

EFFECTIVENESS OF PIN-PRICK TECHNIQUE VERSUS ROUTINE TECHNIQUE ON PAIN PERCEPTION DURING INTRAMUSCULAR INJECTION AMONG PATIENTS ADMITTED IN MGMCRI, PUDUCHERRY

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Abstract : Pain is a complex multidimensional experience; for many people it is a major problem that cause suffering and reduces the quality of life. Pain is one of the major reasons that people seek for health care. A thorough understanding of the physiologic and psychosocial dimensions of pain is important for effective assessment and management of patients with pain.^[1] Pain management is one of the main role of nursing care, where nurses need to be competent. Pain management during invasive procedure is a challenge to the direct care providers. If there is a technique, by which the nurses can provide painless injections that will be a great relief for those clients who are afraid of needles.^[2] Pin-Prick technique helps to reduce the pain during Intramuscular injection.^[7] Hence this study proposes to evaluate the effectiveness of Pin-Prick technique reducing pain perception during intramuscular injection. True experimental design was adopted. 60 samples (30 in Experimental and 30 in Comparison group) were selected by using Randomization. Pin-Prick technique was administered for the experimental group and the effectiveness was assessed by Numerical Pain Rating Scale. The result revealed that in group I, 26 (86.7%) had mild pain (1-3) and four (13.3%) had moderate pain (4-6) and in group II, 14 (46.7%) had mild pain (1-3), 15 (50%) had moderate pain (4-6) and one (3.3%) had severe pain (7-9). The posttest median value for group I was 4, and group II was 2. The obtained Mann –Whitney test value was -4.72. It was significant at $p < 0.001$ level. It indicates that there was reduction in the level of pain perception in group I than group II. The present study shows that Pin-Prick technique is effective pain relief during Intramuscular injection.

Keywords - Pin-Prick technique, Routine technique, pain perception Intramuscular injection.

I. INRODUCTION

Pain management is one of the main facets of nursing care, where nurses need to be competent. Pain management during invasive procedure is a challenge to the direct care providers. If there is a technique, by which the nurses can provide painless injections that will be a great relief for those clients who are afraid of needles [2]. The International Association for study of Pain defines it as an “unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” [5]. Comfort is an important need and ensuring a patient’s comfort is a major nursing responsibility. In the nursing and medical practice, Intramuscular injections is one of the most frequently procedures done almost every day. It is fact that any Intramuscular injection will cause pain at the site of injection (i.e.), pain is evident when administering Intramuscular injection [1]. Nurse’s care for clients in many settings and situations in which interventions are provided to promote comfort. Comfort is a concept central to the art of nursing. A variety of nursing theorist refers to comfort as a basic client need for which nursing care is delivered. The context of comfort is the umbrella under which pain and pain management options are viewed [3].

The most essential of these are the nurses belief that the patients pain is real, the willingness to become involved in the patients pain experience, and a competence in developing effective pain management regimens. Procedural pain is an important source of discomfort for clients in nursing care settings [6]. Injections are among the most frequently uses medical procedures with more than 16 billion injections administered each year worldwide. According to WHO injections are the most frequently used procedures, each year 60 billion injections are administered in developing and transitional countries. The majority, around 95% are given in curative care, and in immunization accounts for around 3% of all injections. The prevalence of injections in European countries was 5.6-11.3 injections per person per year. The lowest annual number of injections was in America that is 1.7-1.9 injections per person per year. People residing in developing regions receive 1.5-11.3 injections per person per year. India contributes 25-30% of global injection load. In India a survey found that 96% of all injection given by private doctors was antibiotics, vitamins, analgesics. The conservative estimation of the average number of injections range from 0.9-8.5 per person. In India, Two hundred and fifty two registered 131(66 males, 54 females) had received medical consultation elsewhere for the current illness. Among them 120 (91%) had received at least one intramuscular injection. Sixty two (52%) were from rural areas while 58 (42%) were from urban region problems for which intramuscular injections were administered are listed [4].

Pin-Prick technique offers a painless injection experience [7]. The mechanism of this device is the Gate-control theory predicts that the stimulation of large diameter nerve fibres drives an inhibitory input onto T cells. T cell activity is depressed and pain relief follows [7]. Research has shown that people who believe that their pain is uncontrollable and overwhelming are more likely to have poorer clinical outcome. The nurse is an important member of the multidisciplinary pain management team. Pain can be present in any patient in a wide variety of care settings; the nurse must be knowledgeable about current therapies and flexible in trying new approaches to pain management. The extent of the nurses involvement depends on the unique factors associated with the patient, the setting, and the cause of pain. So far, here the pain is caused due to intramuscular injection. So, the nurses address the concerns regarding pain and its treatment [8]. Here the investigator intended to provide an empirical evidence for reduction of pain due to Pin-Prick technique. The objective of our work is: a) To assess the level of pain perception using Pin-Prick technique among patients during intramuscular injection administration in group I. b) To assess the level of pain perception among patients during Routine technique of intramuscular injection in group II. c) To compare the level of pain perception among patients during Intramuscular injection in both group I and group II. d) To associate the level of pain perception with their selected demographic variables.

HYPOTHESIS: H1-There is a difference in the level of pain perception between Pin Prick Technique and Routine technique.

I. MATERIAL AND METHODS

Quantitative approach was used to evaluate the objectives of the study. True experimental research design with two groups Post-test only design was selected. The study was conducted in the General wards of MGMCRI. It is a 1356 bedded super speciality hospital. The sample consists of patients receiving IM injection at MGMCRI hospital who met the inclusion criteria. The sample selected for the study were 60 patients, 30 in Group I and 30 in Group II. Sample who met the inclusion criteria were selected during the data collection period by using Simple Random sampling technique through lottery method. The tool consists of two parts: **Part I:** Socio Demographic Variables. **Part II:** Numerical Pain Rating Scale

The researcher explained the procedure to the patient and obtained informed consent. The Socio demographic data were collected by using structured interview schedule and pain was assessed by using Numerical Pain intensity scale after IM injection. The investigator used descriptive statistics which include frequency, percentage and median to assess the socio demographic variables and also used inferential statistics and mean to assess the effectiveness of Pin-Prick technique in Post-test. Mann-Whitney test is used to find out the comparison between the experimental and comparison group. Chi-Square test is used to find out the association with their selected demographic variables.

II. APPLICATION OF THE DEVICE:

It is a plastic device that consists of an oval disc supports with multiple blunt pins, while a hole of 10mm of diameter in the center that allows needle penetration. First the device is placed on the skin at the injection site, then the injection needle is inserted in the hole of the device until it reaches the skin, the device is then gently, but firmly, pressed onto the skin immediately prior and during the penetration of the injection needle into the skin. The device does not interfere with the needle penetration or with the drug delivery and there is no contact between the device and the injection needle.

III. RESULTS

3.1 LEVEL OF PAIN PERCEPTION AMONG THE PATIENTS DURING IM INJECTION IN EXPERIMENTAL AND COMPARISON GROUP

The Table 1. Clearly shows that from the post-test the majority of the samples in Group I, 26(86.7%) had mild pain (1-3) and 4 (13.3%) had moderate pain (4-6) and in group II, 14 (46.7%) had mild pain (1-3), 15 (50%), moderate pain (4-6) and one (3.3%) had severe pain (7-9).

TABLE 1: Distribution of level of pain perception in experimental and comparison group among patients during IM injection

RATE OF PAIN	POST TEST			
	Experimental (Group I)		Comparison (Group II)	
	(N)	(%)	(N)	(%)
Mild pain	26	86.7	14	46.7
Moderate pain	04	13.3	15	50.0
Severe pain	00	0.0	01	3.3

Total	30	100	30	100
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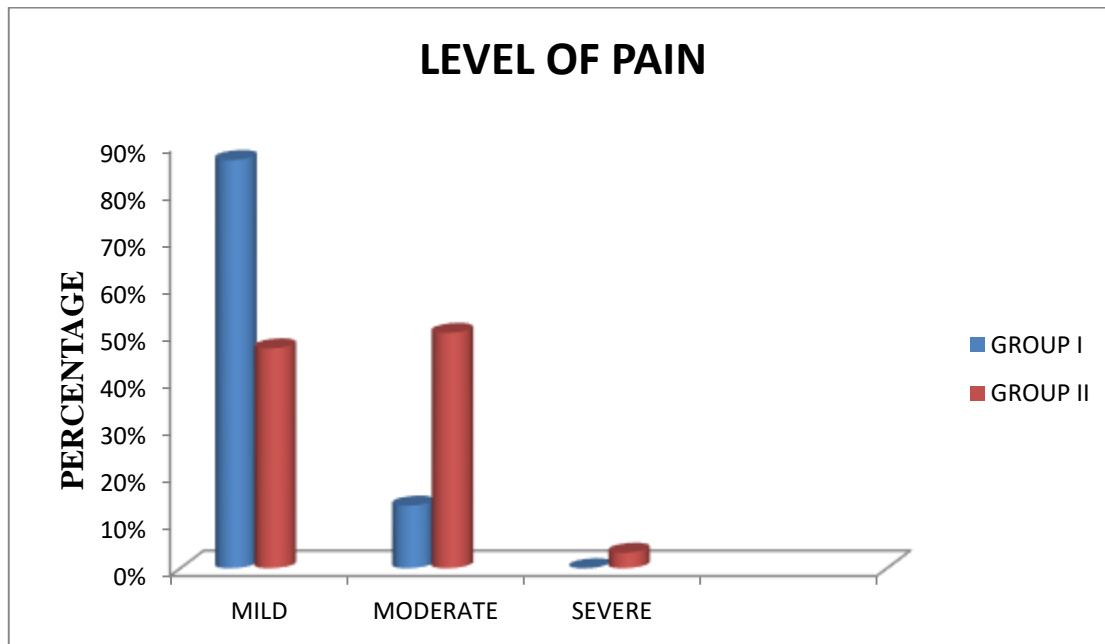


FIGURE 1: Level of pain perception in experimental group and comparison group among patients during IM injection in post-test.

3.2 COMPARISON OF LEVEL OF PAIN PERCEPTION AMONG PATIENTS DURING INTRAMUSCULAR INJECTION IN BOTH EXPERIMENTAL AND COMPARISON GROUP.

TABLE 2: Comparison of pain perception during IM injection between experimental and comparison group (N=60)

GROUP	POST TEST						
	Number of subject	Mean	Median	Standard Deviation	Mann-whitney Test	p Value	
Experimental	30	2.4	2	0.93	-4.72	<0.001*	
Comparison	30	3.97	4	1.19			

***HIGHLY STATISTICALLY SIGNIFICANT AT P<0.001 LEVEL.

The Table 2 indicates the post-test mean value for group I was 2.4 and for group II was 3.97. The post test median value for group I was 2, and group II it was 4. The obtained Mann – whitney test value was -4.72. The obtained p value was 0.001*. It was highly statistically significant at p<0.001 level. There is a significant difference between post-test assessment score of pain during intramuscular injection in experimental group. The result shows that Pin-Prick technique was effective in the reduction of pain during intramuscular injection among patient. Hence the stated hypothesis (H1) was accepted.

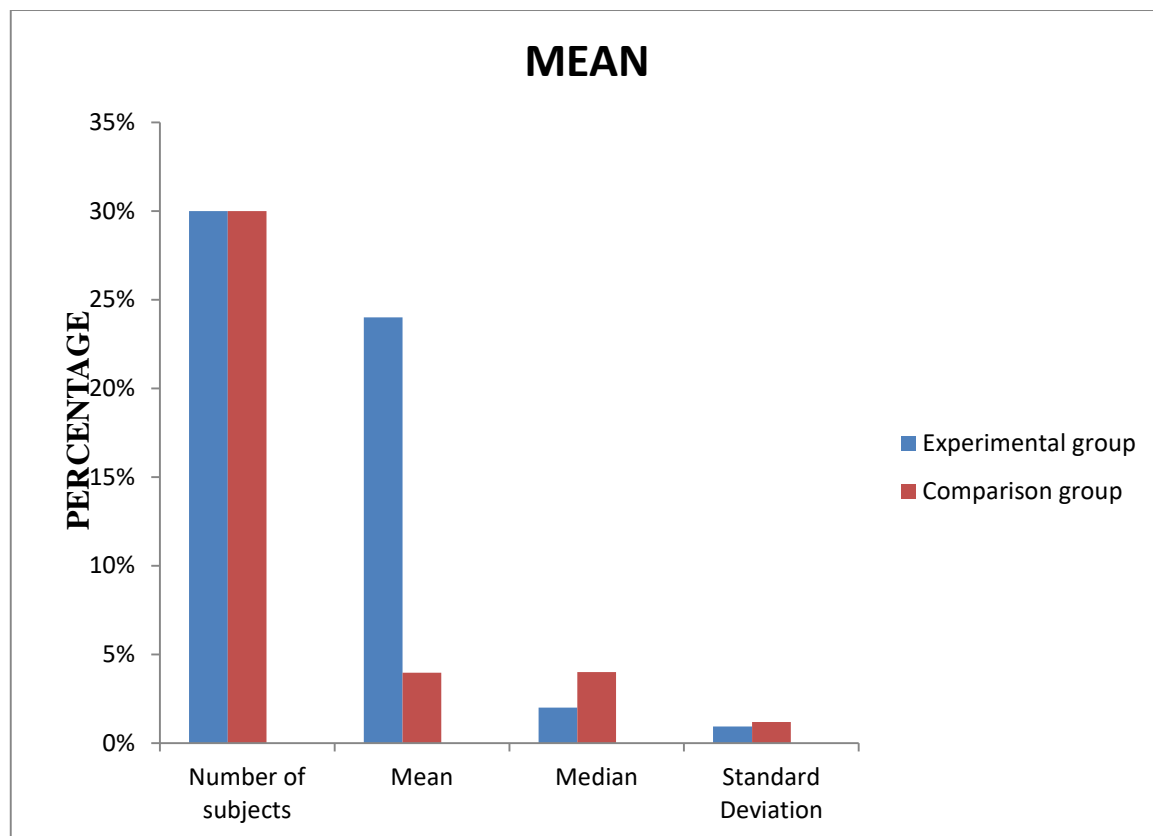


FIGURE 2: Mean value of pain perception in experimental and comparison group.

3.3 ASSOCIATION BETWEEN THE LEVEL OF PAIN WITH THEIR SELECTED DEMOGRAPHIC VARIABLE OF PATIENTS RECEIVING IM INJECTION IN EXPERIMENTAL AND COMPARISON GROUP.

The association between the post-test level of intramuscular injection pain perception with selected demographic variables of the patient who are receiving the intramuscular injection. By using chi-square it was evidenced that there was no significant association between age in years, gender, religion, educational status, occupation, marital status, family income, diet patterns, body built, previous history of hospitalization, previous exposure to intramuscular injection and site of receiving intramuscular injection among the patient who are receiving intramuscular injection at p value 0.000***level. There is no significant difference between the association of post-test level of pain with selected demographic variables of the patient who are receiving intramuscular injection.

IV. DISCUSSION

The main aim of the present study was to evaluate the effectiveness of Pin-Prick technique on pain perception during intramuscular injection among the patients admitted in MGMCRI, Puducherry. The study was supported by similar study conducted to evaluate the effectiveness of using Pin-Prick method for relief of pain during intramuscular and subcutaneous injections. The study describes a new simple and easy to reduce Pin-Prick pain through the pressure at multiple blunt pins at the injection site. 212 patients were randomly assigned to 2 groups. The treated group (Ph=106) received intramuscular and subcutaneous injections with the application at the blunt pins and the control group (n=106) with a placebo device pain reduction (63.2%) 88.5% of the patients in the treated group and 11.4% in placebo device rated the pain (≤ 3). After subcutaneous injections mean reported pain in the treated group compared to placebo group (mean pain reduced: 87.7%) 95.1% of the patients in the treated group and 9.8% in the placebo rated the pain as < 1 . Study concludes that multiple blunt pins pressure on the skin at the time of Intramuscular or subcutaneous injection is able to significantly reduce Pin-Prick pain.^[7]

The important strength of our study were Less pain perception during IM injection, Cost effectiveness, Easy administration, Need less training for administration, Prevent cross infection, Less time consuming, No side effect, Easley understandable. Limitations of our study was study period was limited to 2 weeks, sample size limited to 60 samples, 30 samples in experimental group and 30 samples in comparison group and the study population was limited to the patients who were receiving IM injections in general wards of MGMCRI. Our study suggested that this study should be replicated with large sample size for better generalization, this technique should follow in all areas of nursing practice, studies can be conducted in reduction of pain during the intramuscular injection along with different complementary and alternative modalities to establish a rightful place in patient care, this study should be replicated among pediatric population.

V. CONCLUSION

This study shows the efficacy of multiple blunt pins pressure in significantly reducing Pin-Prick pain associated with intramuscular injections in adults. This study also provides indirect evidence of the Gate-control theory in humans and provide data on the effect of tactile stimulation on pain perception. Further studies may be useful to show the efficacy of this type of mechano-analgesia in other clinical settings.

From this study, the Pin-Prick technique should be followed by all general ward nurses as an evidence based practice for intramuscular injection.

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