

Therapeutic Touch Modalities and Premature Neonate's Health Outcome: A Literature Review

Manju Chhugani^{1*} and Shilpi Sarkar²

¹Principal, Rufaida College of Nursing, Jamia Hamdard, India

²Tutor, Rufaida College of Nursing, Jamia Hamdard, India

*Corresponding author: Dr. Manju Chhugani, Principal, Rufaida College of Nursing, Jamia Hamdard, India, Tel: 9818141401; E-mail: manjuchhugani@gmail.com

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Abstract

Background: In Neonatal Intensive Care Unit (NICU), the premature infant is often placed under incubator, phototherapy and with several cords and tubing connected all over body. They are subjected both to highly stressful environment (noise, bright light, frequent care related handling) and are often deprived of tactile stimulation that they would otherwise experience in general mothering care. The study explored literatures searching different modalities of giving therapeutic touch and its impact on pre-term infant in NICU.

Results: The study explored different modalities of therapeutic touch- Gentle Human Touch, Supporting Holding, Massage technique, tactile stimulation, Tactile-kinesthetic stimulation and Yakson. All identified therapeutic touch modalities had shown several positive outcomes for pre-term neonates in NICU.

Conclusion: As a non-invasive technique, therapeutic touch in any of the therapeutic modalities may be construed as providing developmentally appropriate, family centered care to the preterm neonates in NICU.

Keywords: Therapeutic touch; Touch therapy; Preterm infant; NICU; Massage therapy; Tactile kinesthetic stimulation

Introduction

The health and well-being of a neonate is greatly influenced by its maturity, birth weight, labor process, quality of intrapartum care, and the quality of neonatal care. Normally, at birth the neonate is generally handed over to mother for initiation of breast feeding and skin to skin contact, and thus the mother and child begins to bond. However, when a baby is prematurely born (< 37 weeks of gestation), due to a variety of reasons, the baby is usually separated from its mother for several days to several months for more intensive care in Neonatal Intensive Care Unit (NICU). Thus, the infant in NICU often receives less human contact than the baby born under normal conditions [1]. In NICU, the infant's tactile experiences can be uncomfortable or painful that can lead to touch aversion. It is possible that providing pleasurable touch experiences can help to develop touch acceptance. Kangaroo mother care or skin-to-skin care is an emerging practice in the labor room and NICU which does encourage touch and holding of the infant [2-4].

Systematic application of touch is a therapeutic modality and is specifically applied to help the infant grow and develop [5]. However, the rapidly growing and developing central nervous system of the premature infant is more vulnerable to environmental effects [6]. Therefore, it is imperative that environmental stimuli such as touch and movement be carefully provided with constant monitoring of the infant's individual responses, and modified appropriately. Negative behavioral responses to touch and handling of fragile, preterm infants were studied to result in reflexive responses such as the startle reflex, increased movement, agitation and/or crying, or other observable

avoidance responses [7-9]. It has been identified that neonatal nurses lack specific knowledge in the area of therapeutic touch [10]. The present study explored several literatures on therapeutic touch modalities and its impact on pre-term health to identify best evidences for clinical practice.

Therapeutic Touch Modalities and its Impact on Preterm Neonates

In medically stable, growing preterm infants, therapeutic touch is reported to have a variety of short-term benefits including greater weight gain, shorter hospitalization, reduced incidence for complications etc. [11-14]. The following modalities of therapeutic touch have been identified:

1. Gentle human touch: In response to the recognition that small, fragile preterm infants are reported to significantly react to tactile stimulation; several researchers have implemented a "gentle human touch" model of providing tactile interaction with infants with significant developmental outcomes [15-18]. Gentle human touch nursing interventions were found to be non-aversive or stressful to preterm infants (27 to 32 week's gestational age) with several positive, beneficial behavioral effects [19].

2. Supporting holding: Even when the infant is fragile, there are methods of providing touch that can be promoted for parents. Supportive holding, with a hand to the infant's head and feet or body may be an intervention that is not distressing to the infant [20,21].

3. Massage technique: The stimulation of pressure receptors leads to increased vagal activity which, in turn, seems to mediate the diverse benefits noted for massage therapy. Field et al. found moderate pressure massage is essential for promoting growth in an infant [22].

In another literature, Field, et al. investigated the amount of pressure needed, while massaging, for optimal results. Sixty-eight preterm infants were randomly assigned into a light pressure or moderate pressure massage therapy group. The two groups were massaged for 15 minutes each session (3 sessions a day) using the Field technique over a 5-day period. Weight gain was recorded over the duration of the study and behavior state, stress behaviors, and heart rate were recorded on the first day. The results showed that the moderate massage group gained more weight and also showed a decrease in fussiness, crying, and stress behavior [23].

A review article by Kulkarni et al. explored several literatures supporting beneficial effects of massage therapy. Different hypotheses were put forward regarding the mechanism of action and described techniques of the massage therapy. Massage was found to be more useful when some kind of lubricant oil was used [24].

In a Random cluster design, the efficacy of massage therapy in preterm neonate by mothers and trained professionals were compared in terms of weight gain in a 10 day study period. Both the treatment groups gained significantly more weight compared to the control group [25].

4. Tactile stimulation: It has been identified in a literature by Ferreira et al. that infants who received regular tactile stimulation not only had a shorter hospital stay, but these infants also had increased daily weight gain. These infants also showed improved coordinated movements, range of postures, along with hand and face movement control [26]. A within-subjects, counterbalanced repeated measures study by Weiss, determined the effects of six different types of verbal and tactile stimuli on infants hospitalized for congenital heart disease. Infants were systematically assigned to different sequences of the various stimuli. Measures of arousal included heart rate, blood pressure, respiration, and activity level. Results indicated that the use of touch conducive to neural excitation (i.e., intense, vigorous, extensive touching of highly innervated body areas) produced higher heart rates, and systolic blood pressure as well as greater activity, than did other types of tactile stimulation or soothing verbal stimulation [27]. Helder et al. revealed that tactile stimulation programme in very low birth weight infants result in better auditory responses, more variations in hand movements, less hypotony, more sucking, and less bradycardia and apnea [28].

5. Tactile-kinesthetic stimulation: Tactile kinesthetic stimulation involves body stroking and passive movements of the limbs of preterm infants. Kuhn CM et al. found that Tactile kinesthetic stimulation had fairly specific effects on maturation and/or activity of the sympathetic nervous system [29]. In a randomized controlled trial study, Aliabadi et al. randomly allocated 40 LBW neonates into test (n=20) and control (n=20) groups. Tactile-kinesthetic stimulation was provided for three 15 minute periods per day for 10 consecutive days to the test group, with the massages consisting of moderate pressure strokes in supine and prone position and kinesthetic exercises consisting of flexion and extension of limbs. All measurements were taken before and after completion of the study. Study result showed a trend towards increased daily weight gain and better adaptive behavior with no adverse effects on physiologic parameters [30].

Ferreira et al. evaluated the effect of tactile and kinesthetic stimulation on behavioral and clinical outcome in preterm neonates. Preterm infants weighing <2,500 grams, with no significant perinatal asphyxia were allocated to two groups: a control group (CG) in which no intervention was made (n=16) and a study group (SG) in which the

newborn infants received tactile and kinesthetic stimulation (n=16). Study results showed a trend towards a shorter duration of hospital stay, increased daily weight gain and a predominance of self-regulated behavior (regular breathing, state of alertness, balanced tonus, a range of postures, coordinated movements, hand-to-face movement control, suction, grip, support) in infants in the study group [31].

In a prospective randomized clinical trial, Massaro et al. effects of massage with or without kinesthetic stimulation (KS) on weight gain and length of stay (LOS) in medically stable premature (<1500 g and/or <or=32 weeks gestational age) neonates was assessed. For infants with BW>1000 g, average daily weight gain was increased in the intervention groups (only M and M with KS groups) compared to control (no intervention). The effect was mainly attributable to the M with KS group [32].

Field et al. administered tactile/kinesthetic stimulation in preterm neonates (mean gestational age, 31 weeks; mean birth weight, 1,280 g) for three, 15-minute periods per day for 10 days. The stimulated neonates averaged a 47% greater weight gain per day, were more active and alert during sleep/wake behavior observations, and showed more mature habituation, orientation, motor, and range of state behavior on the Brazelton scale than control infants. Finally, their hospital stay was 6 days shorter [33].

6. Yakson: Yakson is a Korean touching method for healing and relaxation similar to Gentle Human Touch (GHT). A quasi-experimental study on Yakson therapy, by Im et al. was conducted on preterm infants (26-34 weeks gestational age) in the NICU. Yakson consisted of three five-minute phases for 15 minutes: resting the hand on the infant, gentle caressing, and resting the hand again. GHT consists of just hand resting for 15 min twice a day for 15 days while the control group received usual nursing care. After Yakson or GHT, the infants exhibited an increased percentage of sleep states and a decreased percentage of awake and fussy states, suggesting that Yakson is another touching method that is not aversive or stressful to preterm infants, and which may provide several positive effects on preterm infants [34].

Browne's recommendations for thoughtful decision making related to therapeutic touch in NICU [35]

- Modify all handling/touch to be supportive, sensitive, calm and in synchrony with the infant's sleep-wake states as well as behavioral cues.
- Monitor behavioral responses during all handling/touch procedures and modify interactions appropriately.
- Individualize touch and handling based on the infant's responses, timing and continuity needs, as well as parent preference.
- Avoid massage in all small fragile infants who are medically unstable, on ventilators and who may have significant post procedural discomfort should be provided as gentle handling as possible.
- Assist parents in identifying the type of touch and handling that is most appropriate for the infant concern.

Summary

Therapeutic touch in preterm neonates by different modalities was reported to have several positive outcomes. Moderate massage resulted in more weight gain and a decrease pattern of fussiness, crying, and stress behavior, Tactile stimulation conducive to neural excitation was

reported to result in better auditory responses, more variations in hand movements, less hypotony, more sucking, and less bradycardia and apnea. Tactile and kinesthetic stimulation showed a trend towards a shorter duration of hospital stay, increased daily weight gain and a predominance of self-regulated behavior in infants in the study group. Yakson and Gentle human touch therapies exhibited an increased percentage of sleep states and a decreased percentage of awake and fussy states in neonates. Mere supportive holding, was also found to be non-distressing to the infant.

Conclusion

Therapeutic touch modalities were found to have several positive outcomes. As a non-invasive technique, therapeutic touch in any of the therapeutic modalities may be construed as providing developmentally appropriate, family centered care to the preterm neonates in NICU.

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