



**A COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS OF INJECTION DURATION WITH COLD APPLICATION AMONG PATIENTS RECEIVING SUBCUTANEOUS INJECTION OF LOW MOLECULAR WEIGHT HEPARIN (LMWH) IN TERMS OF LEVEL OF PAIN AND BRUISING IN SELECTED HOSPITAL OF DELHI.**

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**ABSTRACT**

The objectives of the study were to assess and compare the level of pain and bruising among patients receiving subcutaneous injection of LMWH for 30 seconds duration with cold application (experimental group I), 30 seconds duration (experimental group II), 10 seconds duration (experimental group III) and to determine the relationship between pain and bruising among the patients receiving subcutaneous injection of LMWH in experimental group I, experimental group II and experimental group III. The sample consisted of 90 patients by purposive sampling and random assignment of 30 patients in experimental group I (30 seconds injection duration with cold application), experimental group II (30 seconds injection duration) and experimental group III (10 seconds injection duration). The significant findings of the study were that administering subcutaneous injection of low molecular weight heparin for 30 seconds duration with cold application resulted in lesser pain, fewer bruises and lesser bruising size as compared to administering for 30 seconds duration and 10 seconds duration. A positive significant relationship was observed between pain and bruising among patients receiving subcutaneous injection of low molecular weight heparin in experimental group I, experimental group II, experimental group III.

**KEYWORDS :** Subcutaneous injection, Low molecular weight heparin, Level of Pain, bruising, cold application, injection duration

Nurses frequently inject LMWH subcutaneously and this action often results in some complications including bruising, hematoma, pain at the injection site. Cold prevents the perception of the pain through its effect on sensory nociceptors. Slow subcutaneous injection reduces tissue pressure trauma and prevents stretch injury, hereby reducing bruises, site pain and other likely damage.

The objectives of the study were to assess the effectiveness of injection duration with cold application among patients receiving subcutaneous Injection of low molecular weight Heparin (LMWH) in terms of level of pain and bruising in selected hospital of Delhi.

The sample consisted of 90 patients by purposive sampling and random assignment of 30 patients in experimental group I (30 seconds injection duration with cold application), experimental group II (30 seconds injection duration) and experimental group III (10 seconds injection duration). The observation of pain was done immediately, at 5 minutes, at 10 minutes after administering of subcutaneous injection of LMWH in the three experimental groups. The observation of bruising was done after 24hrs, 48hrs and 72 hrs after administering of subcutaneous injection of LMWH in the three experimental groups.

Ethical clearance for the study was obtained from the ethical committee of Deen Dayal Upadhyay Hospital, New Delhi. Data collection was done by structured interview schedule, numeric pain rating scale and standardized millimeter scale from 19th December 2015 to 10th January 2016.

**RESULT****Injection site pain**

There was significant difference in the mean pain scores of patients receiving subcutaneous injection of LMWH in experimental group I (30 seconds duration with cold application), experimental group II (30 seconds duration) and Experimental Group III (10 seconds duration) at 0-minute, 5 minute and 10 minutes. The obtained difference was found to be statistically significant as evident from F ratio which was more than the table value (3.10) at all time points at 0.05 level of significance as shown in Table 1.

**Table 1. Comparison of Pain Scores Among Experimental Group I, Experimental Group II and Experimental Group III at 0 Minute, 5 Minutes And 10 minutes (ANNOVA)**

N=90

TIME POINTS	GROUPS	MEAN	STANDARD DEVIATION	"F" RATIO
0 MINUTE	Experimenta l group I	1.2	0.74	103.834*
	Experimenta l group II	2.43	0.67	
	Experimenta l Group III	3.73	0.63	
5 MINUTES	Experimenta l group I	0	0	5.198*
	Experimenta l group II	0.13	0.34	
	Experimenta l Group III	0.33	0.6	
10 MINUTES	Experimenta l group I	0	0	5.801*
	Experimenta l group II	0	0	
	Experimenta l Group III	0.1	0.3	

F value df1 (2) and df2 (87) = 3.10, \* = significant at 0.05 level

Further Post hoc test showed statistically significant differences in mean pain scores between experimental group I and experimental group II, experimental I and experimental group III, experimental group II and experimental group III at 0 minute. However, it was not statistically significant at 5 minutes and 10 minutes.

**Injection Site bruising**

There was significant difference in the mean bruising scores of patients receiving subcutaneous injection of LMWH in experimental group I (30 seconds duration with cold application), experimental group II (30 seconds duration) and Experimental Group III (10 seconds duration) at 24 hours, 48 hours and 72 hours. The obtained difference was found to be statistically significant as evident from F ratio which was more than the table value (3.10) at all time points at 0.05 level of significance as shown in Table 3.

**Table 3. Comparison Of Bruising Scores Among Experimental Group I, Experimental Group II, and Experimental Group III at 24 Hours, 48 Hours And 72hours (ANNOVA)**

N=90

TIME POINTS	GROUPS	MEAN	STANDARD DEVIATION	"F" RATIO
24 HOURS	Experimental group I	0.22	0.67	13.094*
	Experimental group II	1.5	2.14	
	Experimental Group III	6.03	7.6	
48 HOURS	Experimental group I	0.23	0.7	12.347*
	Experimental group II	1.85	2.45	
	Experimental Group III	8.14	10.9	
72 HOURS	Experimental group I	0.22	0.68	12.162*
	Experimental group II	1.58	2.2	
	Experimental Group III	7.42	10.1	

F value df1 (2) and df2 (87) = 3.10, \* = significant at 0.05 level

Further Post hoc test showed statistically significant differences in mean bruising scores between experimental I and experimental group III, experimental group II and experimental group III at 24 hours, 48 hours and 72 hours. But there was no statistically significant difference in mean bruising scores between experimental group I and experimental group II at 24 hours, 48 hours and 72 hours.

### CONCLUSION

It can be concluded that administering subcutaneous injection of low molecular weight heparin for 30 seconds duration with cold application was effective in reducing pain and bruising. Since injection site pain and bruising can occur from local tissue trauma during administration. For this reason, slow subcutaneous injection with cold application can be recommended to decrease the level of pain and occurrence of bruising among patients receiving subcutaneous injection of low molecular weight heparin.

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