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A crossover study to assess the effectiveness of helper skin tap technique on procedural pain among adult patients receiving intramuscular injection in government medical college and hospital sector-32 Chandigarh

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Abstract

Aim: The objective of the study was to assess the level of pain experienced during intramuscular injection using Helper skin tap and conventional technique.

Experimental approach: Quantitative research approach with cross-over design was used in the study along with systematic random sampling technique to select 40 subjects visiting GMCH, Chandigarh.

Major findings: The mean and standard deviation value of pain by Helper skin tap technique was 2.25 ± 1.006 and 0.63 ± 0.705 at 1 minute and 3 minutes respectively whereas by conventional technique, it was 3.68 ± 0.917 and 1.05 ± 0.815 at 1 minute and 3 minutes respectively. The 't' value was found to be 5.019.

Conclusion: The study concluded that the adults who had received intramuscular injection via Helper Skin Tap technique had experienced less pain as compared to conventional technique.

Keywords: Effectiveness, helper skin tap technique, conventional technique, pain, adults

Introduction

Helper skin tap technique involves simultaneous tapping the skin at the injection site several times while the needle is inserted and removed with the palmer aspect of the fingers of the dominant hand which provides muscle distraction and relaxation. It is a comprehensible intervention which aims to lower the procedural pain intensity during administration of injection by intramuscular route.

Materials and Methods

Research Approach: Quantitative research approach was used in the study. Sample size for the study was 40. Systematic Random Sampling was used to enroll study participants. Crossover Design (Randomized Control Trial) was used. Tools used were Wong Bakers FACES Rating Scale and Numerical Pain Rating Scale. Study was conducted at Orthopedics, Surgery and Medicine wards of GMCH-32, Chandigarh. Participants 18 years of age and above receiving at least two doses of Diclofenac 75mg/3ml intramuscular injection were included in the study. Participants were provided with complete information about the study and the consent was obtained priorly. Confidentiality of the subjects was maintained.

Description of Tool for Data Collection: Standardized scales were used to assess the pain level.

Part-A: Socio demographic data

Part-B: Wong-Baker FACES Rating Scale and Numerical Pain Rating Scale.

Plan for Data Analysis: The data analysis and interpretation was done according to objectives and by using descriptive & inferential statistics by SPSS software.

The level of significance was selected at $p \leq 0.05$. Data analysis was done by calculating mean, mode, median, standard deviation, percentage and frequency. Association between pain level and selected socio-demographic variables of adult patients of experimental and control group

receiving intramuscular injections was tested by using chi square test of significance. The analysis was carried out using statistical package for social science (SPSS) software version 26.

Results and Discussion

Table 1: Frequency and percentage wise distribution of subjects according to the socio demographic variables. N=40

Socio Demographic Variables	Frequency	%
Age (In Years)		
18-28	07	17.5
29-38	08	20.0
39-48	09	22.5
49-60	16	40.0
Gender		
Male	29	72.5
Female	11	27.5
Educational Status		
Not formally educated	06	15.0
Upto secondary	18	45.0
Upto higher secondary	04	10.0
Diploma	03	07.5
Graduate and above	09	22.5
Religion		
Hindu	31	77.5
Sikh	06	15.0
Muslim	02	05.0
Christian	01	02.5
Marital Status		
Married	30	75.0
Unmarried	09	22.5
Widow	01	02.5
Monthly Income (In Rupees)		
Nil	14	35.0
<10,000	07	17.5
11,000-20,000	12	30.0
21,000-30,000	04	10.0
31,000-40,000	02	05.0
41,000-50,000	01	02.5
Body Built		
Ectomorph	19	47.5
Mesomorph	10	25.0
Endomorph	11	27.5
Diagnosis of the Subject		
Orthopedics	19	47.5
Surgery	14	35.0
Medicine	07	17.5
Injection Site		
Left	18	45.0
Right	22	55.0

Table 1 depicts the Frequency and Percentage wise distribution of subjects according to the Socio Demographic Variables. Maximum numbers of subjects (40%) were in the age group of 49-60 years. Out of 40 subjects, 72.5% were male and 27.5% were female.

Majorly, 77.5% were Hindu, 15% were Sikh, 5% were Muslim and remaining 2.5% were Christian. Most of the subjects (75%) were married.

Majority of the subjects which constituted 47.5% had ectomorph body built, 25% had mesomorph body and 27.5% had endomorph body built.

45% were educated upto secondary, 22.5% were graduated, 15% were not formally educated, 10% received education up to higher secondary and the rest 7.5% studied diploma.

Most of the subjects (47.5%) had diagnosis related to orthopaedic, 14% had surgical diagnosis and 17.5% had a medical diagnosis. Almost half of the population (55%) had injection site on the right site while the other half (45%) in the left site.

Table 2: Level of pain among subjects receiving intramuscular injection using Helfer skin tap technique and conventional technique. N=40

Pain level	Helfer skin tap technique				Conventional technique			
	1 minute		3 minutes		1 minute		3 minutes	
	n	%	n	%	n	%	n	%
No pain	00	00	20	50	00	00	12	30
Mild pain	35	87.5	20	50	19	47.5	28	70
Moderate pain	05	12.5	00	00	21	52.5	00	00

Table 2 represents Level of pain among subjects receiving Intramuscular Injection using Helfer skin tap technique and conventional technique. Out of 40 subjects, 87.5% had mild pain and just 12.5% had severe pain on receiving IM injection by Helfer skin tap technique within 1 minute of intervention. Half of the subjects (50%) of the subjects had no pain and the other half of the subjects (50%) had mild

pain on receiving IM injection by Helfer skin tap technique within 3 minutes of intervention. Out of 40 subjects, 52.5% had moderate pain whereas 47.5% had mild pain on receiving IM injection by conventional technique within 1 minute of intervention. 70% had mild pain and 30% had no pain on receiving IM injection by conventional technique within 3 minutes of intervention.



Fig 1: Level of pain among subjects receiving intramuscular injection using Helfer skin tap technique and conventional technique

Table 3: Comparison of pain score in experimental and control group using Wong Baker Faces Pain Rating Scale during intramuscular injection among adults by Helfer skin tap technique with conventional technique. N=40

Pain Scale	Mean± SD	SEM	t value
Wong Baker Faces Pain Rating Scale Value by Helfer skin tap technique	2.50±.599	.095	- 5.019
Wong Baker Faces Pain Rating Scale Value by conventional technique	2.98±.357	.059	5.019
Wong Baker Faces Pain Rating Scale Value by Helfer skin tap technique with conventional technique	0.47±.599	.95	5.019

The mean and standard deviation by Helfer Skin Tap technique is 2.50±.599. The standard error mean is 0.95. The mean and standard deviation by Conventional technique is 2.98±.357. The standard error mean is 0.59. The mean

and standard deviation by Helfer skin tap technique with conventional technique is 0.47±.599 and standard error mean is 0.95. The ‘t’ value was found to be 5.019.

Table 4: Association between Socio Demographic Variables with Numerical Pain Rating Scale Value by Helfer skin tap technique. N=40

Variables	Mean±SD	Df	X ²	p value
AGE (In Years)	2.85±1.145	3	1.941	0.58
Educational status	2.78±1.423	4	13.333	0.01 ^S
Religion	1.33±.694	3	7.607	0.05 ^S
Monthly Income (In Rupees)	2.40±1.336	5	3.755	0.58
BMI	2.18±.594	2	3.229	0.19

*p value significant at ≤0.05

Out of the selected Socio Demographic Variables, the Educational Status, and Religion was found to have significant association (0.05) on pain score of adult during

Intramuscular Injection with Numerical Pain Rating Scale Value by Helfer skin tap technique at 0.05 level of significance.

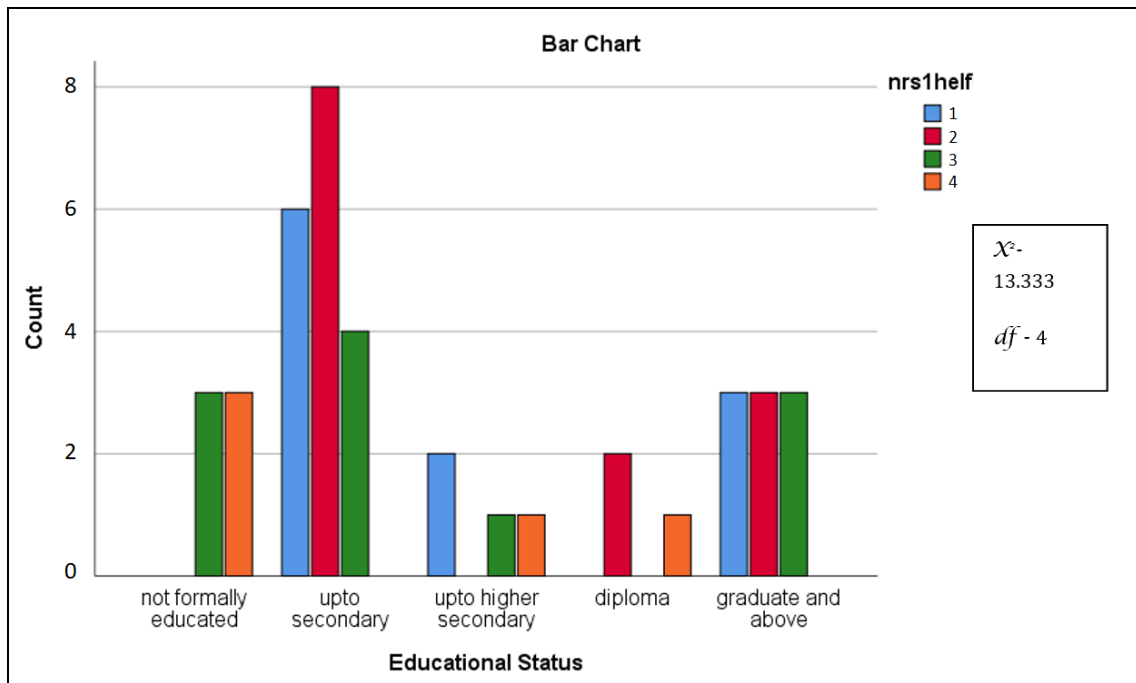
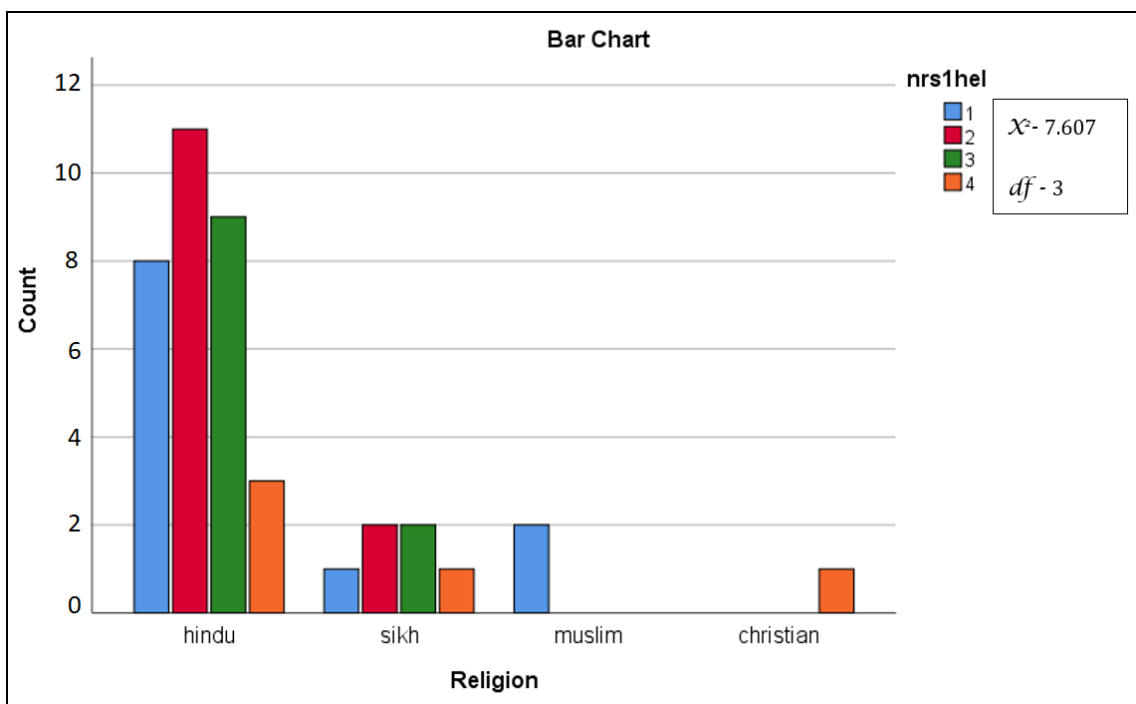


Fig 2: Association between Educational Status and Numerical Pain Rating Scale Value by Helper skin tap technique was found to be significant (p value 0.01)



Religion * nrs1helper Crosstabulation						
Count						
		Nrs1Helper				Total
		1	2	3	4	
Religion	Hindu	8	11	9	3	31
	Sikh	1	2	2	1	6
	Muslim	2	0	0	0	2
	Christian	0	0	0	1	1
Total		11	13	11	5	40

Fig 3: Association between Religion and Numerical Pain Rating Scale Value by Helper skin tap technique was found to be significant (p value 0.05)

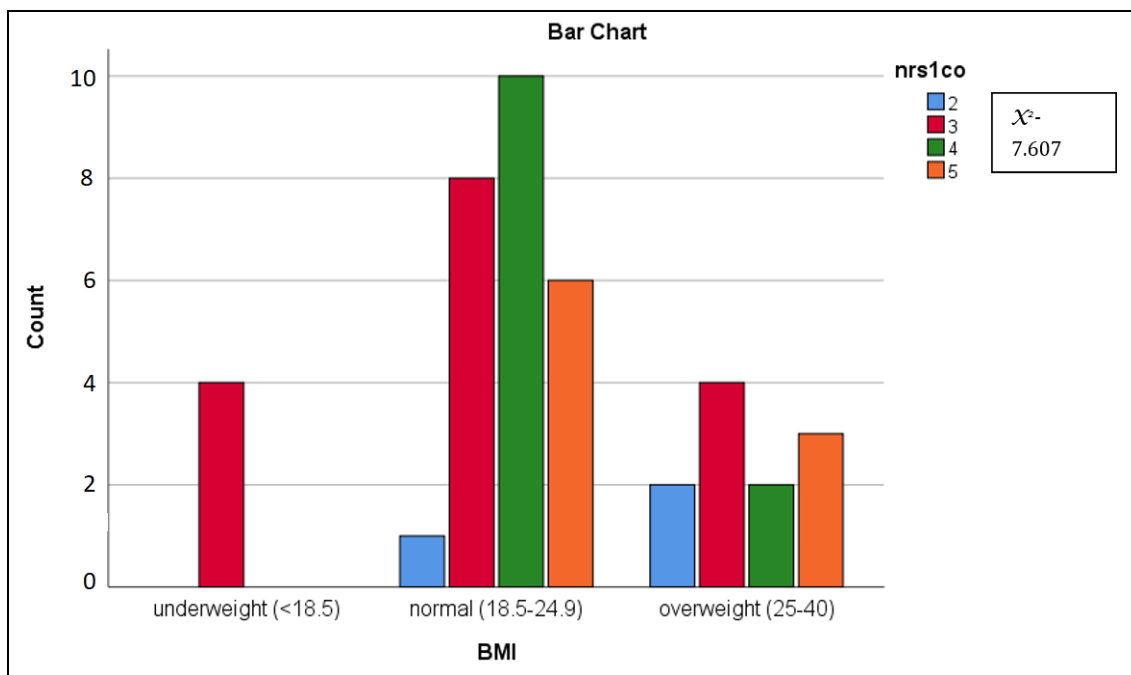
Table 5: Association between Socio Demographic Variables with Numerical Pain Rating Scale Value by conventional technique. N=40

Variables	Mean±SD	Df	X ²	P value
Age (In Years)	2.85±1.145	3	2.052	0.56
Monthly Income (In Rupees)	2.40±1.336	5	3.671	0.59
BMI	2.18±.594	2	5.966	0.05^s

*p value significant at ≤0.05

Out of the selected socio demographic variables, the body mass index (BMI) was found to have significant association (0.05) on pain score of adult during intramuscular injection

with numerical pain rating scale value by conventional technique at 0.05 level of significance.



BMI * nrs1conv Crosstabulation						
Count						
		Nrs1Conv				Total
		2	3	4	5	
BMI	Underweight (<18.5)	0	4	0	0	4
	Normal (18.5-24.9)	1	8	10	6	25
	Overweight (25-40)	2	4	2	3	11
Total		3	16	12	9	40

Fig 4: Association between BMI and Numerical Pain Rating Scale Value by conventional technique was found to be significant (p value 0.05)

Conclusion

The study was aimed to assess the effectiveness of Helper skin tap technique on procedural pain among adult patients receiving intramuscular Injection in Government Medical College and Hospital Sector 32 Chandigarh. Consent was taken from the patients and pain was assessed during

procedure and after the procedure. Data was recorded in a data recording sheet. Validation of procedures was done by experts. A pilot study was conducted prior to the study for assessing feasibility of the study. Study subjects were selected using systematic random sampling technique. Inferential and descriptive statistics were used to analyze the

data. Study finding provides the statistical evidence which indicates that level of pain among subjects receiving intramuscular injection using Helfer Skin Tap Technique was lesser than the subjects receiving IM injection by Conventional Technique. The researchers concluded the inferences from the study were valuable for nursing services, education, administration and research.

Conflict of Interest

Not available

Financial Support

Not available

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