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# Massage Therapy Intervention for Pediatric Palliative Care Patients and Their Families

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## Abstract

This study examined the feasibility and acceptability of a massage therapy intervention for pediatric palliative care patients and their adult caregivers to reduce their symptom impact at an urban pediatric hospital in Omaha, NE. Potential symptoms to be impacted by massage included stress for caregivers and pain, nausea, dyspnea, and anxiety for children. One hundred and thirty five massages were delivered to patients and caregivers in the PICU, NICU, and the inpatient hospital floor during the course of this non-randomized, pre-post study. Validated instruments were used to collect objective data from patients and caregivers, while observations were used to record subjective data from the experience. Nurse surveys were administered to seek feedback on bedside caregiver evaluations of massage. Massages lasted approximately 10 minutes per child and caregiver. Changes in FLACC scores for children and NCCN Distress Thermometer scores for primary and secondary caregivers after the massage intervention were found to be significant with  $p < 0.0001$  for all scores using Wilcoxon's signed rank test. Notable positive qualitative observations were present 34.8% of the time. RN's were very positive in their evaluation and acceptance of massage as a positive experience for their patients and families. Results prove that children and caregivers find massage an acceptable method of providing symptom relief. Based on the results, creation of a full time massage therapist position at the urban Omaha, NE pediatric hospital should be sought. A full time massage therapist position will increase the amount of massages given on a weekly basis, which will positively impact symptom relief for palliative care patients and their adult caregivers in the hospital.

## Introduction

The placement site where research was conducted was Children’s Hospital and Medical Center (CHMC). This hospital sees only pediatric patients and houses specialists from all medical disciplines. Their mission is “to improve the life of every child through dedication to exceptional clinical care, research, education, and advocacy.” Their vision is “to be a global leader for children’s health.”

One of the issues currently present at Children’s Hospital and Medical Center is that pediatric palliative care patients often rely only on pharmaceutical interventions for symptom management and children’s hospitals are not biomedically equipped to support the physiologic needs of family caregivers.

This issue is critically important to those who treat and care for palliative patients, in this case, the Hand In Hand palliative care team at CHMC. Most people think of palliative care patients as close to death, but in reality, they are patients who are looking to improve their quality of life. Palliative care teams use a group of specialized providers whose knowledge can support treatment decisions including pain management and emotional support (NHPCO, 2014). The Center to Advance Palliative Care states pediatric palliative care addresses serious medical conditions including genetic disorders, cancer, prematurity, neurologic disorders, and heart and lung disease. An article authored by the Committee On Bioethics and Committee on Hospital Care cited more than 53,000 children in the United States alone will die from trauma, lethal congenital conditions, extreme prematurity, heritable disorders, or acquired illness. In 2016, over 10,000 children under the age of 15 were diagnosed with a new case of cancer

(Reeve et. al., 2016). This number of pediatric patients, especially cancer patients, necessitates a re-evaluation of the methods currently used in practice to reduce the burden of symptoms.

The Center to Advancing Palliative Care emphasizes obtaining palliative care early in their diagnosis can benefit any person, of any age, with any type or stage of cancer. Doctors realize that both the disease and treatments can cause suffering. Palliative care specialists are noted to have the time and expertise to help interpret the medical information that is given to patients but can also help patients and families understand what it means for them. Palliative care teams can help enhance the quality of life of patient and families by explaining “in the moment” items such as treatment side effects or surgery needs, and can also help in the long term by helping families realize the range of the disease and long term treatment implications (Center to Advance Palliative Care, 2018).

Palliative care doctors can use treatments most people would think of when palliative care is mentioned, typically physical symptom management, which most often uses medications to negate physical symptoms. Symptoms which can be improved with quality palliative care include pain, shortness of breath, fatigue, constipation, nausea, loss of appetite, and difficulty sleeping (Center to Advance Palliative Care, 2018). There are also emotional symptoms present in palliative care patients manifesting as depression, anxiety, withdrawal, anger, and stress (Collinge, Mac Donald, and Walton, 2012). Pain associated with cancer especially is one of the most common and salient symptoms reported in children. Pain is also among the most commonly reported symptoms during the last month of life (VanCleve et. al., 2012a). Cohen et al. (2008) state pain management in children with advanced cancer was inferior to techniques commonly used with adult populations. Traditional approaches to

treating cancer pain include non-opioids, opioids, adjuvant medications, nerve blocks, local anesthetics, and surgical interventions. These interventions are useful clinical tools, but come with potential risks of drug abuse and unwanted side effects (Boyd et. al. 2016). Cohen et. al. (2008) states an accurate assessment of pain is needed to guide pain management interventions as untreated pain may have long-term negative and permanent repercussions.

The focus on physical symptoms overlooks the entire realm of psychosocial well-being of the patient and family. To attend to psychosocial well-being, practitioners have had to seek other modalities of providing care. Integrative medicine has been the answer for many practitioners. Integrative medicine, defined by the Academic Consortium for Integrative Medicine and Health (2018), is the practice of medicine that reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic approaches, health care professionals, and disciplines to achieve optimal health and healing. The National Center for Complementary and Integrative Health (NCCIH, 2017) lists natural products, deep breathing, yoga, Tai Chi, Qi Gong, chiropractic or osteopathic manipulation, meditation, special diets, homeopathy, progressive relaxation, guided imagery, and massage as integrative therapies. The objective of this research project was to assess caregiver and patient experiences of a massage intervention.

Massage therapy has been used in the past on a variety of different types of patients. Massage therapy is proving a unique technique for introducing complementary therapies for symptom reduction. The National Cancer Institute (n.d.) defines massage therapy as a treatment in which the soft tissues of the body are kneaded, rubbed, tapped, and stroked. They also state massage therapy may help people relax, relieve stress and pain, lower blood

pressure, and improve circulation. Karagozoglu and Kahve (2013) found massage therapy a cheap and easy-to-perform application with no side effects and, unlike stress response, leads to relaxation in the muscles by reducing tension. Massages are targeted at the skin and muscles under the skin. The effects of a massage can be seen locally or in other parts of the body by way of transmission through the nervous system (Karagozoglu and Kahve, 2013). Essner et. al. (2016) found a single dose massage exposure for children in a chronic pain clinic statistically significant in reducing pain and tension in the child's targeted area. An analysis of studies, reviews, and trials focused on massage therapy in children found promising effects of massage therapy in conditions involving the integumentary, musculoskeletal, nervous, circulatory, lymphatic, respiratory, and endocrine systems (Beider, Mahrer, & Gold 2007).

The positive effects of massage therapy can also be seen in cancer patients. The American Massage Therapy Association (AMTA, 2017) has performed research proving massage therapy's effectiveness for cancer-related fatigue, reducing post-operative pain, boosting the body's immune system, and decreasing pain in cancer patients. Massage therapy can be responsible for relieving overall symptoms and side effects cancer patients suffer due to their disease course and treatment selection (Karagozoglu and Kahve, 2013). Boyd et. al. (2016) found massage therapy to be relatively safe, with infrequent adverse events after a systematic review and meta-analysis of over 16 studies looking specifically at massage therapy in patients with cancer pain.

Ideally, a massage therapist would be available to a patient at consistent times through the week, however this is not always practical or feasible. There are programs that teach caregivers simple touch massage methods that can be used when a professional massage

therapist is not available. Collinge et. al. (2012) cite there was symptom reduction ranging from 29% to 44% for the cancer patient when their caregiver used the learned simple touch method, which is close to the results from studies using professional massage delivery techniques.

Stephenson et. al. (2007) tested foot reflexology on a group of adult patients with metastatic cancer against a control group who was read to. The caregiver of the experimental group was given a 15 to 30 minute teaching session on reflexology and then asked to provide their partner with cancer a reflexology session after they learned the technique. Subjects with cancer reported a significant decrease in pain and anxiety after the reflexology session, while the control group reported no improvements (Stephenson et. al. 2007).

Collinge et. al. (2007) conducted a group training session for couples affected by cancer. He held a day long training session with couples, educating caregivers on massage therapy, touch therapy, and contemplative practices. Hands on sessions and video demonstrations were completed amongst the couples and training materials were sent home with the couples. Home practice was encouraged and refresher meetings were held midway through to address questions and techniques. Follow up focus groups were conducted after the final data collection to obtain qualitative data and explore future recommendations. Specific to massage therapy, the frequency, duration, partner focused self-efficacy, and patient focused helpfulness were all measured and all found to be statistically significant. Of note, Collinge et. al. (2007) found the frequency of the massage therapy maintained through the 90 day sample interval. This was of significance, as they anticipated a drop off after the initial training. Overall, they found an overwhelmingly positive response to both the massage therapy and touch therapy teachings from the couples.

These touch therapies are not just reserved for use on palliative care patients; they can be utilized for caregiver symptom relief. There is a gap in knowledge identified related to caregiver massage therapy impact based upon literature review. There are very few recent articles that apply massage therapy to caregivers and the symptoms they encounter while acting in their role of caring for their loved one with cancer (MacDonald, 2008; Rexilius, 2002). None of these articles specifically focus on caregivers of pediatric cancer patients and their experiences with massage therapy to improve symptoms. In 1998, MacDonald explored the caregiver perception of massage therapy through a “massage respite project.” This project involved a traveling massage therapist who would visit the homes of caregivers to provide a series of three to nine massages. MacDonald cites a decrease in emotional stress, physical stress, physical pain, and sleep distress among caregivers. Out of a subject group of thirteen, only one caregiver did not achieve long-term improvement in their emotional stress, physical stress, physical pain, and sleep distress (MacDonald, 1998). A more recent article by Rexilius (2002) investigates the use of massage therapy on caregivers caring for patients undergoing stem cell transplant. Caregivers are subject to stress throughout the entire stem cell transplant process related to caring for the patient, possible relocation for treatment, financial stress, household management, and the possibility of the patient’s death. These concerns resulted in increased symptom levels in caregivers. After the intervention, caregivers reported significant decreases in anxiety, depression, and fatigue. The researchers cite numerous limitations to their study including a nonrandomized selection of caregivers, events concurrent with the massage, and time of administration of the measurement instruments focusing on anxiety, depression, subjective burden, and fatigue (Rexilius et. al., 2002).

This research looked at closing these gaps of knowledge by assessing caregiver and patient experiences of a massage intervention and understanding the feasibility of massage therapy in the hospital setting. The Hand In Hand team at CHMC sees only pediatric patients, about half of those are affected with cancer. This research ultimately hopes to provide substantial evidence of the feasibility and efficacy of a trial massage therapist, to then educate CHMC board members of the benefits of Massage Therapy. The long-term goal for this research aims to encourage CHMC to hire a full time massage therapist for the Hand In Hand palliative care team to provide therapy on a daily basis to both patients and caregivers. This research was a pilot study for more in-depth research on massage therapy. It provides a standard process to follow and evaluation tools for further assessment of a full time massage therapist.

## Methods

There were three research questions associated with this project:

1. Do pediatric patients with complex, chronic conditions receiving palliative care consults find massage therapy an intervention that is capable of reducing their symptom impact?
2. Do caregivers of pediatric patients with complex, chronic conditions receiving palliative care consults find massage therapy an intervention that is capable of reducing their symptom impact?
3. Do pediatric patients with complex, chronic conditions receiving palliative care consults, their adult caregivers, and bedside nursing staff find massage therapy a feasible intervention to implement in the hospital setting?

Participants were recruited from Children’s Hospital and Medical Center through the palliative care team. The inpatient list of consults and admissions were examined on a daily basis to see if there were patients hospitalized who would be interested in receiving the massage intervention. Dr. Meaghann Weaver, pediatric oncologist, was the main study contact for the palliative care team and had the final decision in recruitment of participants. She also collaborated with her Hand In Hand team, comprised of a nurse coordinator, social worker, Nurse Practitioner, and integrative therapy practitioner.

This study was a non-randomized, pre-post design provided to a group of pediatric patients with complex, chronic medical conditions receiving palliative care consults. The pediatric patients adult caregivers participation in the therapeutic intervention was sought, both in providing information about the child and their experience, but also in providing feedback about their massage experience from a caregivers perspective. IRB approval was sought by both UNMC and Children’s Hospital before any research activities took place. This research was deemed to be a quality improvement project for CHMC and was not subject to any type of review from the IRB.

Pre-massage therapy intervention

- Meeting with the Hand In Hand team to discuss candidates
- Check with assigned nurse prior to the massage to ensure downtime for the subject
- Check exclusion criteria for Massage Therapy
  - Any open areas of skin or skin sensitivity
  - Platelet count on morning labs < 50,000

- A topical allergy
- Any limiting factors that may prevent a successful massage
- Consent obtained from caregiver prior to massage of the pediatric subject

### Massage therapy intervention

The massage intervention took place during a 30-minute downtime in the participant's hospital room. This ensured a 10-minute massage for the child and caregiver, with additional time for introduction of the massage and any questions. A "Do Not Disturb" sign was placed on the hospital room door to minimize external interruptions, as well as the researcher monitoring interruptions. Calming music for the adults, and playful music for the children, if appropriate, was used in the hospital room during the intervention to minimize the sounds of the medical machines present. The child, when able, and caregiver were able to provide shared intention, meaning they stated their hope for the session, such as "I want to feel better" or "I want to relax." All interventions were timed to ensure consistent 10-minute exposures for patients and caregivers. Caregivers were encouraged to observe 5 minutes of the patients massage for instruction on techniques that can be used when the massage therapist is not present. A 10-minute massage for the caregiver was offered to include their neck, back, shoulders, and hands.

### Data Collection Methods/Data Sources

#### Child Data Collection

Pediatric palliative care patients who received a massage were asked to complete the NCCN Distress Thermometer Scale five minutes pre- and post-intervention (NCCN, 2018). Pediatric subjects were provided with an age-appropriate, validated visual scale worksheet for each

symptom. The worksheet was provided to the child with number rankings under each of the following pictures: pain – FACES pictorial scale (6 faces anchored scale from 0-10 by 2s) (IASP, 2018), nausea – BARF pictorial scale (6 faces anchored scale from 0-10 by 2s) (Baxter et. al. 2011), dyspnea – Dalhousie Dyspnea Scale (3 seven-item picture scale from 0-10) (McGrath et. al. 2005), anxiety – McMurtry Faces Anxiety Scale (0-4 ordinal scale) (McKinley et. al. 2004). A FLACC comfort score for non-verbal or cognitively impaired children was assessed immediately before and after the massage intervention. The FLACC scale has been validated for non-verbal and cognitively impaired children (Merkel et. al. 1997). Subjective data was recorded, focusing on meaningful statements and actions regarding the massage experience from the pediatric subjects. A chart review was conducted by the supervising physician indicating pain medication and nausea medication usage, reporting ratings before and after medications administration.

#### Caregiver Data Collection

Caregivers who received a massage were asked to complete the NCCN Distress Thermometer Scale five minutes pre- and post-intervention (NCCN, 2018). Subjective data was recorded, focusing on meaningful statements regarding the massage experience from the caregivers.

#### RN Data Collection

RN's were given a survey assessing different facets of massage therapy from a bedside caregiver's standpoint. RN's were asked if they noticed a difference when either the child, family member, or both was given a massage, if they found the massage experience disruptive to their patient care and whether they believe massage is a meaningful way to care for their patient and patient's family.

### Overall Data Collection

The researcher recorded all reported data from patients and caregivers to ensure accuracy. Data collected from these massages included age of the child, gender, diagnosis, location in the hospital, whether the child received the massage, duration of the massage for the child, whether the guardian engaged in hands on touch or received verbal teaching, if the guardian received a massage, which guardian, location of the massage (in the room or outside the patient room), if other guardians besides the primary one received a massage, duration of the massage for each guardian, the number of interruptions per session, the total time interrupted, is the patient currently using massage therapy, an initial or repeat encounter for the child and guardian, if there were any negative impacts and their description, and the described massage therapy pre and post evaluation data.

### Overall Results

The sample is comprised of 135 subjects, 42 (31.1%) female and 93 (68.9%) male. The 135 massages were split 62 (45.9%), 12 (8.9%), and 61 (45.2%) amongst the Floor, NICU and PICU, respectively, present in Table 1. Qualitative data was collected by the researcher during the massage experience. 47 of the 135 (34.8%) massage experiences had at least one positive comment or observation recorded as a result of the massage experience.

### Child Results

A total of 53 children received a massage; 36 (67.9%) were on the floor and 17 were in the PICU (32.1%). No children in the NICU received a massage. The mean age for children receiving a massage was 46.32 months, or roughly 4 years, as seen in Table 2. As found in Table

2, the mean duration per child massage was 10.53 minutes with a minimum massage time of 3 minutes and a maximum time of 22 minutes. Additional to the quantitative numbers recorded, there are qualitative observations recorded of children enjoying their massage experiences, such as dancing to children’s music during the massage or falling asleep during their massage.

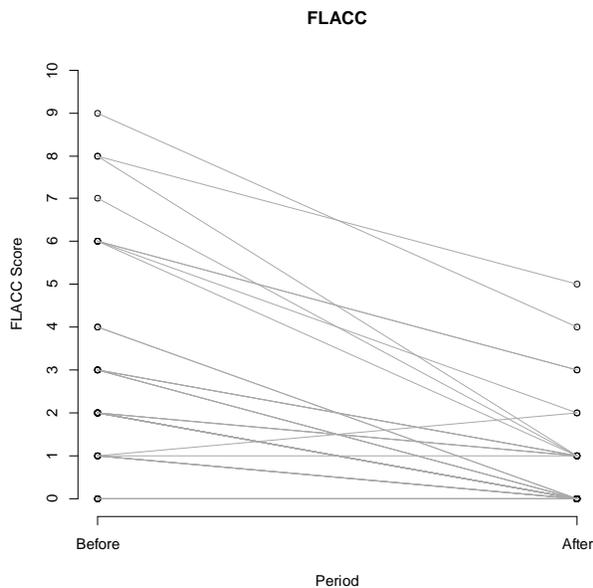
Table 2

Label	N	Mean	Std Dev	Median	Lower Quartile	Upper Quartile	Minimum	Maximum
<b>Age (months)</b>	135	46.32	72.29	11.0	3.0	36.0	0.3	228.0
<b>Duration Child (min)</b>	53	10.53	4.58	10.0	7.0	12.0	3.0	22.0
<b>Duration Guardian (min)</b>	112	10.29	1.49	10.0	10.0	11.00	7.0	15.0

Comparison of FLACC Scores for Children

Of the 53 patients getting a message, 45 (84.9%) had both a before and after FLACC score. Of the 45 patients recording FLACC scores, 37 (82.2%) had a lower FLACC score after massage than before (7 (15.6%) stayed the same and 1 (2.2%) increased). This is found in Figure 1. A Wilcoxon signed rank test was used to test the difference between the before and after FLACC scores. The difference was detectable ( $p < 0.0001$ ) with the median (IQR) before FLACC score being 2 (1, 3) and after 0 (0, 1).

Figure 1



Change in before and after symptoms in children

Only 8 (15.1%) of the 53 children getting a massage had symptom scores. Symptom scores were compared between before and after using Wilcoxon’s signed rank test; none of which were significant. The tables of these results are found in the Table Appendices.

For children, their NCCN scores always went down with median difference score of -3.0 (IQR = 3.0, p = 0.0313) which was significant. The difference in nausea medications was not detectable (p = 0.0625) and the difference in pain medication was not detectable either (p=0.0477), both using a Wilcoxon signed rank test. The tables of these results are found in the Table Appendices at the end of the paper.

## Caregiver Results

A total of 112 caregivers received a massage. The duration per caregiver massage was 10.29 minutes with a minimum massage time of 7 minutes and a maximum time of 15 minutes. A Wilcoxon's signed rank test was used to compare the before and after distress scale scores (difference = after – before) where a negative difference indicates a lower after score. For the caregiver (proxy) and other caregiver (other proxy), scores always went down with median difference scores of -3.0 (IQR = 2.0,  $p < 0.0001$ ), and -3.5 (IQR = 2.0,  $p < 0.0001$ ), respectively. Caregivers also had qualitative data recorded during their massage experiences. They were quoted numerous times declaring positive comments regarding the massage process, for example, "I feel so good now," which occurred after their massage.

## Nurse Survey Results

The nurse survey, comprised of 135 RN's, found 100% of RN's thought massage was a meaningful way to care for their families. When asked if the massage affected their hands on care to their patient, 98.5% of nurses did not think the massage was interruptive to their shift. When only the child received the massage, the child's response to the massage was 91% positive. When caregivers received the massage, their response was almost always positive at 98%. When looking at times that both the patient and caregiver received a massage, the impact was 93% positive on the patient at 97% positive on the caregiver.

## Discussion/Recommendations

The sample size in this study was drastically larger than the first anticipated number of 50. Due to improved work flows and a reduction in time from 30 minute to 10 minute

massages, the researcher and massage therapist were able to perform 135 massages to patients and caregivers. Ten minutes allocated per massage was more feasible as the subjects usually had only about a 15 minute window in which they were not occupied by other family members, hospital staff, procedures, or phone calls. This allowed for 10-minute massages and 5 minutes for massage preparation/clean up and survey administration. This sample size increase demonstrates the cheap and easy to perform fashion of massage therapy that was shown by Karagozolu and Kahve, 2013.

All of the patient care areas in the hospital were available to the Massage Therapist during this study. The priority was placed on children and caregivers in the PICU, then NICU, and then the floor. The distribution of the amount of PICU and floor massages was consistent and the NICU being less frequented. No children in the NICU received massages because of their frail nature, but the parents were enthusiastic about massage therapy visits. The NICU was skeptical of the massage intervention at first but they became more accepting as children transitioned from the PICU to the NICU for a different level of care. Those caregivers requested to continue with the massage therapy visits while in the NICU, so the NICU became more accommodating and understanding of the study.

Some of the most important data collected, unable to be statistically analyzed, were qualitative observations. Items recorded ranged from “Thank you” from both children and caregivers, children falling asleep during the massage, intubated children moving along to music played during the massage, and children appearing in less pain after the massage. Quotes such as, “Everyone talks about you so nicely up here,” and “I’m so happy you found us today!,” before the massage and quotes after the massage such as “I feel so good now,” and “Working

on my shoulder last week really helped” were positive statements shared with the researcher and massage therapist. This was the ultimate reward for carrying out this research endeavor and provided motivation for the researcher and massage therapist.

Key findings this research was able to provide include massage therapy for symptom reduction as feasible and acceptable for children, caregivers and staff. It was not feasible to measure symptom burden on most of the population of children we provided massages to, but the FLACC scores used to evaluate the majority of children were successful in showing a decrease in symptoms. Caregivers also demonstrated a decrease in distress symptoms when given a massage.

When reviewing the nurse survey, the RN’s remained very positive about the massage experience. All RN’s surveyed thought massage was a meaningful way to care for their families. When asked if the massage affected their hands on care to their patient, almost all nurses thought the massage was not interruptive to their shift. When only the child received the massage, the impact on both the child and caregiver was almost always positive. Caregivers focused their attention on the child, so having the child receive a massage benefited the caregiver. They could see the child relaxed and comfortable during the massage. When caregivers received the massage, the impact was positive on the caregiver but most often, the child was not impacted. The child would not be expected to benefit from the caregiver massage. Most of our child population was very young/cognitively impaired and would not be expected to understand the massage benefit for the caregiver.

There were only 6 instances where children were able to provide symptom reports using the pain, nausea, dyspnea, and anxiety scales. These analyses did not prove to be statistically significant. This is most likely due to the small sample size. The FLACC reporting method was utilized more frequently because of the needs of the Hand in Hand patient population.

When considering the high number of FLACC scores reported, 85% of all children, it should be noted that most of these patients are very young and are unable to provide symptom reports to the researcher. There are also children with cognitive delays that are unable to provide reliable verbal information needed to assess symptoms pre and post massage. Of those 45 children evaluated for a pre and post massage FLACC score, 37 had a lower FLACC score after the massage. When evaluated with a Wilcoxon signed rank test, the p value was significant at  $p < 0.0001$ . This statistical analysis puts numbers to the positive qualitative data recorded. Data provided by Essner et. al. (2016) showed a single dose massage exposure for children as statistically significant for pain reduction and similarly, Beider, Mahreer, and Gold (2007) found promising effects of massage therapy in children, all backed by the data reported from this study.

The NCCN Distress Thermometer Scale results for both groups of caregivers found their rating always went down. The primary caregivers reported a median score of 3 less than their starting value. The p value for this was  $< 0.0001$ , statistically significant for this group. The secondary caregiver recorded a median score of 3.5 less than their starting value, also resulting in a statistically significant value of  $p < 0.0001$ . MacDonald (2008) and Rexilius (2002) both found improved symptom relief after massage therapy in caregivers, which this project replicates, with a noted larger sample size for improved accuracy.

Recommendations include further escalation of this pilot study to hospital officials for review of potential benefits of massage therapy to children who are patients, but also their caregiver counterparts. Based off the FLACC scores in children and NCCN Distress Thermometer Scale ratings for caregivers, massage is a proven significant intervention with statistical analysis supporting its usefulness in the clinical setting. The ultimate goal is to have CHMC allocate funding for a full time massage therapist with the potential to be involved in all clinical specialty areas to provide massages to children and caregivers on a daily basis. As of right now, the current massage therapist remains grant funded for 2 days/12 hours per week. They are only able to provide massages to individuals involved with the Hand In Hand clinical team.

## Conclusions

Massage Therapy is a benefit to all those who experience it. Further research, ideally at CHMC, is needed to build upon this pilot study to gain more insight into the benefits children and their caregivers experience as part of the massage process. These expected benefits are seen most obviously during the massage time, but studies could also look at the lasting benefits of massage therapy after its conclusion, as well as benefits from repeat exposures of massage therapy over time for both children and caregivers. Massage therapy was noted to be acceptable, feasible, and impactful.

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## Appendices of Tables and Figures

Figure 2 Scores for child symptom rating pre and post massage

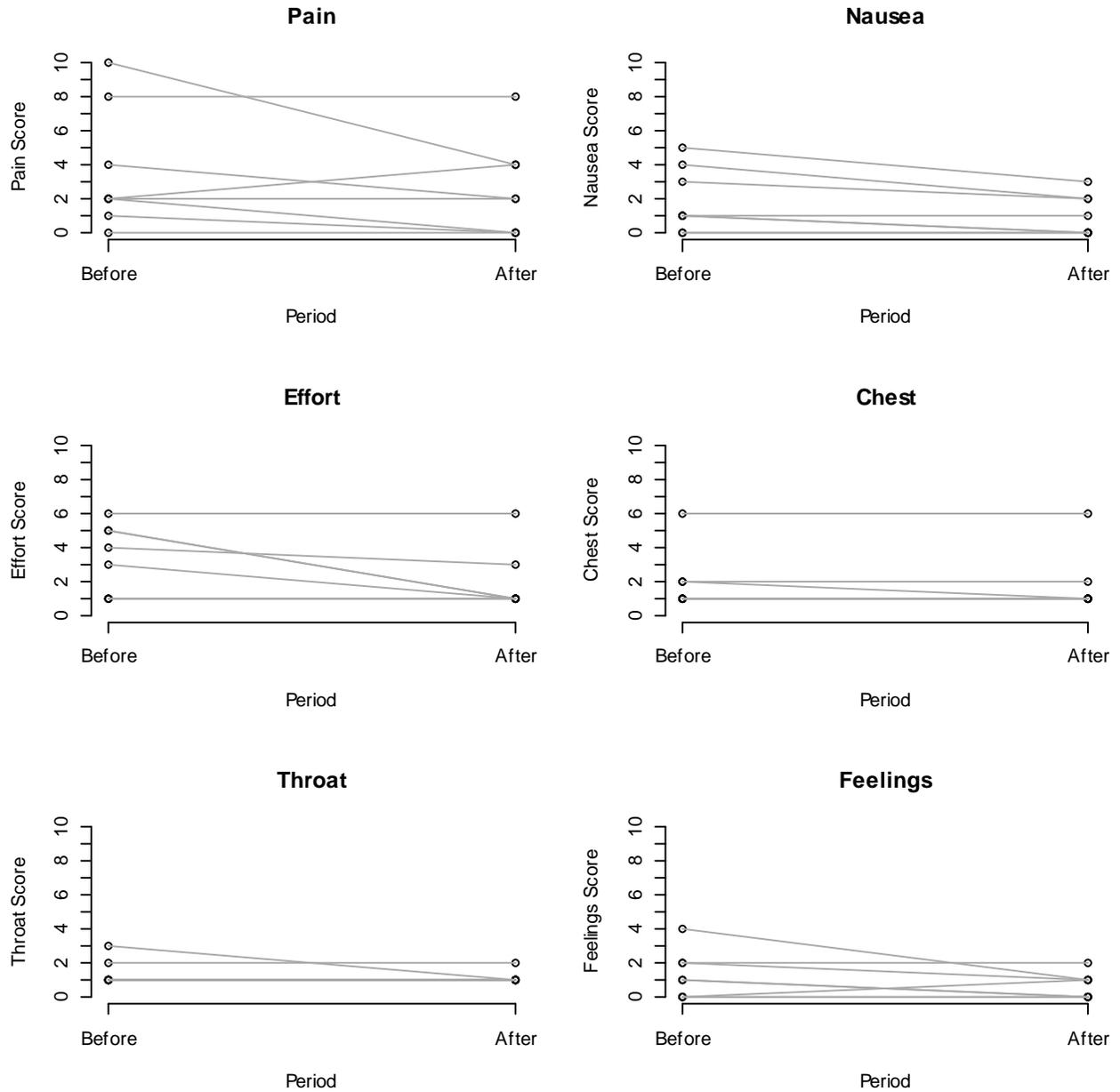


Figure 3 NCCN Thermometer Readings

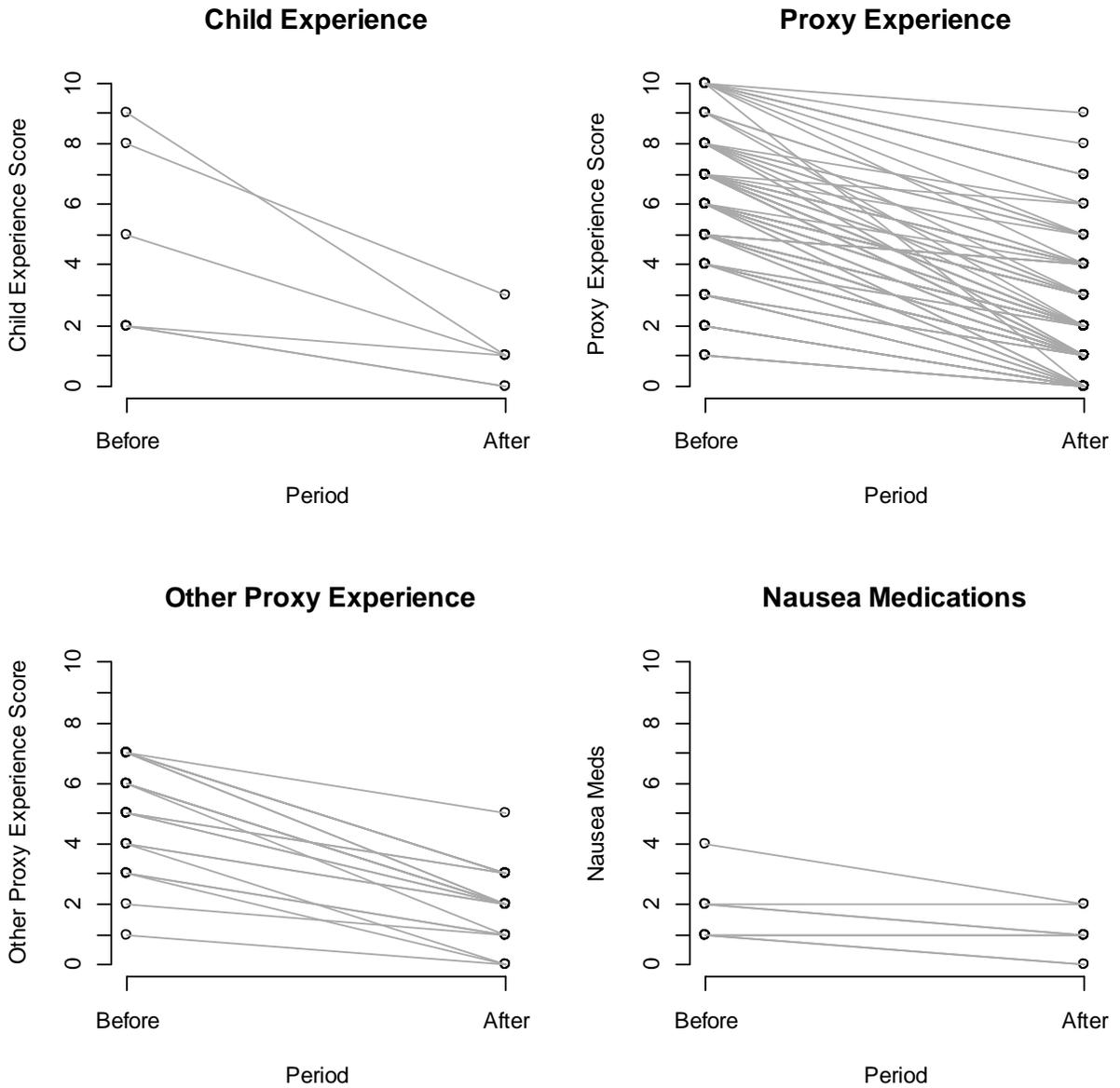


Figure 4 Nausea Medication Before and After Assessment

Table 1

<b>Characteristics</b>		
<b>Gender of Child</b>		n=49
	Male	17 (44.7)
	Female	21 (55.3)
<b>Child Location</b>		n=135
	PICU	61 (45.2)
	Floor	62 (45.9)
	NICU	12 (8.9)
<b>Guardian who received message</b>		n=134
	Mom	109 (81.3)
	Dad	18 (13.4)
	Grandma	7 (5.2)
<b>Guardian engaged in message experience</b>		n=53
	Hands on Touch	1 (1.8)
	Received verbal teaching	4 (7.5)
	Both hands on and verbal	5 (9.4)
<b>Multiple caregivers received</b>		n=113
	Yes	24 (21.2)
	No	89 (78.8)
<b>Guardian location for message</b>		n=135
	In room	128 (94.9)
	Outside Room	7 (5.1)

Table 3

Characteristics	n=135 (%)
<b>Massage Given To</b>	
To Patient	22 (16.3)
To Caregiver	82 (60.8)
To Both	31 (22.9)
<b>Result of Patient Only Massage For Patient</b>	
	n=22
Positive	20 (90.9)
Negative	0 (0)
Neutral/Didn't notice	2 (9.1)
<b>Impact of Patient Only Massage on Caregiver</b>	
	n=22
Positive	6 (27.2)
Negative	0 (0)
Neutral/Didn't notice	9 (41)
Not Present	7 (31.8)
<b>Impact of Caregiver Only Massage on Patient</b>	
	n=82
Positive	1 (1.2)
Negative	0 (0)
Neutral/Didn't notice	81 (98.8)
<b>Impact of Caregiver Only Massage on Caregiver</b>	
	n=82
Positive	80 (97.6)
Negative	0 (0)
Neutral/Didn't notice	2 (2.4)
<b>Impact of Massage To Both Patient and Caregiver on Patient</b>	
	n=31
Positive	29 (93.5)
Negative	0 (0)
Neutral/Didn't notice	2 (6.5)
<b>Impact of Massage To Both Patient and Caregiver on Caregiver</b>	
	n=31
Positive	30 (96.8)
Negative	0 (0)
Neutral/Didn't notice	1 (3.2)
<b>Was This Interruptive To the RN's shift?</b>	
	n=135
Yes	2 (1.5)
No	133 (98.5)
<b>Is Massage A Meaningful Way to Care for Your Families?</b>	
	n=135
Yes	135 (100)
No	0 (0)

## Service Learning/Capstone Experience Reflection

Through my time at Children's Hospital and Medical Center, I learned a lot about the organization, my skills and deficits, and built relationships that will last longer than this project. CHMC is designed to treat patients aged 19 and younger for conditions ranging from the common cold to those requiring solid organ transplant. The organization prides itself on the great care they provide the young patients they see and it is apparent when you step inside the facility that they have met their goal. There is almost always some type of activity taking place during the day that patients and their families, other siblings included, can take part in. This is a great distraction from the day to day hospital setting. At times, you wouldn't know it is a hospital though, because they did such a great job of theming their facility around kids. There are play rooms on all of the regular floors, they make signs with all sorts of childhood characters for birthdays, they provide children's programming on their television sets in patient rooms, and they even have BINGO on Wednesdays. They broadcast the BINGO game over the television into patient rooms for those kids that are too sick to participate in the Glow Theater at the hospital. These examples are a few of the many things CHMC does to help ease the burden of the hospital setting on children and families that are forced to be there.

As I began to start this project, I was walking into an already well thought out idea that Dr. Weaver had been formulating for a while. I struggled a bit trying to make sure I understood everything she wanted. As she already had a good idea of what she wanted to do for this pilot project, I took on the role of making the proposal come to life and ensuring I captured all of her ideas. Once we go into the meat of the project, we found out that we may have to alter our original plan a bit to conform to the real life situations we were running into. Dr. Weaver

wanted to have 30 minute massages for patients and caregivers initially, but after consulting with the Massage Therapist, we decided that the safer time frame for a child massage was no more than 10 minutes, with it needing to be shorter for the youngest patients we saw. I was surprised with the ease of the study procedures as we got started. The massage therapist, Beverly, was a fantastic lady to work with and she was genuinely interested in learning more about the study and working with me to get the data we needed. We worked out a great process to get study things done while getting the patients and families the massages. I really enjoyed working with Beverly, she helped move the massages along and I learned a lot of information from her.

Beverly and I were able to see around 6 families a day to give massages to both the families and patients. She and I both agreed we should focus on families in the PICU and then make it to the floor when we could. Depending on the census for the day, we would sometimes cut our lunches short to make sure we could accommodate as many families as possible. We started around 9 in the morning to make sure we missed busy times for patients and nurses and then worked until 3 in the afternoon to capture those that may have had procedures in the morning. We would coordinate with the integrative therapy practitioner to see as many different families between the 2 disciplines. Beverly and I were quick to make relationships with the rest of the Hand In Hand team, she started about a month before I started the project, and the rest of the staff in the hospital. The nurses were skeptical at first of what we were doing but after we talked with them about what we wanted to do and they got feedback from their families, they found the study to be a huge benefit to them. There was a rough month in the PICU where there were several deaths; Dr. Weaver arranged for the PICU nurses to receive

massages one day that month to help lift their spirits after the passing of so many close patients. They were extremely grateful and became much more accommodating for us after their massage experiences.

I think my people skills played a great part in the success of my capstone. There was a lot of communication with families on the benefits of massage and what we were seeking to prove from the data we were collecting. Beverly did an amazing job of providing great massages for the families and patients and providing reassurance when needed. We were able to build rapport with families quickly, which enhanced our results. They felt more comfortable with us and were willing to be more honest with their feedback and assessment of the massage experience. I also think my attention to detail was a large component of the study, there was a lot of data to be collected in a short amount of time so my ability to keep organized was essential to keeping the study accurate. I think this saved me quite a bit of time and hassle when it came to the analysis portion of this study. The greatest contribution from my capstone is knowing that I will probably help a lot of patients and families have access to a massage at a time where they weren't able to provide care for themselves. There was so much positive feedback from the minimal number of massages we were able to provide, I know massage will be successful for CHMC in any facet they choose to provide it. I am also excited to be able to put together a brief report for a journal that will showcase our work for others to build upon.

My service learning project was a little more detailed than I thought it would be, but I am very happy with the results it provided. Dr. Weaver now has a list of apps broken down by what they are targeting and who they are targeting. She has tablets provided to her by grant money where she is able to preload apps on them for families and children to use. We

identified this as a gap in knowledge in the research community, so we took the task of analyzing those apps for multiple different data points. I was able to get feedback from multiple members of the team and combine that into a large spread sheet which I analyzed for publication. I am most proud of the publication of the calming app article. Dr. Weaver did an amazing job of helping me work through the writing of the paper and I am very grateful for that. My attention to detail was a huge asset for this project as well. I was worried about writing the article, but I was glad to have the opportunity to do it and I am proud of how much stronger my writing skills have become as a part of the process.

Overall, I would highly recommend working with Dr. Weaver in any way you can. She was such a supportive preceptor and an even better person to sit and talk to. She is so caring and willing to do whatever she can to help you out, even if it inconveniences her. I am so glad to have worked with her and anticipate remaining in contact with her even after this project is complete. My takeaways from this project are immense. I am a stronger health practitioner and nurse because of this experience at CHMC. I learned a lot about advocating, for massage in this case, disseminating information to the general public, teaching about research to families that were interested, and I have improved my flexibility to complete and monitor tasks within a large group. I couldn't imagine doing another project, as this has been so fulfilling, not just as a student, but as a human being. I am grateful for the contacts I have made, the families and patients I have met, and the relationships that will continue to last after this project is completed.

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