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A STUDY TO ASSESS THE EFFECTIVENESS OFVALSALVA MANEUVER ON REDUCTION OFPAIN AMONG THE PATIENTS UNDERGOING PERIPHERAL INTRAVENOUSCANNULATION IN SELECTEDHOSPITAL OF KANPUR,UTTAR PRADESH."

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ABSTRACT

Pain can be defined as an unpleasant tactile sensation, arousing sensory experience, and an emotional response that is linked to any type of tissue, cell, or skin damage. The pain is a very common and a primary reason for which the people are seeking the health care Among all the non pharmacological methods for pain relieving, the Valsalva maneuver is one of the method which is found effective in reducing the level of pain a person is experiencing during the procedure of intravenous cannulation .This method is easy to perform as well as inexpensive. The procedure of this maneuver is performed by instructing the patient to forceful exhalation after inspiration by closing the nose or against closed airway. The objectives of the study are: To assess the level of pain in patients undergoing peripheral intravenous cannulation in experimental and control group, To assess the effectiveness of Valsalva Maneuver on reducing pain among the patients undergoing peripheral intravenous cannulation between experimental and control group, To determine the association between the post test level of pain in patients undergoing intravenous cannulation with their selected demographic variables. The research design selected for this study was True Experimental (pre test post test control group design). The total number of samples selected for this study was 60 from which 30 were placed in experimental group and 30 were placed in control group by simple random sampling technique. The setting for this study was Ursala Horsmann Memorial Hospital, Kanpur, Uttar Pradesh. The data was collected by using numerical pain rating scale which scores from 0-10. The result of the study showed that to find the association between post test level of pain with their selected demographic variables, Chi square test was used and it was found that there was a significant association between the level of pain and all their selected demographic variables such as age, gender, body mass index, site of cannulation, number of previous cannulation, size of cannula and previous knowledge regarding Valsalva maneuver. Thus, hypothesis H_2 was accepted.To find out the effectiveness of Valsalva maneuver, the paired t-test value was 14.97 for experimental group which is significant at 0.05 level of significance which represents that there is significant difference in pre-test and post-test level of pain in experimental and control group and the value of unpaired t-test was 4.41 which was significant at 0.05 level of significance which represents that the Valsalva maneuver was effective in reducing the level of pain in patients undergoing intravenous cannulation. Thus, hypothesis H1 was accepted.

Keywords: *Valsalva maneuver, Intravenous cannulation*

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I. INTRODUCTION

Pain can be defined as an unpleasant sensory and emotional experience which can be associated with numerous factors such as tissue damage because of any procedure. It is certainly a very complex phenomenon which can affect the person holistically. It can affect the individual at any age, gender , race etc. It is the most common problem a patient is seeking help for.[1]

Valsalva maneuver is non invasive as well as a non medicated procedure and it is proven effective in reducing the level of pain which can be found associated with the procedure of intravenous cannulation.[2] This technique is named after Antonio Maria Valsalva. The Valsalva maneuver is performed by moderately forceful attempted exhalation against closed airway. It can be performed by straining or coughing.[3]

II. NEED FOR THE STUDY

Intravenous cannulation is a mandatory procedure for the administration of IV fluids,medications and safe administration of anaesthetic agents.[4] Each year 4 million people all over the world receive intravenous therapy through a peripheral venous cannula. Upto 70% of patients require a peripheral venous line during their hospital stay.[5]Peripheral venous therapy accounts for 15-20% of total patient days in acute care hospitals. Venous cannulation is often a painful procedure with the potential to cause significant anxiety, distress, and discomfort, which may delay the patient seeking medical help[6].

III.STATEMENT OF THE STUDY

A Study to assess the effectiveness of Valsalva maneuver on reduction of pain among the patients undergoing peripheral intravenous cannulation in selected hospital of Kanpur, Uttar Pradesh.

IV.OBJECTIVES:

1 .To assess the level of pain in patients undergoing peripheral intravenous cannulation in experimental and control group.
2. To assess the effectiveness of Valsava Maneuver on reducing pain among the patients undergoing peripheral intravenous cannulation between experimental and control group.
3. To determine the association between the level of pain in patients undergoing intravenous cannulation with their selected demographic variables.

V.HYPOTHESIS:

Null Hypothesis:

H_{01}- There is no significant difference in the pre test and post test pain score between the experimental and control group at 0.05 level of significance.

H_{02} **:** There is no significant association between the pain score with their selected demographic variables in experimental and control group.

Research Hypothesis:

H_1- There is a significant difference in the pre test and post test pain score between the experimental and control group at 0.05 level of significance.

H_2 -There is significant association between the pain score with their selected demographic variables in experimental and control group.

VI.METHODS AND MATERIALS:

Dependent Variable:

The dependent variables in present study is Pain experienced by the patients during the procedure of peripheral intravenous cannulation.

Independent Variable:

The independent variable in the present study is Valsalva maneuver.

Demographic Variables:

The demographic variables for this present study are – Age, Gender, Body mass index, Number of previous cannulation, Sites of cannulation, Size of cannula, previous knowledge regarding valsalva maneuver procedure.

POPULATION :

Population for the present study were the patients undergoing the procedure of peripheral intravenous cannulation admitted in selected Hospital of Uttar Pradesh.

Target Population: Patients admitted in selected hospitals of Kanpur, Uttar Pradesh.

Accessible Population : Patients undergoing the procedure of peripheral intravenous cannulation admitted in UrsalaHorsman Memorial hospital Kanpur, Uttar Pradesh.

SAMPLE

In this study, the samples were the patients undergoing the procedure of peripheral intravenous cannulation admitted in UrsalaHorsman Memorial hospital, Kanpur, Uttar Pradesh who had fulfilled the sampling criteria for the study.

SAMPLE SIZE:

The sample size in the present study is 60 from which 30 were placed in experimental group and 30 were placed in control group.

SAMPLING TECHNIQUE:

The Simple Random Sampling Technique is applied in this investigation. The patients were placed in experimental and control group by checking their bed number randomly as the even bed number patients were placed in experimental group and odd bed number patients were placed in control group.

INCLUSION CRITERIA:

1. Patients undergoing peripheral intravenous cannulation admitted in selected hospital of Kanpur, Uttar Pradesh.
2. Patients available at the time of study.
3. Patients with minimum age of 20 years.

EXCLUSION CRITERIA :

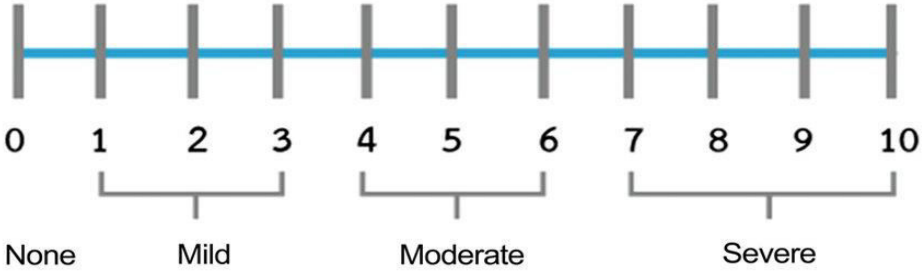
1. Patients who were not willing to participate and the patients who are on anticoagulant therapy.
2. Patients having certain kind of critical illness like CVA, Bleeding disorders and deep vein thrombosis, Hypertension.

VII. DEVELOPMENT AND DESCRIPTION OF TOOLS USED IN THE STUDY

The tools used for the study are demographic variables and Numerical rating pain scale. The tool consist of two sections:

SECTION A- It deals with the demographic data such as Age, Gender, Body mass index, Number of previous cannulation, site of cannulation, size of cannula, Previous knowledge regarding Valsalva maneuver procedure.

SECTION B- Consists of 10 point Numerical Rating Pain Scale which is used to assess the level of pain during peripheral intravenous cannulation.



VIII. DATACOLLECTION PROCEDURE:

Before the data collection, the investigator had obtained the formal permission from the Medical Superintendent of UrsalaHorsman Hospital, Kanpur, Uttar Pradesh.Consent was be taken from the patients to conduct study on them.

IX.RESULT AND FINDINGS

SECTION : A

The major findings are:

- Majority of the patients 53.33% in experimental group and 50% in control group were in the age group of 34-40years respectively.
- Majority of the patients 83.33% in experimental group and 50% in control group were females respectively.
- Majority of the patients 53.33% in experimental group and 56.67% in control group were having normal body mass index respectively.
- Majority of the patients 83.33% in experimental group and 83.33% in control group had undergone one previous cannulartion respectively.
- Majority of the patients 50% in experimental group and 53.33% in control group had 18 gauze cannula respectively.
- Majority of the patients 80% in experimental group and 80% in control group had cannula at dorsum aspect of hand respectively.
- Majority of the patients 100% in experimental group and 100% in control group were not having any previous knowledge regarding Valsalva maneuver respectively.

SECTION-B

Table no. 1. Table showing the description of patients in experimental and control group according to their level of pain in pre test.

Level of pain	Experimental Group				Control Group			
	Frequency	Percentage	Mean	S.D	Frequency	Percentage	Mean	S.D
No pain	0	0%			2	6.70%		
Mild	5	16.70%	5.46	1.47	3	10%	5.06	1.72
Moderate	20	66.70%			23	76.60%		
Severe	5	16.70%			2	6.70%		
TOTAL	30	100%			30	100%		

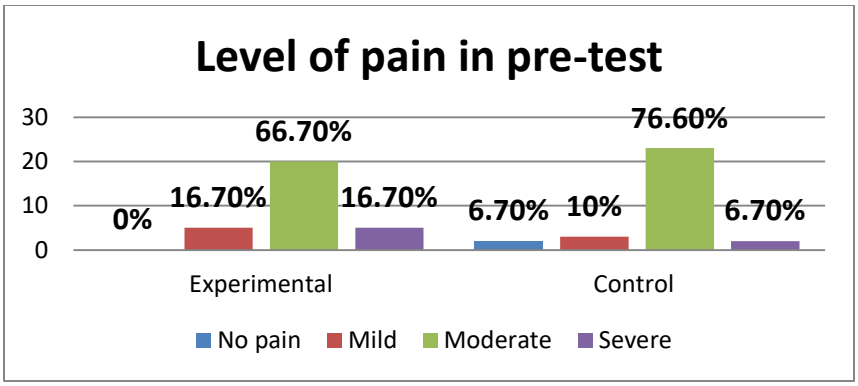


Figure no.1 Clustered Column represents the frequency and percentage wise distribution of patients under experimental and control group according to their level of pain in pre-test.

(Table no. 8 and fig.10 shows the frequency and percentage wise distribution of patients according to their level of pain in pre test. In experimental group, the majority 20(66.70%) had moderate pain level and others 5(16.70%) had mild pain level, 5(16.70%) had severe pain level. In control group, the majority23 (76.60%) had moderate pain level and others 3(10%) had mild pain level, 2(6.70%) had severe pain level and 2(6.70%) had no pain.)

Table *no. 2 . Table showing the description of patients in experimental and control group according to their level of pain in post test.*

Level of pain	Experimental Group				Control Group			
	Frequency	Percentage	Mean	S.D	Frequency	Percentage	Mean	S.D
No pain	0	0%			2	6.67%		
Mild	23	76.67%	2.76	1.19	8	26.66%	4.6	1.94
Moderate	7	23.33%			18	60%		
Severe	0	0%			2	6.67%		
TOTAL	30	100%			30	100%		

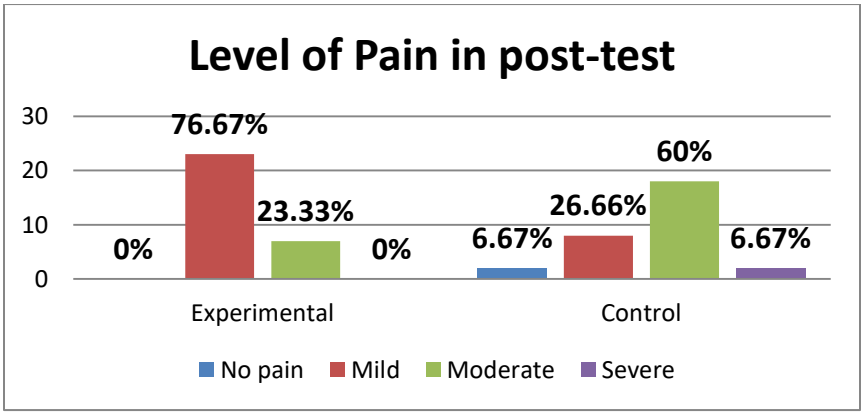


Figure no.2 Clustered Column represents the frequency and percentage wise distribution of patients under experimental and control group according to their level of pain in post-test.

Table no. 9 and fig. 11 shows the frequency and percentage wise distribution of patients according to their level of pain in post test. In experimental group, the majority 23(76.67%) had mild pain and others 7(23.33%) had moderate pain. In control group, the majority 18(60%) had moderate pain and others 8(26.67%) had mild pain, 2(6.67%) had no pain and 2(6.67%) had severe pain.

SECTION-C

Table:3 Table showing paired t-test values on pre-test and post-test level of pain among the patients undergoing peripheral intravenous cannulation in experimental and control group.

n=60

GROUP	PAIRED t-TEST VALUE	TAB. VALUE<0.05	INFERENCE
Experimental (n=30)	14.97	2.92	Significant
Control (n=30)	2.31	2.92	Non-Significant

The above table represents the paired t-test value of pre-test and post-test level of pain among the patients with peripheral intravenous cannulation. In experimental group, the paired t-test value is 14.97 which is significant at 0.05 level of significance. It shows that Valsalva maneuver is effective in reducing the level of pain during intravenous cannulation.

In control group, the paired t-test value is 2.31 which is non-significant at 0.05 level of significance.

Table: 4 Table showing unpaired t-test values on post-test level of pain among the patients undergoing peripheral intravenous cannulation in experimental and control group.

n=60

Group	Mean	S.d	Unpaired t-test value	Tab. Value<0.05	Inference
Experimental (n=30) (Post-test)	2.76	1.19	4.41	1.756	Significant
Control (n=30) (Post-test)	4.6	1.94			

The above reveals that in experimental group, the mean value is 2.76, the value of standard deviation is 1.19. In control group, the mean value is 4.6 and standard deviation value is 1.94 respectively. The unpaired t-test value is found 4.41 which is significant at 0.05 level of significane.It shows a significant difference in post test level of pain among the patients undergoing peripheral intravenous cannulation in experimental and control group. Thus, hypothesis H1 was accepted.

SECTION-D

Table no. 5 : Table showing the association of post test level of pain among the patients undergoing peripheral intravenous cannulation with their selected demographic variables in experimental group.

n=30

Sr. no.	Demographic Variables	Nopain	Mild	Moderate	Severe	p-Value	Inference
1.	**Age in years**						d.f-9
	(a).20-26 years	0	1	0	0		p<0.05
	b).27-33years	0	6	0	0	3.64	**Significant**
	(c).34-40 years	0	12	4	0		
	(d).41yearsand above	0	4	3	0		
2.	**Gender**						d.f-3
	(a). Male	0	5	0	0	2.44	p<0.05
	(b). Female	0	18	7	0		**Significant**
3.	**Body Mass Index**						d.f-9
	(a). Underweight	0	0	1	0		p<0.05
	(b). Normal	0	12	4	0	4.32	**Significant**
	(c). Overweight	0	8	2	0		
	(d). Obese	0	3	0	0		
4.	**No. Of previous cannulations**	0	19	6	0	0.0437	d.f-6 p<0.05
	(a). One	0	4	1	0		**Significant**
	(b). Two	0	0	0	0		
	(c). More than two						
5.	**Size of cannula**						d.f-9
	(a). 16 gauze	0	8	3	0		p<0.05
	(b). 18 gauze	0	12	3	0	0.1943	**Significant**
	(c). 20 gauze	0	3	1	0		
	(d). 22 gauze	0	0	0	0		
6.	**Sites of cannulation**						
	(a). Dorsum aspect of arm						d.f-3
	(b). Inner aspect of arm	0	19	5	0		p<0.05
						0.4187	**Significant**
		0	4	2	0		
7.	**Previous knowledge Regarding Valsalva maneuver**						d.f-3
	(a). Yes	0	0	0	0	0	p<0.05
	(b). No	0	23	7	0		**Significant**

The above table represents the association between post test pain score among the patients undergoing peripheral intravenous cannulation with their selected demographic variables in experimental group.

It reveals that in the experimental group the chi square value for age is 3.64, for gender is 2.44, for body mass index is 4.32, for number of previous cannulations is 0.0437, for size of cannula is 0.1943, for sites of cannulation is 0.4187 and for previous knowledge regarding Valsalva maneuver is 0 respectively.

Table no. 6 : Table showing the association of post test level of pain among the patients undergoing peripheral intravenous cannulation with their selected demographic variables in control group.

n=30

Sr. no.	Demographic Variables	No pain	Mild	Moderate	Severe	p-Value	Inference
1.	**Age in years**						d.f-9
	(a).20-26 years	0	1	0	0		p<0.05
	b).27-33years	0	6	0	0	3.64	**Significant**
	(c).34-40 years	0	12	4	0		
	(d).41yearsand above	0	4	3	0		
2.	**Gender**						d.f-3
	(a). Male	0	4	11	0	8.88	p<0.05
	(b). Female	0	4	7	2		**Significant**
3.	**Body Mass Index**						d.f-9
	(a). Underweight	0	0	0	0		p<0.05
	(b). Normal	1	6	8	2	6.834	**Significant**
	(c). Overweight	1	0	7	0		
	(d). Obese	0	2	3	0		
4.	**No. Of previous cannulations**						d.f-6
	(a). One						p<0.05
	(b). Two	2	6	15	2	1.187	**Significant**
	(c). More than two	0	2	3	0		
		0	0	0	0		
5.	**Size of cannula**	1	4	6	1		d.f-9
	(a). 16 gauze	1	4	10	1	1.846	p<0.05
	(b). 18 gauze	0	3	2	0		**Significant**
	(c). 20 gauze	0	0	0	0		
	(d). 22 gauze						
6.	**Sites of cannulation**						d.f-3
	(a). Dorsum aspect of arm	2	7	13	2	1.946	p<0.05
	(b). Inner aspect of arm						**Significant**
		0	1	5	0		
7.	**Previous knowledge Regarding Valsalva maneuver**						
	(a). Yes						d.f-3
	(b). No	0	0	0	0	0	p<0.05
		2	8	18	2		**Significant**

The above table represents the association between post test pain score among the patients undergoing peripheral intravenous cannulation with their selected demographic variables in control group.The above findings reveals that in experimental group and in control group the demographic variables such as age, gender, body mass index, number of previous cannulations, size of cannula , sites of cannulation and previous knowledge regarding Valsalva maneuver shows significant association with level of pain at 0.05 level of significance. Thus, hypothesis H_2 was accepted.

X. IMPLICATIONS OF THE STUDY:

Nursing practice

- The procedure of intravenous cannulation is very common in hospitals and study reveals that the patients experiences pain during cannulation. So, if the nurses are aware about this maneuver including its indications, contraindications and steps than by the permission of physician she can assist the patient for performing this maneuver so that during the next cannulation the level of pain experienced by the patient can be reduced.

Nursing education

- The topic of Valsalva maneuver can be assigned to the student nurses for their teaching practice so that they will become aware about its significance and steps.

Nursing research

- The present study can serve as a basis for motivating the other researchers to conduct further research which can leads to new discoveries in the area of Valsalva maneuver.

Nursing administration

- The nursing staff and administration can opt for the implication of Valsalva maneuver on their patients as numerous studies found it as significant in reducing the pain level as well as this maneuver is cost effective and easy to perform.

Recommendations:

- The similar study can be performed as a descriptive study for further researchers.
- The study can be performed on large sample.

XII. CONCLUSION:

The study concluded that the unpaired t-test value is found 4.41 which is significant at 0.05 level of significance.It shows a significant difference in post test level of pain among the patients undergoing peripheral intravenous cannulation in experimental and control group. Thus, hypothesis H_1 was accepted. The chi square test values represents that there is a significant association between pain score with their selected demographic variables. Thus hypothesis H_2 was accepted.

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