



Exploring Learning of Pediatric Burn Patients through Drawings and Storytelling

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Abstract

Background: Young children with burn injuries are often ignored during discharge teaching and instructions are given to the caregivers. After recognizing this fact, the author developed an age appropriate coloring and story book called "The Pediatric Burn Book." This book enabled children to learn about their burn injuries and how to care for their bodies prior to going home from the hospital. The purpose of this study was to determine if children learned using this teaching tool. The method of the study had children read and color in the teaching tool book. The child then drew a picture about their burn injury and then told the researcher about it. These stories and this study explored the experiences of hospitalized children aged 5 to 10 to help gain a better understanding of whether an age appropriate teaching tool could help young children learn how to take care of their bodies following discharge. The research method was qualitative using storytelling. The setting was a level one pediatric burn and trauma center. Twenty children were used using convenience sampling. An interpretive phenomenology design was used. Ten meaning units were identified and from these, three main themes emerged: feelings and experiences; adapting to my life now; and, relating in my world.

Results: Sixteen of the twenty children identified at least one learning point from the discharge teaching coloring book. It was concluded that children want to learn about ways to care for their bodies to achieve optimum health and quality of life. Children understand simple age appropriate education principles during discharge teaching. Drawings and storytelling provide valuable insight into what children are thinking and feeling after suffering a burn injury.

Keywords: Pediatric burns; storytelling and drawings; discharge teaching; health education; health behaviors.

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Introduction and Background

Burns are a leading cause of serious injury and even death in children. Each year 250,000 children are burned seriously enough to seek medical attention. Of those, 15,000 require hospitalization. It is estimated that 1,100 children die from fire and burn injuries (American Burn Association, 2017, Burn Foundation, 2017) [1,2]. Burns are also a global health problem and cause 18,000 deaths each year. Most of these burns occur in low- and middle-income countries with about two-thirds occurring in the African and Southeast Asia regions (WHO, 2018) [3].

As a result of their burns, many children must endure lengthy hospitalizations that include frequent surgical procedures, skin grafts and painful treatments followed by rehabilitation and physical therapy as well as additional skin grafts and consequent future hospitalizations. It is not

uncommon for these children to experience life-long physical and psychological trauma (American Burn Association, 2016; Safe Kids Worldwide, 2015) [4,5]. It is vital that children of all ages learn about their burns and are taught healthy behaviors that will promote healing and quality of life following discharge.

Too often however, discharge instructions are only provided to parents, and the child is ignored or sent off to play. Left out of the teaching process, the child's learning needs are neglected. It is imperative that children be included in the discharge education process because it is their bodies that have been burned. Children need to know how to care for their bodies and the importance of good nutrition, exercise and follow-up care. Discharge teaching needs to be presented at the child's developmental level taking into account their cognitive abilities so that they can understand what has happened to them and what they can expect in the future.

Depending on the child's age and stage of development, different teaching and learning styles must be considered. An older child or teenager is most likely able to read and comprehend text, conceptualize and/or learn through electronic health promoting mechanisms (Tercyak, Abraham, Graham, Wilson, & Walker, 2009) [6], while younger children just learning to read and write may learn better through storytelling and drawings to express their thoughts (Macfayden, 2004) [7].

Unfortunately, few age appropriate resources to date are available for nurses and other health care professionals to promote health and life-time well-being in children with burns. Noted while pursuing a Master's degree in Nursing Education, the principal investigator (PI) of this study developed a coloring book designed to help young children between the ages of five and 10 learn about their burn injuries and learn ways by which they must care for their bodies to achieve optimum health and quality of life. *The Pediatric Burn Book*© (xxxx, 2003) is an age appropriate coloring and information book that addresses seven topics that children with burns should learn about before discharged from a hospital setting. Learning topics and associated pictures to color include going home from the hospital; taking care of your skin; good nutrition; exercise; getting enough sleep; going back to school; and, keeping follow up appointments with the medical team.

Review of the literature

Children that are seriously burned, scalding by hot liquids or steam is the most common burn injury in young children compared to older children who are most commonly burned by direct contact with fire (American Burn Association, 2017; Safe Kids Worldwide, 2015; Centers for Disease Control and Prevention, 2019) [1,5,8]. Scalds from food and beverages account for 100,000 injuries while scalds from tap water account for 5,000 injuries. Contact with hot objects such as stoves, clothing irons, and hair curlers account for 60,000 injuries. Other objects that cause burn injuries are: fireworks, 3,200 injuries; gasoline (children playing with matches or gasoline), 8,700 injuries; and, cigarettes or tobacco products (often child abuse), 1,500 injuries (Burn Foundation, 2017) [2].

Internationally other risk factors include: Poverty, overcrowding and lack of proper safety measures; placing young girls in household roles such as cooking and care of small children; underlying medical conditions like epilepsy and those with physical and cognitive disabilities; alcohol abuse and smoking; easy access to chemicals used for assault (like those used in acid violence attacks); the use of kerosene (paraffin) as a fuel source for non-electric domestic appliances; and inadequate safety measures for liquefied petroleum gas and electricity (WHO, 2018) [3].

Rawlings, Khan, Shento and Sharpe (2007) [9] suggested that education and prevention programs are needed to help address the problem of childhood burns and overall, much effort has gone forth in burn prevention. However, children under the age of four do not understand the danger and thus, have limited ability to escape situations due to

their cognitive and developmental abilities. While it is the parent's responsibility to keep the child safe, burn injuries continue to occur in children of all ages.

Depending on the extent of the burn injury, a considerable amount of discharge teaching is often needed prior to discharge. Again, it is the major responsibility of the parents to care for the child after discharge and consequently, most of the discharge instructions are directed toward the parents alone. But it is also important that children with burn injuries are included in discharge teaching and not ignored. It is their bodies that were burned, and they need to learn about their burns and how to take care of their body for the rest of their lives. Therefore, it is imperative that nurses and other health professionals find a way to include children in the discharge education process. Hockenberry and Wilson (2015) [10] felt strongly that children should not be excluded during communication with parents. School-age children want explanations and reasons for everything. In addition, children should begin early to do as much for themselves as possible and thus, become active participants in their care. If the child is involved, an enthusiastic participant will result. Also, as children participate in their care, they gain both confidence and self-esteem. As confidence and self-esteem are built, feelings of fear and anxiety are decreased (Hockenberry & Wilson, 2015) [10]. This is important for children as they learn to and care for their bodies after a burn injury.

Van Dulmen (1998) [11] examined communication between pediatrician, child and parent in the office setting and found that most often children were completely ignored by the pediatrician while almost all communication was directed toward the parents. Both van Dulmen and Colland (1990) [12] suggested that this was due to a lack of confidence on the physicians' part in communicating with a child on medical issues and the notion that it takes much longer to communicate with children than it does parents. Although pediatricians felt that children are capable of communicating about non-medical issues, they also considered parents as primarily responsible for education and management of medical issues and thus, preferred to speak with parents and not the child. Only 13% of medical information was physician directed toward the child although pediatrician-child direct communication increased with the child's age (van Dulmen, 1998) [11]. Interestingly, even when a child was directly asked a question, the parent answered it for the child. As a result of these findings, it appears that both pediatricians and parents alike are guilty of not allowing the child to speak and consequently, become an active participant in their own care.

Szabo et al. (2016) [13] conducted a systematic review of the literature on patient adherence to burn care and concluded that adherence may vary as a function of different factors. They suggested future research should assess pediatric burn patients as a separate population, as well as investigate adherence to multiple aspects of the burn care regimen. The authors claimed that to

enhance adherence to burn care across all age groups, healthcare providers should educate their patients on various treatment components and tailor these components to meet patients' goals and needs, as feasible.

For children with burns to have positive learning experiences and good health outcomes, teaching tools must be developed that are age appropriate. Using age appropriate teaching materials is important to decrease their anxiety and enables children to voice their concerns. Children, especially young children, may have a satisfactory use of language, but still require a simple explanation. Their ability to think concretely can help communication and explanation. Children may also have sufficient experiences with health and health care due to their hospitalization and consequently can develop a good understanding of what is required of them to care for their bodies. Despite this, few age appropriate resources are available and even fewer age appropriate measurement techniques have been developed to measure the whether or not the child learned from the teaching tool.

In developing countries, comic books have been used to teach children aged 5 to 7 about burn prevention (Sinha et al., 2011) [14]. The American Burn Association and other agencies also offer valuable teaching tools and resources to prevent burns. However, no information or teaching tools have been found to date that teach children on discharge how to care for their bodies after a burn injury.

Recognizing the importance, yet lack of tailoring teaching materials to developmental level and cognitive abilities of children with burns, Jenkins et al. (1998) developed and then investigated the use of an age appropriate discharge teaching book written at a grade school level of readability in a single-blind randomized trial to children less than 12 years of age and their families. Patients' and caregivers' knowledge and satisfaction was measured by a 17-item researcher-generated questionnaire and a personal interview at the time of the child's first follow-up visit to the outpatient plastic surgery clinic after discharge from the burn unit. Overall the discharge teaching book improved the burn-care-related knowledge of caregivers but not in the children who were burned. Several factors may have influenced the results of the study including diverse ethnic backgrounds, values and personal beliefs, lifestyles and home environments as well as family infrastructure. Particularly noted is that the person who was interviewed in the clinic was not always the person who was taught at discharge nor the primary caregiver. A very large variance in knowledge scores was found and thus, statistical significance was not found; however, higher knowledge scores were found in those recipients of the discharge teaching book who were the same individuals who brought the child back for follow-up. No significant findings were found among children participating in the study and most likely a result of cultural and language barriers.

Clearly there is a need to educate and support children following a burn injury as shown in a retrospective, cross sectional longitudinal study of eighty pediatric burn patients in a regional burn center. These patients were younger than eighteen years at time of burn injury and survived massive burn injuries involving $\geq 70\%$ of the total body surface area. Evaluated at an average of 14.7 (SD = 6.0) years after injury, Sheridan et al. (2000) [15] found that children who survive severe burns have lingering physical disabilities, mobility issues, scar management, and sometimes depression. However, most of them did have a satisfying quality of life. They also showed that the child's early re-integration with pre-burn activities predicted higher general healthy scores ($p=.03$), physical functioning ($p=.003$), and physical role ($p=.01$). The importance of multidisciplinary follow-up care was emphasized and when follow up care was continued for two years, these children had higher physical functioning ($p=.04$) (Sheridan, et al., 2000) [15]. The importance of follow-up care such as keeping doctor and physical therapy appointments was emphasized to both parent and child through education that began in the hospital and continued on an out-patient basis.

The first mention of the psychosocial sequelae of children with large ($>80\%$) total body surface area was done by Blakeney et al. in 1993. Although several assessment tools were used to examine 25 children, most relevant to this review of literature was the use of journal entries and art as a way to gain a better understanding of psychological adjustment. A journal entry of a child who suffered 99% TBSA burns, viewed himself as living in a "nightmare" but rated himself on standardized tests as within normal limits. These discrepancies of his perception and that of his parents and teacher are noted as all correct. Successful resiliency on the child's part was attributed to utilizing suppression verses repression of feelings (Felsmar & Vaillant, 1987). Through suppression the child had access to pain verses a child who represses feelings and therefore, does not deal with their feelings or the situation. The child responded in a journal entry to the question "If I could do anything while I am alive I would..." "get my old body baaaack." Noted is the emphasis of stretching the word "back" because it can be imagined that the child was emphasizing or screaming this word. The second part of the assignment directed the child to "draw yourself doing something that you really want to" and a picture of the child fishing was drawn. Another picture assignment asked of a different child was a picture template of a hand holding a mirror and the question asked was "I am different from other people because..." The child wrote, "I am burned, and I feel as if the world is upside down." These journal entries utilizing art provided rich access to the children's inner feelings even though the child regarded themselves as "normal" on paper-pencil assessment tools used. Both of these boys and other children who responded said they were glad to be alive and were looking forward to the future with hope and optimism, but they also were sad and angry and wished they had never been burned. This

study showed that by using a completion sentence and art, children could express their emotions and provide greater insight into the phenomenon for the researchers conducting the study.

The use of journal entries and art allowed pediatric burn specialists to understand that children's adaptation to their injury is a process that occurs over many years and as health professions, the importance of offering support and guidance and validating children's struggles as well as celebrate their victories and accomplishments. Art allowed a door into the child's inner feelings previously not able to be conveyed. It is important that clinicians and investigators increase their awareness of psychological symptoms associated with traumatic injuries such as burns and provide treatment during the immediate post-injury period and throughout hospitalization at an appropriate level that the child can understand. Encouraging a child to draw pictures may be a valuable method of inquiry.

Another method of inquiry that seems appropriate for children is that of storytelling (Macfayden, 2004) [7]. Storytelling enables the child to become a more active participant with respect to their healthcare. Listening to children's stories provides insight into their level of understanding and can provide information about gaps in their understanding and comprehension. Storytelling also builds and strengthens the nurse-patient (child) relationship (Bankes-Wallace, 1999).

Purpose

As clearly noted by frequent reviews of the literature, there are to date few age-appropriate resources to teach pediatric burn patients how to care for their body following discharge. In addition, there is a lack of tools to evaluate whether or not learning takes place in discharge teaching of a child. This information along with the PI's clinical experiences with children with burns, provided the impetus to develop a coloring book with age-appropriate text to help children understand their burn injuries and how to take care of their bodies after discharge from the hospital and for the rest of their lives. Based on literature and clinical experiences, *The Pediatric Burn Book*© (xxxx, 2003) includes seven major education/learning points: protecting and caring for the skin; nutrition; exercise; self-care activities like dressing themselves; sleep; going back to school; and, keeping their follow up doctor appointments.

Therefore, the purpose of this study was to explore the experiences of children with burns and provide insight into whether an age appropriate teaching tool, *The Pediatric Burn Book*© (xxxx, 2003) could help young children with burns learn how to take care of their bodies following discharge.

Methodology

Design and Method

This study used storytelling in the narrative tradition and interpretive phenomenology to better understand if pediatric patients with burns are able to learn about their

burns after reading a book designed to teach children about their burns. This study also assessed whether children could express what they have learned through drawing a picture and telling a story about their picture. *The Pediatric Burn Book*© (xxxx, 2003) is a coloring and education book authored by the PI and used in this study as an age-appropriate learning tool to help answer the research question, what are the experiences of children hospitalized for a burn injury who have read *The Pediatric Burn Book*©? Telling stories is considered a natural human impulse (White, 1981) [17] and primary way of making sense of an experience (Mischler, 1986) [18]. When people create meaning from an experience, they often organize encounters into coherent stories (Chamberlain, 1997) [19]. Storytelling or narrative pedagogy was developed by Nancy Diekelmann (2001) [20] after an extensive analysis of shared experiences of teachers and students within the discipline of nursing was done. Storytelling has been shown to be helpful in reforming the climate in the nursing classroom, and gain understanding (Ironsides, 2003) [21]. Faculty use stories as examples to facilitate knowledge acquisition; promote greater understanding and comprehension and illustrate various nursing concepts both good and bad. Students responded positively in course evaluations stating that stories helped them learn and retain content covered in the classroom (Schwartz et al, 2007) [22].

Storytelling is an ideal method for gathering data from children because it gives children of any age, the opportunity to provide information. For younger children just learning to read and write, storytelling offers a mechanism for expression of thought and emotions. For the researcher, a story often yields rich, in depth information to better understand the phenomenon under study. According to Macfayden (2004) [7], storytelling is an age appropriate method for children to determine whether learning occurred.

In addition, some studies generally conducted by psychotherapists or child life therapists have used art therapy as a way to gain deeper meaning into children's thoughts and feelings (Beebe et al., 2010; Blakeney et al., 1993) [23,24]. Trollvik et al. (2011) [25] utilized drawings to explore children's experiences of asthma and 15 children were interviewed after they narrated the meaning behind their drawings. The use of drawings and storytelling in child research is a powerful way of collecting data to gain a better understanding and in-depth knowledge into children's experiences, feelings and emotional well-being.

Sample

Children admitted to the hospital with a second or third degree burn injury, between the ages of 5 and 10, and could speak and read English were recruited for this study. Children with first degree burns are rarely admitted to the hospital and thus, were excluded. Children with burns on their hands were also excluded from participation because of the nature of the study and potential difficulty coloring pictures and drawing.

Purposeful sampling was used to select 24 children who met initial study criteria. Twenty children participated in the study. Four children were eliminated or did not participate. Of those four: one child only spoke Spanish (the book was only available in English); one child who met the criteria was discharged before the PI could get to the hospital; another child's family could not be located to sign the parental permission form despite giving verbal consent over the phone to the PI; written consent was required. The fourth child on closer examination by the PI had burns on their dominant hand which would prevent the child from coloring or drawing a picture.

Demographics of Child Participants

Of the twenty children with burns that did participate in the study, 20% were female and 80% were males; ages ranged from five to 10. The majority of participants had been admitted to the hospital for second degree burns except for one participant admitted for third degree burns. All spoke English and were able to read except for one child that was read to by the PI. Eleven were Caucasian, 6 were African American, and 3 were Latino. All participants were able to draw a picture that included themselves and were able to tell a story about the picture they drew. Demographic data are further presented in Table 1 and Table 2.

Type of injury	Male	Female	Number of Participants
Scald	6	2	8
Flash	2	0	2
Flame	6	0	6
Contact	1	2	3
Electrical	1	0	1

Table 1: Type of burn injury and gender of study participants (N=20).

% TBSA	Number of Participants
<5%	12
5-10%	4
10-15%	2
15-20%	0
20-25%	1
>25%	1

Table 2: Percentage of total body surface area (TBSA) burned (N=20).

Setting

This study was conducted in the patient's room at a Level One Trauma Center and a Burn Center in a large metropolitan teaching hospital in eastern Pennsylvania. Children with burn injuries are admitted to one of three units in the hospital including: Pediatric Intensive Care Unit (PICU); in-patient pediatric unit, or adult burn unit with designated beds for children.

Recruitment Procedures and Protocol for Data Collection

Once approvals from the appropriate Institutional Review Boards including Duquesne University (IRB# 10-38) and Lehigh Valley Health Network (IRB# 2-20101107) were obtained, recruitment activities began. Fliers announcing the study were posted on the burn units and in strategic places to remind staff of the study. Recruitment and study procedures were reviewed with key recruiters; specifically, Registered Nurses including charge nurses, patient care specialists, the child's life therapist as well as bed-side nurses who initially described the study to parents and children that met study criteria. If interested in

participating, the PI was contacted by phone and then met with the child and parents to further explain the study, answer questions and obtain child assent and written parental permission for participation. Prior to initiating the protocol, the PI spent a few minutes talking and sometimes playing with the child to establish a rapport, gain the child's trust and help make the child feel comfortable.

Demographic information was first obtained via the researchers' generated demographic form to qualify study participants and to describe the sample population under study. The child's age, gender and race were recorded. Type of burn injury such as scald, flame or chemical burn; physical location of the burn injury; and, percentage of body surface area (BSA) involved were also recorded on the demographic form but accessed via the child's medical record. A numeric code was used on all study materials to protect confidentiality of data collected. Subsequent data collection occurred in the privacy of the child's hospital room. Parents had the option to be present during data collection if they so desired.

Once all demographic data were collected and criteria for participation met, the child was given a copy of the

Pediatric Burn Book© (xxxx, 2003) and a set of crayons. The child was asked to read and color pictures of their choosing in the coloring book. The book is informal, written in large font with coloring pages in it. There is also a word find puzzle for the children. Seven major education/learning points are clearly described that include: protecting and caring for the skin; nutrition; exercise; self-care activities like dressing themselves; sleep; going back to school; and, keeping follow up doctor appointments. The coloring book includes age-appropriate text and pictures for coloring associated with each of the important healthy behaviors listed. For example, one picture for coloring is of a child riding a bicycle with a statement, "It is important to get exercise and stretch your muscles even though your skin is tight from the burn." If the child was unable to read, the text was read to them.

Once the child was done coloring, the child was given a drawing pad and asked to draw a picture of their self since their burn injury. Although the PI kept the original drawing for analysis purposes, the child and parents were told that a copy of the drawing would be made if they wanted to keep it. The child was offered the coloring pad, colored markers and coloring book as a token of appreciation for their participation in the study. Field notes were taken noting the child's responses or behaviors during the coloring sessions.

After the child was done drawing a picture of themselves, the PI asked the child to respond to the question, "Tell me about your picture." This allowed the child to "tell their story" in their own words and in their own time about the picture they drew. If the child was reluctant to talk, a question such as "Is there anything you remember about what you read, or we talked about today?" The child's responses or story about the picture drawn was audio-recorded for further analysis with permission from both child and parent.

Analysis of Data

- | |
|---|
| <ol style="list-style-type: none">1. Taking care of my body2. What happened to my body3. Feelings of Fear & Anger4. It hurt, and I was uncomfortable5. Trouble sleeping6. What I like to eat7. My body itches8. Thinking about outside9. Being upset with my parents10. My experiences with colors or the alphabet |
|---|

Table 3: Meaning Units.

Meaning Unit 1: Taking care of my body

Taking care of my body was the most commonly identified meaning unit. Most of the children identified the importance of using sunscreen, wearing protective clothes in the sun and wearing warm clothes to protect their skin in the winter. One child after drawing a picture of using

Prior to analyses, all study materials including demographic form, drawings and audiotapes were de-identified to protect confidentiality. Descriptive statistics were conducted on demographic data to describe the sample population under study. Audio-recordings of each child telling their story about the picture they drew of themselves after their burn injury and after reading and coloring in *The Pediatric Burn Book*© (xxxx, 2003) were transcribed verbatim and entered into a qualitative management system, specifically NVIVO Version 9 (2010) [26].

The phases of data analysis occurred with a phenomenological hermeneutic approach that involved a dialectical explanation and what possibilities are opened. It consisted of three phases: naïve understanding, structural analysis, and comprehension understanding (Forsner, et al., 2009) [27]. The PI first read over all the transcribed interviews and listened to the audio recordings to acquire a sense of the whole and obtain a naïve understanding of the children's experiences. This required several readings. Using a structural analysis approach, this information was then analyzed for meaning units. Meaning units were identified by finding similarities in experiences as told by child participants and frequently occurring language used. Meaning units can be one or more related sentences. Meaning units were entered into NVIVO and then analyzed for themes. Meaning units were compared to the seven-major educational/learning points illustrated in the coloring book to gain insight into whether or not the child identified any of the education points and thus, learned about their burns and ways to care for their body after discharge.

Findings

Meaning Units

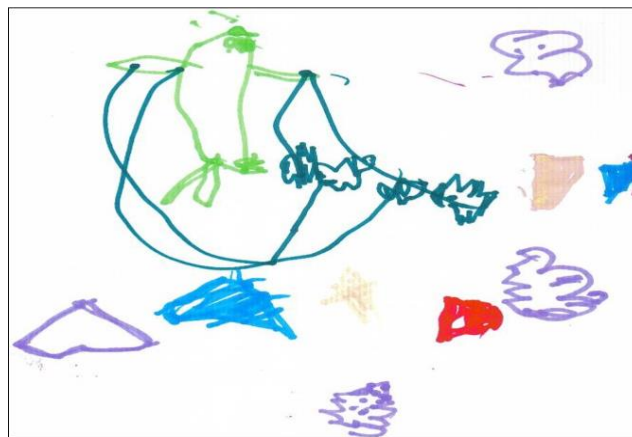
Ten meaning units (summarized in Table 3) were identified during analyses of transcripts. Each meaning unit is described individually as follows:

sunscreen (Figure 1) stated, "When I go outside in the sun, I am going to put on a hat, a shirt, and uh an undershirt...and sun block." Another "When I go outside, I have to put on the cream. I need to put the cream on, so my face heals good." Also, "I have to eat healthy...ummm, I have to exercise, take vitamins, and put the cream on."



Another boy stated, "When I go outside, I can't wear short sleeves in the sun and all that. I also need to get sleep and eat right." He also said, "If I get a crack in my skin, I have to tell my mom right away and she'll give me medicine...and

come here for your appointments." Participants also identified the importance of eating healthy foods such as chicken nuggets, ice cream and milkshakes (Figure 2).



The next component of this meaning unit was brushing their teeth. This was particularly so for a child who had an electrical burn to his mouth from biting an extension cord that was plugged into an electrical outlet. Taking care of his mouth was very important to him. He was asked about his picture (Figure 3) and what was in his hands; he replied, "toothbrush and toothpaste."

When asked why he was using that he said, "So I can brush my teeth. That...Uhm, cuz it stuff takes care of your teeth. Cuz if you don't brush your teeth you get yellow teeth? He also stated I still got baby teeth." Then when I pointed to the child's wound on the right side of his mouth, his boo-boo he said, "brushing my teeth will make it heal better."



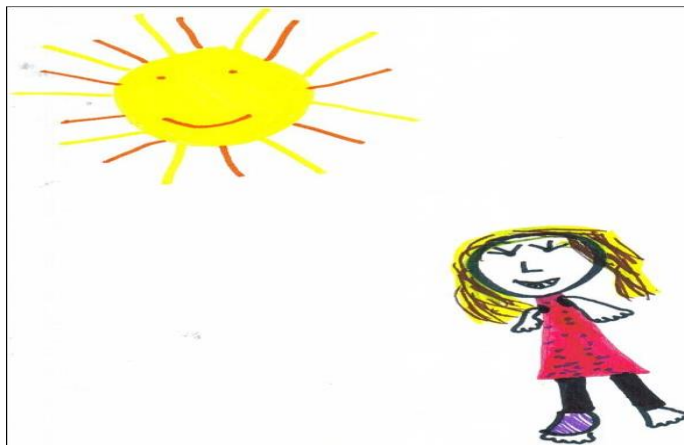
Two children mentioned the importance of sleep and one five-year-old child that had to wear a pressure garment indicated that exercise was important. The nursing staff

tried to teach him the importance of the pressure garment, nicknamed a "spider man suit," and taking care of his body but he did not like it because it fit him too tightly.

Meaning Unit 2: What happened to my body?

The second most identified meaning unit was “What happened to my body?” Some of the children did not actually draw a picture of the fire incident after reading and coloring in the book, but they were still eager to talk about

what happened to them and wanted to tell the PI about their picture. Some spoke in great detail and others as a matter of fact. One child drew a picture of herself with a purple cast on her leg which was actually a dressing (Figure 4).



One child drew an exact color replication of himself in the hospital, matching the colors of his pajamas and dressings. He was very eager to draw and participate despite having to wear a splint which kept his arm extended at ninety degrees. Another child drew a very detailed picture and

said, “My mom was going to the sink and I was going to the sink and she was carrying boiling water and bam this is what happened.” As shown in Figure 5, the child drew a very detailed picture of the dining room and kitchen set-up and how the accident happened.



He not only wanted to talk about the event but also draw it. It is not uncommon for children that have experienced a traumatic event to re-live the event and also have consecutive nightmares about it. Another child was burned by hot water. Scald injuries are the most common burn injury in this age group. He was making hot tea for his mother. When asked what happened he said, “I am pouring water in the cup and the cup spilled on me.” He described the expression on his face that he drew as shown in Figure 6 as, “It was like ouch yahhhhh ahhhhh ahhhhh.”

that his mom turned on the exhaust fan above the stove. He said, “everybody knows wind helps fire.” He was also annoyed that his mother did not have a fire-extinguisher as noted with his comment, “I don’t know what person wouldn’t have a fire extinguisher?” He also shared that he had been hospitalized five times for various reasons, but this was the worst admission. Some children were not as eager to participate and talk. One child from out of state had a mother who opted to treat his 2nd and 3rd degree burns at home holistically. He drew a picture of himself sitting in his bed in his hospital room and said he was “waiting for his legs to heal.” His legs and face were burned from a flash injury involving gasoline, so he had deep 2nd and 3rd degree burns that required grafting. They lived far away,

The children who did not appear to adapt to their injury almost seemed “stuck” on the day it happened, appeared to re-live the day like it happened yesterday and wanted to talk about what happened to them. One child was annoyed

out of state, and transportation was an issue because the child was going to have a prolonged

hospital stays. The child had a flat affect and because of the burns to his legs he had to learn to walk again with physical therapy. He did not really want to discuss how he was injured and appeared as if he were stuck in the events of the hospital room and was not interested in talking about when he was going to go home as shown in Figure 7.

Another child did not draw a picture about the burn injury but of himself outside in the yard. This child was having emotional outbursts and anger issues, throwing items, food trays and other items in his room and ripping the sheets off his bed. At first, he refused to talk to the PI, but after some time was spent sitting quietly with the child and watching cartoons, he began to tell his story as illustrated by the child's drawing (Figure 8). He said he got burned because he was trying to "save his five-year-old brother." Apparently, a neighbor "kid" came into their yard; put a tarp over his brother; and, poured gasoline on the tarp and lit it on fire. When the child participant saw this, he ran over to pull the tarp off his brother and the lit gasoline poured down the front of him. He had not told the events leading up to his burn injury to anyone on the in-patient burn team. He shared that he was angry because he told his mother and she "didn't do nothing." Also, he was angry because he thought that the police should be called, and the neighbor punished. Although this information was shared with the participant's Mom, his concerns were dismissed by her. The child's concerns were also shared with the primary nurse who consequently, notified social services. Also of interest with this patient is that he would only use pencil to color not the colored markers provided.

Meaning Unit 3-Feelings of fear & anger

Many children expressed feelings of fear and anger. One child said, "It's all I could see was fire." Some children spoke of fear of dressing changes and during the ambulance ride. One child was mad at his mother for not having a fire extinguisher. Another child was angry because the neighbor kid who started the fire "didn't get into trouble."

Meaning Unit 4-I hurt, and it was uncomfortable

Children had various reports of hurt & discomfort. For example, one child was asked if it hurt with his sling and shoulder immobilizer on, he said, "Yeah kinda, it gets in the way." Another child describing the event said, "It really hurt, it hurt at a 10! "She poured water on with ice cubes, then it didn't hurt at all." When asked if he received pain medicine he said, "yeah I took it, but she said I can only give you pain medicine for a 4 or 5. My mom couldn't do medicine for a 10." His mom was at home doing dressing changes with oral pain medication of oxycodone. Another child said, "mom help me." He said it was because it hurt and "I just wanted to jump in the pool so I could cool off, but she wouldn't let me." He also said that he was not sleeping well because "I was in pain with my right leg, really couldn't sleep, and then they changed the sheets cuz all the wet

(drainage) and stuff, and then they gave me pain medicine and then I could sleep". One child said as he was talking about his picture "Ouch, it was like ouch yahhhh ahhhh ahhhh." He also described the pain as "it kinda like aches and then it stops. It goes again and then it stops." The child participants also described their pain as "shocks" or a "pinch." One child was concerned that the dressing change was going to hurt but he went to sleep and when he woke up, it was over! (Figure 9).

Meaning Unit 5-Trouble sleeping

Trouble sleeping was also described frequently by the children due to dressings, positioning, itching and pain. One child when asked why he was having difficulty sleeping said, "Yeah cuz it itches sometimes." Other children were not able to sleep because of positioning and wearing a cervical collar and shoulder brace (to enable the graft to take). When asking about sleep, one child said "Not so good. It's kinda uncomfortable." Another child knew it was important to get good rest as indicated by "I have to be sure I get enough sleep" and also indicated that the medicine they gave him helped him do that; prior to receiving the "medicine" he was uncomfortable. Pain sometimes kept them from sleeping. "Uh, last night I was in pain with my right leg, couldn't really sleep, and then they gave me pain medicine, meds and then I could sleep." Another child said, "It's about me sleeping, and I really like to sleep, cuz I'm usually tired." He further described his "dream bubble" was a picture that he drew of a turtle drinking because he liked turtles as shown in Figure 10.

Meaning Unit 6-What I like to eat

Some of the children wanted to talk about food. One child while describing his picture said, "that's a hamborder (hamburger)" and also talked about juice in his picture. Another stated, "I love chicken nuggets... cuz theyz healfy." Ice cream of different colors was also drawn. When asked why they liked ice cream, the response was, "It is good for you." Another child after reading and coloring in the book said, "Well the biggest thing I learned is to eat healthy." Another child shared, "I love fruit cups. They taste real good and it makes it (the burn injury) heal better.

Meaning Unit 7-Thinking about outside

Some of the children drew pictures of the outside. One child drew a picture of a child standing outside and when asked what was in the picture said "me...and that is my cast." another child when describing their picture said, "that's a snowman...and the sun." Another said "that is grass...and that's the sun..." They did not recall if their injury occurred on a sunny day. One child said, "I'm just standing outside... (and this is) a dog." He stated he did not have a dog but wanted one. One child stated "I drew the sun right there, cuz there is sun that comes in my window and it always bothers my eyes. I wish I had a kite right there like a blindfold that I could put over there, so I drew a kite". Interestingly, seven of the 20 drawings included the sun colored in their picture, not always yellow, but present.

Meaning Unit 8-My body itches

Because several children participating in the study experienced itchiness as their burn healed, itchiness was initially grouped as a separate meaning unit. One child said that his padding (the dressing) itched. "Well it's not really the padding, and it's the burn. Plus, I can't lay on my butt because of the padding. I have to lay on my side all the time. I wish I could lay on my back cuz I always lay on my back to sleep." When asked if any medication had been given to help with the itching, the child said, "yes but it doesn't really help for long. It itches again and then I can't fall to sleep." Another child said, "yeah last night it itched a lot." When asked if he called the nurse and asked for medicine, he said "umm hmm."

Meaning Unit 9-My experience with colors or the alphabet

Some of the youngest children in the study did not draw anything in their picture related to the burn injury. One five-year-old identified the person in his drawing as "a person holding a Y." He then said, "that's an E backwards, and three X's." As the interview progressed, he shared that it was really him in the picture and that he was indeed learning to write his letters and was practicing that. Another child shared her favorite colors were "pink and purple" and used mostly those colors to draw her picture. One child drew triangles in several colors. When asked what was drawn at the bottom of the page they said, "ummm a triangle." One child drew different colors of ice cream along with a triangle in the drawing. Another child identified three things drawn in purple in her picture as a ladybug named Tasha, mommy and daddy. The child that had drawn the dream bubble with a turtle in it said that his favorite color was green. Of these five children, three were five years, one was six, and one was seven.

Meaning Unit 10-Being upset with my parents

Two of the children were really upset with their parents and voiced their opinions openly to the PI. The one child who was initially acting out said, "My mother lied to me, she said she would never leave me and she leaves me all the time, see she said she would never leave and she keeps going for a smoke and never comes back. She never comes back; she always breaks her promises." When the mother returned the child said, "Where were you?" The mother replied, "I went out for a smoke." The child said, "That long, you are a liar. You lie to me all the time." Another child said "So...I don't know what kind of person wouldn't have a fire extinguisher. Now I've been in the hospital five times." He also shared "Well when Sam (his sort of step-dad, his words) gets out (of jail) we're gonna move, yeah when he gets out of jail, we're gonna move." When asked if that was going to be a good thing he said yes because children at school pick on him. One child was a victim of intentional (burn) abuse at the hands of his father. He did not want to talk about family or emotions at all. He spoke of a "darkness camp" where he plays hide and seek with his brothers under the table and chairs. This child was referred to the

social worker. He spoke of a man named Ned who had an assembly in school about yo-yo's. His concern was that he didn't get his free yo-yo because he was not in school because of his burn injury. This was very important to him. He shared that the principle of the school said that he might still be able to get a yo-yo. It is obvious he was missing school activities in the hospital.

Common Themes

From the 10 meaning units as described above, three common themes emerged including: 1) Feelings and experiences; 2) Adapting to my life now; and, 3) Relating in my world.

Theme 1: Feelings and Experiences

The children in this study had a wide range of feelings and experiences. Feelings of anger directed toward their parents and fear experienced were shared. The children were mad at their parents for not having a fire extinguisher in the house or because they felt that their parent had lied to them or had broken a promise. They experienced hurt and pain as well as general discomfort. Their body itched. They had trouble sleeping and talked about what happened to them and how sometimes the "medicine" helped and other times it "didn't." Some children drew a picture of the actual burn event while others drew something else, but still wanted to talk to about the burn event and their experiences with it. One child, experiencing anger while not articulating it, shared how he had saved his younger brother from injury but in turn was burned himself. He was adamant that the child who caused the injury to be found and punished. Another child who had experienced considerable fear drew a picture of a microwave on fire after he had put aluminum foil in it and showed how the fire burnt his arms (Figure 11).

Theme 2-Adapting to My Life Now

The children shared what they like to eat and verbalized how some of the food was healthy and would help them and their bodies get better. They recognized in their own way the importance of good nutrition, even if some of their choices were fast food items like chicken nuggets or ice cream or milkshakes. The children also discussed ways by which they could take care of their bodies by using sunscreen, wearing protective clothing (warm and cold), hats, brushing their teeth and taking vitamins. Figure 4 shows a child who has incorporated her purple burn dressing into her colorful outfit and is outside in the sun.

Theme 3-Relating in My World

Children are very resilient and have a way of coping according to their stage of development. Some children respond to things by playing or trying to make things "normal" in their own world. The children who talked about colors and shapes like triangles were living in their own world and doing what was "normal" for them such as coloring shapes, of which they do each and every day. One

child was just learning the alphabet and used this opportunity to practice his letters, next to his drawing of himself. Another child was very imaginative and shared her thoughts of ice cream in various flavors, food, a ladybug who she named Tasha, triangles, her mommy and daddy, and although not easy to identify herself with a little circle by her leg which was her "boo boo." While these items in her drawing were not easily identifiable by adults, she knew what everything was and used her imagination through coloring a picture to share her thoughts.

Education/Learning Points

The meaning units were also analyzed relative to the seven, major educational/learning points illustrated in the coloring book to gain insight into whether or not the child identified any of the education points and thus, learned about their burns and ways to care for their body after discharge. The seven, major education/learning points included: protecting and caring for the skin; nutrition; exercise; self-care activities like dressing themselves; sleep; going back to school; and, keeping their follow up doctor appointments.

To evaluate whether learning occurred, each of the above meaning units were compared to the seven major education/learning points in *The Pediatric Burn Book*© (xxxx, 2003). For learning to occur, the child had to have at least one of the meaning units in their drawing or while describing their drawing to the PI, talked about one of the meaning units. If the child did not include an example of a meaning unit in their drawing, the PI asked the child if they remembered anything about what they had talked about that day. If the child did not mention any of the seven education points in the book, it was concluded that the child did not learn anything from the coloring book.

Of the 20 children with burns that participated in this study, 16 (80%) children identified one or more of the seven educational points in their drawings and thus, provided at least one example of a meaning unit in their drawings. Two children did not identify at least one example of a meaning unit in their drawing or in the story they told about their drawing until asked specifically what they had learned from reading and coloring in *The Pediatric Burn Book*© (xxxx, 2003). Only two children, a five-year-old and a six-year-old, did not identify any of the educational points nor were they able to provide an example of a meaning unit in their drawings. In addition, these two children were not able to address any of the seven educational points when asked.

Discussion

This study was conducted to explore the experiences of young children with burn injuries, specifically to gain insight into their ability to learn about taking care of their bodies after reading and coloring in an age-appropriate discharge teaching book. It is vital that children with burns learn how to take care of their bodies after returning home and the importance of good nutrition, exercise and follow-

up care. Discharge teaching needs to be presented at the child's developmental level and cognitive abilities.

That said, an age-appropriate discharge teaching book, *The Pediatric Burn Book*©, developed by the PI in 2003 was given to the child to read and color the pictures. Drawings and storytelling are an excellent way for younger children just learning to read and write to learn and express their thoughts (Macfayden, 2004) [7]. Thus, after reading the age-appropriate text and coloring pictures of healthy behaviors, child participants were asked to draw a picture of what they learned and then tell their story. Children want explanations and those children who begin early to take care of their bodies after injury become enthusiastic participants of their care. They liked coloring the pictures in the discharge teaching book and then drawing a picture of themselves. They were eager to share their experiences about their burn injury and describe the picture they drew. Findings showed that with few exceptions, most of the children learned about at least one major healthy behavior that they should do to take care of their bodies after discharge. Interestingly, the two children that did not draw or share their experiences through storytelling, indicative of learning, were still excited to talk about their burns. It may be that these two children, the youngest of the participants, were not yet at the stage of their development to understand the importance of caring for their bodies. More time to process the education/learning points may be needed to address discharge teaching and healthy behaviors at this age.

Communicating with the child and not just the parents builds confidence and self-esteem while decreasing feelings of fear and anxiety and could be further explored. This may help them as they enter back into society, school, and face the world after discharged from the hospital.

The findings in this study illustrate both pictorially and orally some of healthy behaviors children with burn injuries learned from reading and coloring in the discharge teaching book. The children were able to illustrate through drawing a picture and then telling their "story" of what the picture represented articulate in their own words their experiences after reading and coloring in the book. Without the help of their drawing, they may not have been able to share this information orally during the interview. These findings further support the use of drawings and storytelling when conducting child research (Macfayden, 2004; Trollvik et al, 2011) [7,25].

Connections are seen between the meaning units and major themes which illustrate the overwhelming resiliency children who undergo a major traumatic event such as a burn injury have. The first major theme of "Feelings and Experiences" illustrates what the children are feeling and experiencing. This theme was supported by six meaning units: being upset with my parents, feelings of fear and anger, it hurt, and I was uncomfortable, my body itches, trouble sleeping, and what happened to my body. The second major theme of "Adapting to My Life Now" encompassed ways by which the children needed to: take care of their body, what I like to eat, and what happened to

my body. By realizing what happened to their body and then how to take care of it since the burn injury may help them adapt to their new life and incorporate the burn injury and care of their bodies into their "normal routine." Lastly, the theme "Relating in My World" depicts ways that children with burns move on and experience the world around them at their developmental or cognitive level.

Through the meaning units of thinking about outside, and my experiences with colors or the alphabet, children demonstrated what they were capable of thinking about. The younger children (age 5 and 6) in the study appeared unable to do what was being asked of them and may not have learned anything from the discharge teaching book. They had difficulty concentrating and drawing a picture of themselves after experiencing their burn injury. These children did draw something that interested them and relate through colors, shapes, or the alphabet in their picture to share. Younger children are concrete thinkers and act in the "here and now." They have thoughts that come in and out of their mind. While they did pay attention while the discharge teaching book was read to them, they were not able to draw anything related to their burn injury. One child was practicing his "letters" because he was learning how to write the alphabet. Another child drew triangles. In addition, it is difficult to ascertain whether the two other children who drew a picture of being outside learned from the discharge teaching book. However, when prompted, both children were able to address at least one healthy behavior that they should do to take care of their body. Age, developmental level and attention span may have been a factor and should be considered when utilizing art as a tool for communication. It is imperative that age appropriate resources are used in child research and need, as noted by Szabo et al. (2016) [13], to be tailored accordingly.

Limitations

Although this study contributes to the understanding of children with burns, it is not without limitations. The nature of this study does not allow generalization of findings. Only one pediatric burn center in eastern Pennsylvania was used to conduct this study. Purposeful sampling was used for recruitment procedures due to the limited age range of the population under study. Lastly, child participants were given the option to have their parents remain with them during participation. Some of the children opted for their parents to be present and others did not. It is not known whether the presence of parents during the interviews influenced their stories or responses.

Contributions

It is not uncommon for nurses and other health professions to provide discharge teaching to parents of a hospitalized child yet ignore the child or send the child off to play. In addition, few age-appropriate resources are available to teach younger children how to care for their bodies when they go home. This study showed that children with burn injuries are willing and eager to learn when an age-

appropriate book is used as the mechanism to learn. In addition, this study further supports the use of drawings and storytelling in child research.

Future Research

To further build the science, reliable and valid age-appropriate instruments should be developed to measure the extent of learning during discharge teaching. It would be interesting to follow children with burn injuries following discharge to determine whether or not they incorporated what they learned from the discharge teaching book in their daily activities. It would also be of value to investigate the effects of learning how to care for their bodies after a burn injury on attributes such as confidence, self-esteem, fear and anxiety.

Conclusions

This study provided a better understanding of children who experienced burn injuries. Through the use of drawings and storytelling, children participating in this study were able to express their feelings and thoughts about learning how to care for their bodies after discharge and thus, explore the true experiences of children with burn injuries. The findings of this study support the use of drawings and storytelling in child research. The importance and value of including young children during discharge teaching so that they can learn how to care for their bodies is also supported by the willingness and eagerness displayed by the children participating in the study. The findings of this study also show that young children can learn during discharge teaching providing age-appropriate resources are used. Nurses and other health professionals should include children with burn injuries in discharge teaching.

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