

The Effectiveness of Digital Pressure on Pain among Patients Receiving Intramuscular Injection

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Abstract

Purpose: To assess the effectiveness of digital pressure on pain among patients receiving intramuscular injection in selected hospitals of Pune city, India. *Objectives:* To assess the intensity of pain in patients receiving digital pressure during and after giving intramuscular injection in experimental group, to assess the intensity of pain in patients not receiving digital pressure during and after giving intramuscular injection in control group, to compare the intensity of pain in patients receiving digital pressure and in patients not receiving digital pressure, during and after giving intramuscular injection, to find association of demographic variables with the intensity of pain. *Methods:* This was a quantitative quasi experimental research study of 60 patients (30 experimental group and 30 control group), who are receiving intramuscular injection on deltoid or gluteus muscle of selected hospitals of Pune during data collection period. The assessment of the intensity of pain were done in patient receiving digital pressure during and after giving intramuscular injection in experimental group by using numerical pain rating scale, visual analogue scale and behavioural responses. Then assessment of the intensity of pain done in patients during and after giving intramuscular injection in control group. *Result:* The mean scores in numerical rating scale during IM injection was 1.9 in experimental group and 3.5 in control group with t calculated value of 9.331816 for t table 2.048407 at a p value of "0" ($p < 0.01$) which indicates that there was less pain in the experimental group during IM injection. The mean scores in visual analogue scale during IM injection was 1.16 in experimental group and 2.43 in control group with t calculated value of 9.641648 for t table 2.048407 at a p value of "0" ($p < 0.01$) which indicates that there was less pain in the experimental group during IM injection. The mean scores in numerical rating scale after IM injection was 0.9 in experimental group and 2.2 in control group with t calculated value of 14.3839 for t table 2.048407 at a p value of "0" ($p < 0.01$) which indicates that there was less pain in the experimental group. The mean scores in visual analogue scale after IM injection was 0.8 in experimental group and 1.9 in control group with t calculated value of 10.70661 for t table 2.048407 at a p value of "0" ($p < 0.01$) which indicates that there was less pain in the experimental group. *Conclusion:* Hence the findings signify that digital pressure was effective in reducing pain during and after intramuscular injection and can be implemented in clinical setting

Keywords: Digital Pressure; Patients; Pain; Intramuscular Injection.

Introduction

Pain is an unpleasant sensory and emotional

experience associated with actual or potential tissue damage. Pain management is considered such an important part of care that the American pain society coined the phrase "Pain: The 5th vital sign" to emphasize its significance and to increase the awareness among health care professionals and to know the importance of effective pain management. Pain during an intramuscular injection generally is to be expected [1,2].

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Review of Literature

Pain is an adverse perception of physical, sensory and emotional dimensions. It has a major impact on the general and specific well being of an affected individual. Due to reasons that are not completely understood, individuals vary greatly in the level of pain intensity, duration and functional impairment experienced [3].

The international association for the study of Pain has defined pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage. The interpretation of pain is subjective. Each person forms an internal construct of pain through encountered injury [4].

There are many other factors which increase pain. Mood disorder or Depressive disorders are found in approximately 50% of chronic pain patients. Depression can significantly intensify the experience of pain and the associated suffering. In some cases, depression manifests primarily with somatic symptoms and complaints. Therefore, on occasion, depression may even be the primary etiology of the pain [5].

Anxiety disorders, are more than 50% of chronic pain patients suffer with anxiety disorders which may alter the experience of pain and suffering [6].

A five-point numerical rating scale produced reliable and valid pain and discomfort rankings for 16 common hospital procedures and experiences. By repeated measure analysis of variance, the scales discriminated between procedures ($F = 35.1, P < 0.001$). Subjects could discriminate between pain and discomfort ($F = 21.6, P < 0.001$). These rankings proved useful in reducing suffering [7].

A study was conducted to examine the psychometric properties (test-retest and interrator reliability, criterion concurrent validity) of 3 verbal pain-assessment tools (Faces Pain Scale, Numerical Rating Scale, Present Pain Intensity Scale) and a behavioural pain-assessment scale for use with an elderly population. The findings support the test-retest and interrator reliability of the behavioural pain-assessment tool across all levels of cognitive impairment, whereas the same measures of reliability for the verbal-report tools decreased with increasing cognitive impairment; however, the majority of elderly with mild to moderate cognitive impairment were able to complete at least 1 of these tools [8].

The angle of needle entry may also contribute to the pain of the injection. Intramuscular injections should be given at a 90° angle to ensure the needle

reaches the muscle, and to reduce pain. A recent study found that nurses did not always ensure needle entry to the skin at 90° and they speculated that this would cause more pain for the patient, due to the needle shearing through the tissues [9].

Similar studies conducted showed that correct delivery of injections is associated with the use of a needle length that penetrates the muscle layer reduces complications of abscess, pain and bruising. The success rate for intramuscular injections in women is consistently lower than in men as women typically have more adipose tissue around the buttocks [10].

A study in journal of pain and symptom management determined if applying pressure to the site for 10 sec prior to an intramuscular injection would reduce injection pain, an approach suggested by anecdotal observation and the gate control theory. The subject was 93 patients who had dorsogluteal intramuscular injections of immune globulin at a county health department. Forty-eight received the pressure treatment and 45 received a standard injection in which no pressure was applied. Mean pain intensity on a 100-mm visual analogue scale, adjusted for differences in injection volume, was 13.6 mm for the experimental group and 21.5 mm for the control group ($P = 0.03$). The findings suggest that simple manual pressure applied to the site is a useful technique to decrease injection pain [11].

Materials and Methods

60 patients (30-experimental group and 30 control group) participated in study from outpatient department of Bharati hospital, Pune the study population was determined by based on inclusion criteria. The inclusion criteria were patients who are receiving intramuscular injection on deltoid or gluteus muscle. Data were recorded in a questionnaire divided in to two parts. The first part covered with demographic information including age, gender, diagnosis, site of injection, volume of injection previous experience of injection frequency, the second part consisted assessment of intensity of pricking pain during and after intramuscular injection in experimental and control group by numerical rating scale. Data were statistically analyzed using frequency and percentage, mean, t test and chi-square tests to evaluate the intensity of pain in relation to demographic information. A P value of less than 0.05 was considered significant.

Result

Section -I

In experimental group the clients were females and majority i.e. 73.33%, age group of 20-30 years. 50% of clients received injection on gluteus site and 50% on deltoid, 43.33% clients had no previous experiences of pain and 46.66% had received intramuscular injections for the second time. In control group the clients were females and majority i.e 70% of clients were in the age group of 20-30 years. 50% of clients received injection on gluteus site and 50% on deltoid. 43.33% clients of previous experiences had moderate pain and 50% had received intramuscular injections for the second time.

Section -II

Intensity of Pricking Pain during Intramuscular Injection by Numerical Rating Scale

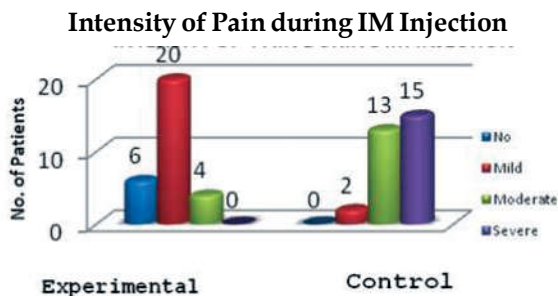


Fig. 1: Shows that, highest samples have moderate pain in experimental group and Severe pain in control group

Effect of Digital Pressure on Intensity of Pricking Pain during Intramuscular Injection

Table 1:

	Experimental Group		T cal	T table	P-Value
	During	After			
Mean	1.93	0.93	8.75	2.048	6.10
S.D.	0.57	0.24			

Table 1 shows that comparing the mean scores which was 1.93 during injection and 0.93 after injection with t calculated value 8.75 for t table 2.048 at a p value of "0" (p<0.01) which indicates that there was less pain after intramuscular injection in experimental group. Hence signifies that digital pressure was effective in reducing pain after intramuscular injection.

Table 2:

	Experimental group	Control group	t cal	t table	P-value
Mean	1.93	3.5	9.33	2.04	0
S.D.	0.57	0.71			

Mean Score of Intensity of Pricking Pain during Intramuscular Injection in Experimental and Control group

Table 2 shows that comparing the mean scores of both the groups which was 1.9 in experimental group and 3.5 in control group with t calculated value of 9.3318 for t table 2.0484 at a p value of "0" (p<0.01) which indicates that there was less pain in the experimental group during intramuscular injection. Hence signifies that digital pressure was effective in reducing pain.

Intensity of Pain after Intramuscular Injection by Numerical Rating Scale in Experimental and Control Group

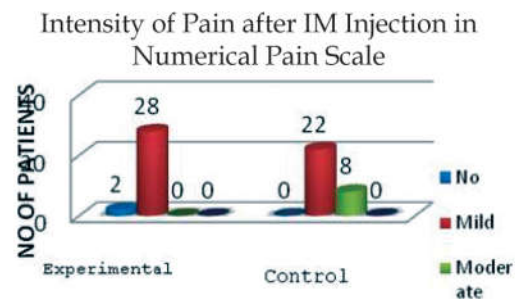


Fig. 2: Bar diagram showing intensity of pain after intramuscular injection in numerical pain scale

Effect of Digital Pressure on Intensity of Pain after Intramuscular Injection in Experimental and Control Group

Table 3:

	Experimental	Control	t cal	t table	P-Value
Mean	0.93	2.26	14.38	2.048	000
S.D.	0.24	0.44			

Table 3 shows that comparing the mean scores of both the groups which was 0.9 in experimental group and 2.2 in control group with t calculated value of 14.38 for t table 2.048 at a p value of "0" (p<0.01) which indicates that there was less pain in the experimental group. Hence signifies that digital pressure was effective in reducing pain after intramuscular injection.

Intensity of Pain during and after Intramuscular Injection in Experimental Group by Numerical Rating Scale

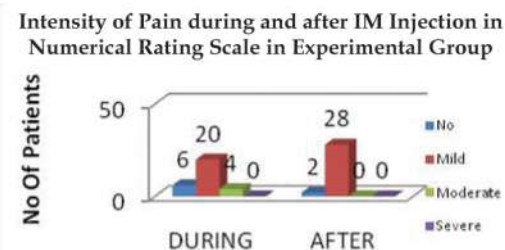


Fig. 3: Bar diagram showing intensity of pain during and after intramuscular injection in experimental group

Organization of Overall (Numerical Pain) Pain Intensity Scores in Experimental and Control Group

Table 4: Analysis of mean scores in experimental and control group N=60

	Experi	Control	t cal	t table	P-Value
Mean	1.66	3.7	13.32	2.04	0
S.D.	0.53	0.64			

Table 4 shows that comparing the mean scores which was 1.66 in experimental group and 3.7 in control group with t calculated value 13.32 for t table 2.048 at a p value of "0" ($p < 0.01$) which signifies that digital pressure was effective in reducing pain in experimental group.

Section III

I] Correlation of the demographic variables with the intensity of pain. (age, site of injection)

The association of demographic variables like site of injection and intensity of pain shows that pain is more at the gluteal site.

Conclusion

The result of this study confirmed with Statistically findings show that, digital pressure was effective in reducing pain in the procedure of intramuscular injection. The findings revealed that there was association of site of injection with the intensity of pain.

Scope of the Study

So finding suggests that, this type of study will helpful not only for the patient with intramuscular injection but also other procedure like IV therapy, blood transfusion, lumbar puncture, abdominal paracentesis, subcutaneous injection which gives

pricking pain. this intervention will help to patient relieve the pain.

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