

Original Research Article

An Experimental Study to Assess the Effectiveness of Helper Skin Tap Technique on Procedural Pain among Patients in Selected Civil Hospitals of Punjab

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ABSTRACT

Introduction– According to American Pain Society, Pain is referred as “the fifth vital sign” to stress its significance and to improve attention of health care professionals about the importance of effective pain management strategies. In the medical practice, Intramuscular injection is one of the most frequent procedures done almost every day to deliver medication deep into large muscles of the body. It is a fact that any intra muscular injection will cause pain at the site of injection and it is a challenge to the nurses to give painless injections. Different methods are used by nurses to reduce pain during IM injections such as tapping the skin, Z-track method, applying pressure, applying heat and cold. Among the different physical interventions, the most effective is tapping the skin to keep the muscles relaxed. It is an accepted fact that there is reduction in pain while giving injection into a relaxed muscle.

Materials & Method- One hundred ten (110) patients from Civil Hospital, Kharar, Civil Hospital, Phase-6, Mohali and Civil Hospital, Chamkaur Sahib were selected by Simple Random Sampling: Lottery method as per inclusion and exclusion criteria. The data was collected from subjects by Uni-dimensional Pain Assessment Scales consisting of Numeric Rating Scale, Visual Analog Scale and Verbal Descriptor scale.

Result- The frequency data shows that pain perception was mild for maximum 71 (64.54%) subjects with HST (Helper Skin Tap) technique while for exact same number for subjects 71 (64.54%) pain was moderate with ST (Standard Technique) by using NRS (Numeric Rating Scale). Similarly, according to VAS (Visual Analogue Scale) 43 (39.09%) subjects were hurt more with ST, whereas 52 (47.27%) were hurt little bit with HST. As per VDS (Verbal Descriptor Scale) data analysis, half of subjects 55 (50%) experienced mild pain with HST, while 50 (45.45%) subjects reported moderate pain with ST. Therefore, all three Uni-dimensional Pain Assessment Scales revealed that the procedural pain perception is less with HST as compared to ST.

The study findings revealed that the mean pain score with ST and HST by using NRS, VAS & VDS was 3.96 ± 1.61 , 3.56 ± 1.91 , 3.41 ± 1.64 and 2.55 ± 1.57 , 2.32 ± 1.75 , 2.22 ± 1.65 respectively. So, it can be said that pain perception is less with HST than with ST.

The statistical testing of data related to effectiveness of HST as compared to ST on procedural pain perception by ‘paired t test’ shows it to be statistically significant at $p < 0.01$ level and concluded that there is significant reduction in procedural pain perception with HST as compared to ST.

The association of pain perception with selected socio-demographic variables i.e., age and gender was found to be non-significant at $p > 0.05$ level.

Conclusion- The study concluded that Helper Skin Tap Technique is effective in reducing procedural pain (intramuscular injection).

Keywords- Effectiveness, Helper Skin Tap Technique, Procedural pain, Patients.

INTRODUCTION

The word “pain” comes from the Latin word “poena” meaning a fine or penalty. An unpleasant sensation that can range from mild, localized discomfort to agony. Pain has both physical as well as emotional components. The physical part of pain results from nerve stimulation. Pain may be contained to a discrete area as in an injury, or it can be more diffuse, as in disorders like fibromyalgia. [1]

Pain is a complex phenomenon and its exact nature remains a mystery. A person in pain often experiences it as an all-consuming reality and wants only one intervention- pain relief. Pain is mediated by specific nerve fibres that carry the pain impulses to the brain, where their conscious appreciation may be modified by many factors. The physical part of pain results from nerve stimulation which may be contained to a discrete area, as in an injury, or it can be more diffuse. [1]

International Association for the study of pain defines pain as “an unpleasant, subjective sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”. [1]

According to American Pain Society

- An unpleasant tactile and sentimental experience associated with the entrance of pathogens that causes a disrupted homeostasis.
- A chaotic humoral experience that creates physiological disturbances and disorders. [1]
- According to American Pain Society, Pain is referred as “the fifth vital sign” tool stress its significance and to improve attention of health care professional about the importance of effective pain management strategies, as well as continuous assessment. [1]

Many factors influence pain perception of a person at a given moment. When an individual is exposed to pain, almost anything can influence as to how the painful stimulus is transmitted to the brain,

how it is perceived and the responses made to it. Socio- cultural factors like race, culture and ethnicity are critical variables which affect pain perception of an individual as it dictates our daily behavior, attitudes and values. [2] Other related factors which influence the pain perception are family (Warfield, 2002), gender (Criste, 2002), age, anxiety and previous pain experiences. *United States (2006)* highlights pain associated with intramuscular injection among adults. It revealed that the adults aged 45-64 years were most likely to report pain lasting more than 24 hours (30%). (25%) of young adults of age group 20-44 years reported pain lasting more than two days (21%). [3] Some studies indicate that older adults are more sensitive to experimental pain than young adults, whereas others suggest a decrease in sensitivity with age. [3]

During hospitalization, the patients need to undergo a variety of painful interventions like injections and other invasive procedures. As the patient is already under stress due to ill health, the health care professionals try to reduce discomfort with these painful procedures.

In the medical field, intramuscular injection is one of the most frequent procedures done almost every day to deliver medication deep into the large muscles of the body. [1] There are 16 billion intramuscular injections administered annually throughout the world (WHO, 2011). In developing countries alone, some sixteen thousand million injections are administered annually, over 90% are administered for therapeutic aims whereas 5 to 10% are administered to disease prevention and the foremost important side effect associated with injections is the related pain. [2]

WHO (2009) a conservative estimate of average of number of intramuscular injections ranged from 0.9-8.5 per person per year with a median of 1.5 intramuscular injections per person per year. [3] *National Centre for Health Statistics U.S.A report (2008)* indicates that more than 1.5 billion

people worldwide suffer from severe pain and that approximately 3-4.5% of global population suffers from mild to moderate pain, due to intramuscular injection. [4]

Managing the pain suffered by patient while performing invasive procedures is a challenge to direct health care providers. One of the most basic human rights of patient's is providing them relief from the pain, which thus is the responsibility of a nurse, who has to use the most efficient procedures to control the pain. Effective pain management not only reduces physical discomfort but also improves quality of life. [2]

In health care settings, pain management is one of the main facets of nursing care, where nurses need to be competent and are obligated to mitigate every kind of pain, including the "minor" procedural pain. [2] Different methods are used by the nurses to reduce pain during intramuscular injections such as tapping the skin, Z-track, applying pressure, applying heat and cold. Among the different physical interventions, the most effective is tapping the skin which relaxes the muscle. It is an accepted fact that there is reduced pain while giving injection into a relaxed muscle. [4]

In 1998, Ms. Joanne Helfer made an attempt to alleviate pain due to intramuscular injection by developing "Helfer Skin Tap Technique" (HST) in which tapping was done over the injection site. HST offers the painless injection experience. As per the gate control theory described by Roger Melzack and Past Wall, this technique provides a mechanical stimulation as well as distraction during administration of intramuscular injection. [4]

MATERIALS & METHODS

A total of 110 (One hundred ten) subjects including men and women admitted in selected hospitals with orthopaedic diagnosis and receiving intramuscular injection Diclofenac sodium 3 ml were selected for the study.

1. The subjects served as their own control, they were selected and randomized into group I & II through Simple Random Sampling: Lottery method.
2. In the crossover design, the subjects in group I were first exposed to HST followed by ST for intramuscular injection, whereas the group II subjects received intramuscular injection through the ST followed by HST with a gap of 24 hours between two techniques in each group.

INCLUSION CRITERIA

1. Male and female adult patients admitted in medical surgical ward with orthopaedic diagnosis.
2. Patients receiving IM injection Diclofenac sodium 3 ml.
3. Patients willing to participate.

EXCLUSION CRITERIA

1. Patients with organomegaly.
2. Patients with Neuropathic disorders (Diabetic neuropathy), paralysis, paresthesia (Spinal cord injury), peripheral nerve damage.
3. Patients with any Psychiatric Disorder.

Data processing and analysis-

1. The data was collected related to socio-demographic characteristics by Questionnaire and Procedural pain by Uni-dimensional pain assessment scales consisting of NRS, VAS & VDS.
2. The data collected from adult patients was analysed using descriptive and inferential statistics based on law of probability which provide a means of drawing conclusion about the population from which the data was obtained for the study.
3. The various statistical measures were used for analysis which included means of dispersion (Standard deviation), Central tendency (mean), frequency, percentage distribution and were presented in the form of tables and figures.
4. The effectiveness of Standard Technique and Helfer Skin Tap Technique on pain

perception was assessed using paired t-test.

- The association of pain with selected socio- demographic variables was analysed using ANOVA test & unpaired t-test.

RESULTS

Analysis and interpretation of data was organised under the following headings:

Part 1- It included Data related to socio-demographic characteristics.

Part 2 – It included data related to Procedural pain perception with Standard Technique and Helper Skin Tap Technique using Uni-dimensional Pain Assessment Scales.

Part 3- It included data related to effectiveness of Helper Skin Tap Technique as compared to Standard Technique on procedural pain.

Part 4- Data related to association of pain with selected Socio-Demographic variables.

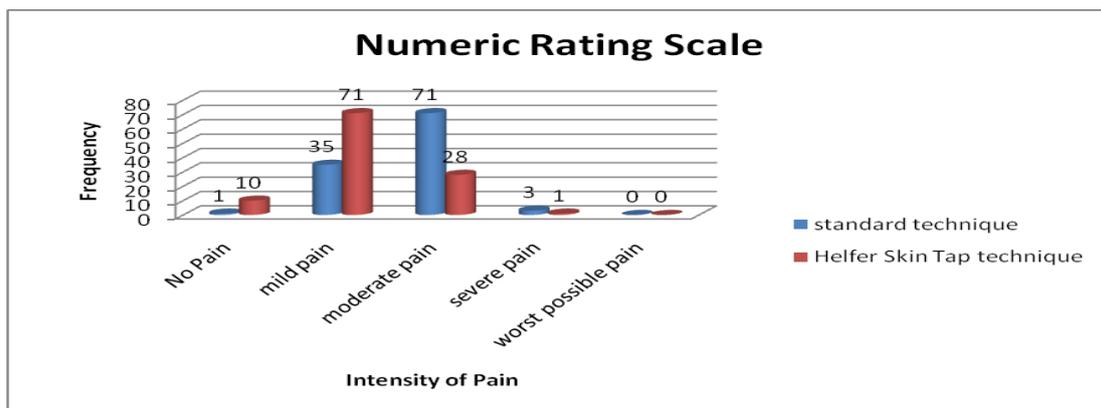


Figure 1: Frequency Distribution of subjects as per intensity of procedural pain perception with Numeric Rating Scale N=110

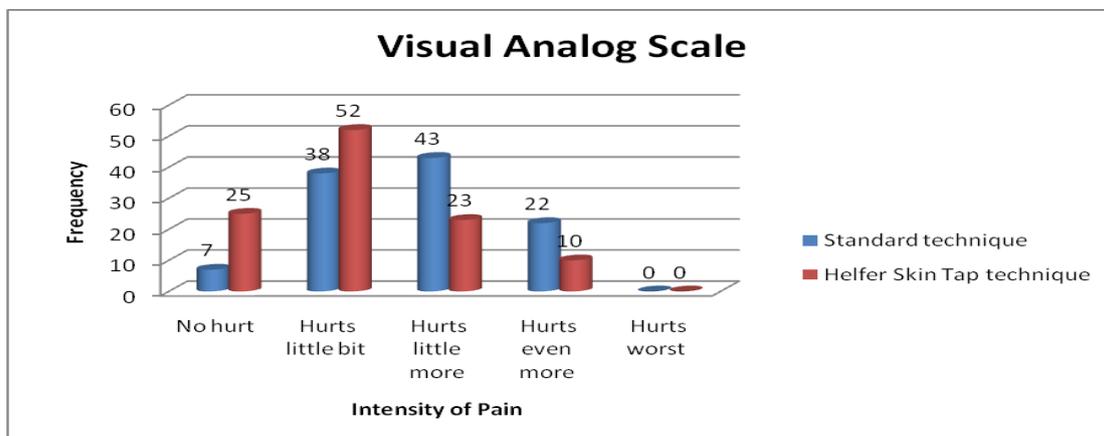


Figure 2: Frequency Distribution of subjects as per intensity of procedural pain perception with Visual Analog Scale N=110

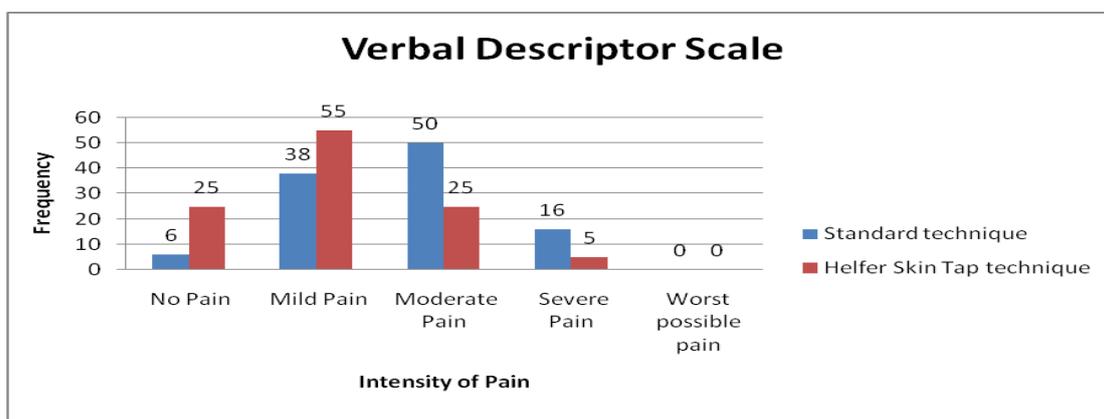


Figure 3: Frequency Distribution of subjects as per intensity of pain perception with Verbal Descriptor Scale N=110

Table 1: Mean pain score of subjects with ST and HST by using different pain assessment scales.

N=110

Uni-Dimensional Pain Assessment Scale (UDPSA)	ST	HST
	(Mean ± SD)	(Mean ± SD)
NRS	3.96 ± 1.61	2.55 ± 1.57
VAS	3.56 ± 1.91	2.32 ± 1.75
VDS	3.41 ± 1.64	2.22 ± 1.65

Table 2: Effectiveness of Helper Skin Tap Technique on procedural pain as compared to Standard Technique.

N=110

UDPAS	Technique	Mean	(D)	(D ²)	t value	p	df
NRS	Standard Technique	1.41	155	509	9.051230*	0.00001	109
	Helper Skin Tap Technique						
VAS	Standard Technique	1.24	142	612	6.397162*	0.00001	109
	Helper Skin Tap Technique						
VDS	Standard Technique	1.22	134	548	6.800247*	0.00001	109
	Helper Skin Tap Technique						

*=Significant p<0.01

Table 3: Association of procedural pain perception with Age N=110

UDPAS	Age (in years)	f (%)	ST		HST	
			Mean ± SD	SE	Mean ± SD	SE
NRS	18-35	56 (50.90)	4.14 ± 1.72	0.43	2.71 ± 1.59	0.42
	36-55	42 (38.18)	3.85 ± 1.42	0.49	2.25 ± 1.52	0.48
	More than 56	12 (10.90)	3.50 ± 1.88	0.93	2.66 ± 1.82	0.91
	ANOVA test		F= 0.9113 ^{NS}	p=0.4015	F= 1.0549 ^{NS}	p=0.3481
VAS	18-35	56 (50.90)	3.58 ± 2.05	0.53	2.39 ± 1.80	0.46
	36-55	42 (38.18)	3.42 ± 1.87	0.59	2.09 ± 1.81	0.54
	More than 56	12 (10.90)	2.83 ± 1.80	1.21	2.83 ± 1.33	1.01
	ANOVA test		F= 0.7217 ^{NS}	p=0.4851	F= 0.8913 ^{NS}	p=0.4095
VDS	18-35	56 (50.90)	3.46 ± 1.80	0.43	2.32 ± 1.69	0.43
	36-55	42 (38.18)	3.52 ± 1.45	0.50	2.00 ± 1.71	0.50
	More than 56	12 (10.90)	2.83 ± 1.58	0.94	2.33 ± 1.15	0.94
	ANOVA test		F= 0.8536 ^{NS}	p=0.4252	F= 0.4967 ^{NS}	p=0.6076

NS=Non significant at p>0.05

Table 4: Association of procedural pain perception with Gender. N=110

UDPAS	Gender	f	ST		HST	
			Mean ± SD	t	Mean ± SD	t
NRS	Male	63	3.73 ± 2.49	1.75506 ^{NS}	2.51 ± 2.83	0.35607 ^{NS}
	Female	47	4.28 ± 2.77		2.62 ± 2.11	
VAS	Male	63	3.46 ± 3.64	0.65069 ^{NS}	2.32 ± 3.12	0.05749 ^{NS}
	Female	47	3.70 ± 3.82		2.30 ± 3.13	
VDS	Male	63	3.30 ± 2.99	0.85409 ^{NS}	2.25 ± 3.42	0.3964 ^{NS}
	Female	47	3.51 ± 2.42		2.13 ± 1.81	

NS= Non-significant at p>0.05

DISCUSSION

The study findings revealed that pain perception was mild for maximum 71 (64.54%) of subjects with HST while for exact same number of subjects 71 (64.54%) pain was moderate with ST through NRS.

The other pain assessment scales i.e., Visual Analog Scale and Verbal Descriptor Scale showed the similar results. According to Visual Analog Scale 43 (39.09%) were hurt more with ST, where as 52 (47.27%) were hurt little bit with HST. Similarly, as per VDS data analysis, half of subjects 55 (50%) experienced mild pain with HST, while 50 (45.45%) subjects reported moderate pain with ST. Therefore, all three Uni-Dimensional Pain Assessment Scales

revealed that the procedural pain perception is less with HST as compared to ST.

Furthermore, the statistical testing of data showed that HST is effective in reducing procedural pain (p=0.00001) and the results are significant at p<0.01 with all three pain assessment scales (i.e., NRS, VAS & VDS).

The statistical analysis of data related to association of procedural pain with selected socio-demographic variables (i.e., age and gender) was found to be non-significant at p>0.05 level.

Vathani et al. (2017) conducted an experimental study with randomized control trial on 134 patients selected by simple random sampling technique to assess

effectiveness of Helfer Skin Tap Technique on patients receiving Intramuscular injection. The findings of study revealed that post-test pain score in the study group and control group was 0.67 ± 1.17 vs. 4.95 ± 1.77 and found to be highly significant at $p < 0.001$ level. It was concluded that there was an effective pain reduction among patients in the study group who received Helfer Skin Tap Technique than patients in the control group who received routine technique. [5] Similarly, the present study showed that the mean pain score with ST and HST by using NRS, VAS & VDS is 3.96 ± 1.61 , 3.56 ± 1.91 , 3.41 ± 1.64 and 2.55 ± 1.57 , 2.32 ± 1.75 , 2.22 ± 1.65 respectively. The Statistical testing of data shows that the results are significant. So, it can be concluded that Helfer Skin Tap Technique is effective in reducing pain related to intramuscular injection as compared to Standard Technique ($p < 0.00001$).

Shah and Narayanan (2016) conducted a Quasi-Experimental study using cross over design to compare the effect of Helfer Skin Tap Technique and Conventional technique on pain perception among 82 patients admitted in orthopaedic ward receiving IM injection Voveran and purposively selected to group I and II. The data was assessed by (a) socio demographic (b) Brief Pain Inventory (c) Anxiety Scale (d) Numerical Pain Intensity Scale and Visual Analog Scale to assess pain during intramuscular injection. The mean deviation of CT and HST was 1.4122 ± 0.5081 and 't' value was 25.170. It concluded that there was significant reduction in pain by Helfer Skin Tap Technique compared to that with Conventional Technique ($p = 0.001$). [6] Similarly, the present study showed that the mean procedural pain score with ST was 3.96 ± 1.61 and 2.55 ± 1.57 with HST through NRS and 3.56 ± 1.91 with ST and 2.32 ± 1.75 with HST through VAS. The 't' value by using NRS and VAS was 6.71 and 5.16 respectively. The Statistical testing of data showed significant reduction in pain score of patients receiving intramuscular

injection with Helfer Skin Tap Technique as compared to Standard Technique ($p < 0.00001$). So, it can be concluded that HST is effective in reducing IM related pain.

Serena (2010) conducted an experimental study on Rhythmic Skin Tap technique to reduce procedural pain during Intra muscular Injection among 60 patients in orthopaedic and trauma ward at St John's Medical College Hospital, Bangalore by using 0-10 numerical pain scale. The study findings showed that pain score using Helfer Skin Tap Technique (1.5 ± 1.1) was less than the pain scored by Standard Technique (2.9 ± 1.9). The study revealed that the overall mean pain intensity by using Helfer Skin Tap Technique was much lower than the pain level by the usual technique. So, Helfer Skin Tap Technique is effective in reducing pain during administration of Intra muscular Injection. [7] Similarly, the present study showed that the mean pain score using HST was 2.55 ± 1.57 which is less than the mean pain score using ST i.e., 3.96 ± 1.61 by using Numeric Rating Scale. So, it can be concluded that HST is effective in reducing pain during administration of Intramuscular injection.

CONCLUSION

The present study considered the following hypothesis:-

H₀- There will be no significant reduction in procedural pain with Helfer Skin Tap Technique.

- The present study showed that there is significant reduction ($p = 0.00001$) in pain perception of patients receiving IM injection with HST as compared to ST.
- So, the null hypothesis was rejected and it can be concluded that Helfer Skin Tap Technique is effective in reducing procedural pain i.e., pain related to intramuscular injection.

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