbody>
</table>

I-CVI = Item validity index; ICC = Intra-class correlation coefficient; EFA = Exploratory factor analysis, CFA = Confirmatory factor analysis
Studies I and II

Participants and setting

Study I

The participants were recruited through purposive sampling. The inclusion criteria were emergency nurses of any gender, with at least a bachelor degree in nursing science, working full-time in an ED, with at least one year of experience in emergency care. The reason for choosing a large public hospital was the diversity of patients’ conditions and treatments, the participants’ demographics and nursing care experiences. The included hospital had more than 600 inpatient beds and provided a variety of treatments, including specialised and general health care services. The participants in study I were 21 emergency nurses working full-time at this public hospital in Bangkok, Thailand. They included 17 women and four men and ranged in age from 23 to 55 years. All the participants had bachelor degrees in nursing science, and one had a master degree in another discipline. Two participants were studying for master degrees in nursing science. The participants’ years of experience in emergency care ranged from 1 year to more than 21 years. All the emergency nurses invited agreed to participate in the interviews.

Study II

The same recruitment procedure and inclusion criteria used in study I were applied to select the participants in study II. Two large private hospitals were selected to ensure representation of diverse nursing care experiences and patient demographics, conditions and treatments. The two hospitals had more than 200 inpatient beds each and provided a variety of treatments and health care services. The participants who worked in these hospitals, therefore, were likely to have diverse experiences in emergency care and a broad perspective on stressful situations. All the ED nurses (n = 28) working in these two hospitals were invited to participate, but 11 who had less than one year of experience in emergency care were excluded, and two ED nurses were not willing to participate. Twelve women and three men with a median age of 27 years (range: 20–39 years) agreed to participate in this study. Nine nurses worked at a private hospital in the central area of Bangkok, and the other six worked at a private hospital in a suburban area of Bangkok. All had bachelor degrees in nursing science and worked full time. Their emergency care experience ranged from 1 to 10 years.
Data collection

The interview guide for the studies I and II (see Table 3) was formulated based on previous research relevant to the JDCS model (Karasek & Theorell, 1990) and occupational stress among emergency nurses (Dwyer, 1996; Healy & Tyrrell, 2011; Helps, 1997; Lim, Hepworth, & Bogossian 2011; Lindström et al., 2000; Ross-Adjie et al., 2007). Follow-up questions were asked to better understand the participants’ experiences. The timing of the interviews was during work shifts, which included morning, evening and night shifts. To obtain data and access the research setting, the researcher needed assistance and facilitation from a gatekeeper (Holloway & Wheeler, 2010; Munhall, 2012), in this case, an emergency nurse at each hospital who participated in the studies. The interviews were carried out at private rooms in the EDs or private locations of the participants’ choice. All the interviews were performed during 2012 and 2013. In study I, the interviews ranged from 45 minutes to one hour. In study II, the interviews lasted 25–80 minutes.

Table 3. Interview guide.

1. Could you tell me about your job description and your responsibilities in your position?
2. Do you think you have control over your work tasks? Work situation? Working hours?
3. Can you choose your work tasks? How?
4. Could you tell me what is stressful in your workplace according to your perceptions?
5. Could you please describe why these factors cause stress in your workplace?
6. Does the stress in your workplace influence your health? In what way does it affect your health?
7. Does your workplace offer you resources, possibilities and facilities to cope with work stress? If yes, what? If no, why?

Follow-up questions:
1. Could you describe that experience?
2. How do you feel about this situation?
3. How does this situation make you feel stress?
Data analysis
The interviews (studies I and II) were analysed using qualitative content analysis (Graneheim & Lundman, 2004). This analysis method emphasises the similarities and differences in texts and, in these studies, was used to conceptually describe the nurses’ experiences of occupational stress. All the interviews were conducted, audio-recorded and transcribed verbatim by the PhD student (NY). They were then translated into English to determine conceptual equivalence and reviewed by a professional linguist to confirm their accuracy and consistency. Words, statements and paragraphs that reflected the essential meanings of the participants’ responses and were relevant to the study aims were identified as meaning units. These meaning units were condensed, abstracted and labelled with codes. The various codes were compared and categorised into sub-categories (sub-themes in study I) and categories (themes in study I). An example of the content analysis is shown in Appendix I.

Study III
This study had a cross-sectional, correlational study design that involved three phases: 1) item generation; 2) content and face validity and test-retest reliability; and 3) evaluation of the instrument’s internal consistency and construct validity. The study was conducted from March 2015 to June 2017. The outline of the development process is shown in Appendix II.

Item generation and response format
In phase I, the preliminary item pool for the Stressor Scale for Emergency Nurses (SSEN) was generated based on a scoping literature review, as described by Davis, Drey and Gould (2009), and the themes/categories and sub-themes/sub-categories from the results of studies I and II. Key terms used to search for relevant articles were ‘occupational stress OR work stress OR stress at work’ AND ‘nurs*’ AND ‘emergency room OR emergency department OR accident and emergency department’. A total of 25 studies (see Appendix III and IV), including both qualitative and quantitative studies, were selected and used for item generation.

The respondents described the extent to which they perceived items as stressful. The chosen response format was a 6-point numerical rating scale that ranged from 0 (‘not at all’) to 5 (‘to a very high degree’). A continuous rating
scale was chosen to prevent the participants from choosing a neutral rating, which would have decreased the sensitivity of the measurement (Streiner & Norman, 2008).

Participants and setting

For content validation of the preliminary items (Phase II), five experts were chosen (see the demographic characteristics of the experts in Table 4). These experts had experience conducting research and a good understanding of the ED context. Face validity was evaluated by the same five experts and four emergency nurses, two from a public hospital and two from a private hospital.

**Table 4. Demographic information of the expert participants who evaluated the content and face validity of the first version of the questionnaire.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Expert #1</th>
<th>Expert #2</th>
<th>Expert #3</th>
<th>Expert #4</th>
<th>Expert #5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>57</td>
<td>63</td>
<td>40</td>
<td>55</td>
<td>48</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Female</td>
</tr>
<tr>
<td>Education</td>
<td>MSc and diploma in advanced practitioner nursing in medical-surgical nursing</td>
<td>PhD</td>
<td>MSc</td>
<td>BSc</td>
<td>MSc</td>
</tr>
<tr>
<td>Current occupation</td>
<td>Registered nurse (government agency)</td>
<td>University teacher (government agency)</td>
<td>Registered nurse (government officer)</td>
<td>Registered nurse (government officer)</td>
<td>Registered nurse (private organisation)</td>
</tr>
<tr>
<td>Position in the organisation</td>
<td>Registered nurse, professional level; nurse supervisor</td>
<td>Senior lecturer; associate professor in the Faculty of Nursing</td>
<td>Registered nurse, professional level</td>
<td>Registered nurse, senior professional level; head nurse of the ED at a public hospital</td>
<td>Registered nurse, senior level; head nurse of the ED at a private hospital</td>
</tr>
<tr>
<td>Years of experience in research</td>
<td>17</td>
<td>32</td>
<td>3</td>
<td>10</td>
<td>0.5</td>
</tr>
<tr>
<td>Emergency care experience or understanding of the context</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
For evaluation of the test-retest reliability of the questionnaire (phase II or pilot testing), convenience sampling was used to recruit participants who fulfilled the criteria as emergency nurses in either public or private hospitals in Thailand, with at least one year of emergency care experience. Thirty emergency nurses from one public (n = 16) and two private hospitals (n = 14) were invited, and all agreed to participate (see Table 5).

For evaluation of construct validity (phase III), the rule of thumb was applied to select a proper sample size for factor analysis. Accordingly, a sample size of 200 was considered to be acceptable (Hair, Black, Babin, & Anderson, 2010). Convenience sampling was used to recruit participants who met the same inclusion criteria as in the pilot test (phase II). EDs in hospitals in four regions in Thailand were randomly selected. Fifty-three hospitals (38 public and 15 private hospitals) were contacted, and 27 public hospitals and eight private hospitals responded and agreed to participate in the study. Of the total 491 questionnaires, 422 were returned, and 405 participants (see Table 5) submitted completed questionnaires, for a response rate of 82%. The data set of 405 participants was split in half. The first 200 completed questionnaires were used to perform exploratory factor analysis (EFA), and the remaining 205 confirmatory factor analysis (CFA) (Kellar & Kelvin, 2013).
Table 5. Demographic characteristic of the participants in phase II (pilot test, n = 30) and III (n = 405).

<table>
<thead>
<tr>
<th>Variable</th>
<th>N (%)</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 30)</td>
<td>(n = 405)</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>36.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>33.9 (8.7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(8.4)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2 (7)</td>
<td>49 (12.1)</td>
</tr>
<tr>
<td>Female</td>
<td>28 (93)</td>
<td>356 (87.9)</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>29 (97)</td>
<td>402 (99.3)</td>
</tr>
<tr>
<td>Part time</td>
<td>1 (3)</td>
<td>3 (0.7)</td>
</tr>
<tr>
<td>Work position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practitioner level</td>
<td>27 (90)</td>
<td>357 (88.1)</td>
</tr>
<tr>
<td>Management level</td>
<td>2 (7)</td>
<td>24 (5.9)</td>
</tr>
<tr>
<td>Others</td>
<td>1 (3)</td>
<td>24 (5.9)</td>
</tr>
<tr>
<td>Years of nursing experience</td>
<td></td>
<td>14.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11.4 (8.9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(9.7)</td>
</tr>
<tr>
<td>Years of emergency care experience</td>
<td></td>
<td>11.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9.4 (7.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(7.5)</td>
</tr>
<tr>
<td>Average working hours per month</td>
<td></td>
<td>258.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>253.3 (63.4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(91.3)</td>
</tr>
</tbody>
</table>
Data collection

The content and face validity of the questionnaire (phase II) was evaluated by five experts and four emergency nurses, with the latter evaluating only face validity. The five experts rated the content validity of the items on a four-point scale: 1 = not relevant, 2 = somewhat relevant, 3 = quite relevant and 4 = highly relevant. To evaluate face validity, open-ended questions were added: ‘Please give your comments and reflections on each statement in this instrument (the 59-item pool of the SSEN) regarding clarity, layout and readability’. ‘Is there anything that you think should be revised’?

Test-retest reliability (phase II) refers to the correlation between two sets of scores from the instrument, with a two-week interval between measurements (Cook & Beckman, 2006; DeVon et al., 2007). In this study, the participants (n = 30) were asked to complete the questionnaire twice two weeks apart. They were also asked how long it took them to complete the questionnaire.

Construct validity and internal consistency reliability (phase III) was tested with 405 selected emergency nurses from four main regions in Thailand.

Procedure

Data were collected in May and December 2015 for phase II and April 2016 and June 2017 for phase III. The initial procedure was performed similarly in phases II and III. The PhD student arranged for a contact person at each hospital, who agreed to participate either by phone or at face-to-face meeting and described the study purpose and inclusion criteria for recruiting participants. The contact persons in this study were emergency nurses, ED head nurses, nurse directors and hospital secretaries at the included hospitals.

In phase II, the 30 participants who agreed to participate received an envelope containing an information sheet, a consent form, and the questionnaire (59-item pool). The respondents were asked to complete the questionnaire in a comfortable place at a time convenient for them and to do the questionnaire twice two weeks apart. The contact person at each hospital distributed the questionnaires to the participants and collected them when the first measurement was completed. Two weeks after the first measurement, the contact persons distributed the questionnaire to the participants a second time. The second questionnaires completed were collected by the contact persons and then submitted to NY.
In phase III, 491 envelope packages including the questionnaire (59-item pool), information sheet and consent form were sent to the contact persons at all the participating hospitals. The contact persons at the hospitals then distributed the envelope packages to the participants as described in the inclusion criteria. The participants were asked to completely answer the questionnaire at a convenient time and place and then put the form in a preaddressed envelope and return it to the contact person. The contact person collected the questionnaires and sent them to NY by regular mail.

Data analysis
An index of content validity per item (I-CVI) was calculated to measure the degree to which the instrument items had an adequate operational definition of the measurement construct and relevant content for the domains in the instrument (Polit, Beck, & Owen, 2007). This index was based on the number of experts who gave an item a rating of either 3 or 4 on a 4-point relevance scale, divided by the total number of experts. An I-CVI value of 0.78 or higher was regarded as acceptable (Polit et al., 2007). Face validity was evaluated based on the comments and reflections on each statement by five experts and four emergency nurses. Next, the items were reviewed and revised following the experts’ and emergency nurses’ recommendations.

The coefficient alpha (Cronbach’s alpha) was calculated to evaluate the internal consistency of the instrument (Kimberlin & Winterstein, 2008). A Cronbach’s alpha value of ≥ 0.70 was regarded as acceptable (DeVon et al., 2007; Tavakol & Dennick, 2011). The test-retest reliability was assessed by calculating the intra-class correlation coefficient (ICC) between the two datasets collected over a two-week interval. The ICC measures the degree of the relationship between measurements in terms of the consistency of absolute agreement. Thus, an ICC of ≥ 0.70 indicates good stability and correlation between the first and second measurements (DeVon et al., 2007; Yen & Lo, 2002).

EFA with varimax rotation using principal component analysis as an extraction method was performed to test the construct validity of the instrument. The purpose of EFA is to investigate the underlying structure of the pattern of correlations among the observed variables (Tabachnick & Fidell, 2007), reduce the number of items and emphasise the apparent factors (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Before EFA, Bartlett’s test of sphericity with P < 0.05 and the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy
of ≥ 0.6 were performed (Tabachnick & Fidell, 2007). The number of extracted factors was determined by examining eigenvalues > 1, the scree test and the Monte Carlo simulation for parallel analysis (DeVellis, 2012; Fabrigar et al., 1999). The factors were rotated with the orthogonal (varimax) rotation with Kaiser Normalisation, and the cut-off point for the factor loadings was 0.60 or higher (Hair et al., 2010; Tabachnick & Fidell, 2007). Descriptive statistics were used to characterise the participants and to evaluate item properties such as skewness and kurtosis.

CFA was performed to test and confirm the factor structure from EFA. The adequacy of the CFA model was assessed through fit indices, including chi-square ($\chi^2$), $\chi^2$/df, the goodness of fit index (GFI) (Bentler & Bonnett, 1980), the comparative fit index (CFI) and the root mean square error of approximation (RMSEA) (Hu & Bentler, 1999). The chi-square statistic should be non-significant but is also sensitive to sample size (Bentler, 1990). We, therefore, also used $\chi^2$/df, with a cut-off < 3 for minimally acceptable ratios, as suggested by Kline (1998). A value of 0.9 or greater indicates acceptable fit for a CFA model in the GFI and CFI (Bentler & Bonnett, 1980). According to the RMSEA rule of thumb, a value of < 0.08 represents a marginal fit, while a value of > 0.10 indicates a poor fit (Hu & Bentler, 1999). The final CFA model was compared with two alternative models to verify the best fit (Hair et al., 2010; Tabachnick & Fidell, 2007). The Akaike information criterion (AIC) was used to estimate the quality of each model, and the lowest AIC value was considered to represent the best model fit (Hu & Bentler, 1999).

Statistical Package for the Social Sciences (SPSS), version 22.0, was used for the analyses. A p-value < 0.05 was regarded as statistically significant.

Study IV

Participants and setting
The participants and setting in this study were the same as in the validation phase (phase III) in study III.

Data collection
The data collection and procedure in this study were the same as in the validation phase (phase III) in study III.
Data analysis

Data were analysed using SPSS (Chicago, IL., USA), version 22.0. Descriptive statistics were used to calculate the mean score for each factor in the SSEN. To investigate the association between sociodemographic variables and the experience of specific stressors for Thai emergency nurses, multiple regression analysis with the stepwise method was performed (Kellar & Kelvin, 2013). All the sociodemographic variables (independent variables) were tested with each stressor in the SSEN (dependent variables). Analysis of variance was calculated to test the significance level of model fit, and the regression coefficient was calculated to describe the influence of sociodemographic variables on stressors in the SSEN (Kellar & Kelvin, 2013).

Ethical considerations

Studies I and II underwent ethical review by the Regional Ethical Review Board in Uppsala, Sweden, (Dnr. 2013/087) and the research ethics committees of the included hospitals in Thailand (IRB/IEC reference 7/2556). For studies III and IV, ethical approval was granted by the ethics or research committees of the provincial public health offices (KB-IRB2016/05.0107) and the included hospitals in Thailand. The studies were conducted in accordance with the Helsinki Declaration. Before the interviews, the study aim and the research design were explained to the participants both verbally and on an information sheet. Written consent was obtained before the interviews to ensure that the participants fully understood the study aim and agreed to participate.

The participants were also informed about the right to withdraw from the study at any time as needed, without giving an explanation. To ensure confidentiality, the participants were assigned code numbers used instead of their names in data analysis (Munhall, 2012; Polit & Beck, 2012). All the questionnaires were saved and stored in a computer file, which required a username and password to access the data. As well, the data are reported on a group level.

The author was aware of that during the interviews, the participants might perceive some questions as uncomfortable. The nurses, therefore, had the right to not answer any question.
FINDINGS

The findings from the four studies reflected Thai emergency nurses’ experiences of occupational stress. The experiences were related to the causes of stress (stressors), stress reactions and ways of coping with occupational stress. An instrument that can measure specific stressors for emergency nurses was developed and validated based on the identified stressors. Sociodemographic variables influenced the experience of specific stressors among Thai emergency nurses.

Stressors

The stressors for Thai emergency nurses were classified as ED-related stressors and human-related stressors (mentioning later in the dissertation). These stressors involved the ED environment (i.e. the characteristics of an ED, work tasks and workload) and organisations’ management system (i.e. rewards systems and types of compensation).

The findings from the interviews (studies I and II) explored stressors in the experiences of public- and private-hospital emergency nurses. The major stressors in public hospitals (study I) were violence in the workplace and heavy workload. The latter consisted of simultaneously performing many tasks, including some roles of physicians, while providing nursing care, completing patient documents and doing another tasks assigned by head nurses.

Due to the characteristics of work in the ED, patients arrive with unpredictable conditions which may be severe. The public- and private-hospital emergency nurses (studies I and II) described that they often had to perform immediate medical procedures, especially while waiting for physicians to attend patients. In such cases, the participants performed physicians’ roles, instead of the nursing role. They described this situation as a stressor related to uncontrollable situations at work.
The characteristics of work in the ED were also reported to be a source of stress in private hospitals (study II). Working in the ED requires providing urgent nursing care to critically ill patients, so the nurses worked under pressure in unpredictable situations. Multiple work tasks and excessive work hours were described as stressors, and in particular, tasks beyond the nursing role made the participants experience high levels of stress.

The organisational management system was identified as a stressor for emergency nurses. The imbalance between the number of nurses and patients was one factor reported in private hospitals (study II). The private hospital directors had no plans to hire more emergency nurses, and this resulted in inadequate nursing staff to cover shifts and high workload for emergency nurses. In addition, financial issues were reported to be a cause of stress. In public hospitals, the nurses described an imbalance between workload and income, while nurses at private hospitals expected to earn more extra pay. These findings revealed differences in organisational support and stress management between public and private hospitals.

Multiple perceived consequences of emergency-department-related stress

The stress reactions found in this dissertation were associated with the emergency nurses’ health and reactions to their workplace and work performance. The described stressors in the ED contributed to stress reactions related to individuals’ ill health, including physical, psychological and social dimensions (work–life conflicts). Stress reactions affected nurses’ performance, resulting in non-holistic care, misinformation, malpractice, substandard care delivery, delayed nursing care and reduced ability due to a loss of concentration and focus.

Uncertainty about resignation was also reported as a reaction to occupational stress. The nurses in both types of hospitals (studies I and II) stated that they were considering resigning from their current workplaces. Some indicated that they might leave private hospitals and work as emergency nurses at public hospitals instead. Similarly, the nurses at public hospitals stated that they might leave their jobs and work as emergency nurses at private hospitals instead.
Ways of coping with occupational stress

The participants (studies I and II) described coping strategies for occupational stress in the workplace, including classic avoidance and distraction. In contrast, talking and debriefing with their colleagues, head nurses and nurse supervisors recalled the classic mechanism of seeking social support, which was experienced as the best way to cope with stress at work. In addition to debriefing and avoiding stressful situations, the participants in private hospitals (II) explained that they turned stress into a challenge and kept thinking positively. Stress could function as a challenge to overcome, proving individuals’ competency.

Stressor measurement

The results of study III yielded the validated instrument called SSEN, a self-administered questionnaire for determining the extent to which a situation in the ED is a stressor for emergency nurses. EFA provided a five-factor solution that accounted for 58% of the cumulative variance. The model structure resulting from EFA was further analysed and confirmed by CFA. The fit indices showed that the final model had acceptable fit, and the final CFA model was compared with two alternative models. The AIC value indicated that four-factor final model was the best model compared to the two alternative model solutions (see Table 6). The final CFA results provided a four-factor solution with 25 items. The factors were life-and-death situations, patients’ and families’ actions and reactions, technical and formal support and conflicts. Cronbach alpha coefficients for the SSEN factors ranged from 0.89 to 0.95.

In this dissertation, stressors related to patients’ and families’ actions and reactions were found to be the most important stressors in both public and private hospitals. The second most important stressors were related to technical and formal support, followed by life-and-death situations, and conflicts. Table 7 shows the four factors and examples of the items.
Sociodemographic factors and stressors

The instrument developed in study III was used to explore the potential relationships between socio-economic variables and Thai ED nurses’ experience of specific stressors (study IV). The sociodemographic backgrounds of the participating emergency nurses (organisation type, educational level and average income) were associated with stressors related to life-and-death situations. Educational level was associated with stressors related to patients’ and families’ actions and reactions, while sociodemographic variables had no influence on stressors related to technical and formal support and conflicts.

Table 6. Results of confirmatory factor analysis of the final model and alternative models.

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$</th>
<th>P</th>
<th>$\chi^2$/df</th>
<th>GFI</th>
<th>CFI</th>
<th>RMSEA (CI)</th>
<th>AIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four-factor final model</td>
<td>658.90</td>
<td>0.00</td>
<td>2.49</td>
<td>0.80</td>
<td>0.91</td>
<td>0.08</td>
<td>658.90</td>
</tr>
<tr>
<td>One second-order factor</td>
<td>678.68</td>
<td>0.00</td>
<td>2.55</td>
<td>0.79</td>
<td>0.91</td>
<td>0.08</td>
<td>796.68</td>
</tr>
<tr>
<td>One general factor</td>
<td>1503.93</td>
<td>0.00</td>
<td>5.57</td>
<td>0.55</td>
<td>0.74</td>
<td>0.15</td>
<td>1613.93</td>
</tr>
</tbody>
</table>

GFI = Goodness of fit index; CFI = Comparative fit index; RMSEA = Root mean square error of approximation; AIC = Akaike information criterion
Table 7. Confirmatory factory analysis results for the four-factor solution with factor loadings, explained variances, Cronbach alpha values of 0.89–0.93 per factor and the mean score of each factor.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Question topic</th>
<th>Factor loading</th>
<th>Explained variance</th>
<th>Cronbach alpha</th>
<th>Mean (SD) (n = 205)</th>
</tr>
</thead>
<tbody>
<tr>
<td>life-and-death situations (F1)</td>
<td>Cardiopulmonary resuscitation</td>
<td>0.88</td>
<td>0.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Death and dying</td>
<td>0.89</td>
<td>0.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A patient with a critical illness</td>
<td>0.84</td>
<td>0.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disaster</td>
<td>0.72</td>
<td>0.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>An accident involving multiple people</td>
<td>0.68</td>
<td>0.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suicide attempt</td>
<td>0.77</td>
<td>0.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>patients’ and families’ actions and reactions (F2)</td>
<td>Encountering verbal assault</td>
<td>0.80</td>
<td>0.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Witnessing colleagues being verbally assaulted</td>
<td>0.87</td>
<td>0.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Witnessing colleagues being physically assaulted</td>
<td>0.88</td>
<td>0.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Encountering physical assault</td>
<td>0.83</td>
<td>0.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High performance demands and expectactions</td>
<td>0.82</td>
<td>0.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Photo and/or video recording posted in a negative way on social media</td>
<td>0.76</td>
<td>0.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of understanding of the triage process</td>
<td>0.65</td>
<td>0.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complaints about nursing performance</td>
<td>0.78</td>
<td>0.61</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7. Confirmatory factory analysis results for the four-factor solution with factor loadings, explained variances, Cronbach alpha values of 0.89–0.93 per factor and the mean score of each factor (continued).

<table>
<thead>
<tr>
<th>Factors</th>
<th>Question topic</th>
<th>Factor loading</th>
<th>Explained variance</th>
<th>Cronbach alpha</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical and formal support (F3)</td>
<td>Broken medical equipment</td>
<td>0.78</td>
<td>0.61</td>
<td>0.89</td>
<td>3.29</td>
</tr>
<tr>
<td></td>
<td>Lack of clear policies</td>
<td>0.81</td>
<td>0.65</td>
<td>0.91</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of necessary medical equipment</td>
<td>0.80</td>
<td>0.64</td>
<td>0.91</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of support from the supervisor or head nurse</td>
<td>0.81</td>
<td>0.65</td>
<td>0.91</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lack of support from the organisation manager or director</td>
<td>0.80</td>
<td>0.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflicts (F4)</td>
<td>Being criticised and/or blamed by a physician</td>
<td>0.92</td>
<td>0.86</td>
<td>0.93</td>
<td>2.83</td>
</tr>
<tr>
<td></td>
<td>Being criticised and/or blamed by a nursing colleague</td>
<td>0.92</td>
<td>0.85</td>
<td>0.93</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Being criticised and/or blamed by a supervisor or head nurse</td>
<td>0.90</td>
<td>0.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feeling uncomfortable with working with a colleague</td>
<td>0.69</td>
<td>0.47</td>
<td>0.93</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Having a conflict with the physician in charge of a patient</td>
<td>0.83</td>
<td>0.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feeling uncomfortable with working with the attending physician</td>
<td>0.70</td>
<td>0.49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION

Methodological discussion

Studies I and II
A qualitative study design is useful for describing individuals’ experiences and providing deeper understanding of individuals’ personal experiences within an area of interest (Holloway & Wheeler, 2010; Munhall, 2012). To increase the quality of this study, the criteria for trustworthiness described by Lincoln and Guba (1985), including credibility, dependability, confirmability and transferability, were applied.

The findings in studies I and II illustrated the experiences of occupational stress among Thai emergency nurses. The strength of these studies was their credibility as data were collected from 36 emergency nurses in both public (n=21) and private (n=15) hospitals in Bangkok, Thailand. The data were diverse as the participants were both men and women, with varied educational levels, emergency care experiences and areas of hospital settings (Holloway & Wheeler, 2010). Additionally, throughout the data analysis, all the researchers repeatedly read and checked the data and discussed the findings to reduce bias and minimise inconsistencies in the data, thereby improving the dependability and confirmability of the study (Lincoln & Guba, 1985; Holloway & Wheeler, 2010).

A possible weakness was that the transcripts were translated from Thai into English by NY. To prevent language barriers in the research, all the interview data were transcribed verbatim in Thai by the first author, who was a native speaker of Thai. The transcripts were then read carefully several times and translated into English by NY, and the English translation was checked and approved by a professional Thai linguist to prevent language loss in the studies. This repetition of tasks ensured that the researchers thoroughly reviewed the transcripts, safeguarding against the risk of translation distortion that often occurs (Squires, 2009). The small sample size in both studies (studies I and II)
makes it difficult to generalise the findings; therefore, the transferability of these two studies is noted as a limitation (Holloway & Wheeler, 2010).

Study III
In phase II, content and face validity were evaluated by four emergency nurses and five experts in the field of emergency nursing. Although some of the five chosen experts had little research experience, and not all were experts in stress research, they had worked in EDs for a long period of time and were familiar with the context. To strengthen the face validity of the instrument, four emergency nurses were invited to evaluate it. Face validity pertains to how test respondents perceive it, so it should be judged by individuals representing the respondents in question, not by experts in the field (Kimberlin & Winterstein, 2008). To enhance this phase, an alternative is to apply the Delphi technique, or group communication and discussion among experts with the aim to build consensus regarding the model, guideline or instrument (Hsu & Standford, 2007). The feedback process in the Delphi technique allows experts to reassess their previous judgements and to consider changing or modifying the text or statement in the instrument or questionnaire. Modifications can be done either by individual panel members in the same group or by panel members in another group (Hsu & Standford, 2007). Applying this technique in the validation phase of the SSEN made the face validity more rigorous and clear as the instrument was reassessed several times.

The construct validity of the instrument was tested through EFA with data on 200 emergency nurse participants. Bartlett’s test of sphericity and KMO confirmed that sample size was adequate for this test; therefore, the results could be considered to be reliable (Tabachnick & Fidell, 2007). Although Kaiser’s (1960) criterion and the parallel analysis using Monte Carlo simulation online software suggested extracting 6–10 factors, we decided to select only 5 factors based on the results from the scree test. This was done to avoid overestimated factor extraction (Tabachnick & Fidell, 2007). As well, a five-factor solution accounted for 58% of cumulative variance, reaching the recommended common variance explained (Tinsley & Tinsley, 1987). Other validity testing methods could have been used, such as concurrent validity, which measures how well the SSEN compares to a well-established instrument, or predictive validity, which evaluates stress reactions such as fatigue, burnout, absenteeism, work performance and intention to leave the current job. Given the time constraints of the current study, it was not possible to use these validity tests.
Although the 34 items in the SSEN were derived from EFA, some possibly important items were eliminated as their factor loading values were less than 0.6. The eliminated items (e.g. patients and their relatives cannot make payments due to hospital policy) may be important stressors for emergency nurses in private hospitals (study II). This issue may be as fewer private-hospital nurses than public-hospital nurses (n = 91 of 405) participated in phase III. Consequently, the cumulative variance in this item was inadequate for running EFA and caused low factor loading (0.12–0.43). In addition to an adequate sample size (Tabachnick & Fidell, 2007), therefore, the homogeneity of the participants should be considered when selecting study participants to prevent unexpected measurements when performing factor analysis.

CFA provided a final model with a four-factor solution and acceptable values for most fit indices. Although the covariance between error terms should not be allowed to co-vary freely (Hair et al., 2010), we allowed some items in our study to share their covariance as the meaning of the items were similar. Letting error terms co-vary can violate the assumptions of the measurement, though the fit indices become better. However, in a complex situation such as the stressful ED setting, it seems realistic that some pairs of items mirrored other concepts rather than the specific stressors intended; therefore, we did not think that the assumptions of the measurement were seriously violated (Hair et al., 2010; Tabachnick & Fidell, 2007). Although the GFI value of the final model was slightly lower than the cut-off point (0.80), our final model had the lowest AIC value (658.90) compared to the two alternative models. This result indicated that the best model solution was found in the current study (Hu & Bentler, 1999). Cronbach’s alpha values ranged from 0.89 to 0.93 per factor, and the ICC was 0.89, indicating good homogeneity and stability for the final 25-item instrument (DeVon et al., 2007; Tavakol & Dennick, 2011).

The strength of this study was that the final model of the SSEN was confirmed by CFA, whereas not all existing instruments have been confirmed by this method. To the best of our knowledge, only one existing measure of nurses’ stress has been confirmed by this method (Admi, Eilon, Renker, & Unhasuta, 2016). Furthermore, we performed CFA using a separate sample from the EFA sample.

The limitation of the SSEN was related to its content validity. It was evaluated by Thai experts and might be validated differently in other contexts, such as
Western or East Asia countries. We recommend reassessing the content validity of the SSEN before using in other contexts.

Study IV
A possible limitation of study IV was the sampling technique. The data in this study came from the same data set used in study III to develop and validate the SSEN (Yuwanich et al., 2017a). The data were collected through convenience sampling, which may limit the generalisability of the study results (Etikan, Musa, & Alkassim, 2016). The small number of nurses working at the management level should also be taken in consideration when trying to generalise the results.

Reflections on the results
The results are reflected on and discussed through the theoretical framework related to health and welfare.

Job demand-control-support model and stress among Thai emergency nurses
The results in this dissertation describe Thai emergency nurses’ experience of stress, including stressors, multiple perceived consequences of ED-related stress and ways to cope with occupational stress. Stressors are a major concern in this dissertation, and the identified stressors can be discussed based on the JDCS model. Job demand is considered to be an important stressor in the model and refers to workload or time pressure. The stressors identified in this dissertation are related to the workplace (i.e. workload and excessive work tasks with limited time) and to humans (i.e. conflict with other health care personnel and disrespect from patients and their relatives). These stressors can be related to psychological job demand in the JDCS model and can have major impacts on health and performance outcomes (Häusser et al., 2010; Karasek & Theorell, 1990). The findings also concern the other two elements in the JDCS model: job control and social support. Job control is associated with skill discretion and decision-making authority, and social support at work refers to the overall level of helpful social interactions with either co-workers or supervisors (Karasek & Theorell, 1990).
The emergency nurses in public and private hospitals inevitably encountered heavy workload under time pressures, and their decision-making authority was limited although they were fully skilled in nursing care. These factors were associated with poor job control, particularly low decision-making authority in the workplace. This finding is consistent with the work of Adrienssens et al. (2011) and supports the high strain hypothesis of the JDCS model, which states that high job demand and low job control lead to psychophysiological ill health among employees (Karasek & Theorell, 1990; Luchman & González-Morales, 2013).

Regarding the support dimension of the JDCS model (Karasek & Theorell, 1990), the emergency nurses in the interview studies (studies I and II) received support from other emergency nurses, nurse supervisors, ED head nurses and nurse managers. This support included debriefing and handling stressful situations and was experienced as efficient stress management. These findings are consistent with those of Healy and Tyrrell (2013). This experience, therefore, was not in line with the iso-strain hypothesis that high job demand, low job control and low social support cause great risk of stress at work (Karasek & Theorell, 1990). Although the private-hospital managers provided some activities aimed at relieving stress, the participants commented that it was insufficient (study II). In contrast, the participants at the public hospitals perceived a lack of organisational support from hospital directors. These findings could indicate that private hospitals have different support systems than public hospitals.

The SSEN items (study III) can be related to the JDCS model as they were partly generated from the results of studies I and II, using a deductive approach (Munhall, 2012) based on the JDCS model with the aim to explore ED nurses’ experiences of work-related stress. For example, in factor 3, technical and formal support, the item ‘lack of clear care policy for treating a patient’, reflected the job demand dimension, while the item ‘no support from colleagues in the ED’ reflected the support dimension. However, the SSEN items cannot display the interactions between each dimension as shown in the JDCS model. It, therefore, cannot be used to describe strain and the iso-strain hypothesis in the JDCS model (Karasek & Theorell, 1990).

The sociodemographic backgrounds of the emergency nurses, including organisation type (public or private), educational level and average income, appeared to have a relationship to the stressors in the SSEN. The participants’
sex, age, work position and emergency care experience had no influence on to what degree they perceived the stressors itemised in the SSEN.

Organisation type (public or private) was associated with stressors related to life and dead situations. This is in line with a previous study reporting that nurses working in public and private hospitals have different levels of occupational stress (Nabirye, Brown, Pryor, & Maples, 2011). In other words, the emergency nurses in both types of organisations (public and private hospitals) perceived life-and-death situations as occupational stress differently due to management of trauma and non-trauma patients with critical condition and other crisis situations (Yuwanich, Akhavan, Nantsupawat, & Martin, 2017b).

The emergency nurses’ educational background was found to be a significant sociodemographic factor associated with stressors related to patients’ and families’ actions and reactions. This finding is supported by previous studies showing that nurses with high educational levels (i.e. master degrees) experience occupational stress (Nabirye et al., 2011) and exhibit high job strain and low control at work (Sakkomonsri, Suwan-Ampai, & Kaewboonchoo, 2016; Trousselard et al., 2016). This dissertation shows that educational level and work position could be related as most nurses at the management level held master degrees and primarily dealt with patients and their relatives when problems occurred. According to the findings from our previous qualitative study (Yuwanich et al., 2017b), when patients could not pay for services, the ED nurses at the practitioner level requested that their nurse supervisors contact other hospitals where the patients could receive health care services under their health care scheme. This situation can explain why emergency nurses who had master degrees and worked at a management level inevitably encountered stressful situations even as they had to complete their tasks. This finding is in line with the JDCS model of high job demand and low control (Karasek & Theorell, 1990).

Human-related stressors

The human-related stressors for emergency nurses involved patients, their relatives and other health care personnel in and outside the ED. Situations involving patients and their relatives were reported to be a common stressor in the ED. Patients and their relatives’ misunderstanding of triage system was reported to be a common stressor (studies I and II). However, only the nurses in private hospitals (study II) described patients and relatives’ behaviour as related to stress. This finding clarified that patients and their relatives had high
demands and expectations as they paid high prices for medical and nursing services. Sometimes those behaviours had detrimental effects on the nurses.

When exploring the experienced stressors, using the SSEN (study IV), patients’ and families’ actions and reactions were shown to be the most important stressor for the participating emergency nurses. This result was supported by previous studies (Adriaenssens et al. 2015b; Yuwanich et al. 2016). Some items in this factor, such as encountering verbal assault by patient and/or their relatives, were related to violence in the ED. Albashtawy (2013) found that verbal violence was the most common violent event related to stress in the ED. In addition to patients’ and their relatives’ reactions, patients in critical and crisis conditions were found to cause stress for nurses at both types of hospitals.

Another human-related stressor was conflicts among emergency nurses and other health care personnel in either the ED or other departments (studies I and II). The most common stressful situation related to conflict that the nurses experienced as a stressor was nurse–physician conflict which also has been described in previous studies (Hamdan et al., 2017; Happell et al., 2013; Healy & Tyrrell, 2011). Interestingly, the results from stressor measurement using the SSEN showed that conflict was found to be the lowest significant stressor for the emergency nurses (study IV).

**Occupational stress related to health and welfare**

The findings showed that stressors at the ED affected Thai emergency nurses, leading to several reactions. The stressors found were in line with the general definition of stressor as factors or events that threaten individuals’ health or diminish normal functioning (Pacák & Palkovits, 2001). Furthermore, the stressors found were in accordance with Selye (1975) and Lazarus (2006), who viewed stressors as environmental stimuli with the potential to cause stress to individuals. The stress caused by environmental stimulus can be described through the JDCS model. It posits that stress at work (job strain) is caused by the interaction of high levels of job demands (e.g., too many work tasks under time limit) and low control (e.g., the inability to make any decisions at work) (Karasek, 1979). In this dissertation, occupational stress had impacts on emergency nurses’ psychophysiological health. This experience is in line with the JDCS model, which holds that the interaction between high job demand and low control at work impairs workers’ health (Karasek & Theorell, 1990; Luchman & González-Morales, 2013).
Although the JDCS model supports that job strain affects emergency nurses’ psychophysiological health, the pathway or mechanism of health impairment cannot be described through this model. The imbalance of job demand and job control, though, results in environmental stressors, which can be viewed as environmental stimulus, and can cause stress when appraised as a threat to personal health and well-being (Lazarus & Folkman, 1984). A possible way to describe stress-related health impairment is to discuss it from the physiological perspective. Stimuli that occur at work have the potential to induce the neural and hormonal pathways and lead to physical and psychological responses (Bamber, 2007; Stratakis & Chrousos, 1995). These responses explain why the emergency nurses in this dissertation had psychophysiological ill health related to occupational stress.

In addition to psychophysiological ill health, the stress experiences found in this dissertation indicated work–life conflict resulting from occupational stress. This finding supported results from previous studies showing that occupational stress affects individual health, families and society (Mohajan, 2012; Sauter et al., 2009).

It is clear that occupational stress affects Thai emergency nurses’ health, but health is a broad concept, and its definition has changed over time. To describe emergency nurses’ health related to occupational stress, a suitable concept of health is needed. The most widely used health concept is the WHO’s (1948) definition of health as a state of complete physical, mental and social well-being. However, using this health concept to describe the emergency nurses’ health related to occupational stress in this dissertation appeared to be impossible as the possible completeness of those elements contrasted with the findings. From this perspective, it may appear that the emergency nurses had only poor health.

Another health concept from Antonovsky’s (1996) salutogenic model is considered. This concept focuses on the sense of coherence (SOC) and the ability to use resources to create one’s own health in a crisis situation or condition (Antonovsky, 1996). Turning to the findings, the emergency nurses reflected that they experienced health impairment related to occupational stress but attempted to find some resources to maintain their health and ability to work in the ED. Support from talking with and debriefing colleagues, head nurses and nurse supervisors was described as a coping strategy by the emergency nurses. This coping strategy was experienced as effective stress management, as described by Healy and Tyrrell (2013), and was related to the available resources.
in the salutogenic model (Antonovsky, 1996). Based on the assumptions of the salutogenic model, this coping strategy can be viewed as a resource that helped increase the nurses’ SOC with aim to defend against any factor that damaged health (Lindström & Eriksson, 2006). It can be explained as the emergency nurses’ attempt to maintain their health while working in a stressful workplace by using the available resource to cope with occupational stress. This discourse accords with a previous study finding that health care students reported high levels of SOC when using active coping and indicated enjoying a good health education environment (Gambetta-Tessini, Mariño, Morgan, & Anderson, 2016).

The occupational stress found among Thai emergency nurses in this dissertation was caused health impairment and work–life conflicts, which were related to negative stress or distress, as described by Selye (1975). Moreover, we found that occupational stress in the ED contributed to negative work-related responses, including poor nursing care performance and uncertainty concerning resignation from one’s current nursing job. These negative responses are congruent with previous studies (Kirwan et al., 2013; Kwak, Chung, Xu, & Ean-Jung, 2010; Verrall et al., 2015) and may be related to a shortage of emergency nurses (Sawatzky & Enns, 2012). The nurses’ negative work-related responses may influence Thai health care system by resulting in an inadequate health workforce and poor-quality health services. This situation may indicate that the nurse shortage in Thailand will become worse in the future as at present, the nursing profession has approximately 43,250 empty positions (Srisuphan & Sawaengdee, 2012). Moreover, the negative responses to stress were related to poor-quality nursing care in both types of hospitals. Stress-related excessive work tasks and high workload among nurses, in particular, led to non-holistic care, misinformation, malpractice and substandard performances, which can all cause low patient safety (Kirwan et al., 2013; Verrall et al., 2015).

In stress appraisal and coping, individuals who perceive stress try to find ways to cope with it (Lazarus & Folkman, 1984). This dissertation also found that the nurses used coping strategies to alleviate occupational stress. Nurses who encountered stressful situations walked away from them in the coping method called avoidance (Healy & McKay, 2000). However, the nurses discussed that after they walked away from these stressful situations at work, they returned to face the situations and solve the problems. This problem solving in our
findings was congruent with previous research finding that nurses’ coping pattern includes seeking support, problem solving and self-control (Lim, Bogossian, & Ahern, 2010). This coping pattern was also described as emotion- and problem-focused coping (Folkman & Lazarus, 1980; Lazarus, 2006). Although emotion-focused coping is used initially, individuals tend to employ both forms of coping to deal with stressful encounter (Folkman & Lazarus, 1991). Accordingly, the emergency nurses ultimately adopted problem-focused coping to handle stress. These findings are supported by previous studies reporting that the most frequently used coping methods among nurses are problem-focused (Lim et al., 2010; Ashker, Penprase, & Salman, 2012).

Interestingly, the findings from study II revealed another coping strategy: a positive reaction to occupational stress. The emergency nurse participants described that when they encountered stressful situations at work, they turned stress into a challenge, viewing it as an opportunity to demonstrate professional competence. This different reaction to stress was described by Selye (1975), who stated that individuals’ reactions to stress differ according to their adaptation to the stressor. This reaction by nurses is a positive reaction to stress, or eustress (Lim et al., 2010), which has rarely been found in research on nurses’ stress. This finding could be a contribution of new knowledge from this study.

Karasek and Theorell (1990) adopted a different viewpoint regarding positive stress-response than Selye’s GAS model (Selye, 1975). The JDCS model shows that even amid high job demands, workers have the ability to control or make decisions at work and seek good support, which can lead to active learning at work (Karasek & Theorell, 1990). Thus, it can be presumed that nurses in private hospitals (study II) may have good support from colleagues and supervisors and a level of job control to buffer job demand and react positively to stress.
CONCLUSIONS

Emergency nurses in Thai private and public hospitals frequently experienced occupational stress, and these experiences could be described through the JDCS model. Heavy workload, delayed admissions to other departments, difficulties working in multidisciplinary contexts and problems related to patients and their relatives were reported as stressors. The similarities of the occupational stressors experienced by the emergency nurses at both types of hospitals may be related to the nature of the ED.

Unlike the nurses in public hospitals, the nurses in private hospitals did not experience violence at the ED and complained less about low salaries. However, private-hospital nurses described patients’ and their relatives’ frustration and dissatisfaction with not receiving the care and emergency medical services for which they paid dearly as the main stressors, which could lead to ethical dilemmas for nurses. Although the Ministry of Public Health has launched the UCEP policy to solve payment problems for emergency care services in private hospitals, some private hospitals have not adopted this policy. Consequently, emergency nurses in these private hospitals still inevitably encountered this ethical dilemma. Disrespect from patients and their relatives was also a stressor not encountered in public-hospital settings.

The responses to and consequences of stress among emergency nurses were similar, including psychophysiological ill health, consideration of leaving one’s current emergency nursing job and reduced quality of nursing care. However, only nurses at private hospitals felt positively challenged and encouraged by certain stressful situations. This positive response to stress has rarely been found among nurses and is new knowledge contributed by this dissertation.

Emergency nurses in both types of hospitals mostly received support from close colleagues, head nurses and nurse supervisors. Organisational support was not present in public hospitals but was reported to be present to a degree.
in private hospitals. Similarly, the nurses desired additional support, especially financial support (e.g. extra payment for specific competences) as compensation for stressful work. The difference in the nurses’ experiences of support may be due to differences in the two type hospitals’ management systems, rewards and compensation.

The empirical knowledge from the two qualitative studies was useful and contributed practical knowledge, such as the development of a new instrument (study III). The further measurement by using the new instrument provided evidence that the stressors related to patients’ and families’ actions and reactions were the most important stressors for the participating emergency nurses. Furthermore, sociodemographic factors were important influences on the specific stressor for Thai ED nurses (IV).

The specific instrument to measure stressors among emergency nurses developed in this dissertation is a new contribution to the knowledge of stressors in EDs. The comparison of private and public hospitals contributes to better understanding of the experience of occupational stress among Thai emergency nurses.
FUTURE RESEARCH

Patient safety should be further studied to understand both emergency nurses’ and patients’ perspectives regarding the consequences of occupational stress for patient safety. Different perspectives may create a knowledge base which can be used to develop guidelines or protocols aimed at reducing nurses’ stress and preventing its consequence, such as low patient safety. As well, positive stress in nurses’ workplace needs to be further explored, particularly how it affect nurses’ health and caring performance.

The SSEN is intended to identify stressors for emergency nurses so that they can be addressed, and the work environment or situation modified. To evaluate changes in perceived stressors, the predictive validity of the SSEN for stress reactions (e.g. fatigue, burnout, absenteeism, work performance and intention to leave one’s current job) should be evaluated.
IMPLICATIONS

The results from studies I and II can be useful and beneficial for public and private hospitals to develop stress management programmes and policies and guideline procedures related to the prevention and management of occupational stress for emergency nurses. This could reduce stress and support emergency nurses in appropriate ways. The current studies (studies I and II) demonstrate that emergency nurses work in a stressful environment. This environment affects the job characteristics in the ED, which are important determinants of occupational stress and have health-related and organisational consequences. Managing the work environment thus may tend to diminish stress and prevent ill health related to occupational stress.

Patients’ and their relatives’ misunderstandings of the triage system in the ED are another major stressor identified in the studies. To reduce misunderstandings, information about the triage system should be developed and distributed to patients and their relatives. Such information could not only diminish misunderstanding, but we believe that it could also increase patients’ satisfaction. Healy and Tyrrell (2013) reported that debriefing is important to reduce occupational stress for nurses in the ED. The results in studies I and II also show that debriefing by colleagues and supervisors can reduce the experience of stress in the ED. Consequently, the development of debriefing programmes may be useful to manage occupational stress in the ED.

The interview studies (studies I and II) identify the consequences of occupational stress among ED nurses, particularly feelings of uncertainty about whether to leave or continue working at their current workplace or to leave the profession. These can lead to higher turnover and shortages of ED nurses. We, therefore, suggest that policymakers, as well as organisations in both the public and the private sectors, take greater responsibility for work-related stress by attempting to reduce the causes of stress and to provide employees with appropriate support. As the nurses in the study (II) suggested, organisations should consider increasing the nursing staff to create a better balance between the number of patients and nurses. Doing so may reduce workload,
mitigate the cause of stress and ultimately prevent nurses from leaving their jobs. The study findings may be beneficial for developing and implementing policies and guidelines to prevent and manage occupational stress in the ED. For example, policies regarding work task should be created or revised to regulate emergency nurses’ assigned tasks and to ensure their right to choose to perform only nursing care tasks and not other tasks outside nursing care. We believe that such policies could reduce the multiple tasks among emergency nurses and ultimately prevent the cause of stress.

The SSEN (studies III and IV) developed to measure specific stressors for emergency nurses can be used by organisations and researchers. The instrument is useful for emergency head nurses, nurse managers and hospital directors to identify the current stressors in the ED in their organisations. The measurement results can be used to discuss and plan to reduce stressors for emergency nurses. Together with the predictors in study IV, it should be taken into account when planning and providing stress management in the workplace.
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SAMMANFATTNING PÅ SVENSKA

Syftet med denna avhandling är att identifiera stressorer hos thailändska akutsjuksköterskor och att utveckla och validera ett instrument för att mäta specifika stressorer för akutsjuksköterskor.


Akutsjuksköterskor på både privata och offentliga sjukhus (studie I och II) upplevde ofta arbetsrelaterad stress, som påverkade deras psykofysiologiska hälsa och orsakade brister i omvårdnaden av patienter. Likheten mellan arbetsrelaterade stressorer, som akutsköterskorna upplevde på båda typerna av sjukhus, kan förklaras av akutavdelningarnas speciella verksamhet. Skillnaderna i sjuksköterskornas erfarenheter av arbetsrelaterad stress och organisationsstöd kan bero på skillnader mellan de offentliga och privata sjukhusen i ledningssystem, belöningssystem och form av ersättning.

Så vitt vi vet finns det inte något validerat instrument för att mäta stressorer på akutsjuksköterskor arbetsplatser. Därför utvecklades och validerades ett nytt instrument (studie III). Metoderna i denna studie bestod av tre faser, 1) generering och kategorisering av frågor 2) innehålls och ytaanalys och repeaterbarhet och övergripande giltighet, samt 3) utvärdering av instrumentets interna konsistens och begreppssäkerhet. För den explorativa faktoranalysen (med varimaxrotation) användes svaren från 200 akutsköterskor. Trettioen faktorer med faktorvikt > 0,60 i den explorativa faktoranalysen testades vidare med konfirmatorisk faktoranalys av svaren från 205 akutsköterskor. Cronbach’s alpha-värden och intra-class koeficienter beräknades. Den explorativa faktoranalysen gav en fem-faktorslösning och den konfirmatoriska faktoranalysen gav en slutlig fyra-faktorslösning med 25 kategorier fördelade på
faktorerna Liv- och dödsituationer, Patientens och familjens handlingar och reaktioner, Tekniskt och formellt stöd och Konflikter. Cronbach’s alfa-värdena varierade mellan 0,89 - 0,93 per faktor och korrelationskoefficienten var 0,89, vilket indikerar god homogenitet och stabilitet.


Fortsatt forskning kring patientsäkerhet på akutmottagningar bör fokusera både på akutsjuksköterskans och patientens perspektiv med beaktande av konsekvenserna av arbetsrelaterad stress på patientsäkerheten. Olika perspektiv kan skapa en kunskapsbas som kan bidra till utvecklandet av riktlinjer med syfte att minska stress hos akutsjuksköterskor och förebygga dess konsekvenser, såsom låg patientsäkerhet. Den positiva stressen på akutsjuksköterskornas arbetsplats behöver ytterligare undersökas med avseende på hur det påverkar sjuksköterskornas hälsa och omvårdnad.

Nyckelord: akutsköterskor, arbetsrelaterad stress, frågeformulär, privata sjukhus, offentliga sjukhus, instrumentutveckling, validering.
บทคัดย่อภาษาไทย

cุณีภูมิภัทร์นิมิตรอุปราช์* ศึกษาปัจจัยที่ทำให้เกิดความเครียดของพยาบาลที่ปฏิบัติงาน
ณ แผนกอุบัติเหตุและฉุกเฉินในประเทศไทย และเพื่อพัฒนาและตรวจสอบเครื่องมือวิจัยที่ใช้
ในการวิจัยปัจจัยที่ทำให้เกิดความเครียดที่เฉพาะเจาะจงสำหรับพยาบาลที่ปฏิบัติงาน ณ แผนก
อุบัติเหตุและฉุกเฉิน คุณภูมิภัทร์นิมิตรอุปราช์เป็นตัวอย่างของการศึกษาวิจัยเชิงคุณภาพของเรื่องและ
การศึกษาวิจัยเชิงปริมาณของเรื่อง ข้อมูลที่ใช้ในการศึกษานั้นได้มาจากการสัมภาษณ์
และการศึกษาแบบทางความสัมพันธ์ (การศึกษาที่ 1 และ 2) และจากการศึกษาแบบภาคตัดขวาง
และการศึกษานัยทางความสัมพันธ์ (การศึกษาที่ 3 และ 4) ในการศึกษาที่ 1 และ 2 ผู้วิจัย
ทำการศึกษาโดยใช้วิจัยเชิงคุณภาพแบบพรรณนา เบื้องต้นโดยการสัมภาษณ์ด้วยคำถาม
แบบสั้นโครงสร้างโดยมีวัตถุประสงค์เพื่อให้ข้อมูลเชิงลึกเกี่ยวกับความเครียดของพยาบาล
ที่ปฏิบัติงาน ณ แผนกอุบัติเหตุและฉุกเฉิน กลุ่มตัวอย่างที่สัมภาษณ์ประกอบไปด้วยพยาบาล
ที่ปฏิบัติงาน ณ แผนกอุบัติเหตุและฉุกเฉินในโรงพยาบาลรัฐบาลจำนวน 21 คน โรงพยาบาล
เอกชนจำนวน 15 คน ผู้วิจัยทำการวิเคราะห์เนื้อหาในท่าทีของข้อมูลที่ได้จากการ
สัมภาษณ์เชิงลึก ผลจากการวิเคราะห์ข้อมูลประกอบไปด้วยสมองประกอบประกอบหลักการดังนี้ 1)
ปัจจัยที่มีผลกระทบที่ทำให้เกิดความเครียดในแผนกอุบัติเหตุและฉุกเฉิน 2) ปัจจัยที่เกี่ยวข้องที่
ก่อให้เกิดความเครียดในระดับบุคคล และ 3) การปรับรูปแบบวิธีการและวิธีการที่
ก่อให้เกิดความเครียดที่เกี่ยวข้องในแผนกอุบัติเหตุและฉุกเฉิน ผลการวิจัยพบว่าพยาบาลที่
ปฏิบัติงาน ณ แผนกอุบัติเหตุและฉุกเฉิน ทั้งในโรงพยาบาลรัฐบาลและโรงพยาบาลเอกชนมี
ประสบการณ์ที่มีเหตุการณ์ที่มีความเครียดในที่ทำงาน ซึ่งความเครียดนั้นส่งผลกระทบต่อ
สุขภาพกายและสุขภาพจิต ซึ่งส่งผลต่อความพร่องในปฏิบัติการพยาบาล นอกจากนี้พบว่า
พยาบาลที่ปฏิบัติงาน ณ แผนกอุบัติเหตุและฉุกเฉิน ทั้งในโรงพยาบาลรัฐบาลและ
โรงพยาบาลเอกชนมีประสบการณ์ความเครียดที่คล้ายคลึงกัน อาจจะเกิดจากลักษณะการให้บริการของแผนกฉุกเฉินและอุบัติเหตุ ในส่วนประสบการณ์ที่มีความแตกต่างกันในด้านความเครียดและการสนับสนุนจากองค์กร อาจจะเป็นผลมาจากระบบการจัดการขององค์กร การให้รางวัลเพื่อเป็นแรงจูงใจ และการเจรจาแทนที่แยกต่างกันระหว่างโรงพยาบาลรัฐบาลและโรงพยาบาลเอกชน

จากการทราบรวบรวมความที่เกี่ยวข้องพบว่าจึงไม่มีเครื่องมือสำหรับประเมินปัจจัยที่เกี่ยวกับความเครียดของพยาบาลที่ปฏิบัติงาน ณ แผนกฉุกเฉินและอุบัติเหตุ ดังนั้นในการศึกษาที่ 3 ผู้วิจัยจึงได้พัฒนาและทดสอบเครื่องมือเพื่อประเมินปัจจัยที่เกี่ยวกับความเครียด โดยประกอบไปด้วยขั้นตอนดังนี้ 1) การสร้างข้อคำถาม 2) การตรวจสอบความเที่ยงตรงตามเนื้อหา ความเที่ยงตรงที่ปรากฏภายนอกและความคงที่ของเครื่องมือวิจัยใช้ วิธีการทดสอบครับ และ 3) การประเมินความเชื่อมั่นของเครื่องมือวิจัยจากการวิเคราะห์ความคงที่ของความเที่ยงตรงและการวิเคราะห์ข้อคำถามโดยผู้วิจัยได้ทำการวิเคราะห์องค์ประกอบเชิงสภาวะและหมูแบบโดยวิธีจัดการเปลี่ยนแปลงของข้อมูล 200 ชุดจากการตอบแบบสอบถามของพยาบาลที่ปฏิบัติงาน ณ แผนกฉุกเฉินและอุบัติเหตุ จากผลการวิเคราะห์ดังกล่าวทำให้เกิดข้อคำถามทั้งหมดที่มีค่าหนักองค์ประกอบมากกว่า 0.6 จำนวน 31 ข้อและได้ทำการวิเคราะห์เพิ่มเติมโดยวิธีการวิเคราะห์องค์ประกอบเชิงชั้นล่าง โดยผู้วิจัยได้ทำการจัดการเปลี่ยนแปลงของพยาบาลที่ปฏิบัติงาน ณ แผนกฉุกเฉินและอุบัติเหตุ จากผลการวิเคราะห์องค์ประกอบเชิงสภาวะทำการวิเคราะห์ ทำให้ได้องค์ประกอบทั้งสิ้น 5 องค์ประกอบ จำนวนจากองค์ประกอบชั้นล่างที่มีค่าหนักองค์ประกอบมากกว่า 0.6 จำนวน 4 องค์ประกอบ โดยประกอบไปด้วย 25 ข้อคำถามซึ่งแบ่งเป็น องค์ประกอบที่เกี่ยวข้องกับความเป็นอยู่และความต้องการของผู้ป่วยและญาติ องค์ประกอบที่เกี่ยวข้องกับการทำงานและ การแสดงพฤติกรรมของผู้ป่วยและญาติ องค์ประกอบที่เกี่ยวข้องกับการสนับสนุนทางด้านสุขภาพและการสนับสนุนอย่างเป็นทางการ และองค์ประกอบที่เกี่ยวข้องกับความขัดแย้ง นอกจากนี้ผู้วิจัยยังได้ทดสอบค่าสัมประสิทธิ์อัลลีนและค่าความเชื่อมั่นของเครื่องมือวิจัยโดยการทดสอบซ้ำจำเป็นกว่าค่าสัมประสิทธิ์อัลลีนอยู่ระหว่าง 0.89 ถึง 0.93 ต่อองค์ประกอบ 66
เครื่องมือวิจัยที่พัฒนาขึ้นใหม่ในการศึกษาที่ 3 ได้ถูกนำมาใช้ในการศึกษาที่ 4 โดยมี วัตถุประสงค์เพื่อศึกษาปัจจัยที่มีผลต่อการรับรู้ถึงปัจจัยที่ทำให้เกิดความเครียดที่เฉพาะเจาะจงของพยาบาลที่ปฏิบัติงาน
ณ แผนกอุบัติเหตุและฉุกเฉินในประเทศไทย จากผล การศึกษาพบว่าลักษณะขององค์กรระดับการศึกษา และรายได้เฉลี่ยมีความสัมพันธ์กับปัจจัยที่ทำให้เกิดความเครียดที่เกี่ยวข้องกับความเป็นและความตาย ซึ่งระดับการศึกษาเป็นปัจจัยที่ท้า
ความของปัจจัยที่ทำให้เกิดความเครียดที่เกี่ยวข้องกับการทำงานและการแสดงพฤติกรรมของผู้ป่วยและญาติ ในขณะที่ปัจจัยที่พัฒนาขึ้นใหม่ที่มีผลต่อองค์ประกอบที่เกี่ยวข้องกับการสนับสนุนทางด้านเทคนิคและการสนับสนุนอย่างเป็นทางการ และองค์ประกอบที่เกี่ยวข้อง กับความขัดแย้ง

การศึกษาในอนาคตที่เกี่ยวข้องกับความปลอดภัยของผู้ป่วยควรมุ่งเน้นถึงกิจกรรมของตัวผู้ป่วยเองและพยาบาล โดยศึกษาถึงผลกระทบจากความเครียดในที่ทำงานซึ่งจะส่งผลต่อความปลอดภัยของผู้ป่วย ดังนั้นการพัฒนาแนวทางการปฏิบัติเพื่อลดความเครียดในพยาบาลและป้องกันผลกระทบจากความเครียดของผู้ป่วย ในขณะเดียวกันผู้วิจัยแนะนำว่าควรทำการศึกษาเพิ่มเติมในเรื่องของความเครียดเชิงบวกในพยาบาล ซึ่งมีผลกระทบต่อสุขภาพและการทำงาน สำหรับพยาบาลที่ปฏิบัติงาน ณ แผนกอุบัติเหตุและ ฉุกเฉิน

ค่าสัมพันธ์: พยาบาลแผนกอุบัติเหตุและฉุกเฉิน ความเครียดในที่ทำงาน แบบสอบถามโรงพยาบาลรัฐบาล โรงพยาบาลเอกชน การพัฒนาเครื่องมือวิจัย การตรวจสอบเครื่องมือวิจัย

คำสำคัญ: ความเครียด ความปลอดภัย แบบสอบถาม


Sauter, S., Murphy, L., Colligan, M., Swanson, N., Hunell, J., Scharf, F., … Tisdale, J. (2009). *Stress... at work (NIOSH)*. Cincinnati, IL: DHHS (NIOSH)-CDC.


Appendix I. Example of content analysis

<table>
<thead>
<tr>
<th>Identifying the meaning units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Words, statements, and paragraphs that reflected the participants' experiences of occupational stress at the ED as well as stress based on the JDGS model, were identified as meaning units.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condensing the meaning units and coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>The meaning units were condensed and labelled with a code.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Creating the sub-categories and categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>The various codes were compared due to differences and similarities, and they were then sorted into sub-categories. Finally, the emerged sub-categories that had a similar meaning were categorized into a category which constitute the manifest content.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interview #1</th>
<th>Interview #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning units: You have to understand that patient's relatives at the private hospital just want to talk with the physician, not the nurses. They do not trust when they talk to the nurses. We have inadequate physicians here; thus, talking to the patient's relatives becomes our responsibility.</td>
<td>There is a problem associated with the ability for patients to pay at a private hospital. I would say this is totally different from a public hospital. In cases of accidents and emergencies, when the patient has been transferred to ER, we have to help them first because our department is different from others, such as the medical-surgical outpatient department or the health check-up unit, where patients could make a plan and independently choose to have a health care service by themselves. Whenever we could not clear a patient's finances or could not find a hospital to refer the patient to for further treatment due to their right-of-health care scheme, this makes me feel stressed, because it is one thing that I cannot control and I have to ask the nurse supervisor for help.</td>
</tr>
</tbody>
</table>

| Condensed meaning units | A patient's relative at the private hospital wants to talk to the physician, not to nurses. They do not trust the nurses. We have inadequate physicians here; thus, talking to the patient's relatives becomes our responsibility. | In cases of accidents and emergencies, when the patient has been transferred to ER, we have to help them first because our department is different from others. When we cannot clear a patient's finances or find a hospital to refer the patient for further treatment, this makes me feel stressed and need help from the nurse supervisor. |

<table>
<thead>
<tr>
<th>Codes</th>
<th>Patients' relatives do not trust the nurses. The patient's ability of paying for emergency care services.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-categories</td>
<td>Confronting the situation of providing emergency care for patients and their relatives. Confronting the situation of providing emergency care for patients and their relatives.</td>
</tr>
</tbody>
</table>

| Category | Work context is an issue. |
Appendix II.
Phases of development and validation of the instrument in study III
(Yuwanich et al. 2017a)

1. Item generation:
A preliminary 74-item pool was generated from the literature review and interviews (Yuwanich et al., 2016, 2017b).

2. Content and face validity:
Content validity was evaluated by five domain experts. Face validity was evaluated by 5 domain experts and four emergency nurses.

3. Pilot testing:
Test-retest reliability was evaluated on 30 emergency nurses.

4. Construct validity and internal consistency:
These were evaluated on 405 emergency nurses.
## Appendix III.
Details on the research articles in the scoping literature review

<table>
<thead>
<tr>
<th>Authors/countries</th>
<th>Study approach</th>
<th>Aims</th>
<th>Sample</th>
<th>Main findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adriaenssens, De Gucht and Maes (2015) &lt;br&gt;The Netherlands</td>
<td>Complete two-wave panel design, quantitative approach</td>
<td>To examine the influence of changes over time in work and organizational characteristics on job satisfaction, work engagement, emotional exhaustion, turnover intention and psychosomatic distress in emergency nurses</td>
<td>170 ED nurses</td>
<td>Changes in job demand, control and social support predicted job satisfaction, work engagement and emotional exhaustion. Work-related interventions are important to improve occupational health in emergency nurses and should focus on lowering job demands, increasing job control, improving social support and ensuring a well-balanced reward system.</td>
</tr>
<tr>
<td>Adriaenssens, De Gucht and Maes (2012) &lt;br&gt;The Netherlands</td>
<td>Cross-sectional study, quantitative approach</td>
<td>To examine (1) the frequency of exposure to and the nature of traumatic events among emergency nurses; (2) the percentage of nurses who report symptoms of PTSD, anxiety, depression, somatic complaints and fatigue at a sub-clinical level; and (3) the contribution of traumatic events, coping and social support to PTSD symptoms, psychological distress, somatic complaints, fatigue and sleep disturbances</td>
<td>248 ED nurses</td>
<td>ED nurses frequently confront work-related traumatic events. Death or serious injury of children or adolescents was perceived as the most traumatizing event. Traumatic events were related to anxiety, depression and somatic symptoms, and 8.5% met clinical levels of PTSD.</td>
</tr>
<tr>
<td>Adriaenssens, De Gucht, Van Der Doef and Maes (2011) &lt;br&gt;The Netherlands</td>
<td>Cross-sectional study, quantitative approach</td>
<td>To examine (1) whether emergency nurses differ from a general-hospital nursing comparison group in job and organizational characteristics; and (2) to what extent these characteristics predict job satisfaction, turnover intention, work engagement, fatigue and psychosomatic distress in emergency nurses</td>
<td>254 ED nurses and 669 general ward nurses</td>
<td>Emergency nurses reported more time pressure and physical demands, lower decision authority, less adequate work procedures and fewer rewards than a general-hospital nursing population. Decision-making authority, skill discretion, adequate work procedures, perceived rewards and social support by supervisors proved to be strong determinants of job satisfaction, work engagement and lower turnover intention in emergency nurses.</td>
</tr>
<tr>
<td>Authors/countries</td>
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<td>Sample</td>
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<td>---------------------------------</td>
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</tr>
<tr>
<td>Bailey, Murphy and Porock</td>
<td>Qualitative study: observations and interviews</td>
<td>To explore how emergency nurses manage the emotional impact of death and dying in emergency work and to present a model for developing expertise in end-of-life care delivery</td>
<td>28 ED nurses</td>
<td>Barriers that prevent the transition to expertise contributed to occupational stress and can lead to burn-out and withdrawal from practice.</td>
</tr>
<tr>
<td>Declercq, Megazuck, Deheegher</td>
<td>Cross-sectional study, quantitative approach</td>
<td>To compare the respective contributions of an individual's subjective response and the frequency of exposure to critical incidents to the development of symptoms of PTSD</td>
<td>136 Dutch-speaking nurses and ambulance personnel</td>
<td>Stressors that elicited the most intense effects within this population were those involving children and those when workers encountered limitations in supplies and resources. There was no relationship between the frequency of critical incidents encountered and the occurrence of PTSD symptoms.</td>
</tr>
<tr>
<td>Gates, Gillespie and Succop</td>
<td>Cross-sectional study, quantitative approach</td>
<td>To examine how violence by patients and visitors is related to ED nurses' work productivity and symptoms of PTSD</td>
<td>230 ED nurses</td>
<td>Of nurses, 94% exhibited at least one PTSD symptom after a violent event, with 17% having scores high enough to be considered probable for PTSD. In addition, there were significant indirect relationships between stress symptoms and work productivity.</td>
</tr>
<tr>
<td>Gevers, Van Erven, De Jonge</td>
<td>Cross-sectional survey study, quantitative approach</td>
<td>To determine the combined effect of acute and chronic job demands on acute job strains experienced during medical emergencies and their consequences for individual teamwork behaviour</td>
<td>23 emergency nurses and 25 emergency physicians</td>
<td>High acute job demands influenced effective teamwork behaviour during medical emergencies. Acute emotional demands resulted in acute job strain. Although acute cognitive and physical strains were also detrimental, effective teamwork behaviour was especially impeded by acute emotional strain.</td>
</tr>
<tr>
<td>Gholamzadeh, Sharif and Dehghan Rad</td>
<td>Descriptive survey, quantitative approach</td>
<td>To investigate the sources of job stress and the adopted coping strategies of nurses working in an accident and emergency department</td>
<td>90 ED nurses</td>
<td>The following stressors were reported: workload, problems related to the physical environment, issues dealing with patients and their relatives and handling their anger, exposure to health and safety hazards, lack of support from nursing administrators, absence of the responsible physician in the ED and lack of equipment.</td>
</tr>
</tbody>
</table>
### Appendix III
Details on the research articles in the scoping literature review (continued)

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<tr>
<td>García-Izquierdo and Ríos-Ríosuez (2012) Spain</td>
<td>Cross-sectional study, quantitative approach</td>
<td>To examine the relationship and predictive power of various psychosocial job stressors for the three dimensions of burnout in emergency departments</td>
<td>191 ED nurses</td>
<td>Emotional exhaustion, cynicism and reduced professional efficacy were reported to be predictors for burnout. Excessive workload and lack of emotional support predicted dimensions of emotional exhaustion. Cynicism had four predictors: interpersonal conflicts, excessive workload, contract type and lack of social support. Finally, variability in reduced professional efficacy was predicted by three variables: interpersonal conflicts, lack of social support and type of shift worked.</td>
</tr>
<tr>
<td>Healy and Tyrrell (2011) Ireland</td>
<td>Descriptive survey design, quantitative approach</td>
<td>To report on a study on nurses’ and doctors’ attitudes to and experiences of workplace stress in three EDs in Ireland and to offer some suggestions on how stress among ED staff can be reduced</td>
<td>90 ED nurses and 13 ED physicians</td>
<td>The effects of stressful incidents in ED staff can be profound. Witnessing aggression, violence and the death of patients and participating in resuscitation can be emotionally and physically demanding.</td>
</tr>
<tr>
<td>Hunsaker, Chen, Maughan and Heaston (2015) United States</td>
<td>Cross-sectional study with a noneperimental, descriptive, predictive design</td>
<td>To determine the prevalence of compassion satisfaction, compassion fatigue and burnout in ED nurses throughout the United States and to examine which demographic and work-related components affect the development of compassion satisfaction, compassion fatigue and burnout in this nursing specialty</td>
<td>284 ED nurses</td>
<td>Low manager support was a significant predictor of higher levels of burnout and compassion fatigue among emergency nurses, while high manager support contributed to greater compassion satisfaction.</td>
</tr>
<tr>
<td>Kogien and Cedaro (2014) Brazil</td>
<td>Cross-sectional study, quantitative approach</td>
<td>To determine the psychosocial factors of work related to harm caused in the physical domain of the quality of life of nursing professionals working in a public ED</td>
<td>189 ED nurses</td>
<td>Low intellectual discernment, low social support and experiencing high-demand jobs and passive jobs were the main risk factors threatening the physical domain of quality of life.</td>
</tr>
</tbody>
</table>
Appendix III
Details on the research articles in the scoping literature review (continued)

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<tbody>
<tr>
<td>Kowalenko, Gates, Gillespie, Succop and Mestzel (2013) United States</td>
<td>Longitudinal, repeated-measures design, quantitative approach</td>
<td>To describe the incidence of violence in ED health care workers over nine months</td>
<td>213 ED workers (117 ED nurses)</td>
<td>Physical threats were reported as violent events in the ED. Significant differences in violent events were reported between registered nurses and medical doctors and patient care assistants. Registered nurses felt less safe than medical doctors. (P = .0041)</td>
</tr>
<tr>
<td>Lavoie, Talbot and Mathieu (2011) Canada</td>
<td>Qualitative study with semi-structured interviews</td>
<td>To identify support activities for emergency nurses who have been exposed to traumatic events to prevent PTSD</td>
<td>12 ED nurses</td>
<td>ED nurses described traumatic events as both witnesses and victims. The context surrounding traumatic events influenced perceptions of them. Peer support, psychoeducation and ED simulations were identified as support after exposure to traumatic events.</td>
</tr>
<tr>
<td>Lu et al. (2015) China</td>
<td>Cross-sectional study, quantitative approach</td>
<td>To describe the relationship between coping strategies and occupational stress among ED nurses in China</td>
<td>113 ED nurses</td>
<td>The stressors of ED nurses were mostly due to the nature of the nursing specialty (2.97 ± 0.55) and its workload and time distribution (2.97 ± 0.56). Too much work, criticism, instrument equipment shortages, night shifts and professional rank concerns were the factors influencing occupational stress with respect to positive coping styles. Too much work and issues with medical insurance for ED nurses were the factors influencing occupational stress with respect to negative coping styles.</td>
</tr>
<tr>
<td>Nielsen, Pedersen, Rasmussen, Pape and Mikkelsen (2013) Denmark</td>
<td>Descriptive survey, quantitative approach</td>
<td>To investigate the relationship between 12 work-related stressors and the occurrence of adverse events in an ED</td>
<td>118 ED workers (98 ED nurses)</td>
<td>The study recorded 214 adverse events during the 979 studied shifts. High variability of stressors and emotional impact among the different groups of participants was found.</td>
</tr>
<tr>
<td>Oliveira, Achieri, Pessoa, Miranda and Almeida (2013) Brazil</td>
<td>Qualitative study with observations and semi-structured interviews</td>
<td>To explore the understanding of the social representations of nurses in the ED and their relationship to stress</td>
<td>10 ED nurses</td>
<td>Three themes—work overload, precariousness of interpersonal relationships and lack of motivation in the workplace—were found and described as situations related to social representations and stress.</td>
</tr>
<tr>
<td>Pereira et al. (2014) Brazil</td>
<td>Cross-sectional study, quantitative approach</td>
<td>To assess occupational stressors among nurses working in urgent and emergency care facilities</td>
<td>49 nurses in urgent and emergency care units</td>
<td>ED nurses working in a highly complex health care facility identified performance of nursing care as the most important stressor. Those working in a health care facility with medium complexity considered activities related to staff management to be stressors.</td>
</tr>
</tbody>
</table>
Appendix III. Details on the research articles in the scoping literature review (continued)

<table>
<thead>
<tr>
<th>Authors/countries</th>
<th>Study approach</th>
<th>Aim</th>
<th>Sample</th>
<th>Main findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Popa, Raed, Purcarea, Lala and Bobirnac (2010) Romania</td>
<td>Cross-sectional survey study, quantitative approach</td>
<td>To investigate factors and levels of occupational stress in emergency medical workers</td>
<td>4693 emergency care personnel (200 ED nurses)</td>
<td>High risk of burnout consisted of high emotional exhaustion and high depersonalisation. Possible explanations for this might be linked to high patient flow, emergency department crowding, long work hours and individual parameters, such as coping mechanisms, social development and work environment.</td>
</tr>
<tr>
<td>Ramacciati, Cecagnoli and Addey (2015) Italy</td>
<td>Qualitative study with phenomenological approach</td>
<td>To investigate the feelings experienced by nurses after episodes of violence in the workplace</td>
<td>9 ED nurses</td>
<td>ED nurses felt that violent episodes were inevitable. Facing such episodes led to feelings of being vulnerable, fear, angry, loneliness and a lack of support from management. These feelings were described as long-lasting effects. Gender differences were also found to play important roles in emotional responses.</td>
</tr>
<tr>
<td>Rugless and Taylor (2011) Australia</td>
<td>Observational study, quantitative approach</td>
<td>To examine patterns of and attitudes to sick leave taken by ED and other hospital staff and to compare ED doctors’ and nurses’ psychosocial work conditions</td>
<td>158 ED staff members (87 ED nurses)</td>
<td>The high rate of sick leave among ED nurses might be related to their considerable psychological job demand and perceived lack of supervisor support. Compared with ED nurses, ED doctors had significantly more job insecurity and supervisor support but less psychological job demand (p &lt; 0.05).</td>
</tr>
<tr>
<td>Sawatzky and Enns (2012) Canada</td>
<td>Cross-sectional survey study, quantitative approach</td>
<td>To explore the factors that predict the retention of nurses working in EDs</td>
<td>261 ED nurses</td>
<td>Of the respondents, 25% will probably or definitely leave their current ED jobs within the next year. Engagement played a central role in ED nurses’ intention to leave and was associated with job satisfaction, compassion satisfaction, compassion fatigue and burnout (p &lt; 0.05).</td>
</tr>
</tbody>
</table>
### Appendix III.
Details on the research articles in the scoping literature review (continued)

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<th>Main findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Westphal et al. (2015)</td>
<td>Descriptive survey, quantitative approach</td>
<td>To examine whether mindfulness protects against the impact of work-related stress on mental health and burnout in emergency nurses</td>
<td>50 ER nurses</td>
<td>Interpersonal conflict was reported to be the main stressor. Nurses working more consecutive days since taking time off were at high risk for depression, and those reporting more work-related interpersonal conflicts were at high risk for burnout. Mindfulness was associated with reduced anxiety, depression and burnout.</td>
</tr>
<tr>
<td>Wolf, Delao and Perhats (2014)</td>
<td>Qualitative descriptive exploratory design, narrative inquiry approach</td>
<td>To better understand the experience of emergency nurses who have been physically or verbally assaulted while providing patient care in United States EDs</td>
<td>46 ED nurses</td>
<td>Environmental, personal and cue recognition were identified as the themes. Overall, nurses believed that violence was endemic to their workplace and that both limited recognition of cues indicating a high-risk person or environment and a culture of acceptance of violence were barriers to mitigation.</td>
</tr>
<tr>
<td>Zampieron, Galeazzo, Turra and Buja (2010)</td>
<td>Cross-sectional study, quantitative approach</td>
<td>To quantify the perceived aggression towards nurses working in two Italian health care institutions and to verify the hypothesis of an association between the characteristics of aggressors and the type of aggression</td>
<td>595 nurses at two health care institutions (38 ED nurses)</td>
<td>Nurses (more often female nurses working in the ED and in geriatric and psychiatric units) had experienced aggression in the previous year (49%), of which 82% was verbal. Aggression at work was related to fatigue, stress and work dissatisfaction.</td>
</tr>
</tbody>
</table>
### Appendix IV.

**References in the scoping literature review**

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Title</th>
<th>Journal</th>
<th>Volume</th>
<th>Issue</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adriaenssens, J., De Gucht, V., &amp; Maes, S.</td>
<td>Causes and consequences of occupational stress in emergency nurses, a longitudinal study</td>
<td><em>Journal of Nursing Management</em></td>
<td>23</td>
<td>3</td>
<td>346–358</td>
</tr>
<tr>
<td>Bailey, C., Murphy, R., &amp; Porock, D.</td>
<td>Professional tears: Developing emotional intelligence around death and dying in emergency work</td>
<td><em>Journal of Clinical Nursing</em></td>
<td>20</td>
<td>23–24</td>
<td>3364–3372</td>
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<tr>
<td>Declercq, F., Meganck, R., Deheegher, J., &amp; Van Hoorde, H.</td>
<td>Frequency of and subjective response to critical incidents in the prediction of PTSD in emergency personnel</td>
<td><em>Journal of Traumatic Stress</em></td>
<td>24</td>
<td>1</td>
<td>133–136</td>
</tr>
<tr>
<td>Gates, D. M., Gillespie, G. L., &amp; Succop, P.</td>
<td>Violence against nurses and its impact on stress and productivity</td>
<td><em>Nursing Economics</em></td>
<td>29</td>
<td>2</td>
<td>59–67</td>
</tr>
<tr>
<td>Gholamzadeh, S., Sharif, F., &amp; Dehghan Rad, F.</td>
<td>Sources of occupational stress and coping strategies among nurses who are working in admission and emergency departments in hospitals affiliated to Shiraz University of Medical Sciences, Iran</td>
<td><em>Iran Journal of Nursing and Midwifery Research</em></td>
<td>16</td>
<td>1</td>
<td>41–46</td>
</tr>
<tr>
<td>García-Izquierdo, M., &amp; Ríos-Ríos, M. I.</td>
<td>The relationship between psychosocial job stress and burnout in emergency departments: An exploratory study</td>
<td><em>Nursing Outlook</em></td>
<td>60</td>
<td>5</td>
<td>322–329</td>
</tr>
</tbody>
</table>
Appendix IV.

Reference lists of the scoping literature review (continued)


Appendix IV.
Reference lists of the scoping literature review (continued)


