DOI Number: 10.5958/0974-9357.2020.00010.0

A True Experimental Study to Assess the Effectiveness of Helfer Skin Tap Technique on the Level of Pain during Intramuscular Injection of Tetanus Toxoid among Antenatal Mothers in a selected Hospital of Delhi

Rautela M.[1], Thomas S.[2], Rita P.D.[3]

[1]Tutor, St. Stephen's Hospital College of Nursing, [2]Associate Professor, [3]Senior Tutor, Holy Family Hospital College of Nursing, Delhi, India

Abstract

A True experimental study was conducted to assess the effectiveness of Helfer skin tap technique on the level of pain during intramuscular injection of Tetanus Toxoid among Antenatal Mothers in a selected Hospital of Delhi and to find out the association between the level of pain experienced by Antenatal Mothers during intramuscular injection using Helfer skin tap technique and selected variables. A total of sixty sample were randomly assigned into 2 groups (30 in experimental group and 30 in control group)using simple random sampling technique. Structured interview schedule was used to collect the demographic characteristics and clinical health data. For the administration of intramuscular injection, Helfer skin tap technique was used for the experimental group and routine technique was used for the control group. Immediately after the administration, the post test pain score was obtained using Numeric pain rating scale. Findings revealed that the mean post test pain score and standard deviation of the experimental group was 1.13 ±1.11 whereas of the control group was 4.23±2.01. The calculated 't' test value 4.42 was found significant at $p \leq 0.05$. Significant association was found between the level of pain experienced by Antenatal Mothers during intramuscular injection with Helfer skin tap technique and selected variables such as religion and Body Mass Index but no association was found with other selected variables. The study results showed that Helfer skin tap technique was effective in reducing the level of pain during intramuscular injection.

Keyword: *Helfer Skin Tap Technique, Intramuscular Injection, Antenatal Mothers, Tetanus Toxoid,Level of pain.*

Introduction

Pain is a complex phenomenon, and its exact nature remains a mystery. A person in pain wants only one intervention-pain relief[1]. Margo McCaffery, one of the nursing's pain pioneers, defined pain as "whatever the experiencing person says it is and existing whenever the person says it does". The International Association for the Study of Pain (IASP) offers the accepted medical definition of pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage"[2].

According to WHO 2015 guidelines, every year at least 16 billion injections are administered worldwide. The vast majority –around 90% –are given in curative care. Immunization injections account for around 5% of all injections, with the remaining covering other indications, including transfusion of blood and blood products, intravenous administration of drugs and fluids and the administration of injectable contraceptives[3].

Ronald Melzack and Patrick Wall introduced their "gate control" theory of pain in the 1965 Science article "Pain Mechanisms: A New Theory". The authors proposed that both thin (pain) and large diameter (touch, pressure, vibration) nerve fibers carry information from the site of injury to two destinations in the dorsal horn of the spinal cord: transmission cells that carry the pain signal up to the brain, and inhibitory inter neurons that impede transmission cell activity. Activity in both thin

and large diameter fibers excites transmission cells. Thin fiber activity impedes the inhibitory cells (tending to allow the transmission cell to fire) and large diameter fiber activity excites the inhibitory cells (tending to inhibit transmission cell activity). So, the more large fiber (touch, pressure, vibration) activity relative to thin fiber activity at the inhibitory cell, the less pain is felt[4].

In 1998, Ms. Joanne Helfer made an attempt to alleviate pain due to intramuscular injection by developing 'Helfer Skin Tapping Technique' which involves tapping over the skin over the injection site[5]. S S, Kumari L.conducted an experimental studyto compare the pain level of neonates during intramuscular injection with and without the use of Helfer skin tap technique. True experimental post test control group design was used in the study. The study was conducted on 100 neonates (50 in experimental group and 50 in control group). The analysis revealed that in the experimental group, the post test mean value was 2.15 with standard deviation 2.01 and in control group the post test mean value was 5.7 with standard deviation 0.73. Results showed that Helfer skin tap technique was effective in reducing the intramuscular injection pain among neonates.

Problem Statement: A True Experimental Study to Assess the Effectiveness of Helfer Skin Tap Technique on the Level of Pain during Intramuscular Injection of Tetanus Toxoid among Antenatal Mothers in a selected Hospital of Delhi

Objectives:

1. To assess the level of pain experienced by Antenatal Mothersduring intramuscular injection using Helfer skin tap technique.
2. To assess the level of pain experienced by Antenatal Mothersduring intramuscular injection using routine technique.
3. To compare the level of pain experienced by Antenatal Mothersduring intramuscular injection using Helfer skin tap technique and routine technique.
4. To find out the association between the level of pain experienced by Antenatal Mothers during intramuscular injection using Helfer skin tap technique and selected variables.

Research Hypothesis:

H_1: There will be significant difference between the mean post test pain score during intramuscular injection using Helfer skin tap technique and mean post test pain score during intramuscular injection using routine technique among Antenatal Mothers at 0.05 level of significance.

H_2: There will be significant association between the level of pain experienced by Antenatal Mothers during intramuscular injection using Helfer skin tap technique and selected variables at 0.05 level of significance.

Operational Definitions:

- **Effectiveness:** In this study, effectiveness refers to the reduction in the level of pain experienced by Antenatal Mothers during intramuscular injection of Tetanus Toxoid using Helfer skin tap technique.
- **Helfer Skin tap technique:** In this study, it refers to a technique in which the investigator taps the deltoid muscle before the administration of intramuscular injection 16 times rhythmically with the palmar aspect of the dominant hand, then taps the deltoid muscle with palmar aspect of non-dominant hand 3 times counting 1, 2, 3 using the V tap (spreading the thumb and index finger) and insert the needle immediately after the 3rd count and continues to tap throughout the procedure.
- **Antenatal Mothers:** In this study, Antenatal Mothers refer to the pregnant mothers within the age group of 18-45 years receiving intramuscular injection of Tetanus Toxoid.
- **Intramuscular injection:** In this study, it refers to the administration of injection Tetanus Toxoid into the deltoid muscle.

Conceptual Framework: Ernestine Wiedenbach's helping art of Clinical Nursing theory (1964) is used as a conceptual framework for this study in a modified form.

The Theory mainly consists of 3 factors that indicate the nurse has a central purpose that helps direct the prescription for care within realities of a given situation. The 3 factors of theory can be explained as following:

- **Central purpose:** It refers to what the nurse want to accomplish through what she does. It is overall goal toward which a nurse strives. In the present study

the central purpose was to reduce the level of pain during intramuscular injection of Tetanus Toxoid among antental mothers.

- **Prescription:** It specifies the nature of the action that will fulfill the nurse's central purpose and rationale for that action. In the present study, the prescription was Helfer skin tap technique to reduce the level of pain during intramuscular injection.
- **Realities:** It refers to the physical, physiological, psychological, emotional and spiritual factors that come into play in a situation involving nursing actions. The 5 realities identified by Ernestine Wiedenbach were:
- **Agent:** The agent is the caregiver who has the personal attribute, capacities, competence and commitment to provide the nursing care. In the present study the investigator was the agent.
- **Recipient:** The recipient is the person for whom the action is taken. In the present study, Antenatal Mothers receiving intramuscular injection of Tetanus Toxoid were the recipient.
- **Goal:** It is the desired outcome the nurse wishes to achieve. The goal in the present study was to reduce the level of pain during intramuscular injection.
- **Means:** The means are activities that the nurse is empowered to achieve the goals. This includes specific skills, procedures or techniques. The means in the present study was Helfer skin tap technique.
- **Framework:** The framework consists of the human, environmental, professional, and organizational facilities. In the present study, antenatal clinic of selected Hospital of Delhi was considered as the framework.

The practice of nursing involves identification, ministration and validation.

- **Identification:** This involves determining the need for help. In the present study, the investigator has identified that there was a need to reduce the level of pain among Antenatal Mothers during intramuscular injection.
- **Ministration:** This refers to the provision of required help for the identified need. In the present study, the investigator administered the intramuscular injection in the experimental group using Helfer skin tap technique whereas in the control group using routine technique.
- **Validation:** This involves validating that the actions were helpful. In the present study, validation was done by assessing the level of pain immediately after the administration of intramuscular injection using Numeric Pain Rating Scale and evaluating the effectiveness of Helfer skin tap technique by analyzing the goal has been attained or not.

Material and Method

Quantitative approach and True experimental Posttest-only control group design was adopted for the study. Content validity of the tool was established by giving to experts. The reliability coefficient of the standardized tool (Numeric Pain Rating Scale) using Cronbach's alpha was 0.88. After obtaining the ethical clearance from the ethical committee of Holy Family Hospital, New Delhi, the pilot study was conducted on 8 Antenatal Mothers to find out the feasibility of conducting the final study. The findings of the pilot study revealed that it was feasible to conduct the study. After obtaining the ethical clearance from the ethical committee of St. Stephen's Hospital, Delhi, the final study was conducted at antenatal clinic of St. Stephen's Hospital, Delhi. A total of sixty sample were randomly assigned into 2 groups (30 in experimental group and 30 in control group) through simple random sampling technique using a chit method. Formal consent was obtained from the sample. Structured interview schedule was used to assess the selected variables (demographic characteristics such as age, educational status, religion and clinical health data such as number of dosage of Injection Tetanus Toxoid during pregnancy, previous experience of receiving Injection Tetanus Toxoid, number of previous delivery, Body Mass Index (BMI) categories) of the sample. The intramuscular injection of Tetanus Toxoid was administered into the deltoid muscle using Helfer skin tap technique in the experimental group and using routine technique in the control group. Immediately after the administration of intramuscular injection, the post test pain score of the experimental group as well as of the control group was obtained using the Numeric Pain Rating Scale.

Findings: Findings revealed that in the experimental group, majority of the sample 20 (66.66%) were in the age group of 25-31 years, 26 (86.66%) have completed graduation and above, 22 (73.33%) were Hindu, 18 (60%) were receiving 2nd dose of Injection Tetanus Toxoid, 24 (80%) already had an experience of receiving

Injection Tetanus Toxoid, 14 (46.66%) had one experience of delivery and 10 (33.3%) had BMI between 18.5-24.9 (Normal).In the control group, majority of the sample 21 (70%) were in the age group of 25-31 years, 25 (83.33%) have completed graduation and above, 20 (66.66%) were Hindu, 17 (56.66%) were receiving 2nd dose of Injection Tetanus Toxoid, 24 (80%) already had an experience of receiving Injection Tetanus Toxoid, 13 (43.33%) sample did not have an experience of previous delivery in the past, 13 (43.33%) had one experience of delivery in the past and 11 (36.6%) had BMI between 25-29.9 (overweight).

Table 1: Frequency and percentage distribution of level of pain during intramuscular injection in experimental group and control group n=60

Level of pain	Experimental group (n_1=30)		Control group (n_2=30)	
	f	%	f	%
None	10	33.33	0	0
Mild	18	60	09	30
Moderate	02	6.66	15	50
Severe	0	0	06	20

Data represented in Table 1 reveals that majority of the sample in the experimental group 18 (60%) perceived mild pain, 10 (33.33%) perceived no pain and least 02 (6.66%) perceived moderate pain during intramuscular injection using Helfer skin tap technique, whereas none of the sample experienced severe pain. Majority of the sample in the control group 15 (50%) perceived moderate pain, 09 (30%) perceived mild pain and 06 (20%) perceived severe pain during intramuscular injection using routine technique whereas none of the sample experienced no pain.

Table 2: Mean, Mean Difference, Standard Deviation, Standard error of mean difference and 't' value of post test pain score of experimental group and control group during intramuscular injection n=60

Group	Mean	Mean difference	Standard deviation	Standard error of mean difference	't' value
Experimental (n_1=30)	1.13	3.1	1.11	0.70	4.42*
Control (n_2=30)	4.23		2.01		

t (58)=2.00, *- Significant at $p \leq 0.05$

Data represented in Table 2 shows that the mean post test pain score of the experimental group was 1.13 and the mean post test pain score of the control group was 4.23. The calculated 't' value of 4.42 was greater than the table 't' value 2.000 at $p \leq 0.05$. Hence, the research Hypothesis H_1 was accepted. Results indicated that Helfer skin tap technique was effective in reducing the level of pain during intramuscular Injection among antenatal mothers.

Significant association was found between the level of pain experienced by Antenatal Mothers during intramuscular injection with Helfer skin tap technique in the experimental group and selected variables such as religion and BMI as the calculated Fisher's exact test value was significant at $p \leq 0.05$ but no association was found with other selected variables.

Discussion

The present study found that in the experimental group, majority of the sample 18 (60%) perceived mild pain, 10 (33.33%) perceived no pain, 02 (6.66%) perceived moderate pain and none of the sample experienced severe painduring intramuscular injection using Helfer skin tap technique, whereas in the control group, majority of the sample 15 (50%) perceived moderate pain, 09 (30%) perceived mild pain, 06

(20%) perceived severe pain and none of the sample experienced no pain during intramuscular injection with routine technique. These finding were similar to the study findings of Cherian AT.[7] who reported that out of 40 sample, majority 33 (82.55%) reported mild pain, 5 (12.5 %) reported no pain and 2 (5%) reported moderate pain after receiving intramuscular injection with rhythmic skin tapping whereas majority of the sample 25 (62.5%) reported mild pain and 15 (37.5%) reported moderate pain after receiving intramuscular injection without rhythmic skin tapping.

Conclusion

The findings of the study proved that Helfer skin tap technique was effective than routine technique in reducing the level of pain during intramuscular injection of Tetanus Toxoid among Antenatal Mothers and it can be implemented as a useful measure to reduce the pain related to administration of intramuscular injections.

Ethical Clearance: Taken from Ethical committee of Holy Family Hospital, New Delhi and St. Stephen's Hospital, Delhi.

Source of Funding: Self

Conflict of Interest: None

References

1. Shah S, Narayanan A. Effect of Helfer Rhythmic Skin tap technique on procedural pain among patients receiving intramuscular injection. Manipal Journal of Nursing and Health Sciences 2016;2(1): 3-9.
2. Black JM, Hawks JH. Medical Surgical Nursing. 8th ed. Philadelphia: Elsevier; 2009.
3. WHO. WHO calls for worldwide use of "smart" syringes. http://www.who.int/ (accessed 20 November 2017).
4. Brar NK, Rawat HC. Textbook of Advanced Nursing Practice.1st ed. India: Jaypee; 2015.
5. Said M, Shehata H. Effects of Helfer skin Tapping and Z track Techniques on pain intensity among Hospitalized adult patients who receiving intramuscular injection. International Journal of Novel Research In Healthcare And Nursing 2016;3(3): 77-94.
6. S.S. Kumari L6 A study to assess the effectiveness of Helfer skin tap technique on pain during Intramuscular injection among Neonates born in Labour room of a selected tertiary level Hospital, UP. International Journal of Science & Research 2015;(4): 547-552.
7. Cherian AT. Effectiveness of rhythmic skin tapping on pain during intramuscular injection among male adults in selected Hospital at Manglore. International Journal of Advanced Science and Research 2016;1(10): 13-19.