TAMPEREEN
AMMATTIKORKEAKOULU

HOW TO TREAT A PAEDIATRIC PATIENT WITH BURNS

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Bachelor's thesis
October 2016
Degree Programme in Nursing

ABSTRACT

Tampereen ammattikorkeakoulu
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SHOKRIEHZADEH, ROJIN:
How To Treat A Paediatric Patient With Burns

Bachelor's thesis 25 pages, appendices 2 pages
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The aim of this bachelor's thesis was to bring forth different aspects of nursing a paediatric burn patient. This thesis aspires to widen the nursing student's understanding of a patient's holistic care. This thesis is a literature review that has analyzed eight scientific study and review articles. The co-operation partner is Tampere University of Applied Sciences.

The thesis presents up-to-date methods on how a nurse can take care of a paediatric burn patient holistically. The findings have been gathered from international peer reviewed original studies and literature reviews. The findings discuss the different aspects of nursing a paediatric burn patient, which consist of assessment of the burn, fluid resuscitation, nourishment, wound care, pain management, psychological care and lastly family nursing. Constant assessment of the patient's vitals and respiration has been noted as well.

The findings of this thesis demonstrate that paediatric burn care consists of many elements, which a nurse has to consider. Articles that study this subject could be scarcely found from the available databases. Therefore it is recommended that more studies be conducted in the area of holistic paediatric burn nursing

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Key words: paediatric nursing, burns, holistic nursing.

TIIVISTELMÄ

Tampereen ammattikorkeakoulu
Hoitotyön koulutusohjelma
Lasten ja nuorten hoitotyö

SHOKRIEHZADEH ROJIN:
Pediatrisen Palovammapotilaan Hoitoyö

Opinnäytetyö 25 sivua, joista liitteitä 2 sivua
Lokakuu 2016

Opinnäytetyön tarkoituksena oli tuoda esiin palovamman saaneen lapsen ja nuoren hoitotyön eri näkökulmat. Opinnäytetyön tavoitteena oli avartaa sairaanhoitajaopiskelijoiden tietämystä potilaan kokonaisvaltaisesta hoidosta. Opinnäytetyö toteutettiin narratiivisena kirjallisuuskatsauksena, jossa analysoitiin kahdeksan vertaisarvioitua tieteellistä artikkelia. Yhteistyötahona toimii Tampereen ammattikorkeakoulu.

Opinnäytetyö esittelee ajan tasalla olevia käytäntöjä siitä, miten sairaanhoitajat voivat kokonaisvaltaisesti hoitaa palovamman saaneen pediatrisen potilaan. Opinnäytetyö tarjoaa maailmanlaajuista tietoa, joka on kerätty vertaisarvioiduista kirjallisuuskatsauksista ja tutkimusartikkeleista. Opinnäytetyön tuloksissa käsitellään pediatrisen palovammapotilaan vamman arviointi, nestehoito, ravitsemus, haavanhoito, kivunhoito, psykologinen hoito ja viimeiseksi perhehoitotyö. Lapsen yleisvoinnin ja hengityksen tarkkailu on myös mainittu.

Kirjallisuuskatsauksen tulokset osoittavat, että pediatrisen palovammapotilaan hoito koostuu monesta eri elementistä, jotka sairaanhoitajan pitää ottaa huomioon. Tutkittua tietoa aiheesta löytyi niukasti tarjolla olevista tietokannoista. Siitä johtuen lisätutkimus aiheeksi suositellaan erityisesti sairaanhoitajien näkökulmaa pediatrisen palovammapotilaan kokonaisvaltaisessa hoidossa.

Asiasanat: lasten ja nuorten hoitotyö, palovammat, kokonaisvaltainen hoitotyö.

CONTENTS

1 INTRODUCTION

Due to their curious nature children are susceptible to many injuries, burns being among the most significant ones (Ruusala 2015, 1). A research by Rytkönen, Papp, Koljonen and Vuola (2008) indicates that during the years 1994-2004, 67 paediatric burn victims needed emergency care in Finland (Rytkönen, Papp, Koljonen & Vuola, 2008, 1231). According to Global studies children aged 0-4 years have the highest tendency to obtain burn injuries. One reason can be the fact that there are many ways to acquire such burn traumas. (Hollywood & O'Neill 2013, 28.)

This author's literature review's goal is to analyse the collected data and discuss the different aspects of paediatric burn care from a nurse's point of view. A lot of research has been done about paediatric burns, however few of them explore the aspects of nursing paediatric patients. This author will collect the different aspects from each resource and assemble them in this literature review in a logical matter. (Parahoo 2006, 132.) Children are very different patients to adults when it comes to such different treatments of burns. The author will be going through burn assessment, wound management, pain management, nutrition, fluid resuscitation and emotional support of the patient and family.

This topic was chosen due to the author's interest in acute nursing care and specialisation in paediatric nursing. The co-operation partner will be Tampere's University of Applied Sciences.

2 PURPOSE, TASKS AND OBJECTIVES

The objective of this bachelor's thesis is to contribute to nursing student's knowledge when they are studying either surgical nursing or paediatric nursing. They can use this information to back up their understanding of wound care and children's physical and psychological needs. This thesis is also expected to benefit anyone searching information on this topic since it will be in the public.

The purpose of this bachelor's thesis is to conduct a research on existing literature, critique them and analyse the findings. In the end the author will have written a literature review that involves all the aspects that have to be considered when a nurse is taking care of a paediatric burn patient.

The author's main task is to answer the research question, which will bring her closer to her aim. The aim is to find the current knowledge on the phenomena she is studying by answering the research question:
What are the aspects of paediatric burn care from a nurse's point of view?

3 THEORETICAL STARTING POINTS

The elements that make this thesis distinct are paediatric nursing, paediatric patients and paediatric burns. To understand how a nurse can treat paediatric burns, each key concept has been defined below figure 1.

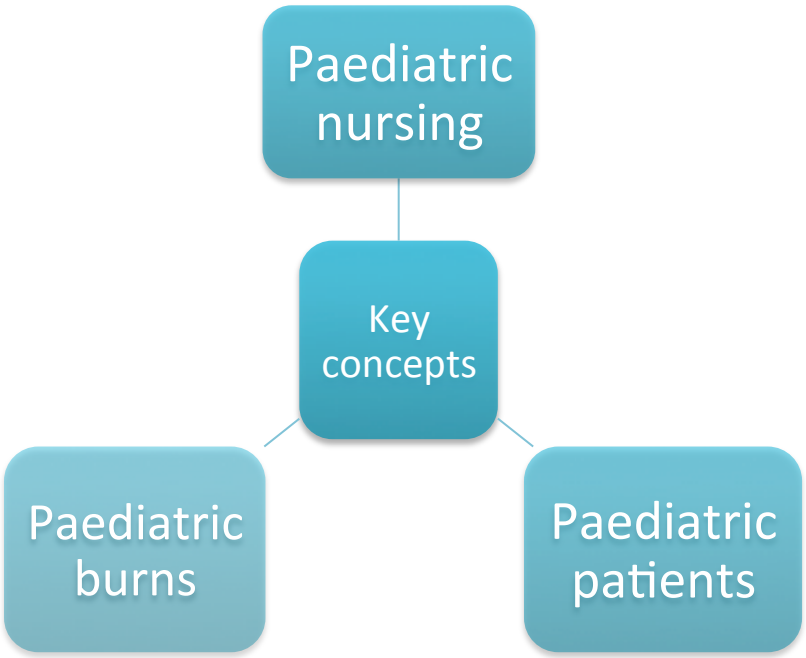

FIGURE 1. A diagram of key concepts.

3.1 Paediatric nursing

Nursing care itself is a wide concept. With every patient the nurses job is to: maintain patient confidentiality and to maintain a trust relationship with the patient and the family as well, be the patient's advocate, care for the patient according to the illness, follow the treatment protocols, prevent infections and to be able to see the difference between normal and abnormal physical and psychological activity. With paediatric patients however, supporting a child's physical and psychological growth is included in a nurse's treatment plan. (Tuomi 2008, 23.)

3.2 Paediatric patients

Since paediatric patients vary from new-borns to teenagers, each patient has to be treated according to their physical and psychological development (Tuomi 2008, 19). To be precise this author will discuss patients from the ages 0-18 as paediatric patients and will also use the term child. Because of their developmental stage, paediatric patients

may not always be able to express themselves verbally. This is why it is important for a nurse to have knowledge on different ways to assess pain. Creating a trust relationship with patients so that the patient will be able to voice their fears and emotions or even wishes regarding a procedure to the health professional is also key when it comes to nursing. (Storvik-Sydänmaa, Talvensaari, Kaisvuo & Uotila 2012, 104.)

3.3 Paediatric burns

Most of paediatric burns can occur when the skin has contact with a thermal substance such as flame, hot liquids or hot surfaces (Neriman, Sevinc, Nursel & Ramazan 2013, 209). A burn can affect a child locally and systemically depending on the size of the injury, which means that a burn not only causes necrotic tissue on the skin but a serious burn trauma can also affect a patient's cardiovascular, respiratory, metabolic and immune system (Betts & Pomeroy 2010, 465-466). The depth of the burn and the total body surface area (TBSA) affected are some of the factors that determine the treatment. The skin is made up of three layers, epidermis, dermis and the subcutaneous layer. The four classifications of burned skin depth are superficial, superficial/dermal, deep dermal and full thickness. (Hollywood & O'Neill 2013, 28-30.)

4 METHODOLOGY

4.1 Literature review

By doing a literature review the author will come to a conclusion on the current state of knowledge on this topic and increase her understanding of it (Parahoo 2006, 127-130). A writer can achieve a good literature review by becoming familiar and confident on the content of researched evidence (Polit & Beck, 2012, 95).

A literature review can be split into three basic categories, which include narrative literature review, systematic review and a meta-analysis. A narrative literature review is one of the most common reviews and has no strict rules when it comes to the literature search. A systematic literature review however goes through specific guidelines with its literature search, which it gives it more credibility. This author will conduct a traditional narrative literature review. (Salminen 2011, 6-11.)

4.2 Literature search

It is required of the author to read, digest, compare and analyse the searched material according to guidelines after which she will summarize the information handpicked from the chosen material (Parahoo 2006, 134).

Since secondary sources are usually reports of someone else's original work, they may not be as reliable as primary sources. Reliance on books are also not recommended since the information they deliver may be dated by the time they are published. (Parahoo 2006, 122-123.) This does not however mean that they are not worth reading since their bibliography may be very valuable (Polit & Beck 2012, 95). Due to the lack of primary sources this author will be using secondary sources such as review articles along with original studies. Non-research sources such as statistics, clinical descriptions and case reports will be used in the theoretical starting points to broaden the understanding of the phenomena. (Polit & Beck 2012, 96.)

Going through relevant studies' bibliography will be one search method among using databases such as the Cumulative Index to Nursing and Allied Health Literature, CI-

NAHL. Being multi-lingual is beneficial in a sense that the author has been able to use Finnish electronic databases such as Arto and Medic. (Polit & Beck 2012, 98-100.)

What search words one uses with these electronic databases is significant. Keywords this author frequently used were p#ediatric AND burns AND nursing OR. Finnish keywords used were lasten AND palovammat AND hoitotyö. The use of asterisks and other symbols is important since there may be different ways some words are written. (Polit & Beck 2012, 101.) The word paediatric is a perfect example. In most scientific papers it is written the British way, which is paediatric but not all researchers have adopted this wording and use pediatric instead. It is for this reason that the keyword p#ediatric was used to search for both versions.

After deciding which keywords to use to conduct the research, some inclusion and exclusion criteria need to be set. The criteria can vary from the year the study was conducted to whether it has been peer reviewed. Different search engines give different options for limiters for example Cinahl gives the many options and Google scholar gives only one. The limiters that this author has chosen can be seen below in the table, which shows what keywords, limiters and search engines were used. (Polit & Beck 2012, 101.) Whether these criteria were met would be determined after thorough reading of the articles. Initial inclusion criteria for the literature search involved studies that have been conducted between the years 2000-2016, are peer reviewed, are specific to paediatric burns, include nursing methods, and that they are primary sources. Another inclusion criteria was that the study had to be conducted in Europe so that the methods studied could be applicable in Finnish nursing. Due to lack of scarcity of original studies in this particular topic the author has had to rely on international studies as well as secondary sources. (Parahoo 2006, 138.)

DATABASE	KEYWORDS	LIMITERS	RESULTS
CINAHL	P#ediatric AND burns AND nursing	2000-2016, English language, peer reviewed	82
CINAHL	P#ediatric burns AND nursing	2000-2016, English language, peer reviewed	3
ARTO	Lasten AND palovammat	2000-2016	2
MEDIC	Lasten AND palovamma AND hoitotyö	2000-2016	1
MEDIC	Pediatric burns AND nursing	2000-2016	9

Table 1. Database searches.

4.3 Data analysis

Before starting the data analysis of the findings the author has thoroughly read, familiarized the sources, critiqued and compared them together to ensure consistency and validity of offered information. After this follows analysis of the found material. (Parahoo 2006, 131-133.) The author would like to enlighten the reader about critiquing and evaluating the findings, which is followed by the selection of the articles (Polit & Beck 2012, 119). By critiquing the articles found in the search the author will decide whether the article answers the research question and critique their research methods. The author will be using a matrix (appendix 1), which will record these characteristics. (Polit & Beck 2012, 111-119.) The articles that were selected are listed in Table 2.

1. Gomez-Torres, D., Maldonado-Gonzalez, V., Reyes-Robles, B. & Carrera A. 2014. The Nurses Humanistic Functioning In Relation To The Pain Of the Child Patient With Burns.
2. Hollywood, E. & O'Neill, T. 2014. Assessment and management of scalds and burns in children.
3. Merz, J., Schrand, C., Mertens, D., Foote, C., Porter, K. & Regnold, L. 2003. Wound Care of the Pediatric Burn Patient.
4. Moore, E., Bennet, K., Dietrich, M. & Wells, N. 2015. The Effect of Directed Medical Play on Young Children's Pain and Distress During Burn Wound Care.
5. O'Hara, D., Ganeshalingam, K., Gerrish, H. & Richardson, P. 2013. A 2 year experience of nurse led conscious sedation in paediatric burns.
6. Sharp, N., Aguayo, P., Marx, D., Polak, E., Rash, D., St. Peter, S., Ostlie, D. & Juang, D. 2014. Nursing Preference of Topical Silver Sulfadiazine Versus Collagenase Ointment for Treatment of Partial Thickness Burns in Children.
7. Williams, C. 2010. Assessment and management of paediatric burn injuries.
8. Zengerle-Levy, K. 2004. Practices That Facilitate Critically Burned Children's Holistic Healing.

Table 2. Articles selected for the literature review.

5 FINDINGS

A paediatric nurse has many responsibilities as it has come to light through vigorous search of various studies and review articles. These sources have confirmed that the aspects of paediatric wound care are indeed physical, meaning it includes burn assessment, fluid resuscitation, nourishment, wound management and pain management. In addition psychological aspects include emotional care of the patient and family nursing.

5.1 Assessment of the burn

After admittance to the hospital the patient's burn wounds need to be thoroughly assessed and reported. The burn method, affected area and depth of the burn all play a role in selecting the method of treatment. Documenting these is also important in order to follow the progress or regression of the wounds. Measuring the TBSA of a paediatric patient can be tricky and it must be done with utmost care. Overestimating the surface can lead to excessive fluid resuscitation. There are three tools to evaluate the percentage of the affected area. The most accurate one is the Lund and Browder chart, which is available for various sizes and is also adjustable to fit the paediatric patient in question. (Williams 2011, 61 & Merz et al. 2003, 430-431.)

Asking the parents separately about the turn of events is also significant in case there are any inconsistencies in the story. This may be a hint that the burn has been intentional. Other signs of abuse can be evident patterns from cigarettes or an iron, no splashes when it comes to scalds and lack of guilt from the parents. In these instances it is important to remain professional and contact the correct authorities to assess the situation. (Williams 2011, 61-62.)

5.2 Managing fluid balance and nutrition

According to a review conducted by Hollywood and O'Neill (2013, 30) if a paediatric patient's TBSA has been burned more than 10%, they will require fluid resuscitation in order to avoid burn shock. A physician determines the fluid requirement and a common formula used in these cases is the Parkland Formula (4ml/kg/%TBSA). Preferably fluid resuscitation should be started when the burn has occurred because fluid loss begins immediately. If an intravenous route can not be attained, an intraosseous route is anoth-

er way to administer fluids. (Williams 2011, 63.) After counting the required amount of fluids by using the Parkland formula, it is time to administer it. During fluid resuscitation, half of the calculated fluids need to be administered within eight hours and the rest throughout the remaining 16 hours. In addition to the resuscitation fluids the child will receive maintaining fluids, which involve crystalloids. Whenever a patient has an IV cannula, the site should be routinely checked for signs of blockage, phlebitis, infection or infiltration. If these signs should occur, the cannula must be removed immediately. (Hollywood & O'Neill 2014, 30.)

If the patient's nutritional and fluid needs are met, the IV fluids can be decreased. Oral and enteral feeding via a nasogastric or jejunal tube can be supported and managed by making sure the placement of the tube is right and keeping a balance chart. A nurse must also be able to remove the nasogastric tube if the patient finds it hard to breathe. Vitamins, protein and zinc can be included in the patient's diet by a dietician to upkeep the healing and epithelialization of the burn wounds. (Hollywood & O'Neill 2014, 30-31; Merz et al. 2003, 435-436.)

Paediatric burn patients will have their urine output closely monitored to ensure the renal system is functioning. This is especially vital in the beginning phase of hospitalization. Urine output of 1ml/kg/hour is preferred for children under 30 kilograms and 2ml/kg/hour for over 30 kilograms. Blood glucose levels as well as potassium, sodium, calcium, magnesium lactic acids, ketones and potassium will be monitored from blood results. These can be supplemented if need be. (Williams 2011, 64.)

5.3 Wound management

The articles indicate that wound care is overseen once the patient has been stabilized. The decision of which kind of wound care is administered is dependent on the type of burn the child has suffered. Full thickness burns may require more frequent dressing changes or even surgical excision compared to superficial burns. (Hollywood & O'Neill 2014, 32; Sharp et al. 2014, 253; Merz et al. 2003, 436.)

Blisters can form due to the epidermis separating from the dermis and there are three common ways to manage them. Other than leaving the blister intact, one can extract the fluid from the blister and the skin unbroken. The third option is to remove the roof of

the blister completely. The burn wound can be washed with antibacterial cleansers or even soap and water. According to Merz et al. (2003, 436) this should be done twice daily along with wound dressing. Debridement should be done as often as necessary. A nurse can debride the skin by brushing or scraping the dead skin away. (Hollywood & O'Neill 2014, 32.)

The dressings vary in their quality and purpose. For full-thickness burns, a silver-sulfadiazine dressing is recommended for its bactericidal effects, which means that it can kill certain bacteria. According to a study by Sharp et al. (2014, 255-256) nurses found the silver sulfadiazine dressing difficult to change due to its messiness. Another study stated that Silver Sulfadiazine does not penetrate eschar, therefore it forms a gel like substance on the dead skin, which can be painful to remove. Thus nurses preferred the use of Collagenase ointment, which does require an extra step of adding an antibacterial cream along with it. This is due to its easiness to apply and the fact that it does not need to be changed as often, which means less trauma for the patient. (Merz et al. 2003, 437.)

The ''wet dressing'' as Merz et al. (2003, 437) describe it, is the use of mesh gauze and burn dressings, which have been wrapped around a burn wound. Perforated catheters are placed between the layers of the dressing and they can be irrigated with antimicrobial solutions. The solutions can be administered via the catheters every few hours and thus the dressings remain wet. The procedures that are followed by the use of wet dressings are excisions, skin grafts and cultured skin substitutes. An excision is when the ischemic skin is shaved off until viable tissue is reached. This should be done as soon as the child is stable to enable faster epithelisation. Skin grafts can be used to cover the burned area after the dead skin has been excised and they can be temporary or permanent. Cultured skin substitutes are prepared of the patient's own keratinocytes and fibroblasts and they can be ready to use in three to four weeks. Along with antibiotic solutions, a nurse can irrigate the wet dressing catheters with a mixture of nutrients made for cultured skin. (Merz et al. 2003, 437-439; Hollywood & O'Neill 2014, 32.)

Skin grafts may vary in some ways. They can be synthetic or made of the patient's own skin. They do have one thing in common. Their role is to protect the skin against infection, fasten epithelialization and decrease fluid and protein loss. A nurse maintains the dressings that protect these grafts by changing them, irrigating the possible catheters

with antibiotic solutions when needed and managing the wound by debriding and cleansing it. (Merz et al. 2003, 437-439.)

Fungal or bacterial growth can be identified by wound cultures, which can be taken during admission and weekly from then on. Furthermore keeping the temperature of the room comfortably warm can prevent heat loss and lower the body's metabolic rate. (Merz et al. 2003, 436.)

5.4 Pain assessment and management

Unrelieved pain can cause negative long lasting effects, such as post traumatic stress disorder, fears, behavioural issues and even sleep and eating disturbances. These do not affect the patient only but the caretakers as well. (Moore, Bennett, Dietrich & Wells 2015, 265.)

A nurse plays a significant role when it comes to pain assessment and management. Before medicating a child for pain, a nurse needs to evaluate the level of pain they are in. Other that using verbal communication, a nurse can assess a patient's pain by utilizing several tools and scales. These tools involve observing the child's vital signs, facial expressions, body language and crying. Scales that may be used include the Wong-Baker FACES pain rating scale and the FLACC scale. With the FACES pain rating scale, the child chooses a facial expression that best represents the pain they are experiencing and the FLACC involves the nurse assessing the child's face, legs, activity, cry and consolability. Pain, however, is not the only discomfort the patient may experience. Once the burn starts to heal, it may cause itchiness. The Itch Man Scale enables the nurse to assess the child's distress by analysing their drawings of the discomfort caused by the itchiness. (Hollywood & O'Neill 2014, 31.)

The type of pain that a paediatric patient may experience can be separated in three categories, background pain, procedural pain and psychological pain. Each type can be managed with pharmacological and conservative methods. Pharmacological methods include IV opioids, which can be administered regularly or prior to a procedure, such as morphine, methadone and ketamine. Morphine can be administered for severe burn pains and it can distribute widely throughout the body. It can be given as an infusion or via a pain pump, which children over the age of eight can control themselves. Metha-

done has a long lasting effect for background pain and causes no euphoric effects. It does need to be weaned off gradually to avoid withdrawal symptoms. Procedural pain should be avoided by medicating the patient before the procedure. Ketamine, which causes sedation, affects within 30 seconds and can last up to 10 minutes. Thus minor procedures, such as dressing changes and debridement can be done quickly without causing the patient trauma. The patient will have no recollection of the procedure however older children may experience hallucinations, which is why midazolam can be given before Ketamine. Strong opiates can cause side effects such as laryngospasms, mucus secretion and cardiovascular stimulation. This is why it is important for the nurse to monitor the patient's respiration and pulse. (O'Hara, Ganeshalingam, Gerrish & Richardson 2013, 48-49; Merz et al. 2003, 439.)

Pharmacological methods are not the only way to relieve pain. Arrangements as simple as covering the wound from air can play a major role in a burn patient's comfort. This is due to the sensitivity of the exposed nerve endings. Even a slight breeze can be painful for a patient. Other simple methods include breathing exercises, preparedness, relaxation and therapeutic medical play. (Hollywood & O'Neill 2013, 31; Moore et al. 2015, 266.)

Moore et al. (2015, 266-268) define therapeutic medical play as using actual equipment that are needed for an upcoming procedure to role-play with the child. The nurse and paediatric patient can play with the tools and act as if they are doing a dressing change or any other procedure that the child will have soon. This causes the patient to have a positive experience about what is to come and thus feels less anxious. Feelings of anxiety and fear can reflect strongly to the child's experience of pain. That is why even therapeutic play and psychological comforting are considered conservative pain relieving methods. (Gomez-Torres, Maldonado-Gonzalez, Reyes-Robles & Carrera 2014, 226.)

In Gomez-Torres' et al. (2014, 226-228) study nurses were interviewed about humanistic ways that they would alleviate a paediatric burn patient's pain. The importance of the nurse's role in easing a patient's pain this study was accentuated. By being aware of the patient's pain, a nurse can use instruments, techniques and tools to bring more comfort to the paediatric patient. These abilities include emotional comforting and gentle touches as well as using laughter and placebos. Even the simplest task of being present was noted to be comforting for the patient.

5.5 Psychological care

In many ways the experience of pain and its management plays a big role in a patient' s psychological wellbeing. Therefore most of the conservative pain management methods can also be taken advantage of when supporting the patient psychologically. Due to the pain, trauma, fear and continuing hospital stay, there is a very big likelihood that the child may experience severe anxiety. The distress caused by an upcoming procedure can be relieved with psychological methods. These include preparing the patient by giving them age appropriate information about what is to come, giving them a chance to express their emotions and creating a trust relationship with them. (Moore et al. 2015, 266; Hollywood & O'Neill 2013, 33.)

Individuality is emphasized in Williams' (2011, 66) article. By learning about the child's personality and interests via the family or the patient themselves, a nurse can utilize that knowledge later on. It will be easier to connect with the patient and bring comfort to them when nurses know their preferences. Knowing about the patient's personality prior to burns can be helpful in case the patient develops personality disturbance and changes.

Using humanistic and psychological methods to nurse a paediatric patient can be put in four categories according to a study conducted by Zengerle-Levy (2004, 1260-1271). These methods are being a parent-minded nurse, sustaining human connections, seeing the patient as a child and renewing their spirit. In addition to approaches already mentioned in previous paragraphs, a nurse can bring comfort and structure to a child's hospital stay by setting rules, establishing routines and making sure they have some autonomy and mental stimulation. Since the patient's hospital stay may be long, this enables them to develop mentally as well as physically. The importance of using a loving and playful approach in paediatric nursing is stressed in this study as well as bringing hope in their lives. (Zengerle-Levy 2004, 1260-1271.)

5.6 Family nursing

Supporting the families and promoting their health as well is an important part of paediatric nursing. When a child falls ill or in this case has been burned, the parents may feel guilty and inadequate. According to Moore et al. (2015, 266) parental anxiety can have effects on the patient's experience of distress. Therefore family oriented nursing is important. (Williams 2011, 66-67.) Involving the family in the care and letting them make decisions can bring normalcy back for the family. Making sure the patient's caretakers are informed and prepared can help them be more supportive towards the patient, especially during procedures such as dressing changes. (Hollywood & O'Neill 2014, 33.) Events such as the patient's death need special sensitivity from the nurse and the rest of the multidisciplinary team (Williams 2011, 66).

5.7 Other considerations

Using a holistic approach when nursing paediatric burn patients also involves regular monitoring of their vitals and health along with supporting their respiratory system. Besides oxygenation via intubation tubes and masks, suctioning the airways and positioning are effective ways to enable comfortable respiration. (Merz et al. 2003, 235.)

6 DISCUSSION

6.1 Ethics and validity

Since this study is a literature review and did not involve participants, an evaluation from an ethics board has not been needed (Parahoo 2006, 116). This author aspired to conduct a valid and credible literature review by being trustworthy and authentic. The author does admit to having premade opinions of what the nursing aspects should include, thus making the search extremely difficult. Therefore the author had to revise the rules of a literature search and open up the inclusion criteria. Even though conducting a research alone may have also increased the risk for bias, the author has aspired to list all the aspects found objectively and attempted to use triangulation when relating the findings. The fact that some of the articles did not originate from Europe may be significant in this literature review's finding's transferability. Meaning the findings may not be appropriate for Finnish health care. (Polit & Beck 2012, 197.)

6.2 Limitations

The aim of this thesis was to provide the reader an overview of the nursing aspects of paediatric burn care. Through rigorous searching for original studies, that conform to this author's original standards only a few could be found due to limited sources provided by the school's databases. Thus the author had to remove some inclusion criteria. After deciding that international peer reviewed literature reviews could be used, the results were more extensive. The searches done with other keywords and in other databases were not listed in this paper due to the fact that they did not produce any results.

6.3 Recommendations for further research

As it has been noted previously, original studies concerning the nurse's role in paediatric burn care are scarce. Paediatric burns are not a rare phenomenon and nurses play a significant role in a child's hospital stay. Therefore this author recommends studies to be conducted on the matter. Especially in the Scandinavian region where the findings may be applied to Finnish health care systems.

7 CONCLUSION

This thesis set out to discover different aspects of nursing paediatric burns. Through rigorous search and many difficulties and changes in inclusion criteria, the author was finally able assemble a review on the findings. The findings prove that paediatric burn care is holistic and a nurse plays a significant role in the patient's comfort. The patient's age and development needs to be considered when choosing how to approach them. There are numerous non-pharmacological methods that can be utilized in Finnish health care such as conservative pain alleviation and psychological support techniques that were stated in the findings. The pharmacological aspects, such as medication and the dressing selection needs to approached with a more critical mind.

This search has affirmed the author's opinion of the importance of paediatric nursing and has taught her resilience even in the toughest of times. Conducting this search has not been easy and the author does not recommend writing a thesis alone but at least it has been an experience she will not forget. The author has learnt new things, not just about the subject, but about herself as well. And the importance of support, be it from friends, family or the teachers, cannot be stressed enough.

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APPENDICES

Appendix 1. Results matrix

(1/2)

Author, year and country	Title	Methods	Aspects found
Gomez-Torres, D., Maldonado-Gonzalez, V., Reyes-Robles, B. & Carrera A. 2014. Mexico.	The Nurses Humanistic Functioning In Relation To The Pain Of the Child Patient With Burns	Qualitative interviews.	Pain management and psychological care
Hollywood, E., & O'Neill, T. 2014. Ireland.	Assessment and management of scalds and burns in children	Review article	Burn assessment, fluid management, nutrition, pain assessment and management, wound management, psychological care and family nursing
Merz, J., Schrand, C., Mertens, D., Foote, C., Porter, K. & Regnold, L. 2003. United States.	Wound Care of the Pediatric Burn Patient	Review article	Fluid management, Nutrition, respiration and pain management
Moore, E., Bennet, K., Dietrich, M. & Wells, N. 2015. United States.	The Effect of Directed Medical Play on Young Children's Pain and Distress During Burn Wound Care	Pilot clinical intervention study.	Pain management, psychological care and family nursing

(Continues)

(2/2)

Author, year and country	Title	Methods	Aspects found
O'Hara, D., Ganeshalingam, K., Gerrish, H. & Richardson, P. 2013. United Kingdom.	A 2 year experience of nurse led conscious sedation in paediatric burns	Data was collected from two years worth of sedation room logbooks and patient notes.	Pain management
Sharp, N., Aguayo, P., Marx, D., Polak, E., Rash, D., St. Peter, S., Ostlie, D. & Juang, D. 2014. United States.	Nursing Preference of Topical Silver Sulfadiazine Versus Collagenase Ointment for Treatment of Partial Thickness Burns in Children	Survey Follow-Up of a Prospective Randomized Trial	Wound management
Williams, C. 2011. United Kingdom	Assessment and management of paediatric burn injuries	Review article	Assessment, psychological care, family nursing and fluid management
Zengerle-Levy, K. 2004. United States	Practices That Facilitate Critically Burned Children's Holistic Healing	Qualitative research. Interviews and observations of nurses	Psychological care