

Effectiveness of Nursing Interventions on Pain Associated With Intramuscular Injection

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Abstract: Pain is a feeling triggered in the nervous system. Pain may be sharp or dull. Objectives – 1. To assess the pain associated with intramuscular injection benzathine penicillin .2. To evaluate the effectiveness of manual pressure application & muscle relaxation therapy on intramuscular injection benzathine penicillin. Methodology -experimental research approach one group pre-test and post test design. The sample composed of 50 patients in age group of 15 - 55 years of diagnosed as RHD and who receive IM injection benzathine penicillin in cardiology OPD of 50 patients were selected by non-probability convenient sampling technique. FINDINGS- Data related to age of respondents illustrate maximum subjects 24 (48 %) belonged to age group of 15-25 year, gender depicts that majority subjects that is 30 (60 %) were female. After administration of selected nursing intervention, there was a shift in the number of subjects from severe and moderate response to mild and no response, which shows the effectiveness of nursing interventions in management of pain. In pre test most 39(78%) subjects had moderate response followed by 11(22%) subjects with severe response none of the subjects were there in no and mild response . The post intervention score revealed that most 47(94%) subjects were in mild response.

Keywords: Effectiveness, Nursing Interventions, Pain, Intramuscular Injection.

1. Introduction

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.

Procedural pain is an important source of discomfort for clients in nursing care settings. Among others, intramuscular injection is common procedure that nurses frequently carry out which causes pain and distress to the recipient. Pain management during invasive procedure is a challenge to the direct care providers.

Intra muscular injection is common yet a complex technique used to deliver medication deep into the large muscles of the body. Intra muscular injection route provides faster drug absorption than the subcutaneous route because the muscles have greater vascularity. There are several factors which influences person experiences of pain during Intra muscular injection for example anxiety, culture, age, gender, and expectation of pain relief. These factors may increase or decrease the experience of pain during Intra muscular injection. Also intramuscular injection are frequently referred to as to as a 'basic skill', but involve a complex series of consideration and decision relating to volume of injective, medication to be given , technique, site selection , equipments also[1].

Providing pain relief is considered a most basic human right, so it is the responsibility of the nurse to use most effective approach to pain control. Nurses are ethically and legally responsible for managing pain and reliving suffering. Effective pain management not only reduces physical discomfort, but also improves quality of life.

Learning is the addition of new knowledge and experience Interpreted in the light of past knowledge and experience. Teaching and learning is an integral part of nursing. Nurses have the responsibility to educate patients related to various aspects and keep themselves updated. Various teaching strategies are used to increase knowledge, such as lecturing, Demonstration, discussion and self-education. These methods of self-education has an advantage over the others as the learner can educate himself at his own pace and it also stresses on rereading [2]

2. Need for the Study

There are 12 billion Intra muscular injections administered annually throughout the world. Intramuscular injection can be an unpleasant experience for patients, making an appropriate explanation and psychological support necessary. Pain is the most common reason for self deferral from injections by the inpatient and outpatient clients in the hospital. "Will it hurt?" is a question that is most often heard by the nurses from the patients during any invasive procedure. Being able to provide injections to patients with a less painful experience is a part of standard nursing care. Is it possible to give injections that do not hurt?

According to Meinhart, Mc Caffery Pain is initiated by stimulation of nociceptors in the peripheral nervous system or by damage to or malfunction of peripheral or central nervous system [3].

'Helfer Skin Tap Technique' on pain during intramuscular Injection revealed that the intramuscular injection of medication is a procedure commonly performed by nurses and are associated with discomfort, pain and trauma to the injected tissue. Even though it can cause tissue, musculoskeletal and neurological complications such as abscess, tissue necrosis, muscle damage and nerve injury [4].

Nurses play a greater role in minimizing the pain and discomfort during any invasive procedure. The nurse can minimize the discomfort and pain during Intra muscular injection by helping the client to assume a proper position and by implementation of different physical, psychological interventions that Physical interventions and injection techniques that minimize pain during injection offer an advantage over other techniques because they can be easily incorporated into clinical practice without added cost or time. Research studies have been reported the positive effect of using simple pressure, divisional therapy for muscle relaxation with injection administration will reduce the perception of pain before administering an intramuscular injection.

Various studies have found that the intramuscular injection of benzathine Penicillin is a painful experience and the patients undergo severe stress as they perceive the procedure as painful. If a physical method such as pressure application, if found to be effective, could be effectively introduced into practice, as it is a simple and cost effective method for pain reduction.

3. Review of Literature

According to Shinde M, reviewing of literature is to gain a better understanding and insight necessary to develop a broad conceptual framework in which the problem can be examined. It means the activity involved in identifying and searching for information of a topic and developing a comprehensive picture of the state of knowledge of that topic, doing literature reviews before conducting a study [5].

3.1 Studies related to nursing intervention-

Salunkhe, P. A., & Dias, R. A. concluded in their study that intervention as demonstration of cardiopulmonary resuscitation was effective.[6] Deshmuk M concluded that the structured education was effective on knowledge and practice of staff nurses regarding venous access device care[7].udaykar found in their study natural honey is an effective agent in managing radiation induced oral mucositis. Honey could be a simple, potent and inexpensive agent, which is easily available, and it can be a better therapeutic agent in managing radiation mucositis in developing countries like India for the management of this morbidity. Also in orasep help to relief of pain and dry, scratchy mouth for the relief of pain associated with canker sores, irritation of the mouth and gums [8].Shinde M concluded that demonstration regarding feeding of hemiplegia patient among caregivers were effective [9].another study found that there were significant differences on the quality of sleep before and after slow stroke back massage. This shows that there was gradual improvement in the sleep quality after back massage on 3 consecutive days. The back massage has effect on quality of sleep among ICU patients [10].

Patients were satisfied with nursing care given by the nurses.[11] The overall assessment reveals that though the subjects at undergo severe stress of the procedure they undergo. Modification in coping strategies and planned interventions are desirable[12].Almost all Health Worker

showed averagely satisfied with their present job. Community showed averagely satisfaction with services provided by the health workers in rural area thus further increase in satisfaction of clients would be possible by adequate drug supply, less waiting hours and transport facilities for emergencies [13].

3.2 Studies related to pain and Intramuscular Injection Benzathine Penicillin it's complications and management.

According to Brunostudy on Injections and pain (2000) showed that although most patients expected a spinal puncture to hurt more than an intravenous and an intramuscular injection, they actually found the opposite to be true. Pain felt after an injection depends on the size and gauge of the needle, and on the substance or drug that is being injected, its concentration (or dilution), the volume injected, the site of the injection, and the ability of the healthcare provider to carry out the procedure. Those who were ever given an intramuscular injection of benzathine penicillin are unlikely to have forgotten this experience, contrary to other less painful intramuscular injections [14].

According to Keen study on Comparison of intramuscular injection techniques to reduce discomfort and lesions, the Z-track intramuscular injection technique was compared with the standard injection technique for incidence and severity of discomfort and lesions at the injection site. The Z-track technique significantly decreased incidence of selected descriptors of discomfort and lesions at selected time intervals, severity of discomfort at selected time intervals, and severity of lesions at all time intervals post injection [15].

3.3 A study related to pressure therapy and injection pain management

An experimental study conducted on effect of manual pressure on pain severity in Iran 2012. The study concluded that **manual** pressure in IM injection site leads to pain relief and we can apply the technique for decreasing of pain and patient comfort promotion[16].

According to Schechter pain reduction during pediatric immunizations: evidence-based review and recommendations reveals that pain associated with immunizations is a source of anxiety and distress for the children receiving the immunizations, their parents, and the providers who must administer them. Immunizations are stressful for many children; until new approaches are developed, systematic use of available techniques can significantly reduce the burden of distress associated with these procedures [17].

According to Esmailzadeh intramuscular injection is an invasive and painful method for medication. Results showed that local cold significantly decreased the severity of pain due to intramuscular benzathine penicillin injection in local cold therapy group as compared with routine care group ($p=0/000$).Local cold could play an important role in decreasing pain during intramuscular benzathine penicillin

injection. Nurses are recommended to use local cold therapy to decrease pain intensity of benzathine penicillin intramuscular injection in patients. However, more studies are needed to determine the underlying mechanisms [18].

3.4 Study related to Progressive Muscle Relaxation Therapy

Progressive muscle relaxation is a technique that involves tensing specific muscle groups and then relaxing them to create awareness of tension and relaxation. It is termed progressive because it proceeds through all major muscle groups, relaxing them one at a time, and eventually leads to total muscle relaxation. This technique has been effective in the treatment of muscular tension, anxiety, insomnia, depression, fatigue, irritable bowel, muscle spasms, neck and back pain, high blood pressure, mild phobias, and stuttering. People respond differently to various activities. Some feel pleasant or refreshed, and others feel calm and relaxed after an activity like this one. Some people notice little change the first time, but with practice, their control increases - as well as the benefits. If you practice this activity, your relaxation should increase [19].

A Quasi-experimental study conducted by Ghafari et al. Progressive Muscle Relaxation Technique is practically feasible and is associated with increase of life quality of multiple sclerosis patients; so that health professionals need to update their knowledge about complementary therapies[20].

4. Statement of the Problem

“Effectiveness of selected nursing interventions on pain associated with Intramuscular Injection Benzathine penicillin among Rheumatic Heart disease patient attending cardiac OPD in selected hospitals of metropolitan city.”

4.1 Objectives of the Study

1. To assess the pain associated with Intramuscular Injection Benzathine penicillin.
2. To evaluate the effectiveness of pressure application & muscle relaxation therapy on intramuscular injection benzathine penicillin.
3. To find out the association between the intensity of pain and selected demographic variables.

4.2 Hypothesis

H_0 – There is no significance difference in the mean of pre test and post assessment of pain score of intramuscular injection benzathine penicillin among rheumatic heart disease patient attending OPD after administration of selected nursing interventions

H_1 - There is significance difference in the mean of pre test and post assessment of pain score of intramuscular injection benzathine penicillin among rheumatic heart disease patient attending OPD after administration of selected nursing interventions.

4.3 Ethical Aspects

1. Research problem was approved by the Ethical committee of the hospital/college.
2. Written informed consent was obtained from the subjects participated in the study. Explanation was given regarding the purpose of the study.
3. Confidentiality was assured.
4. Due permission from authorities was obtained.
5. Subjects were protected from all types of harm.
6. Written permission taken from hospital Dean and Head of Cardiology department, OPD in charge of hospital.
7. The individual participant had the right to walk away from the study without assigning any reason to the investigator.

5. Research Methodology

5.1 Research Approach

According Shinde M, “Research approach refers to the way in which the researcher plans or structures the research process. It is a set of the flexible spots designed to keep the research in the right direction. This scientific process helps to acquire dependable and useful information”

5.2 Research Design

Research design selected for this study is experimental one group pre-test post-test design.

• Independent Variables

The independent variable in this study was experimental therapy, that is nursing interventions such as; 1) Simple manual pressure application 2) Progressive muscle relaxation therapy was an independent variable.

• Dependent Variables:

Thus, dependent variable in this study was Pain associated with intramuscular Injection Benzathine penicillin.

5.3 Setting of the Study

The investigator conducted the study in Outpatient Cardiology department of selected hospitals.

5.4 Sampling Technique

In this study, the sampling technique used by the investigator was Non- probability convenient sampling,

5.5 Sample

In this study, the sample consisted of Rheumatic heart diseases subjects in age group of 15 - 55 years and who receive Intramuscular injection benzathine penicillin in outpatient department of selected hospitals in metropolitan city.

5.6 Sample Size:

In this study the numbers of study subjects were 50, who fulfilled the inclusion criteria.

Inclusion Criteria:

1. Rheumatic heart disease patients who received Intramuscular Injection Benzathine penicillin attending outpatient department in selected hospitals of metropolitan city.
2. Patients who were willing to participate in the study.
3. Patients within the age group of 15 -55 years
4. Who were able to read and write Marathi,Hindi & English
5. Patients who were present during the period of data collection.

Exclusion Criteria

1. Patients other than Rheumatic heart disease who receive Intramuscular Injection benzathine penicillin attending outpatient department .
2. Patients admitted in the indoor department.
3. Patients in age group of below 15 and above 55 years .
4. Patients who were included in pilot study.
5. Patients who absent during the period of data collection.

Data Analysis

The analysis of the data was done based on the objectives of the study. Investigator planned to analyze the data in the following ways. Descriptive statistics and Inferential statistics

6. Findings of the Study**Findings in relation to the demographic variables**

Data related to age of respondents illustrate maximum subjects 24 (48 %) belonged to age group of 15-25 year, gender depicts that majority subjects that is 30 (60 %) were female about, religion reveals that, maximum subjects 37 (74 %) were belonged to Hindu ,education throws lights as highest 24(48%) of the subjects had studied till primary .28 (56%) subjects had below 5000/- monthly income and 19 (38%) subjects had duration of illness 5-10 years .Surgical procedure on Mitral valve reported that 25 (50%) subjects were equally divided in yes and no option and awareness regarding injection benzathine penicillin as treatment. maximum subject 30 (40%) answered no.

In pre test most 39(78%) subjects had moderate response followed by 11(22%) subjects with severe response none of the subjects were there in no and mild response . The post intervention score revealed that most 47(94%) subjects were in mild response. There was a shift in the number of subjects from severe, moderate response to mild response after administration of selected nursing intervention, which shows the effectiveness of the nursing interventions.

Comparison of mean according to area wise Behavioral observation (FPPV) check list related to pain among RHD patients in pre test and post test. The calculated -t value was found to be for facial- 25.8, posture-17.74, physical activity- 21.29 and verbal response. As the calculated t value was greater than the table 't' value 2.03 at 0.05 level of significance with the degrees of freedom being 49 so null hypothesis (H_0) was rejected.

This shows that there was a significant difference in the mean of pre and post test at the 0.05 level of significance with regard to the area wise behavioral observation related to pain score after administration of selected nursing intervention to the patients. Which denotes the effectiveness of the nursing interventions in management of injection pain from the behavioral responses observed related to pain.

Evaluation of the effectiveness of selected nursing intervention on pain associated with intramuscular injection benzathine penicillin among RHD patients. The calculated 't' value noted for numerical rating scale-11.09 and overall observational pain -25.71. As the calculated t value was greater than the table 't' value 2.03 at 0.05 level of significance with the degrees of freedom being 49 so null hypothesis (H_0) was rejected. This shows that there is a significant difference in the mean of pre and post test assessment score on intensity of pain after administration of nursing interventions. . Hence H_1 alternate hypothesis is accepted.

It is analyzed and presented in form of frequency and percentage table. According to Patient's view about relaxation techniques 50(100%) subjects had agreed for carry out technique, while 47(94%) subjects did not experienced any difficulty while carrying out relaxation techniques. 1(2%) subject specify the difficulty while carrying out relaxation techniques, due to conversation of people and 2(4%) subjects had distraction from environment . 50(100%) subjects would also give suggestion to follow the technique to other subjects. Overall they had positive response to the relaxation technique.

7. Scope of Study**For patients**

1. Findings will help to reduce future complications related to intramuscular Injection Benzathine penicillin in patients with Rheumatic heart disease.
2. Patients will reduce their fear and anxiety related to intramuscular Injection Benzathine penicillin
3. Patients will have better outcome and faster recovery due to relax mind while under going this secondary prophylaxis.
4. Patients will have better adherence and acceptance of this secondary prophylaxis that is Innection Benzathine penicillin.
5. The study will help to determine the reduction in the intensity of pain acquired by client after administration of selected nursing interventions on pain associated with intramuscular Injection Benzathine penicillin among rheumatic heart disease patient

Nursing Services

Nurses have an important role to play in the management of pain in hospital as well as in community.

- This study can be used as an informative illustration for staff nurses working in different wards, OPD, immunization department for managing patients with pain at the site of injection.
- This study can be used as an informative illustration for

community health nurses working in community for taking care of patients with pain of injection in family setting and in health centre.

- This study brings to light the effectiveness of pressure at injection site reduces the pain. It will be helpful to convince patients to get adhere to treatment.
- Thus the nurses working in hospital and community area, can make use of these interventions and can stress on the modified practices related to above aspect.
- In nursing procedure of administration of injection can be reframed by using study findings and can be used in day to day practice while taking care of patients

Nursing Administration

To improve the nursing care provided by health care personnel the nurse administrator can use the findings of the study, as a basis for in service education for the trained nurses. The finding of the study can help the nurse administrator to formulate policies for care of pain at injection site and implementation of this evidence based practices (EBP) at bed side.

Nursing Education

Nursing Education is a main foundation through which nurses are prepared for practice in various settings. The result of the study nursing teacher can be as an informative illustration to nursing students while teaching IM injection procedure and as a therapeutic technique for reducing pain. The nurse educator can also highlight the benefits of the interventions to the nursing students and to the patients by using demonstration of manual pressure at injection site and muscle relaxation techniques.

NURSING RESEARCH

Another research has been added to the nursing literature. The tool, technique and literature of review can provide an avenue for further research studies. It certainly increases the body of knowledge and can be used as reference materials in the future. The suggestions and recommendations can be utilized by other investigator for conducting further studies in the same field.

8. Limitations of the Study

1. The study is limited to topic of intramuscular injection.
2. The study is limited to only small group of patients who receive IM injection benzathine penicillin.
3. The results could not be generalized due to small number of subjects and restricted time period.
4. Attempt is not made to compare and correlate the other types of therapies and other different IM injections.
5. Therapy is provided to patients only for short time period.
6. Attempt is not made to compare and correlate the other parameters of pain assessment.

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