The Healing Properties of Touch Associated with Premature Infants and Childhood Development: A Literature Review

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ABSTRACT

OBJECTIVE**:** To investigate the use of touch therapy to enhance and improve the treatment and overall wellbeing of children.

METHODS: A computer search was performed using PubMed, Ebscohost, and Google Scholar databases at Logan College of Chiropractic. The search came up with about 144,000 articles pertaining to touch therapy in children but 22,000 of those articles pertained to the effects of touch deprivation. References from Tiffany Field and Edward Smith were used.

CONCLUSION: There are many articles that outline the importance of touch when a child is born prematurely or with an illness, but not all of the articles outline how this could affect the infants later in their development. Some of the articles examined in the paper show how the lack of touch in development may alter a child's physical and emotional state in development.

KEYWORDS: Touch therapy, touch, premature babies, massage and babies, touch and behavioral effects

INTRODUCTION

Touch therapy is a therapeutic modality that has been overlooked for years but has been used to help all walks of life from premature babies to victims of cancer[1] to musculoskeletal problems[4]. In infants the effects of touch has been measured in regard to birth weight and mental cognition, while in cancer patients the effects have been used to measure the effects of touch on pain and fatigue with positive results[2, 3]. The definition of touch is to come in contact with, most commonly with hands or fingers. Touch therapy includes massage, light touch, and manipulation. This paper will demonstrate how touch is being incorporated to aid premature babies in weight gain and behavior[6]. This paper will also demonstrate how the lack of tactile stimulation affects the behavior from infancy through childhood, adolescence and adulthood.

Touch in many cultures has been used as a way to communicating, conveying emotion, and healing. When a person receives touch to the surface of the skin many things within the nervous system occur. Within the skin there are receptors or corpuscles that receive the input from the skin. That signal is then transported to the brain via the spinal cord. The portion of the brain that processes this input is the parietal lobe. The parietal lobe is not only responsible for deciphering touch but also cognition, information processing, speech, and visual perception. Due to these processes sharing a lobe in the brain, it is easy to see why something as simple as a soft touch or embrace could affect how the body as a whole reacts to such stimuli. An example of this is when a person hits there elbow or knee on a hard object the automatic reflex is to rub the affected area. When the affected area is stimulated it overwrites the pain sensation to the brain. This paper will demonstrate how

this complicated system of sensory, cognition and emotion translate into healing properties and long term emotional development in children.

What is healing touch? Healing touch can sometimes be subjective depending on what an individual has found works for them. Massage therapists, acupuncturists, and chiropractors have been said to have a healing touch. While this is not entirely false, the touch being referenced in this paper is simple soft touch without any kneading or thrust on the patient.

DISCUSSION

When a premature child is born it is immediately taken from its mother and given the appropriate medical attention. In the normal birthing process the child is usually given to the mother at the first possible moment following the appropriate cleaning procedures. Within those first few minutes the mother and child begin to bond[5]. When a child is born prematurely, due to a variety of reasons, the baby is usually separated from its mother for several days to several months. In this time frame the infant receives significantly less human contact than the baby born under normal conditions[7]. The premature infant is often placed in an incubator along with several other cords and tubing placed all over the body of the infant[8]. This makes it very difficult for contact to be made with the child.

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While the baby is in somewhat of isolation, the mother and father are encouraged to come and have tactile contact with the infant[9]. A study performed by Ferreira and Bergamasco showed that the infants that received regular tactile stimulation not only had a shorter hospital stay, but these infants also had a increased daily weight gain. These infants also showed improved coordinated movements, range of postures, along with hand and face movement control[10].

Martha Nogueras performed an experiment on infants between the ages of one and a half months as well as three and a half months old[11]. The study was designed to make a correlation between face-to-face interaction as well as touch. The participants were healthy at the time of birth as well as the time of testing. The infant was placed twenty inches away from the face of the experimenter for three two minute sessions. The infants were put into two groups, the touch treatment group and the non-touch treatment group. The infants in the touch group received smiling, vocalizing, and rubbing rhythmically whenever the infant made eye contact and continued to make eye contact with the experimenter. For the non-touch group, whenever the infant made eye contact the experimenter cooed and smiled

without touching the infant[11]. The infants were given ten sessions each that were taken into account. The infants that received touch showed better social behavior when placed in front of experimenters. They showed more focus and attentiveness when having person encounters with the experimenters. While the information received from the study was positive and helpful, the topic needs to be further researched.

A paper by the Brain research Centre and Department of Psychology at the University of British Columbia outlines the importance of touch in the developmental stages[12]. The paper explains how children that are deprived from touch show developmental delays compared to those that receive normal sensory stimulation. Animal models are used to demonstrate this fact. Some of the animals used to demonstrate the importance of touch in development are kangaroos, rats, and worms. Rats have shown that the amount of licking received from the mother has a direct impact to the behavior and physiology of the rats as they develop into adult hood. This same type of pattern can be seen in children that orphans in very poor conditions. These children tend have a higher occurrence of vital infections, impaired growth and development. Most of the evidence points to the mechanosensory stimulant deprivation as the cause not the lack of maternal influence. A study performed by Hopper and Pinneau showed that when infants had ten minutes of extra tactile stimulation they showed a decrease of regurgitation in those infants[12].

In a study performed by Field and Scafidi 20 preterm neonates were moved from neonatal intensive care into transitional care unit after being deemed stable[13]. The preterm neonates were all given 15 minutes of mechanosensory stimulation three times per week for ten days. The mechanosensory stimulation controlled throughout the experiment with all of the infants receiving body stroking for the first five minutes of treatment. During this

portion the infant's limbs were flexed up during this portion of the intervention. The control group for this experiment was infants of the same gestational age, approximately 31 weeks gestation, birth weight, approximately 1.27kg, and the amount of time spent in the intensive care unit, approximately twenty days. The main constant between both groups of infants was the caloric intake. The group that received regular mechanosensory stimulation had daily weight gain increase of 47% more than the control group[13]. The stimulated infants were also released an average of six days before the non stimulated infants. The researchers also found that the infants that received stimulation spent more time awake and active, were behaviorally more mature, and were more oriented. Eight to twelve months following the experiment, the stimulated infants were in a higher weight percentile and had a decreased incidence of minor neurological abnormalities indicating cerebral dysfunction[13].

The previous experiment led to many hospitals making changes in their procedures for the care of premature infants. One hospital started a procedure called kangaroo care[14]. Kangaroo care is a procedure where the infant wears only a diaper and is held against the bare chest of a carrier. The infants that received one hour of kangaroo care for at least two week had a increase in mental and motor skills when evaluated six months following the last treatment[14].

A study performed in Children's Hospital Los Angeles evaluated the effects of massage for medically fragile infants[15]. This study was designed to show that while touch is great for premature and low birth weight infants it is also believed that the same sort of treatment would be beneficial for infants in an acute state in the neonatal intensive care unit. In the study certified infant massage instructors (CIMI) instructed nurses, parents and caregivers[15]. The involved infants received seven days of treatment with the outcome

followed up for a month. For the treatment procedure there were three segments of twenty minutes. The first five minutes of treatment two hands were placed on the infant, usually one hand one the head and the other on the feet. Next for ten minutes full contact was made on the skin of the arms, legs, stomach, chest, back, face, and head. One of the largest differences found between the massage group and the control was the difference in mechanical ventilation time. The control group had a mean time of 64.9 days[15]. While the massage group spent an average time of 17.2 days on mechanical ventilation. The purpose of this study was prove that tactile stimulation and massage are just as important to preterm infants as it is to medically fragile[16]. With the proper training and program design this program would be beneficial and important in most medically fragile infants.

Table 1:
Patient demographics by treatment group

		Massage Mean (SD) (*n* = 5)	**Control Mean (SD) (*n* = 7)**	***F***
Gender				
	Male	2	3	
	Female	3	4	
Age (weeks)		8.2 (4.7)	13.2 (9.6)	1.14^{NS}
Gestational age (weeks)		38.5 (3.1)	33.4 (6.4)	2.72^{NS}
Initial weight (kg)		4.3 (1.1)	4.1 (1.8)	0.017^{NS}
Initial MECS		413.3 (493.7)	68.6 (181.4)	2.92^{NS}
Initial N-PASS		0 (0)	0 (0)	
Days of MV		17.2 (25.8)	64.9 (84.1)	1.47^{NS}

	Massage Mean (SD) (*n* = 5)	**Control Mean (SD) (*n* = 7)**	***F***
Length of stay (days)	56.8 (32.2)	35.4 (39.1)	0.999^{NS}

NS: Non-significant[15].

While adolescence can be difficult for any child, if the proper developmental ground work is not laid it could increase the likelihood of other problems to occur. In the early nineteenth century it was noted that children raised in an orphanage had fifty-fifty chance of surviving long enough to reach puberty[18, 19]. The effects of not receiving touch into adolescents and adult hood was addressed in a book written by Tiffany Field called Touch. In psychiatric units for young adult world wide it is not uncommon to find a no touch policy in most of the facilities[17]. The policy is usually in place due to staff concern of accusations of sexual abuse by the patients as well as the risk of promiscuity between the adolescent patients. In order to introduce touch to these patients, one time per day for a week, they were given thirty minute massages. The patients that received the thirty minute massages daily showed a decrease in depression and anxiety. They also exhibited more appropriate behavior as well as better patterned sleeping[12].

There are several studies that prove the effectiveness of touch in therapies and effects of how that therapy can improve the progress of the patients. Some therapists make touch a key component to their treatment of these patients. Judy Milachovich wrote a chapter in a book called Touch in Psychotherapy by Edward Smith about what leads the physiotherapist to incorporate touch in their treatment plans or not[21]. Milachovich found a correlation between the types of therapy they provide and if the patient was sexually abused as a child and the way the therapist perceives touch. She found that among the therapists that had

experienced abuse there was no way to distinguish between physical abuse and sexual abuse[21]. These therapist themselves suffer with poor body image, self esteem and feelings about being touched as well as touching according to a survey given to a group of therapists. The survey also showed that these therapists usually sought out additional training in touch, more than those therapists without an abusive history[20]. The therapist that had an abusive history also demonstrated a need to receive touch[24]. This need was fulfilled by sharing the additional training with their patients and forming treatment plans around their own personal needs[21].

Field also discusses the affects of touch deprivation on sleep, physical violence, as well as the immune system[21]. Researchers Heinicke and Westheimer found that when a child is separated from its mother for two to twenty weeks there is an obvious change in the pattern of sleep in the child[23]. Even after the child has been returned to its mother there is still a disturbance in the child's pattern of sleep. In turn, there is also a change in the child's performance in school. The child is less attentive and also has a decrease in grades. Dr J. H. Prescott suggested that lack of touch can lead to many problems including hyperactivity, drug abuse and violence[21]. He theorized that the lack of tactile stimulation as a child leads to an addiction to sensory stimulation that is expressed as drug abuse, crime, and delinquency[25]. He developed this theory from a study performed in New Mexico and Japan correlating the amount of affection with the amount of violence found in the adult populations in that area. It was found there was an increase of crime in the areas that showed less physical affection toward the children. In the areas where physical affection is more common and expected in the culture, there is a definite decrease in the amount of adult violence in that culture. Other factors were also considered in this matter like possible

parental sexual abuse and other external forms of physical abuse that would skew the results of the study. Steve Suomi used monkeys to demonstrate the relationship between touch and immune system. There a direct correlation found between the amount of grooming and touch with the body's ability to handle immunological change. The amount of grooming in the first six to seven months was directly correlated with the amount of antibodies produced by the infant and the ability for the antibodies to respond to these challenges. In the monkeys that were separated from their mothers for extended periods of time showed signs of a suppressed immune response as well as a decrease in natural killer cells. Suomi also found that social grooming among these primates caused a decrease in hear rate as well as a decrease in stress hormones[22].

CONCLUSION

The effects of touch go far beyond using these techniques on children and infants only. These studies have shown that the use of touch therapy, when properly trained, can be very helpful when the child's development is in its very critical stages early in life[8]. It has been proven that by spending as little as thirty minutes per day giving a child tactile stimulation increases weight gain and cognitive reflexes. Even though this knowledge is available some practitioners do not perform manual therapy due to personal experiences usually linked with some form of physical or sexual abuse[24]. This research has been proven with humans as well as animal models. Some of the animals that demonstrate positive reactions to touch therapy are rats and monkeys. The has shown that even in those animal groups due to grooming and stroking by the mother or maternal figure, the animals all responded positively to the additional activity. This early stage tactile stimulation also shows its

advantages through the adolescent years as well as through adult years via behavioral patterns[6]. Children that had received regular tactile stimulation showed more cognitive stability as well as more social stability. If the research continues to prove the vast use of touch in development in the progression of human life, it will improve the treatment of infants in all settings not just in hospitals for children born prematurely which is the main use of touch in the healthcare profession.

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