



## **Effect of Sphygmomanometer Blowing on Pain Perception among Patients Undergoing Venous Cannulation in Selected Hospitals at Thiruvananthapuram District.**

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### **ABSTRACT**

Peripheral intravenous Cannulation is a common invasive procedure usually performed in hospitals. Cannulation causes moderate or severe pain in patients. This study has been conducted to assess the effect of sphygmomanometer blowing on pain perception among patients undergoing venous Cannulation. The objectives of the study are to assess effectiveness of sphygmomanometer blowing on reduction of level of pain perception among patients undergoing venous Cannulation, and to find out the association between the level of pain perception among patients undergoing venous Cannulation with selected demographic variables. Quantitative research approach, quasi experimental post test only control group design was used as research design. This study was based on Roy's Adaptation Model. Convenience sampling method was used to select 60 samples. The Numerical Pain Scale tool used to assess the pain. The collected data were analyzed using descriptive and inferential statistics. Sphygmomanometer blowing was done for the patients of experimental group for 20 seconds and Cannulation was done. Within this period, intravenous Cannulation was given by the staff nurse. After this procedure pain assessment was done by using numerical pain scale. The results of the study revealed that mean difference of experimental and control group was 2.23. The t value was 9.17 which is significant at 0.05. The post test scores indicate that sphygmomanometer blowing group has a reduction in the level of pain perception. There is no significant association between the pain level and demographic variables such as age, marital status, educational status, occupation and family income. There was a significant association between the pain level and the gender of the patient at 0.05 level. Thus it can be concluded that the sphygmomanometer blowing is effective in reducing pain perception among patients undergoing venous Cannulation

Keywords: effect; sphygmomanometer blowing; pain perception; venous Cannulation; patient

### **Introduction**

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Superficial pain is initiated by activation of nociceptors in the skin or other superficial tissue, and is sharp, well-defined and clearly located<sup>1</sup>. Intravenous Cannulation is the most frequently used procedures in the wards, casualty and in preoperative preparation. It is a very painful and stressful procedure, thus emotions may become exaggerated at times, triggering vasovagal reaction. Patient's anxiety and fears concerning needles are real and may even prevent them from seeking health care<sup>2</sup>.

In 1994, the International Association for the Study of Pain (IASP) classified pain according to specific characteristics: (1) region of the body involved in abdomen, lower limbs, (2) system whose dysfunction may be causing the pain in nervous, gastrointestinal, (3) duration and pattern of occurrence, (4) intensity and time since onset, and (5) etiology. Pain can be broadly divided into three classes. (A) Nociceptive pain represents the sensation associated with the detection of potentially tissue-damaging noxious stimuli and is protective. (B) Inflammatory pain is associated with tissue damage and the infiltration of immune cells and can promote repair by causing pain hypersensitivity until healing occurs. (C) Pathological pain is a disease state caused by damage to the nervous system (neuropathic) or by its abnormal function (dysfunctional)<sup>1</sup>.

Sphygmomanometer blowing is a Valsalva maneuver technique and it increases intrathoracic pressure. Whenever Valsalva is applied, contraction of the thoracic cage compresses the lungs and causes a large increase in intrathoracic pressure. This increase results in compression of the vessels within the chest and it activates baroreceptor activation. Activation of the cardiopulmonary baroreceptor reflex arc or the sinoaortic baroreceptor reflex arc induces antinociception thereby reducing pain and also acts as a distraction technique which helps to divert patient's attention to non-noxious stimuli in the immediate environment<sup>3</sup>.

A quasi-experimental study was conducted to assess the effectiveness of Valsalva maneuver on pain during venipuncture among patients

in tertiary care hospital. 60 patients were selected through convenient sampling technique. 30 subjects were selected in experimental and in control group each. In this patient was asked to perform Valsalva maneuver by doing moderately forceful exhalation against a closed airway by closing one's mouth shut and do as blowing up a balloon during IV Cannulation and pain level is assessed immediately after it by using Numeric Pain Rating Scale ranging

from 0-10 . The results revealed that there is significant reduction in pain during venipuncture after intervention in experimental group ( $p=0.000$ ). No association was found between pain level and socio-demographic and clinical variables. The study concludes that valsalva maneuver is non invasive, non-pharmacological and effective method to reduce pain associated with peripheral intravenous Cannulation.<sup>4</sup>

### Statement of the problem

A study to assess the effect of sphygmomanometer blowing on pain perception among patients undergoing venous Cannulation in selected hospitals at Trivandrum district.

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### Objectives of the study

- To determine the effect of sphygmomanometer blowing on reduction of level of pain perception among patients undergoing venous Cannulation
- To find the association between the level of pain perception among patients undergoing venous Cannulation with selected demographic variables

### Hypothesis:

- H 1 : There is a significant difference in the level of pain perception in patients with intravenous Cannulation between 2 groups
- H 2 : There is a significant association between the level of pain perception among patient with intravenous Cannulation and selected demographic variables.

**Research approach:** Quantitative research approach

**Research design :** Quasi experimental – post test only control group design.

**Independent variable :** sphygmomanometer blowing during venous Cannulation.

**Dependent variable:** level of pain perception.

**Setting of the study:** This study was conducted in Saraswathy hospital Parassala and in Community Health Center Malayinkil.

**Study Population :** adults between the age group of 21 to 40 years undergoing with intravenous Cannulation for the first time during hospitalization.

**Sample size :** 60 patients ( 30 experimental and 30 control patients)

### Conceptual framework

The conceptual framework of this study is based and designed on the concept of Roy's adaptation model. This model explains system is a set of units which are related or connected to form a unity or whole and it is characterized by inputs, outputs, control process and feedback process.

### Tools and techniques of data collections

Data were collected using the numerical pain scale . the tool has two sections, section A and section B. section A contains questionnaire on socio-demographic variables such as age in years, sex, marital status, educational status, occupation, family income per month. Section B : The Numeric Rating Scale (NRS-11) is an 11–point scale for patient self-reporting of pain.

### Data collection process

The study was conducted in the Saraswathy hospital Parassala and in Community Health Center Malayinkil from 15.01.16 to 10.03.16. The investigator obtained prior consent from the District Medical Officer for conducting the study. The investigator selected 60 patients undergoing intravenous Cannulation by using convenience sampling technique. The researcher introduces herself, and then explained the purpose of the study and the oral consent was obtained from the patients. The demographic data was collected by face- to- face interview method held with the patients, who had volunteered to participate in the study. Patients were asked to blow into rubber tubing connected to a sphygmomanometer and raised the mercury column up to 30mmHg of experimental group for 20 seconds. Within this period, intravenous Cannulation was given by the staff nurse. After this procedure pain assessment was done by using numerical pain scale. No intervention was provided for the patients belonging to the control group. Only pain assessment was done using numerical pain scale. Duration of the data collection was 8 weeks.

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## Results

Section A demographic variables. When analysing the demographic data, the description of sample characteristics shows:

- Majority of samples in the experimental group (30%) were between the age group of 36-40 years and in control group (30%) were between the age group of 26-30 years.

- □ Majority of the samples in the experimental (73.34%) were male and control group (50%) were female.
- □ Majority of the samples in the experimental group (66.67%) and control group (73.33%) were married.
- □ Majority of the samples in the experimental group (50%) and control group (53.33%) were graduate.
- □ Majority of the samples in the experimental group (36.67%) and control group (33.33%) were private employees.
- □ Majority of the samples in the experimental group (56.67%) and control group (53.33%) were having the monthly income of Rs. 5000 – 10000

Section B : Effect of sphygmomanometer blowing on level of pain perception among patients undergoing venous Cannulation.

Unpaired 't' test was done to find out the effect of sphygmomanometer blowing on level of pain perception among patients undergoing venous Cannulation in the experimental and control group. It was found that there was a significant difference on level of pain perception between experimental and control group. The obtained 't' values was stastically significant at 0.05 level. Hence the sphygmomanometer blowing was effective in reducing pain perception among venous Cannulation patients.

Group	Mean	Standard deviation	Mean difference	t
Experimental	2.6	1.1		
Control	4.9	0.7	2.23	9.17*

\* Significant at 0.05 level. t test : Unpaired t test

Section C: Association between level of pain perception and selected demographic variables among patients undergoing venous Cannulation

In the experimental group chi square value of gender was 4.28 and the chi square value for the above stated demographic variables were less than the table value; hence it is statistically significant at 0.05 level. It reveals that there was a significant association between gender and level of pain perception among patients undergoing venous Cannulation in experimental group. There is no significant association between the pain level and demographic variables such as age, marital status, educational status, occupation and family income

## Discussion

This study aimed to evaluate the effect of sphygmomanometer blowing on pain perception among patients undergoing venous Cannulation. The demographic data were collected by face-to-face interview method. Patients were asked to blow into rubber tubing connected to a sphygmomanometer and raised the mercury column up to 30mmHg of experimental group for 20 seconds. Within this period, intravenous Cannulation was given by the staff nurse. After this procedure pain assessment was done by using numerical pain scale. For the control group no intervention was provided. Only pain assessment was done using numerical pain scale. The data gathered were analyzed and interpreted based on the objectives of the study. Descriptive statistics used were frequency, percentage, mean and standard deviation. Inferential statistics used to test the hypothesis at 0.05 level of significance were paired and unpaired 't' test. The major findings of the study showed that there is a significant decrease in pain perception level ( $p < 0.05$  level).

## Conclusion

The following conclusions were drawn on the basis of the findings of the study:

□ The findings of the study showed that nobody in the experimental group had severe pain and no pain, 66.67% of the venous Cannulation patients had mild pain and 33.33% had moderate pain. All the subjects in the control group had moderate pain during venous Cannulation. The mean pain score of samples in the experimental group was 2.6 and the mean pain score of samples in the control group was 4.9. The mean difference between pain scores in the experimental and control group was 2.23. There is a significant reduction in the level of pain perception among patients with venous Cannulation in the experimental group. Among the demographic variables only the sex in the experimental group and control group had significant association with the level of pain perception.

## Nursing Implications

- It is easy to administer in setting as it does not require any extra facilities.
- The nursing students should be made aware of the various non pharmacological measures for reducing pain during venous Cannulation and other invasive procedures.
- The nursing students can be taught to implement this intervention while cannulating the patients.

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**Acknowledgement**

I express my sincere gratitude and heartfelt thanks to my guide, Dr. Janet J for her expert guidance, cooperation, encouragement, patience and valuable suggestions which made the study a successful one.

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