

THE EFFECT OF TOUCH ON THE PAIN REACTIONS OF
FULL-TERM NEONATES WHO HAVE UNDERGONE
EARBORING AT SAINT PAUL'S HOSPITAL

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Abstract

The study was conducted to determine the effect of touch on the pain reactions of full-term neonates who have undergone ear boring. Touch was applied to the experimental group, but withheld from the control group. The findings showed that touch minimized the pain reactions of the experimental group, much more than among those to whom touch was not applied. The reduction in crying pattern, breathing pattern, respiratory rate, heart rate, motor activity of the legs, state or arousal and the over-all pain reactions to ear boring of full-term neonates was significant greater among those who were touched than among those who were not touched.

Introduction

Pain is a phenomenon present at any stage of life. Neonates, small as they are, also experience pain. Their general reaction to pain stimuli is body movement associated with brief, loud crying and facial expression. Part of the role of health care professionals is the management of pain, also known as pain relief. Pain relief methods may be pharmacologic, the use of anesthesia or analgesia, or non-pharmacologic, like providing a safe comfortable environment and sensory enrichment as in visual, auditory, tactile or olfactory interventions. Touch is one form of non-pharmacologic intervention for pain.

Although touch has been recognized as an important element of caring and pain alleviation, it still has not been utilized to the fullest for pain alleviation by health care providers. This may be so because of their conflicting views about the effectiveness of touch in relieving pain. Most studies in pain alleviation have considered pharmacologic and non-pharmacologic. Touch would fall under the latter. Most of the studies on the effect of non-pharmacologic

interventions, however, focus on alternatives, other than touch. Only a few, if any have studied the effect of touch in pain alleviation, thus this study.

Objectives of the Study

This study was conducted to determine the effect of touch on the pain reactions of full-term neonates who had undergone ear boring. Specifically, the study aimed to find out whether infants who had been touched would exhibit significantly less crying pattern, breathing pattern, respiratory rate, heart rate, motor activity of the legs, state or arousal and the over-all pain reactions than those who were not touched.

Theoretical and Conceptual Framework

The “gate-control” theory of Melzack and Wall (1965) states that pain impulses can be modulated by the opening and closing of a gate. They propose that when the gate is open the pain impulses are readily transmitted. When the gate is closed the pain impulses are not transmitted. If the gate is partially open, only some of the impulses can be transmitted. Touch is assumed to prevent the passage of pain impulses.

Neonates are very sensitive to touch. Infants who experience ear boring suffer from pain caused by the piercing. Touch is expected to help alleviate the that the infants feel during their ear boring. It is assumed that by touching them the gate to pain transmission will close and stop further pain stimuli, thereby lessening the pain sensation of ear boring. Even if they experience pain, the infants who are touched during the ear boring procedure will probably experience less pain than those who were not touched.

The schematic diagram on the assumed relationship between touch and pain is shown in Figure 1.

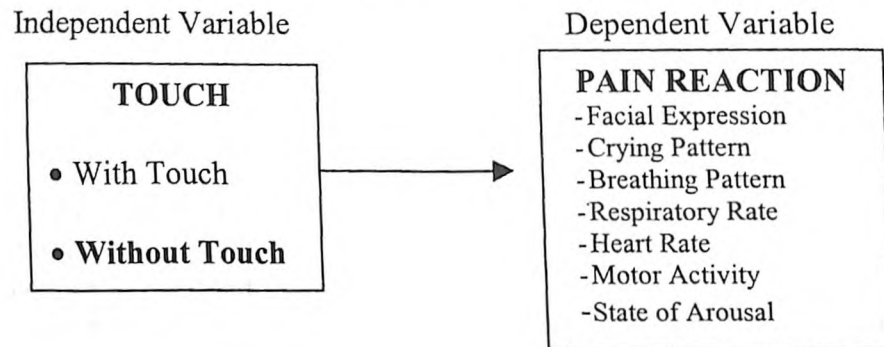


Fig. 1. Assumed Flow of Relationship Between Touch and Pain Reaction

Hypotheses

1. There is no significant difference in the facial expression score of full-term neonates who had ear boring and had been touched from those who had not been touched.
2. There is no significant difference in the crying pattern of full-term neonates who had ear boring and had been touched from those who had not been touched.
3. There is no significant difference in the breathing pattern of full-term neonates who had ear boring and had been touched from those who had not been touched.
4. There is no significant difference in the respiratory rate of full-term neonates who had ear boring and had been touched from those who had not been touched.
5. There is no significant difference in the heart rate of full-term neonates who had ear boring and had been touched from those who had not been touched.

6. There is no significant difference in the motor activity of the arm and that of the legs of full-term neonates who had ear boring and had been touched from those who had not been touched.
7. There is no significant difference in the state of arousal of full-term neonates who had ear boring and had been touched from those who had not been touched.
8. There is no significant difference in the over-all mean reaction score of full-term neonates who had ear boring and had been touched from those who had not been touched.

Methodology

The posttest only-control group design was used in this study. The subjects of the study consist of 30 full-term neonates born at Saint Paul's Hospital from August 1, 1998 to February 15, 1999 and who had their ears pierced. They were assigned at random to the experimental and control group. Touch, using a procedure adapted from the Guide to Infant Massage, was applied to the experimental group for a duration of ten minutes, eleven minutes before the ear boring procedure. The touch intervention, however, was not applied to the 15 infants in the control group. Both groups of subjects were observed for pain reactions at the first instance of pain using the Neonatal Infant Pain Scale.

The t-test for difference between two independent samples tested at 0.05 level of significance was used to analyze the difference between the mean pain scores of the experimental and the mean pain score of the control group. The hypotheses were tested at .05 level of significance.

Findings

Age and Weight of the Neonates

The results of the study reveal that the experimental and the control groups of neonates did not significantly differ in gestational age, weight and present age. The average gestational age of the experimental

group was 38.8 weeks while that of the control group was 39 weeks. No significant difference in gestational age was found between the two groups (t -test=0.79). The average weight of the experimental and the control groups of neonates did not also significantly differ (2.82 kg and 2.88 kg, respectively), as shown by a t -test result of 0.73, which was not significant at 0.05 level.

The experimental and the control groups did not also differ significantly in terms of age at the time of ear boring. The mean age of the first group was 2.8 months, while the second group was 3.0 months. The t -test value of 0.76 did not reach the 0.05 level of significance. This means that the experimental and the control groups have about the same age at the time of ear boring. The two groups therefore are comparable.

Table 1. Mean Scores in Gestational Age, Weight and Present Age of the Experimental and the Control Groups

Variables	Exptl Group	Contrl Group	t-Value	Sig.
Gestational Age	38.80	39.00	0.79	ns
Weight	2.82	2.88	0.73	ns
Present Age	2.80	3.00	0.76	ns

Ns – Not significant

Effect of Touch on the Pain Reaction of the Neonates

The result of the study showed that there is a significant difference between the pain reactions of full-term neonates who have undergone ear boring and have been touched and those who have not been touched. More specifically, a decrease in the manifestation of pain was in the infants' crying pattern, breathing pattern, respiratory rate, heart rate, motor activity of the legs, and in the state of arousal.

The differences between the mean scores of the group who were touched and the mean scores of those who were not touched registered t -test values of 3.64 for crying patterns, 2.70 for breathing pattern, 3.02 for respiratory rate, 3.04 for heart rate, 5.15 for motor activity of the legs, and 6.04 for the state of arousal. Except for motor activity of the arm, all t -test values were significant at 0.05 level.

There was no significant difference in the facial expression and motor activity of the arms of the experimental and control group. The mean score for facial expression of the experimental group was 0.86, while that of the control group was 0.96. The t-test for the difference between the means was not significant at 0.05 level.

The difference between the mean scores for motor activity of the arms of the neonates who were touched was 0.06, while the mean score for those who were not touched was 0.26. The test for difference between means registered a t-test value of 1.54, which was not significant at 0.05 level.

Bell's findings (1995) show that facial expression and crying are common indicators of pain among young children. Studies reviewed by Lester and Boukydis (in Chamberlain, 1989) also revealed similar observations

Toye's (1994) findings also pointed out that touch resulted in a significant reduction in anxiety which manifests in the reduction of respiratory rate. Mackey (1995) similarly noted that the first observable response to touch is rapid relaxation which also means lower heart rate. Fishman (1995) also reported a significant decrease in cardiovascular variables and experience of pain as a result of physical contact.

Table 3. Means, differences in means between the experimental and the control groups in terms of the various indicators of pain reactions and their t-test results.

Pain Reactions	Experimental Group (n=15)	Control Group (n=15)	t-value
A. Facial Expression	0.86	0.93	0.65
B. Crying Pattern	0.73	1.46	3.64*
C. Breathing Pattern	0.66	0.93	2.70*
D. Respiratory Rate	43.6	47.4	3.02*
E. Heart Rate	144.6	154.2	3.40*
F. Motor Activity of the Arm	0.06	0.26	1.54ns
G. Motor Activity of the Legs	0.06	0.73	5.15*

*Significant at .05 level

ns – Not significant at .05 level

Over-all Pain Reaction

On the whole, the effect of touch on the pain reaction of the full-term neonates based on the over-all mean score of all the pain indicators was significant in favor of those infants who were touched during the ear boring. The mean score of 2.6 for the experimental group was significantly lower than the mean score of 5.26 obtained by the control group. The hypothesis that there is no significant difference in the pain reaction of infants who were touched and the pain reaction of those who were not touched cannot be rejected. The test result shows that on the whole, infants who were touched experienced less pain reaction than those who were not touched. This means that touch reduces pain among infants.

The positive effects of touch in the reduction of pain reaction among neonates who experienced ear boring find support in the studies of Fishman, et. al. (1995), Dima-ano and Aliwalas (1997) and many others. On the whole the "gate control theory" find empirical support in this study. The findings show that in general touch is able to partially "close the gate" that allows the transmission of pain to the pain center of perception and reaction (Melzak and Wall, 1965).

Table 3. Means, differences in means of overall pain reaction rate between the experimental and control groups and the t-test results.

Over all pain Reaction	Experimental Group (n=15)	Control Group (n=15)	Computed t
- (0) No Pain	2	0	8.48*
- (1-2) Mild Pain	3	0	
- (3-5) Moderate Pain	10	10	
- (6-7) Severe Pain	0	5	
Mean	2.6	5.26	

* Significant at 0.05 level

Conclusions

In the light of the foregoing findings, it can be deduced that touch applied before the painful procedure like ear boring, lessens pain reactions in infants, specifically: crying pattern, breathing pattern, respiratory rate, heart rate, motor activity of the legs, state of arousal and over-all reactions. The “gate control theory” finds strong support from this study. Among infants whose ears were pierced, touch may have reduced the chance of noxious stimuli to pass through the pain center for perception, interpretation and pain reaction. This may have reduced pain and reduced pain reactions.

Recommendations

1. Hospital administrators need to support the promotion of touch therapy in the health care service since touch is found to be beneficial to the health care customers.

2. Hospital Practitioners (doctors, nurses, midwives, etc.) should utilize touch therapy in pain management as well as in other areas of health care services as that of relieving anxiety, in promoting growth and development of infants, etc., most particularly in balancing the world of cutting-edge technology.

3. Nursing Educators should strengthen in the curriculum the teaching of holistic, non-invasive, economical intervention – touch – in pain management. Furthermore, they must provide the students some avenues for related learning experiences to perfect ‘touch’, making them clinically sensitive and able to compassionately render service to others.

4. Parents/would-be-parents must recognize and practice touch therapy as a bond that will keep their families closer to one another. ctice

5. It is recommended that this study be replicated among other age groups, in other settings, using other procedures. er

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