# PRESSURE ULCER PREVENTION IN COSTA RICA

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**ABSTRACT**

**Background**

Pressure ulcers are localized injuries to the skin and underlying tissue caused by pressure, shear or a combination of these. The consequences of pressure ulcers are contributing to higher risk of morbidity and mortality. It also increases costs to society and causing suffering affecting the quality of life for individuals. Research shows that patients often do not get access to those interventions with the highest evidence-based utility. Many times, there can be great differences within countries regarding interventions that reaches the patients.

**Aim**

The aim of the study was to describe pressure ulcers prevention by registered nurses in San José, Costa Rica.

**Method**

A qualitative design with semi-structured interviews was used. The study consisted of interviews with six registered nurses whereof one was an included pilot interview. The data process consisted of recording the interviews, transcription and a qualitative content analysis.

**Findings**
The main findings show that there is insufficient knowledge regarding pressure ulcer prevention and that there is a lacking ability to implement the existing knowledge into daily practice.

**Conclusion**

Strategies are needed to implement routines regarding pressure ulcer prevention and broader knowledge is needed to enable the registered nurses to follow these routines and to perform accurate and evidence based care. The lack of resources and time influence the ability to fulfil professional responsibilities regarding pressure ulcer prevention. The management have the important task to make sure that the needed knowledge and resources exists so that the staff can fulfil their work duties.

**Keywords**: Costa Rica, pressure ulcers, prevention, knowledge, education

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## BACKGROUND

### Pressure ulcers

A pressure ulcer, also commonly known as decubitus ulcer or bedsore, has been defined as a localized injury to the skin and underlying tissue caused by pressure, shear or a combination of these both (National Pressure Ulcer Advisory Panel [NPUAP], 2009). If the force exerted on the skin is too high, or persists for a long period of time, an ulcer can occur (Agrawal & Chauhan, 2012). Several areas where bony structures are located underneath the skin are particularly sensitive for prolonged pressure, such areas include for example the sacrum and heel (Greenwood et al, 2014). Several grading systems have been introduced with the purpose of identifying the severity of an ulcer and comparison of various stages and grades (Agrawal & Chauhan, 2012). Pressure ulcers are divided into four different categories depending on their depth and different kinds of affected tissues (Thomas & Compton, 2014).

According to Lindholm (2012), pressure ulcers have been known to affect mankind since the earliest documentation on papyrus paper 2000 years Before Christ. Since then pressure ulcers have been associated with morbidity, reduced quality of life, extended length of hospitalization and mortality (Greenwood et al, 2014). Historically, pressure ulcers were considered to occur by prolonged time in bed, when in fact they may develop in less than two hours (Myers, 2008). The previously used terms “decubitus” and “bed sore” has therefore been replaced by the more accurate term “pressure ulcer” (Lindholm, 2012).

### Pressure ulcer Classification System

The first category is defined as non-blanchable skin redness, also referred to as erythema. This erythema often manifest’s over a bony prominence. In this stage the ulcer reaches to the outermost layer of the skin, the epidermis, but is not yet affecting the underlying tissue layers, dermis and subcutis (NPUAP, 2009). Most of the erythema resolves after offloading the tissue, according to Thomas and Compton (2014), the first category should be considered as a sign of increased risk for developing more severe ulcers in the near future. Erythema may be difficult to detect in individuals with darkly pigmented skin since they may not have visible blanching, instead their skin color may vary around the surrounding area (Steven, 2015).

The second category of pressure ulcers covers conditions regarding a partial thickness loss of dermis. The skin damage is viewable since the skin has broke open, it may also occur as an intact, serum-filled blister (NPUAP, 2009). Pressure ulcers of the third category represents a full thickness wound affecting cutis and the subcutaneous fat tissue without reaching through bone, tendon or muscle. Some anatomical structures do not consist of any subcutaneous tissues, in which cases ulcers may be shallow but still represent severity of the third category level (Baranoski & Ayello, 2008). The fourth category indicates full thickness tissue damage and the sore is deep enough for bone, tendon or muscle to be exposed and palpable. In this stage the tissue is severely damaged and the pain experienced is little or none at all. Complications as infection of the bone or blood system may occur (NPUAP, 2009).

## Risk assessment scale

To be able to prevent pressure ulcers the caregiver need to recognize the patients that are at risk. To help with these clinical findings different kinds of indicators have been developed throughout the years. Two examples of pressure ulcer risk assessment scales are The Modified Norton scale and the nutritional intake created by Ek, Unosson and Bjurulf (1989) and the Braden scale developed by Bergstrom, Braden, Laguzza and Holman (1987).

The Modified Norton scale consist of seven factors; mental condition, physical activity, mobility, food intake, fluid intake, incontinence and physical condition. Each factor is being judged based on the patient's condition and given a score from one to four for a total of 28 points, indicating a good condition with little risk of pressure ulcers. Patients with scores below 20 points has an increased risk of pressure ulcers occuring. The Braden scale is an assessment tool used to examine the seven following risk factors associated with pressure ulcers; sensory perception, skin moisture, activity, mobility, nutrition, friction and shear. Each criterion is ranked numerically from one to four, with a final score ranging from six to 23 whereas a score below 18 points indicates an increased risk of pressure ulcers (Moore & Cowman, 2014).

Risk scales should be used as a complement to clinical assessment, medical examination and experience. The sole use of risk assessment scales is not enough to prevent pressure ulcers. Use of such scales, combined with an explicit policy regarding pressure ulcer prophylaxis, can however make it possible to identify patients at risk, increase the awareness and enable registered nurses and staff to engage in treatment and decrease the prevalence (Lindholm, 2012). NPUAP is recommending continuous use of risk assessments scale, but research by Sharp, Burr, Broadbent, Cummins, Casey and Merriman (2000) has found that registered nurses generally do not use recommended risk assessments tools in their clinical care. One possible explanation given was the lack of a universally accepted tool or guidelines for such assessment.

## Risk factors and prevention methods

According to Lindholm (2012) the consequences of pressure ulcers are contributing to higher risk of morbidity and mortality. It also increases costs to society and causes suffering affecting the quality of life for individual patients.

The emergence of pressure ulcers is a result of many complex mechanisms. The patient's medical condition is often presented as the main factor, followed by environment and duration related factors. Several risk factors combined with an external pressure is the main reason behind pressure ulcer occurrence (Jenkins & O'Neal, 2010). According to the NPUAP (2007), the preventive work should be based on prevention points consisting of the five following essential groups of criteria; risk assessment, skin care, nutrition, mechanical loading- and support surfaces and education.

Risk assessment

The first group of factors, risk assessment, includes observandum regarding the increased risk related to persons who are bed-bound, chair-bound or suffer from reduced ability to reposition. Furthermore, it covers the use of a valid, reliable and age appropriate method

for systematic evaluation of individual risk factors. Regular intervals for assessment of all patients and/or residents at risk when admitted to health care facilities are recommended. Risk assessment also includes individually based schedules for acute care (assess on admission, reassess every 24 hours minimum or in the case of change in condition), long-term care (assess on admission, weekly for four weeks, then quarterly or in case of change in condition), and home care (assess on admission and at every nurse visit). Clinical findings of individual risk factors such as exposure to moisture, incontinence, device related pressure, friction, shear, immobility, inactivity, nutritional deficits and mental status is of relevance to modify the care and be able to specify preventive treatments. The documentation should consist of risk assessment scale scores and the establishment of a prevention plan based on the identified risk factors (NPUAP, 2007).

Skin care

The second group covers skin care and recommends a daily skin assessment with extra observation on the following pressure points; sacrum, ischium, trochanters, heels, elbows and the back of the head. The frequency of bathing should be evaluated individually and based on the patient's skin condition. The general guidelines mentioned by the NPUAP is usage of mild soap, avoidance of hot water and excessive rubbing. In the occurrence of incontinence, a bowel and bladder program should be established and in the case of necessity the skin should be cleansed at time of soiling. Absorbing and quick drying materials should be used. Furthermore, the NPUAP describes use of moisturizers in the event of dry skin conditions and the importance of minimization of environmental factors increasing risk of these conditions such as low humidity and cold air. Massage should be avoided over bony parts (NPUAP, 2007).

Nutrition

Nutrition related measures includes identification and correction of protein and calorie intake and assessment regarding possible need of nutritional supplementation. The risk of dehydration should be unravelled and prevented (NPUAP, 2007). Optimizing nutritional status is of high importance both from a preventive perspective and from a treatment and healing perspective. Documentation of Body Mass Index (BMI), identification of eating abilities and the usage of tools such as Mini Nutritional Assessment (MNA), for patients over 65 years of age, or Subjective Global Assessment (SGA), for all ages, is recommended to identify risk of and prevent malnutrition (Sterner, 2012).

Mechanical loading and support surfaces

The NPUAP states that a bed-bound person should be repositioned at least every two hours and chair-bound persons at least every hour. To ensure consistency and patient safety a repositioning schedule should be established and documented. When positioning persons in chairs following factors should be considered; postural alignment, balance and stability, distribution of weight and pressure redistribution. Persons with the ability to shift weight every 15 minutes should be advised to do so. In cases where it is needed a pressure-redistributing mattress and chair cushion surfaces should be used.

During transfer and position changes all types of dragging should be avoided, instead the usage of lifting devices is recommended. Bony parts, for example knees and ankles, should be kept from direct contact with each other by the use of pillows or foam wedges. To eliminate pressure on heels a pillow can be placed under the calf to raise the heel and reduce pressure. Any skin exposed to device related pressure should be padded and

inspected regularly. Rehabilitation programs should also be established to maintain or improve mobility and activity status (NPUAP, 2009).

Education

The NPUAP also state the importance of implementation of educational programs regarding pressure ulcer prevention. This education should be directed at all levels of health care providers such as patients, family and other caregivers. The information should include following aspects; etiology of and risk factors for pressure ulcers, risk assessment tools and their application, skin assessment, selection and use of support surfaces, nutritional support, program for bowel and bladder management, development and implementation of individualized programs of skin care, demonstration of positioning to decrease risk of tissue breakdown, accurate documentation of pertinent data (NPUAP 2007).

## The concept of prevention

Prevention is described as the act of preventing or effectual hindrance. Something that prevents or a hindrance, obstacle or impediment (The free dictionary n.d). The conditions of the concept "prevention" requires that there is something you want to prevent and avoid. In nursing it is used to describe the actions directed to hindrance of an illness or disease and promoting health maintenance. Prevention are the measures put in to stop something specific from happening. In this context prevention includes nursing actions such as assessment of the need to perform prescribed measures to avoid pressure ulcers. Hence, the consequences of the concept is to hopefully manage to avoid an unwanted event, or as in this study the occurrence of an ulcer. Prevention covers screening tests, immunization, health education, early diagnosis of disease and treatment. The concept also includes recognition of disability limitations and rehabilitation potential. Prevention related to pressure ulcers is a cardinal aspect of nursing care and includes both discovery and identification of individuals that are at-risk developing such illness and in need of appropriate treatment to the affected area (Anderson, 1994).

Prevention can also be defined as measures that should be applied on or adopted by persons not yet feeling the effects of a disease, with the intention to reduce the negative impact that the disease risk to cause them in the future. Prevention can be classified into three categories, primary, secondary and tertiary. The primary is prevention practiced prior to the development of a disease, to avoid it. Secondary prevention covers activities for early recognition of the disease to prevent progression and emergence of symptoms. Prevention on a tertiary level aim to restore function and reduce related complications to prevent further deterioration of an already established disease (Pellmer, Wramner & Wramner, 2012). Prevention can be of universal measures, essential for everyone, or of selective measures, recommended for subgroups, (for example based on age or sex). Individual preventive measures should be practiced when a condition related to a higher than average risk of developing a disease has been identified (Gordon, 1983).

## Theoretical frame work

In this study we have used the evidence based prevention methods and recommendations stated by the NPUAP (2009), as a theoretical frame work to enable an examination of the Costa Rican registered nurse's pressure ulcer prevention methods and knowledge. The purpose of NPUAP is to improve the prevention and treatment for the patients regarding

pressure ulcers, their work includes research, public policy and education. With the diagnosis pressure ulcer or the diagnosis risk for pressure ulcer, NPUAP presents a number of interventions regarding measurements related to the patient's state (NPUAP, 2009).

## Costa Rica

Costa Rica is a relatively small, middle-income, democratic country situated in Central America, bordering Panama to the south and Nicaragua to the north (Unger, De Paepe, Buitrón & Soors, 2008). The country has a population of 4.9 million, and the majority lives in the major cities Alajuela, Cartago and the capital San José. The country has a surface of 51.100 square kilometres bordered by the Caribbean Sea and the North Pacific Ocean on each side of the country (Utrikespolitiska Institutet, 2014).

Costa Rica has a rather high quality of life and a well developed welfare system in comparison to many other countries in Latin America. The foundation of this well developed welfare system was established in the late years of the nineteen forties when the Social Security Administration were carried out and the public sector strongly favored social programs in areas such as education and health care. Today education is both free and mandatory for all citizens, this contributes to the high literacy rates, exceeding 97 percent, in residents age 15 and older (United Nations International Children Emergency Fund [UNICEF], 2013).

Both high- and low-income countries are facing difficulties regarding implementation of cost effective health interventions (Haines, Kuruvilla & Borchert., 2010). Studies have shown that the prevention of pressure ulcers not only decrease suffering but also is highly cost efficient (Demarré et al., 2015). The countries not considered as high-income possess an even greater challenge bridging the gap between knowledge and actions for health, scilicet, the implementation of research in the practice. Weaknesses in the health systems, lack of professional regulation and in some cases difficulties to access the research are some of the mentioned complexities. The existing need consists of strengthening mechanisms and institutions with ability to affect the uptake of evidence. Furthermore, work is needed to translate the results of research to recommendations, guidelines and routines that are adjusted theoretically and practically for individuals and health workers (Bours, Halfens, Abu-Saad & Grol, 2002). Existing methods for update of knowledge has been shown to lack in sufficiency and requires more effective ways to disseminate evidence-based knowledge that generates in improved health (Haines et al., 2010).

## Health care system in Costa Rica

Caja Costarricense del Seguro Social (CCSS) is the social security administration that is responsible for funding and providing personal health services in Costa Rica, funded by the state, employers and employees. Since the reform of the system in the year of 1995 the Costa Rican social security administration provides health care mostly in their own facilities and covers benefits as prevention, treatment and rehabilitation (Sáenz, Acosta, Muiser & Bermúdez, 2011). The ministry of health (MOH) is the governmental head responsible for the planning and coordination of all the activities within the health care system including respect to human resources (Sáenz et al., 2011). Contrary to many industrialized countries the responsibility of the elderly care is still often laid upon the family. Nursing homes has only recently started to be an option for this kind of care (Knaul, Nigenda & Zuñiga, n.d).

The human development index of Costa Rica has increased by 26 percent between the years 1980 and 2013, positioning the country at place 62 out of 187 countries, in comparison to the bordering country Nicaragua which has the position of 129 (United Nations Development Programme [UNDP], 2013). The explanation for the country's progress could be referred to the social security reform mentioned above (Knaul et al., n.d). The life expectancy at birth is 77 years of age for males and 81 years of age for females according to World Health Organization (WHO), 2013. The child mortality rate has decreased and the most common causes of death among adults is ischaemic heart disease (13,8 percent) followed by stroke, chronic obstructive pulmonary disease, diabetes mellitus and hypertensive heart disease (WHO, 2015).

### Rationale

The prophylactic work to prevent pressure ulcers is in the interest of both healthcare providers and patients, with consequences regarding the financial burden on resources and patients' quality of life (Demarré et al., 2015). From a nursing perspective the clinical relevance is closely connected to *what* preventive work is being done and *how*, the use or non-use of documentation, scales and measurements for record keeping and evaluation.

The ratio of registered nurses to population reflects a severe nursing shortage in Costa Rica and the situation regarding the healthcare such as prevention is naturally affected (Knaul, Nigenda & Zuñiga., n.d). More than 20 percent of the population will be over 65 years of age by the year 2025, with following consequences such as increased demand for health services and a decreased quota of income contributors (Boddinger, 2012). According to Raju et al. (2014) one of the main factors associated with pressure ulcers is age. With an increasing elderly population one can expect an increased incidence of pressure ulcers and therefore a growing need for efficient prevention and knowledge regarding this area.

Research shows that patients often do not get access to those interventions with the highest evidence-based utility. Many times, there can be great differences within countries regarding which interventions that reaches the patients (Haines et al., 2010) In this study the evidence based knowledge focused upon is prevention regarding pressure ulcers, and the authors will examine the existence or non-existence of this gap in Costa Rica.

## AIM

The aim of the study was to describe pressure ulcers prevention by registered nurses in San José, Costa Rica.

## METHOD

### Study design

To describe the prevention of pressure ulcers in Costa Rica a qualitative study with semi-structured interviews was used. The design typically develops during the study for qualitative research with decisions based on the best ways to obtain data and whom to include. This is followed by a constant reflection of what has already been learned. According to Polit and Beck (2012) this enables the research to be based on reality and to reach viewpoints that are not known beforehand. This method was considered suitable

since the aim of the study is to describe a situation, in this case prevention of pressure ulcers in Costa Rica. According to Elo and Kyngäs (2008), interviews are adequate for data collection when performing this type of qualitative study. The interviews need careful preparations with the chosen aim as an outset, hence to enable credibility regarding the analysis of the content (Danielson, 2012).

The semi-structured interviews were focusing on the participant's opinions and knowledge about the chosen subject. Material was collected during the interviews and a comparison with the evidence based theories stated in the theoretical framework was made and after which, conclusions could be drawn. In line with Polit and Beck (2012) we prepared questions for the semi-structured interviews to be sure that the chosen topic was to be covered but also allowing the participants to speak freely about the topics and use their own words. Polit and Beck (2012) also states that the use of interviews is suitable when using a qualitative design hence it enables the purpose to gain significance from collected data. Furthermore, this method allows access to information while the participants can express them selves freely. The method provides flexibility and therefore adjustments to new information can be made during the process of data collection (Polit & Beck, 2012).

**Inclusion criteria**

The inclusion criteria for participating in the interviews were a completed nursing education of minimum four years, the participants had to be registered nurses with at least one-year experience as a practicing nurse at a public or private hospital and an ability to communicate and express themselves in English.

**Sampling**

Six registered nurses working in a private hospital in San José, Costa Rica was interviewed. two of the registered nurses worked at the same ward in the hospital, the four remaining participants worked at three different wards, though in the same private hospital. The registered nurses had between two and six years of practicing experience as registered nurses, four of the of participants had working experience in both public and private hospitals in Costa Rica.

**Sample process**

Before arriving in Costa Rica we tried to establish contact with six private and three public hospitals in San José, Costa Rica by electronic mail in order to recruit participants and gain permission. An invitation to participate in an interview was sent by electronic mail together with executive summary of the study and a letter to head of operations (Appendix A, B). In total, two private hospitals responded and declined participation due to time limitation and high work demands of the nursing staff.

In San José, contact was established with a nursing school. Through the school the authors were able to connect with one nurse that had previously studied at the school and was now working at a private hospital, to perform a pilot interview as mentioned below. Through the first interviewed nurse snowball sampling, also called network or chain sampling occurred. Snowball sampling is a variant of convenience sampling where previous participants refer others who meet the criteria of the study (Polit & Beck, 2012). Through this method six registered nurses working in a private hospital were contacted and chosen

for interviews regarding their knowledge about pressure ulcer prevention. The minimum number amount of participants was set to be six, however when we arrived at the hospital only five registered nurses was found to fit the inclusion criteria and approved to take part in the study. Since the authors chose to include the pilot interview in the study the pre set amount of interviews was reached.

In order for the participants to gain knowledge about the preventive work being performed in the clinical care settings and being able to talk freely about the subject in this study the inclusion criteria was set to minimum one year of experience as a practicing nurse. Registered nurses are responsible and accountable for the overall nursing services in the health care system, including the occurrence and treatment of pressure ulcers (Samuriwo, 2012). The purpose of the study was to describe the prevention regarding pressure ulcers, therefore registered nurses as a profession fulfilled the aim and was appropriate to interview in order to gain information regarding the situation of choice.

## Data collection

Interview guide

Following the guidelines published in Polit and Beck (2012) an interview guide was created before conducting the interviews. A selection of 15 open-ended questions (Appendix E) were discussed and written down to be used as an outset for the semi-structured interviews.
In line with Polit and Beck (2012) the questions were prepared to allow the participants to provide detailed information about the chosen topic, the authors used follow up questions carefully, avoiding being to bound to the interview guide with risk of disturbing the flow of dialogue. Questions that could be answered with only one word like “yes” or “no” were avoided (Polit & beck, 2012). Because of the authors limited linguistic knowledge in Spanish, the interviews were conducted in English and not in the respondent’s native language.

Test interview

A test interview was conducted between the two authors in order to practice interview techniques and gain confidence as the role of an interviewer. A few adjustments in the interview guide was made to improve the structure of the interview.

Pilot interview

One pilot interview was conducted in order to detect if the questions were adequate in relation to the aim of the study. The interview was audio-recorded and conducted at a nursing school with a registered nurse who met the inclusion criteria. According to Polit and Beck (2012) the main purpose of a pilot study is to detect issues within the study method to refine and improve the technique. Other important functions were to control the quality of the audio recording devices used, and to get a sense of the interviews estimated length of time (Polit & Beck, 2012). The authors determined the interview as accurate, and no adjustments were made after the pilot interview. Therefore, in line with Granskär and Höglund-Nielsen (2012), the pilot interview was included in the study.

Interview process

The semi-structured interviews were conducted in approximately 25 – 35 minutes. As Polit and Beck (2012) addresses it is of great importance that authors using qualitative interviews for data collection are good listeners without confusing their own thoughts and

ideas for the participants. Further the authors, in line with Polit and Beck (2012) acknowledged the importance of self-awareness and also awareness of participants, with the ability to create a setting in which the sharing of experiences and feelings are perceived as safe. The authors prepared the participants before the interviews to create such a setting by informing about the study and about confidentiality (Polit & Beck, 2012). The first minutes of conversations before the interview was used to make the participants feel at ease before the actual interview begun. Following the guidelines of Polit and Beck (2012) the authors were mostly quiet and listening during the interviews considering the importance of not to interrupt, to lead, or offer personal opinions or counsel.

### Data analysis

The method used was qualitative content analysis. In line with Danielson (2012) the interviews were conducted and all data was collected before the analysing begun. The interviews and the field notes were transcribed as a whole, as suggested by Polit and Beck (2012), all non verbal sounds as "hmm" or "ah" were included. As a first part of the analysis the authors read the material several times as suggested both in Danielson (2012) and in Polit and Beck (2012). As a manifest approach were being used the direct content was described without interference from the authors own views or believes. The next step involved taking out the parts of the material that fulfilled our aim and answered our questions. The analytic procedure involved converting all the data collected from the interviews into smaller more manageable segments, meaning units. These units were later put together to create meaningful conceptual patterns. In line with Polit and Beck (2012), we developed a category scheme based on the conceptual patterns. A careful reading of the data enabled identification of underlying concepts which were discussed and after consideration the categories were formed.

When analysing data with the purpose to find an obvious meaning, Danielson (2012) suggests a manifest analysis. By using this method, the authors could break down the material to what the participants expressed regarding prevention. An inductive approach was being used during the process, according to Danielson (2012) this means an impartially approach were the observed phenomenon is being described as correctly and as close to reality as possible. These observations function as an outset from which following theories and conclusion can be made (Danielson, 2012).

According to Polit and Beck (2012), the analysis of qualitative data is both an active and interactive process. In line with this assertion the reading of data was several times by both authors in search of meaning and understanding of the data to enable insights and theories (Polit & Beck, 2012). The data collected from the interviews were audiotaped accompanied by field notes which according to Polit and Beck (2012) is a good way to capture any non verbal behaviour to secure an as accurate and valid transcription as possible when reflecting the interviews.

### Ethical considerations

Since the setting of the study was hospitals and healthcare institutions these ethical aspects are of great importance because information found and used in such settings is not only a question of ethical consideration but also of juridical acts (Amerson & Strang, 2015).
In line by Polit and Beck (2012), all participants received both oral and written information about the purpose and aim of the study. An important reflection to make is if all the

participants were able to receive information that suited their abilities. According to the ethical principle about autonomy, the participants given consent can only be achieved if the decision is based on adequate information (Amerson & Strang, 2015). As described in Kjellström (2012) the authors are responsible for obtaining ethics throughout the study.

Participants were informed that their participation in the study were voluntary and that they at any time could withdraw their participation without giving any notice about their reason. The respondents were given the opportunity to determine time, date and location for the interviews. They were also informed about confidentiality and that the data collected could not be traced back to their identity. Respondents were also ensured that the collected data was handled confidentially so no unauthorized access could occur in any stage of the process in accordance to the declaration of Helsinki (World Medical Association, 2013). All participants had to sign a consent form where they confirmed their voluntary participation as suggested Helgesson (2006).

## FINDINGS

The categories and sub categories that emerged during the data analysis are presented in table form (Table 1). These categories are used as headings and the subcategories are used as subheadings, below which the findings are reported. Citations are used to exemplify, presented in italic. Words that are left out of these quotations are marked with /…/.

**Table 1.** Category and sub categories

| **Category** | **Sub categories** |
|---|---|
| Education | Registered nurses knowledge<br>Patient education |
| Risk assessment | Responsibility<br>Holistic approach<br>Risk assessment tools |
| Risk groups | Immobility<br>Age<br>Nutrition |
| Documentation | |
| Resources | Time, education and financial assets<br>Public healthcare versus private healthcare |

### Education

Registered nurses knowledge

The majority of the participants mentioned their own education regarding pressure ulcer prevention to be overall satisfying. Especially the use of a holistic approach when caring for patients was said to be very well taught in nursing school with high ability to prepare nurses for their future work tasks regarding this matter. A few of the participants stated that their education had left them with a lack of knowledge regarding materials and products for the treatment and prevention of pressure ulcers. Even though this area was mentioned as mainly the physician's responsibility a few of the participants mentioned that they would need more education and knowledge in this area to be able to provide the best possible care regarding treatment and prevention.

*I think we have a really good education about the holistic, ehm, treatment that we have to do, with the nutrition, with the emotional part, with the family with the educational part of the family.*

All of the participants mentioned that they had both theoretical and clinical practice regarding pressure ulcers during their nursing education. However, two of the participants stated that the theoretical practice did not meet their expectations and left them feeling insecure in the area. Three of the participants mentioned that a positive part of the education regarding pressure ulcers was that they were able to see several different kinds of ulcers during their clinical practice in the hospitals. One of the participants stated that pressure ulcers are common in Costa Rica, based on experiences from clinical training and working in hospitals.

*/.../ we see it like all the time in the hospitals, its really common here in Costa Rica*

<u>Patient education</u>
All of the participants described education both for the patient and for the families as one of the most important parts of the preventive work regarding pressure ulcers. One of the participants described education as a way of involving the patients in their own care. Education was also mentioned as a way for the registered nurses to enable increased empowerment and autonomy for the patients.

*Yes, we try to educate the patient in order to make him understand, he knows about it. Educate above moving, change of position, if they cannot do it, we try to involve them in their health, own care. To participate as much as possible.*

One participant especially emphasized the need of education not only for patients but also for their relatives to help achieve compliance during the treatment and/or as a part of the preventive work. The participants described oral information to be the most common form of education for patients and relatives, one participant also mentioned that written information and sometimes drawings were being used to enable the best possible understanding among the individuals. Further, the importance of being flexible and creative when communicating was mentioned, whereas adjusting to the individual's specific needs. Although this was said to be the goal, lack of time was mentioned to be a possible hindrance.

*The first thing is education, the patient and the family. At least I try to take like the whole family /.../ I explain to everyone. Because if someone like forgets something maybe /.../ one is going to say "but you have to do that". Education for me is like the most important. /.../ And I write it and I make a draw or something so they can remember how to do it.*

**Risk assessment**

<u>Responsibility</u>
All of the participants stated that the registered nurses were the profession responsible for the prevention of the pressure ulcers. Furthermore, all of the participants expressed feelings of guilt or failure in the event of a newly occurred pressure ulcer during the patients hospitalization. Two of the participants mentioned the existence of specialized teams of registered nurses in some hospitals, these teams were said to be responsible for the

prevention, the follow up and measurements of every patient with an ulcer of any kind. The participants described that the daily responsibility including care and treatment of pressure ulcers parallel with preventive work was laid upon the registered nurses. The physician's responsibility was mentioned to cover decisions regarding treatments and such as descriptions of materials and products, although the majority of the participants described the whole process as a teamwork. Most participants also mentioned lack of resources as a problem to fulfil this task and responsibility, especially in the public health care settings. The registered nurse to patient ratio and the financial difficulties was mentioned as important factors regarding the ability to perform prevention. One nurse described the work environment in the public hospitals to allow less time for preventive work with the patients compared to the private hospitals where the same participant experienced that they had enough time to fulfil their responsibilities.

> *But in a room of for example six, you have to take care of everything, medication, bath, the ulcers, and I don't know… special needs of every patient. It's like harder to remember sometimes with a lot of patients. /…/ In the private sector yes you are in charge of just one or two patients every day or two in the morning, or another two in the afternoon, so I think you have more time to remember.*

One of the participants said that all the registered nurses working in the ward is aware of the importance of repositioning the bedbound patients to enable blood circulation and prevent pressure ulcers from occurring. But this was said to be difficult, especially in the public hospitals due to the high work demands.

> *I will say that we try to prevent, but right now it is difficult because of a lot of patients in the hospital. Of course prevention is one of our goals. But it is difficult. Yeah right now I will say that prevention is hard. /…/ We need more nurses education people. We are working on that.*

<u>Holistic approach</u>
All of the participants mentioned the importance of having a holistic approach. To see all the sides of the patient's situations was seen as a cornerstone in order to provide a good prevention and treatment. The appearance of pressure ulcers was mentioned to be a consequence of many different factors, the treatment was therefore said to be individually formed by these different factors. The patients emotional lives including their surrounding environment regarding work situation, family and psychological state was mentioned by some of the participants to be as important as physical factors for example the nutritional status.

> */…/ you have to take care of the emotional part of the person, and the nutrition of the person, and do all the investigation around the person. /…/ we have a really good education about the holistic treatment, with the nutrition, with the emotional part, with the educational part of the ulcer.*

<u>Risk assessment tools</u>
Regarding risk assessment tools the participants mentioned the use of the Braden scale in some wards at the hospitals, but not in every ward. The Braden scale was also said to mostly be used on patients that were hospitalized for a longer period of time. The participants also mentioned that physical exams were a part of the everyday routine and in the event of a newly occurred pressure ulcer they should be graded, measured and on

occasion photographed for the documentation. The patient's journal also kept a diagram of the body where different kind of ulcers were marked out, this was to make sure that all the patients ulcers were examined every day and so to know if any new ulcers had occurred. Another routine that was mentioned when treating patients with the risk of developing pressure ulcers was the use of a wrist band with the words "ulcer risk" written on it in Spanish. The patients bed was also marked with a special colour. This was described as an effective way for the registered nurses to know which patients were at risk and also it worked as a reminder for the patient to not stay too long in the same position.

> *A wristband, it says ulcer risk. They know that, in some cases they already have one and some cases is because they don't move a lot. Sometimes in their bed they have the same colour and a paper that says it. /.../ scale, physical exam, a picture of the body of all the places an ulcer can occur, grade of the ulcer /.../ continue looking every day if they already had one.*

**Risk groups**

Immobility

The participants especially mentioned patients with reduced ability to move to be of high risk for developing pressure ulcers. Even though specialized ulcer teams were mentioned the participants stressed the responsibility of the registered nurses and the rest of the health care team. Pressure ulcers were said not to occur if they were prevented and/or treated properly. One participant stated that patients in the intensive care unit are the only patient group that are justified to develop pressure ulcers because they do not have the ability to reposition on their own. Followed by the previously mentioned notion that if the registered nurses fulfilled their responsibility pressure ulcers should not occur.

Age

Another risk factor mentioned by the participants were age, and therefore the elderly population was considered to be a risk group for developing pressure ulcers. This was described as a consequence due to poor nutritional status and hesitation of seeking medical attention.

The participants also described a scenario where the elderly in many cases do not live with their families and therefore they have a tendency to wait too long before they seek medical advice. Different explanations for this was mentioned such as accessibility and financial resources, but the main consensus described was that the elderly in many cases tried to treat themselves first or did not think they needed treatment at all. If this was due to tradition, culture or lack of education the participants could not say.

> *Usually they don't live with their families, they are by themselves and they have like a small ulcer, and they don't say anything, /.../ they do not go to the clinic, because they think they can do everything by themselves.*

One participant mentioned a crème called "Crema de Rosas" and stated it to be highly common among the elderly population. The crème was said to often be used at home instead of medication or other treatments for example on different kind of ulcers. According to the same participant this particular popular crème is only regular moisturizer and therefore not enough to treat for example a pressure ulcer.

Nutrition

The patient's nutritional status was said to be of great importance for the treatment of the pressure ulcers. The patients eating habits, vitamin and protein intake was described as crucial for progress in the treatment process. Regarding the prevention all of the participants stressed that the patients needed to be educated about nutrition and its impacts of the risks for developing pressure ulcers. The preventive work was said to consist of research regarding the patient's nutritional status and habits, and the measurements consisted of education and information based on the physician's individual assessments and descriptions. Alcohol consumption and tobacco use was also stated as a part of the screening. Further it was mentioned that many people did not have the financial resources to buy healthy food even if they had the knowledge about the nutritional impact.

> */.../ the nutritional status of the body is vital. So acute assessment of the dietary food habits of the person, if he smoke, any kind of drug or alcohol because all the state of skin depends of nutritional. Sometimes our patients they do not know how to eat, they eat very bad or they do not have the condition to buy good food.*

**Documentation**

The documentation regarding pressure ulcers is conducted in the patient's individual paper journal. The participants stated that the documentation for pressure ulcers mostly consisted of a diagram of the body were the ulcers were marked. The ulcers were also supposed to be measured in length and depth but this depended on the routines in the different wards. The descripted products and materials for the treatment were are also written down in this journal. The Braden scale as mentioned above was documented if used. Some wards used a pre-written sheet with all the assessments mentioned above, to make sure that all the documentation about different kind of ulcers were collected together and could be easily accessed.

**Resources**

Time, education and financial assets

All the registered nurses stressed the great importance of preventive work with benefits such as reducing the patients suffering, and also benefits regarding the financial costs of extended hospitalization. The lack of resources was stated as a hindrance or difficulty to perform the preventive work. The main resources mentioned to enable accurate prevention and treatment was time, education and financial assets. The registered nurses knowledge about prevention was also mentioned as an important resource. To be able to educate the patient and the family, the registered nurse must first and foremost possess the accurate knowledge henself.

> *It is cheaper, less painful and everything. It is better to prevent.*

Public healthcare versus private healthcare

The participants with working experience in both private and public hospitals mentioned the existence of differences between these two sectors on several occasions during the interviews. Mostly the lack of resources in the public hospitals were stressed, it was mentioned that they did not have the same access to the variety of products as in the private hospitals.

*But we don't have that products on the public hospitals, because they are too expensive.*

Further, the participants mentioned that the patient's relatives have more influence and insight in the treatment and the preventive work in the private hospitals. The family is included and encouraged to participate in the patient's treatment while at the same time being educated together with the patient regarding preventive matters. This way, the participants stated, the patient is getting more support and the family is able to question the treatments and options to a greater extent which generates more security for the patients.

In contrast to the private hospitals, the participants described that the public hospitals only allow relatives to accompany the patient at specific hours which made it more difficult for the relatives to be engaged in the treatment and make sure that the patient received the accurate treatment and measurements. It was also stressed that working in the public hospitals on occasions made the registered nurses feel like the lack of resources disabled them to provide the best possible health care for the patients, which was not in line with their aim and professional pride.

*/.../ they don't have the time, and they don't have the money or they don't have the resources to do it maybe in the most effective way.*

*In the private hospitals here in Costa Rica people are paying a lot of money, so that maybe the family and friends and nurses are like more aware of this, and they have to change the position and they have to be checking every day the ulcers. Because they have a family watching all the time, but in the public hospitals it's like, I don't know, six beds/patients in one room, they don't allow family all day, so they don't know if they receive the treatment that they need to.*

The main reason for the occurrence of a pressure ulcer was said to be pressure, all of the participants stressed the importance of regularly repositioning the patients in order to relieve pressure. The general routine said to be followed both in the private and the public hospitals was to change the position of the patients at least every two hours. Even if this was a well-known routine and even mentioned as one of the most important interventions the participants said it to not always be achieved. The main reason for this was described to be lack of time.

*/.../ the general rule is that we need to change positions every two hours. /.../ But it is difficult because we have not only a room with six patients, but its four rooms like that, it is maybe just one or two nurses per shift. It is very difficult.*

It was also mentioned that sometimes the patients did not manage to commit to the treatment and stopped coming to their appointments. The most common reason for this was said to be the amount of time the patients had to dedicate to treat the pressure ulcers before any progress could be seen. Financial costs were also mentioned as a probable reason due to the expensive materials and products that are being used. The participants stressed the need to inform the patient and their relatives about these matters, before they started the treatment so they would not lose their hope and motivation.

*We talk very clear to the family and the patient and we say that it's not going be easy, and it's going take a while. And the ulcers are expensive, because the*

*products that we use are expensive. You need to be patient, and like just keep coming.*

## DISCUSSION

### Discussion on findings

The main problem was found to consist of both a lack of knowledge in several of the prevention areas mentioned below and the fact that the areas where accurate preventive knowledge did exist, the problem lay in the ability to implement this knowledge in the daily practice. Resources such as time and financial assets was found to stall the preventive work, mostly affecting the screening routines and the preventive education to precede the occurrence of pressure ulcers. In agreement with More and Price (2004) the findings also shows a correlation between the nurse to patient ratio and the achieved prevention of pressure ulcers. The findings in this study emphasizes that this might lead to increased prevalence of pressure ulcers.

In line with More and Price (2004), we recognize the need of implementation strategies to empower the registered nurses to overcome the difficulties and barriers regarding the preventive work. The findings presented in this study shows that although the registered nurses possess knowledge and realizes the benefits of prevention regarding pressure ulcers, the lack of time disables them from fulfilling this responsibility. Leaving them with feelings of guilt and inadequacy. Similarly to a study conducted in Ethiopia by Nuru, Zewdu, Amsalu and Mehretie (2015), poor practice regarding pressure ulcer prevention was explained by the shortage of registered nursing staff which reduces the amount of time available for each patient. As found in this study the registered nurses emphasize that they are unable to fulfil their responsibility regarding prevention, especially in the public hospitals where the registered nurse to patient ratio is lower than in the private hospitals. This may result in consequences regarding the implementation of quality care.

Further the findings of this study shows several areas for improvement such as risk assessment, documentation and the lack of knowledge regarding mechanical loading- and surfaces among the registered nurses. Regarding risk assessment, the findings shows that the knowledge of the increased risk related to persons with reduced ability to reposition are in line with the NPUAP (2007) recommendations. However, the findings also presented a lack of assessment scale usage and inadequate documentation. The documentation should in addition to what was mentioned by the registered nurses consist of a prevention plan based on identified risk factors for each individual patient (NPUAP, 2007).

As presented in the background, Sharp et al., (2000) addresses the problem with the lack of assessment scale usage among registered nurses. As also stated by the NPUAP (2007), the use of a risk assessment scale is recommended for preventive purposes regarding pressure ulcers. However, the findings in this study shows that the registered nurses have knowledge about the existence of risk assessment tools, but they only use it occasionally. Hence the usage could be improved and should be a part of the prevention routine during clinical practice (NPUAP, 2007). In harmony with Sharp et al., (2000), we find the explanation for the lack of risk scales usage to be affected by deficiencies in the evidence based nursing practice regarding pressure ulcer prevention. As addressed in the background, both high and low income countries are facing difficulties with the implementation of research in the practice (Haines et al., 2010). The authors find the results in this study to be of concern regarding the matter of prevention. When research is not implemented into routines and recommendations that are followed in the daily practice,

evidence based knowledge do not reach the patients and therefore results in consequences such as reduced quality of care.

The findings showed that the measurements regarding skin care was in line with the NPUAPs (2007) recommendations to some extent. Especially the daily skin assessment with extra observation on specifically exposed pressure point was found to be an established routine at the wards. As presented in the result the registered nurses or a specialized ulcer team is responsible for daily skin assessment and the documentation that follows. Routines regarding incontinence, bathing and environmental factors as stated by the NPUAP (2007) to be considered when practicing skin care with the aim of pressure ulcer prevention, was not mentioned by the participants.

As presented in findings, the registered nurses considered nutrition to be one of the main areas in their preventive work. In line with NPUAPs recommendations identification and correction of protein intake and assessment regarding the need of nutritional supplementation is being performed at the hospitals. Further the patients nutritional status are considered to be a part of the holistic approach of which importance was stressed by the registered nurses to impact both the preventive perspective but also the treatment and healing perspective. Further the findings showed areas of improvement regarding the nutritional area, according both to the recommendations of NPUAP (2007) and Sterner (2012), assessment tools such as MNA or SGA mentioned in the background should be used and documented together with BMI and identification of eating abilities. This was not found to be a part of the preventive nutritional work based on the interviews with the registered nurses.

As presented in the background the NPUAP (2009) recommend mechanical loading- and surfaces as one of the essential groups of which the pressure ulcer prevention should be based upon. This area includes repositioning at least every two hours for persons that are bed-bound and at least every hour for persons that are chair-bound. The findings showed that the registered nurses follow these recommendations to some extent. The routines presented in findings shows that the general rule in the Costa Rican hospitals is that persons with reduced ability to move are to be repositioned every two hours, however this was said by the registered nurses to not always be achieved. Leaving this preventive area with great capacity for improvement. Further the NPUAP (2009) recommend repositioning schedules to be established and documented, the findings also showed lack of knowledge regarding the following recommendations mentioned in the background; positioning factors, transport and position changes. In agreement with NPUAP (2009) the act of not following these recommendations and/or the lack of evidence based knowledge in this preventive area may jeopardize consistency and patient safety.

A positive finding was the registered nurses approach to patient education to enable and strengthen empowerment. As recommended by the NPUAP (2009) persons with the ability to shift weight should be advised to do so every 15 minutes. The registered nurses emphasized the benefits of education for the patients both regarding prevention, treatment and healing. As presented in findings the hospitalized patients with risk of pressure ulcers were to be educated and informed about their situation with the aim to enable them to help them help themselves (empowerment). As mentioned above one of the main preventive areas emphasized by the registered nurse were education, both regarding themselves as registered nurses, but also regarding patients and their relatives. This is in accordance with the NPUAPs (2007) recommendations. The education was found to include both ethology

of and risk factors for pressure ulcers, skin assessment, nutritional support and the importance of documentation and follow up. The education was found to lack information about risk assessment tools and their application, selection and use of support surfaces as well as different kind of materials and products used for prevention and treatment.

The authors find the results to be in line with the aim of this study, to describe the pressure ulcer prevention in Costa Rica. The main findings show a number of areas for improvement to continue the clinical quality enhancement, with emphasize on education regarding pressure ulcer prevention among the registered nurses. Further the implementation of this evidence based knowledge faces a lot of challenges. The health system including both the private and the public hospitals are in need of strategies and mechanisms to enable the registered nurses to fulfil their responsibilities regarding pressure ulcer prevention. The challenge to implement cost effective health interventions such as pressure ulcer prevention should be of high priority, not to mention the ability to decrease patient suffering and hospitalization. In line with a similar study by Barry and Nugent (2015) on pressure ulcer prevention in frail older people, the findings shows the many complexities related to pressure ulcer prevention. Also in agreement with this study our conclusion as well emphasizes the importance of education, effective clinical leadership and multidisciplinary teamwork. The prevalence and incidence rates of pressure ulcers should always be monitored to enable evaluation of implemented care strategies and their effectiveness (Barry & Nugent, 2015).

Further studies are needed to examine more effective ways to implement evidence based knowledge in the clinical practice to generate in improved health. The deficits found in the preventive work regarding pressure ulcer prevention in Costa Rica could serve as an outset for improvement work in this area. To enable improvement one must first know what the existing difficulties are. This study and others of its likings are needed to find such hindrance and enable development in the direction towards a more quality based care. Improvement of the preventive work would not only contain benefits for the patients and the registered nurses such as patient safety and ability to fulfil work responsibilities but also for the society regarding financial aspects and overall a more effective and qualitative healthcare.

### Discussion on method

The aim of this study was to describe registered nurses knowledge regarding pressure ulcer prevention in San José, Costa Rica. A qualitative method with a semi-structured interview guide was therefore carried out as a study design in order to obtain subjective data on the chosen topic. The use of semi-structured interviews with open-ended questions was appropriate since the participants were able to share a broad description of their knowledge related to the aim of the study (Elo et al., 2014).

The number of participants was chosen according to the guidelines of Sophiahemmet University with a maximum of eight and a minimum of six participants. The intention of the beginning of the study were to interview eight registered nurses but due to lack of participants and the time length of the study, a number of six participants that fit the inclusion criteria were chosen to be included. The six conducted interviews were found satisfactory considering the aim of the study and the varied data they obtained.

One interview was conducted in an empty corridor in the nursing school mentioned above and the maintaining interviews were conducted at the registered nurses workplace in one of the more quiet areas of the ward. Preferably, as recommended by Polit and Beck (2012) the interviews should have been held in an enclosed room in order to decrease the risk of interruptions and to ensure the participants ability to speak freely. However, this was not possible due to the participant's duties at the hospital and we had to be flexible and adjust to the situation. Therefore, the interviews were held in a less private setting with several disturbances and interruptions with consequences such as lesser quality of the recorded audio. Although field notes were taken during the interviews and the recorded data was usable, lack of quality in the audio recording could have led to unheard words and possibly misinterpretations during the process of transcription (Polit & Beck, 2012. Having the interviews conducted in a more private setting could have led to a more natural flow of the interviews and possibly decrease the risk of environmental factors affecting the answers.

In order to achieve accuracy during the analysis process, the transcription was conducted by both of the authors. As mentioned above the recorded audio was occasionally insufficient and the quality of some words and sentences were within risk of transcription errors. To avoid this as much as possible both authors, as suggested by Polit and Beck (2012), listened to the same recorded audio repetitively in order to reproduce an as accurate transcription as possible. Occasionally some words could not be heard or not correctly interpreted due to linguistic difficulties. Since the interviews were held in English, the second language of both the authors and the participants the experience of natural hindrance in form of language barriers were to be expected and taken under consideration. At one occasion one of the participant expressed the need of further explanation regarding a question, the authors therefore had to explain the question in a different way that might have been of leading character. This may have affected the participants answer as stated by Elo et al. (2014). Possible preferred solutions to the problem could have been to use an interpreter or to enable the participants to read through the transcription afterwards in order to correct potential misunderstandings, however this was not executable due to the participant's lack of time (Polit & Beck, 2012)

The snowball sampling method used to find participants that fit the inclusion criteria could, according to Polit and Beck (2012) be criticized for the risk of generating a too homogenous group of participants. The event of this occurrence might decrease the variety of collected data and in that case endanger to make the study less representative of a wider group. The decision to proceed with the interviews although the available participants were exclusively registered nurses working in the private healthcare sector, could be criticized on the same basis. Preferably interviews should also have been conducted in public healthcare setting and with participants from different hospitals in order to broaden and generalize the study. Due to shortage of responses and length of time of the study, this was not possible. However, the authors found the collected data to maintain variety and to some extent as well represent the public health care sector due to the participant's various work experiences within both sectors.

Furthermore, one weakness of the study could be that the authors possesses limited or none experience of interviewing prior to this study. More experience regarding interview techniques might have been beneficial to achieve even more detailed and accurate answers during the interviews.

As mentioned in Danielson (2012), important reflections to be made by the authors during the study is if the information presented possesses credibility and if the facts are correct and evidence based. Further it is of great importance to use reliable sources throughout the study and also to question and to peruse the information found. This technique has been used to determine what sources to include in the study. The preparations and planning of this study has also been specified to fulfil this purpose. To impose credibility in the discussion; field notes, complications and other observations related to the data collection were written down. According to Danielson (2012), one challenge while researching is to not let time influence the perspectives and memories of different parts of the process. According to Elo et al., (2014) it is essential to consider the adequacy of the chosen method, to what extent will it enable the authors to fulfil the aim and answer the questions, and will other researchers be able to recreate the same result. The ability to present scientific results is based on credibility, hence why the authors have chosen to follow up on this concept throughout the process.

## Conclusion

According to the findings in this study, strategies are needed to implement routines regarding pressure ulcer prevention. Furthermore, broader knowledge is needed to enable the registered nurses to follow these routines and to perform accurate and evidence based care in the daily practice. The registered nurses criticized that the lack of resources and time influenced their ability to fulfil their professional responsibilities regarding pressure ulcer prevention. The management have the important task to make sure that the needed knowledge and resources exists so that the staff can fulfil their work duties.

Findings showed that a holistic approach was emphasized together with focus on education and nutrition both important factors to attend in the preventive work, but the ability to do so was stated to be very much affected by the lack of resources. The most addressed difficulties regarding prevention was mentioned to exist in the public hospitals. More education for the registered nurses regarding prevention and especially more registered nurses with ability and time to educate people could be a solution to the problem.

### Further research

The findings in this study show an existing need for further research regarding registered nurses' knowledge about pressure ulcer prevention. It also shows the need of implementation strategies to enable evidence based routines to reach the patients. Furthermore, research is needed to examine the possibility for the registered nurses to fulfil their responsibilities regarding preventive work. Professional expectations and the resources to enable them was in many areas regarding pressure ulcer prevention in Costa Rica, found to contrast. Without the accurate knowledge the registered nurses are not able fulfil their preventive duties. Even in areas where preventive knowledge exists to a high degree, routines and resources can be improved. Further research is needed on how get the evidence based knowledge to reach the registered nurses, and how to implement routines to make sure that that knowledge is used in the daily clinical practice.

## Clinical implication

This study can work as an indicator for the current situation regarding the Costa Rican registered nurses' knowledge and routines considering pressure ulcer prevention in this area. The hindrances of registered nurses preventive work are of great importance to research, not only to affect the quality of care but also to increase health and prevent suffering. This study could be used to indicate in what areas more knowledge regarding pressure ulcer prevention is needed. The findings show that preventive routines regarding pressure ulcers exists, but it also shows a need of constant evaluation and follow up to make sure that these routines actually take part in the daily clinical practice.

Since education was found to be an important part of the preventive work, more research regarding teaching and communication could be of great value. The benefits of empowerment together with extension of patient's self-management could be a solution when the team lack resources. If research could find effective ways to engage the patients more in their own care and with more influence, the patients could make a substantial part of the team.  More time spent on prevention could lead to less time spent on treatment and in the end, improved health. And after all, is that not the purpose of healthcare?

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**Letter to head of operations**
Stockholm 2015-06-02

To head of operations
NN
XXClinic, XXHospial

Our names are Frida Hagtorn and Grigoriy Larsson and we are nursing students at Sophiahemmet University, during this autumn we are conducting our bachelor thesis which means we are to perform an individual thesis work. We have been granted a scholarship for minor field studies regarding pressure ulcer prevention in Costa Rica. Therefore we are interested in conducting interviews and observations with nurses on this topic at the XXClinic, XXHospital. The selection for inclusion will be done from following criteria; the ability to communicate in English, a nursing degree and a minimum of 1 year working experience. In the attached file an executive summary of the research design and purpose can be seen. We would appreciate if we could perform such interviews at your clinic. If you would accept us for conducting our study at your clinic please sign the other attached file. If you feel any hesitation or have any further questions about our study, please contact us or our supervisor.

Best regards

Sophiahemmet University

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&
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**Executive summary of the study**
Pressure ulcer prevention in Costa Rica

Pressure ulcers have been known to affect mankind since the earliest documentation on papyrus paper 2000 years Before Christ. Since then pressure ulcers have been associated with morbidity, reduced quality of life, extended length of hospitalization and mortality. Historically pressure ulcers were considered to occur by prolonged time in bed, when in fact they may develop in less than two hours (Steven, 2015). The previously used terms "decubitus" and "bed sore" has therefore been replaced by the more accurate term "pressure ulcer".

The purpose of the trip to Costa Rica is to perform data collection from interviews for a qualitative study as a part of our thesis work for a bachelor's degree in nursing. The aim of the study is to describe pressure ulcers prevention by nurses in Costa Rica, with the goal of contributing to the general discourse of the field by exploring the current situation in the region.

The first part of the work consists a literature study concerning pressure ulcers prevention, which will be done from October to December and will continue parallel with the collection of empirical data. Research question will be answered by using semi-structured interviews, which allows the respondent to discuss more around areas where he or she possesses knowledge and in that way gain more information. To establish the template for the semi-structured interview we will perform pilot interviews with key individuals and accordingly adjust our questions. Healthcare providers such as hospitals, nursing homes and healthcare centres in the area of San José, Costa Rica will be contacted to establish a connection with nurses involved in the work with our chosen subject.

I hereby accept that Frida Hagtorn and Grigoriy Larsson are allowed to perform their study "Pressure Ulcer Prevention in Costa Rica" at the clinic under stated period of time: October to November 2015.

City, Date:

Signature, Head of operations:

Name:

**ATTACHMENT C 1(1)**

**Consent form**
**Pressure ulcer prevention**

This consent form establishes that you have read and understood what taking part in this research study will involve. By signing this you confirm the following;

- I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.
- I understand that taking part is voluntary and that I am free to withdraw at any time, without giving any reason.
- I understand that any information that I give will only be used anonymously and I will not be identified when my views are presented in any publications and reports.
- I agree to take part in this study.

Name:

Signature:

Date:

**ATTACHMENT D 1(1)**

**XX Clinic**
Sophiahemmet University, Stockholm, 151101
Valhallavägen 91, 114 28 STOCKHOLM, Sweden

Our names are Frida Hagtorn and Grigoriy Larsson and we are nursing students at Sophiahemmet University, Stockholm Sweden. During this autumn, we are conducting our bachelor thesis which means we are to perform an individual project work. Therefore, we are interested in conducting interviews with nurses on this topic, the inclusion criteria's will be as following; a minimum of four years nursing education and a minimum of one year working experience in a private or public hospital.

Research and evidence based knowledge may exist theoretically but the implementation to practice has been shown to be more complex. The area of prevention regarding pressure ulcers is a well studied field yet the problem continuously occur with consequences such as financial coasts and reduced quality of life.

The purpose of our trip to Costa Rica is to examine the knowledge and methods in the region regarding prevention of pressure ulcers.

The first part of the work consists of a literature study concerning pressure ulcers prevention, which will be done partly before the trip and then continue parallel with the collection of empirical data. Research question will be answered by using semi-structured interviews, which allows the respondent to discuss more around areas where he or she possesses knowledge and in that way gain more information.

Since the settings of this study is hospitals and healthcare institutions, ethical aspects such as anonymity, respect and integrity regarding patients are of great importance because information found in such settings is not only a questions of ethical consideration but also of juridical acts.

If you feel any hesitation or have any further questions about our study, please contact us or our supervisor.

Best regards
Sophiahemmet University

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**ATTACHMENT E 1(1)**

**Interview guide**

- Where do you work?
- How many years have you been being working here?
- Have you received any clinical practice at a hospital?

- Did you receive any theoretical education regarding pressure ulcer?
- What is your knowledge regarding pressure ulcer?
- Do you have any routines regarding pressure ulcer prevention?
    - If yes, how does it work?
- Do you use or know any risk assessment tools regarding pressure ulcer?
- If yes, how do you they work?
- Who is responsible for screening, prevention and measurements?
- Is there anything in preventing of pressure ulcer that you would like to know more about?
    - If yes, what would that be?

- From your own experiences, in which group of patients is pressure ulcers most common?
- Can you describe the nursing care of a patient with a risk for pressure ulcer?
- How would you prevent a pressure ulcer from developing on this type of patients?
- What interventions is the nurse responsible this patient at the ward?
- Can you name any techniques, methods or tools that you have used during your clinical practice?
- How do you follow up the different patients?