IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

"A STUDY TO ASSESS THE EFFECTIVENESS OF VALSALVA MANEUVER TECHNIQUE ON PAIN REDUCTION AMONG PATIENTS UNDERGOING PERIPHERAL INTRAVENOUS CANNULATION IN SELECTED HOSPITAL OF VALSAD DISTRICT."

MS. RIDDHI P. PARMAR[1],
Corresponding Author
M.Sc. Nursing, Department of Medical Surgical Nursing,
Sandra Shroff ROFEL College of Nursing, Vapi

PROF, MR. SAMUEL FERNANDIS[2],
GUIDE
Principal and HOD of Department of Medical Surgical Nursing, Sandra Shroff ROFEL College of Nursing, Vapi

MRS.SHEBA JOVERSE [3],
CO- GUIDE
Associate Professor, Medical Surgical Nursing Department, Sandra Shroff ROFEL College Of Nursing, Vapi

MRS. CHAITALI PATEL [4],
CO- GUIDE
Assistant Professor, Medical Surgical Nursing Department, Sandra Shroff ROFEL College Of Nursing, Vapi

ABSTRACT

Introduction; Patients are suffering from pain during peripheral intravenous cannulation, and they need an intervention to reduce the pain during peripheral intravenous cannulation. By using the Valsalva Maneuverer Technique reduce the pain during intravenous cannulation. The **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 Valsalva Maneuverer Technique in Pain reduction

among patients undergoing peripheral intravenous cannulation in experimental group.3) To find out the association between the level of pain score among patients undergoing peripheral intravenous cannulation with selected demographic variables in experimental and control group. **Method;** A quantitative research approach with a quasi-experimental design was adopted for the study. A total 80 subjects were selected by non-probability purposive sampling technique. Data were collected by using demographic variables and a numerical rating scale. **Result;** The result revels that the calculated value of unpaired "t" test = 7.56 which is greater than the table value of the unpaired "t" test: 1.64 (df 78) at the level of P <0.05. **Interpretation and conclusion;** The data shows that the calculated "t" value is greater than the table value of "t". Thus, there is significant effect of Valsalva maneuverer technique in reducing the pain during peripheral intravenous cannulation among patients.

Key words; Valsalva maneuverer Technique, intravenous cannulation

INTRODUCTION

Pain is a vital function of the nervous system, providing the body with a warning of potential or actual injury. It is both a sensory and emotional experience affected by psychological factors such as past experience, beliefs about pain, fear or anxiety. It is difficult to describe pain due to the complexities of its anatomical and physiological fundamentals and the uniqueness of its perception, culture, and social events attached to it. There are five most common types of pain: acute pain, chronic pain, neuropathic pain, nociceptive pain, and radicular pain. During peripheral intravenous cannulation, patients may have acute pain. Intravenous cannulation has become an important component of patient care. It is estimated that 80% of all patients who enter the health service each year receive intravenous infusions and injections. Inserting an intravenous cannula is aimed at providing quick and efficient access in emergencies. Peripheral intravenous cannulation is the insertion of an indwelling plastic lumen catheter under the skin into the peripheral vein. Valsalva maneuverer (VM) non-invasive method was described for the first time by Antonio Maria Valsalva, an Italian anatomist, physician, and surgeon, in 1704. It was first used in otolaryngology; in 1851, it was used by Edward Weber, so it was sometimes named the Valsalva-Edward maneuver.8 It is one of the non-pharmacological methods used to reduce pain during intravenous cannulation. It is one of the easiest techniques to learn and practice. This technique is safe, effective, self-induced by the patient, evidence-based, and cost-effective without having any side effects. Valsalva maneuverer is a forced expiration against a closed glottis, associated with an increase in the intrathoracic and intra-abdominal pressure. Increased intrathoracic pressure promotes loading of baroreceptors, which causes regulation of baroreflex controlling nerve activity and antinociception. The sympathetic nervous system is activated and controlled by Valsalva barro receptors, which reduces pain perception. Valsalva maneuver is a forced expiration against a closed glottis, associated with an increase in the intrathoracic and intra-abdominal pressure. Increased intrathoracic pressure promotes loading of baroreceptors, which

causes regulation of baroreflex controlling nerve activity and antinociception. The sympathetic nervous system is activated and controlled by Valsalva bar receptors, which reduces pain perception.

STATEMENT OF THE PROBLEM

"A STUDY TO ASSESS THE EFFECTIVENESS OF VALSALVA MANEUVER TECHNIQUE ON PAIN REDUCTION AMONG PATIENTS UNDERGOING PERIPHERAL INTRAVENOUS CANNULATION IN SELECTED HOSPITAL OF VALSAD DISTRICT."

OBJECTIVES OF THE STUDY

- To assess the level of pain in patients undergoing peripheral intravenous cannulation in experimental and control group.
- To assess the effectiveness of Valsalva Maneuverer Technique in Pain reduction among patients undergoing peripheral intravenous cannulation in experimental group.
- To find out the association between the level of pain score among patients undergoing peripheral intravenous cannulation with selected demographic variables in experimental and control group.

HYPOTHESIS

- H1: There is a significant difference between the level of pain among patients undergoing peripheral intravenous cannulation in experimental group and control group at 0.05 level of significance.
- H01: There is no significant difference between the level of pain among patients undergoing peripheral intravenous cannulation in experimental group and control group at 0.05 level of significance.
- H2: There is a significant association of post-test pain score of patients undergoing peripheral intravenous cannulation in experimental and control group with selected demographic variable at 0.05 level of significance.
- H02: There is no significant association of post-test pain score of patients undergoing peripheral intravenous cannulation in experimental and control group with selected demographic variable at 0.05 level of significance.

DELIMITATION:

The study is limited to,

- Data collection period limited to 4 weeks only.
- The patient who are admitting in hospital and willing to participate in the study.
- Sample size of study 80 only. (40 in experimental and 40 in control group)

OPERATIONAL DEFINITION

1. ASSESS: In this study it refers to determine the level of pain by using the numerical rating scale among patients undergoing peripheral intravenous cannulation.

2. Effectiveness: In this study, effectiveness refers to effect of the Valsalva maneuver technique on level of pain among patients undergoing peripheral intravenous cannulation as measured by numerical rating pain scale.

3.Pain: In this study, pain refers to discomfort or unpleasant sensation caused by peripheral intravenous cannulation among patients undergoing peripheral intravenous cannulation.

4. Valsalva Maneuver Technique: In this study, Valsalva Maneuver is a technique of taking deep breath and forcing against a closed glottis, associated with an increase in intra-thoracic and intra-abdominal pressure by holding the taken breath for about 10 to 15 seconds at the time of needle pricking and thereafter breathing out.

5. Peripheral Intravenous cannulation: In this study peripheral intravenous cannulation refers to insertion of intravenous cannula in to the peripheral vein.

6. Patient: In this study patient refer person aged between 21 to 60 years who is undergoing procedure of peripheral intravenous cannulation an inpatient in hospital of Valsad district.

RESEARCH METHODOLOGY

REASERCH APPROACH: Quantitative research approach

RESEARCH DESIGN: Quasi Experimental Design Non-Equivalent Control Group Post – Test - Only Design)

VARIABLES:

Research variables:

- **Independent variable:** Valsalva maneuver technique is an independent variable.
- **Dependent variable:** level of pain among patients undergoing peripheral intravenous cannulation is a dependent variable.
- **Demographic Variables**: Age, gender, Education, Occupation, Previous experience of intravenous cannulation, site of IV Cannulation, size of cannula, BMI.

RESEARCH SETTING: Selected Hospitals of Valsad district.

POPULATION AND SAMPLE

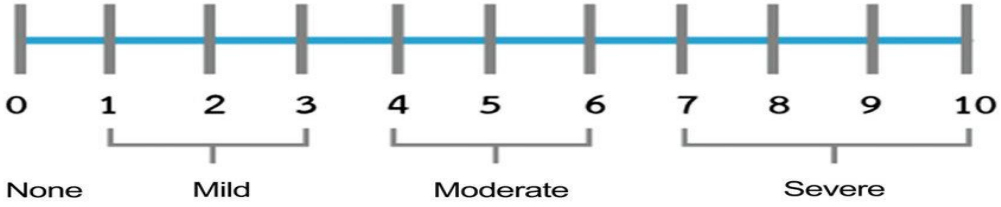
POPULATION: patient who all admitted in hospital of Valsad district.
SAMPLE: patients undergoing intra venous peripheral cannulation admitted in Haria L.G. Rotary hospital, Vapi.
SAMPLING TECHNIQUE: Non-Probability Purposive Sampling Technique.
DESCRIPTION OF TOOL:

Final tool consisted of three parts:

SECTION- A: SOCIO- DEMOGRAPHIC DATA

It consists of selected socio demographical variable such as Age, Gender, Education, Occupation, Previous experience of intravenous cannulation, site of IV Cannulation, BMI, size of cannula.

SECTION- B NUMERICAL RATING SCALE



Scoring:

0- No Pain

1-3- Mild Pain

4-6 - Moderate

7-10 – Severe

RESULTS

SECTION-A : DESCRIPTION OF SOCIO DEMOGRAPHIC CHARACTERISTICS OF SUBJECTS

SOCIO DEMOGRAPHIC VARIABLE		EXPERIMENTAL GROUP N= (40) %		CONTROL GROUP N= 40 %	
		F	P (%)	F	P(%)
AGE	a) 21 - 30 yr.	10	25%	7	13%
	b)31 - 40 yr.	6	15%	10	30%
	c) 41- 50 yr.	15	37%	14	37%
	d) 51- 60 yr.	9	23%	9	20%
GENDER	a) Male	22	57%	29	70%
	b) Female	18	43%	11	30%
EDUCATION	a) No formal education	3	7%	2	3%
	b) Primary	9	20%	7	17%
	c) Secondary	12	30%	20	56%
	d) Graduate	15	40%	8	17
	e) Post - graduate	1	3%	3	7%
OCCUPATION	a) Sedentary worker	19	50%	9	20%
	b) Moderate worker	19	43%	25	63%
	c) Heavy worker	2	7%	6	17%
PREVIOUS EXPERIENCE	a) Yes	33	80%	38	93%
	b) No	7	20%	2	7%
	a) 18 g	0	0%	1	3%

SIZE OF CANNULA	b) 20 g	17	43%	29	72%
	c) 22 g	23	57%	10	25%
	d) 24 g	0%	0%	0	0%
BMI	a) Below 18.5 - under weight	0%	0%	3	8%
	b) 18.5- 24.9 - normal weight	19	50%	24	60%
	c) 25.0 - 29.9- over weight	18	43%	11	27%
	d) 30.0 - 34.9- obesity class -i	3	7%	2	5%
	E) 35.0 - 39.9 - obesity class -II	0	0%	0	0
	f) above 40 - obesity class -iii	0	0%	0	0
SITES OF IV CANNULATION	a) hand	15	38%	14	35%
	b) wrist	25	62%	24	60%
	c) cubital fossa	0	0%	2	5%
	d) leg	0	0%	0	0
	e) foot	0	0%	0	0

SECTION-B: I : Frequency and Percentage Distribution According to the Levelof Pain Score.

(N=80)

PAIN SCALE SCORE	EXPERIMENTAL GROUP		CONTROL GROUP	
	F	P	F	P
No Pain	1	2.50%	0	0
Mild Pain	23	57.50%	4	10%
Moderate Pain	16	40%	30	75%
Severe Pain	0	0 %	6	15%

SECTION B : II Comparison of Mean level of Pain Score of Peripheral IntravenousCannulation between Experimental and Control Group

(N=80)

VARIABLE	EXPERIMENTAL GROUP (MEAN)	CONTROL GROUP (MEAN)	MEAN DIFFERENCE
Intravenous Cannulation Pain	**3.15**	**5.35**	**2.2**

SECTION B: III Effectiveness of Valsalva Maneuver in reducing pain during peripheral intravenous cannulation (N=80)

Group	N	Mean	Mean Difference	SD	"t" (unpaired) Calculated Value	t test table value	DF	Inference
Experimental	40	3.15	2.2	1.37	7.56*	1.64	78	Significant
Control	40	5.35		1.21				

SECTION C : Association between the level of pain scale score and selecteddemographic variable of experimental group

Sr No	Socio Demo Graphic Variable	Category	Total Score		Chi Square Value	Table Value	DF	Inference
			<M	>M				
1	Age	21 - 30 year	2	8	1.30	7.81	3	NS
		31 - 40 year	2	4				
		41- 50 Year	5	10				
		51- 60 Year	4	5				
2	Gender	Male	9	13	1.57	3.84	1	NS
		Female	4	14				
3	Education	No Formal Education	0	3	4.51	9.49	4	NS
		Primary	2	7				
		Secondary	5	7				
		Graduate	6	9				
		Post Graduate	1	0				
4	Occupation	Sedentary Worker	7	12	1.13	5.99	2	NS
		Moderate Worker	6	13				
		Heavy Worker	0	2				
5	Previous Experience	Yes	12	21	1.27	3.84	1	NS
		No	1	6				
6	Size Of Cannula	18 G	0	0	2.97	7.81	3	NS
		20 G	3	14				
		22 G	10	13				
		24 G	0	0				
7	BMI	Below 18.5 - Under Weight	0	0	3.06	11.1	5	NS
		18.5- 24.9 - Normal Weight	4	15				
		25.0 - 29.9- Over Weight	7	11				
		30.0 - 34.9- Obesity Class -I	2	1				
		35.0 - 39.9 - Obesity Class -II	0	0				
		Above 40 - Obesity Class - III	0	0				
8		Hand	5	10	1.83	9.49	4	NS

	Sites Of Iv Cannula	Wrist	8	17				
		Cubital Fossa	0	0				
		Leg	0	0				
		Foot	0	0				

Association between the level of pain scale score and selected demographic variable of control group

Sr No	Socio Demographic Variable	Categoryy	Total Score		Chi Square Value	Table Value	DF	Inference
			<M	>M				
1	Age	21 - 30 Yr	3	4	5.31	7.81	3	NS
		31 - 40 Yr	3	7				
		41- 50 Yr	5	9				
		51- 60 Yr	7	2				
2	Gender	Male	13	16	0.0012	3.84	1	NS
		Female	5	6				
3	Education	No Formal Education	2	0	3.41	9.49	4	NS
		Primary	3	4				
		Secondary	8	12				
		Graduate	3	5				
		Post Graduate	2	1				
4	Occupation	Sedentary Worker	5	4	0.74	5.99	2	NS
		Moderat e Worker	11	14				
		Heavy Worker	2	4				
5	Previous Experience	Yes	**18**	20	1.72	3.84	1	NS
		No	**0**	2				
6	Size Of Cannula	18 G	**0**	1	2.25	7.81	3	NS
		20 G	**15**	14				
		22 G	**3**	7				
		24 G	**0**	0				
7	BMI	Below 18.5 - Under Weight	**0**	3	4.73	11.1	5	NS
		18.5-24.9 - Normal Weight	**12**	12				
		25.0 - 29.9- Over	**6**	5				

		Weight						
		30.0 - 34.9- Obesity Class -I	**0**	2				
		35.0 - 39.9 - Obesity Class -II	**0**	0				
		Above 40 - Obesity Class - III	**0**	0				
8	Sites Of Iv Cannula	Hand	**8**	6	4.59	9.49	4	NS
		Wrist	**8**	16				
		Cubital Fossa	**2**	0				
		Leg	**0**	0				
		Foot	**0**	0				

S: significant, NS: Not significant, p< 0.05.

DISCUSSION

Section I: Description of Socio Demographic Characteristics of subjects. **Section II**: Comparison of Mean level of Pain Score of Peripheral Intravenous Cannulation between Experimental Group and Control Group

Section III: Effectiveness of Valsalva Maneuver Technique in reducing painduring peripheral intravenous cannulation.

Section IV: Association between level of pain scale score and the selecteddemographic variables in experimental and control group.

Section I: Description of Socio Demographic Characteristics of subjects.

Socio demographic profile of Subjects with peripheral intravenous canulation. It shows that majority (37%) of Subjects were in the 41- 50 years in experimental group whereas in control group most of the Subjects (37%) were in the age group of 41- 50 years. Also, there were (33%) Subjects who were in the age group of 21-30 years in experimental group in contrast with 30% Subjects from 31- 40 years age group in control group. Gender wise distribution shows that majority (57%) Subjects were male in experimental group and (70%) Subjects were male in control group. However (43%) Subjects were female in experimental group and (30%) Subjects were female in control group. Education wise distribution shows that majority (40%) Subjects were graduate in experimental group and (56 %) Subjects were secondary level education in control group. It is significant to shows that majority (50%) Subjects were doing sedentary work in experimental group and (63 %) Subjects were doing moderate work in control group. It describes that in experimental group (80%) Subjects were having previous experience of intra venous cannulation and in control group (93%) Subjects were having previous experience of intra venous cannulation. Based on size of cannula majority (57%) Subjects were using 22 G cannula in experimental group and (72%) Subjects was using 20 G cannula in Control group. BMI wise distribution shows that majority (50%) Subjects were coming under normal weight in experimental group and (60%) Subjects was also coming under normal weight in Control group. Based on sites of IV cannulation distribution shows that (62%) Subjects have cannula on wrist area in experimental group and (60%) Subjects have cannula on wrist area in control group. This result is supportedby similar study conducted by Mrs. Anjana, T. D (2015) to assess the effectiveness of Valsalva Maneuver on pain reduction among adult patients undergoing peripheral intravenous

cannulation in Sree Mook Ambika Medical College Hospital, Kulasekhara.

Section II: Comparison of Mean level of Pain Score of Peripheral Intravenous Cannulation between Experimental Group and Control Group

Comparison of overall mean score between the experimental control group results revels that, In the experimental group (2.50%) Subjects experience no pain; (57.50 %) Subjects experience mild pain and (40%) Subjects experience moderate pain. In the control group (10%) Subjects experience mild pain, (75%)Subjects experience moderate pain and (15%) Subjects were experiencingsevere pain. This result is supported by similar study conducted by Mrs. Anjana,T. D (2015) to assess the effectiveness of Valsalva maneuver on pain reductionamong adult patients undergoing peripheral intravenous cannulation in Sree Mookambika Medical College Hospital, Kulasekhara" shows the Experimental group (83.3%) samples experiences mild pain and (16.6%) samples experiencemoderate pain in the post test. In the control group (43.3%) samples experience moderate pain and (56.6%) samples experienced severe pain in the post test.

Section III: Effectiveness of Valsalva Maneuver Technique in reducing pain during Peripheral intravenous cannulation.

With the regard to the standard deviation related to the peripheral intravenous cannulation in experimental group 1.37 and in control group 1.21. the mean of experimental group in peripheral intravenous cannulation is 3.15 and in control group 5.35. which shows that it is decreased compare with control group and mean difference is 2.2. The calculated value of unpaired "t" test = 7.56 which is greater than the table value of unpaired "t" test: 1.64 (df 78) at the level of $P<0.05$. hence, hypothesis H1 is accepted for the reducing pain scale score by using of Valsalva maneuver technique during peripheral intravenous cannulationin hospital of Valsad district and H_{01} is rejected. This result is supported by similar study conducted by Rashmi Kadyan M.Sc. Nursing, Rajkumari Amrit Kaur College of Nursing, Lajpat Nagar, New Deli (2017) shows that the mean post-test pain scores of adults in experimental group(1.3) is lower than mean post-test pain scores of adults in control group (5.56). The obtained mean difference (4.26) between post test scores of experimental and control groups was found to be statistically significant as evident from t- value 17.75 at 0.05 level. Therefore, obtained mean difference was true difference and not by chance so the research hypothesis (H2) is accepted. This shows that Valsalva maneuverer is effective in reducing IV cannulation pain

Section IV: This Section deals with association between level of pain scale score a n d the selected demographic variables in experimental and control group.

The chi- square value shows that there is no association between the level of pain scale score and selected demographic variables such as age, gender,education, occupation, previous experience of intravenous cannulation, BMI, size of canula, sites of IV cannulation. So, the null hypothesis (H02) is accepted.And research hypothesis (H2) was rejected in the experimental group. The results show there is no association between the level of pain scale score and selected demographic variables such as Age, gender, education, occupation, previous experience of intravenous cannulation, BMI, size of canula, sites of IVcannulation. So, the results shows that null hypothesis (H02) is accepted and research hypothesis (H2) was rejected in the control group. describes theassociation between the level of pain with demographic variables both inexperimental and control groups. This result is supported by similar study conducted by Mrs. Anjana, T. D (2015)to assess the effectiveness of Valsalva maneuver on pain reduction among adultpatients undergoing peripheral intravenous cannulation in Sree Mookambika Medical College Hospital, Kulasekhara" The results show there is no association between the level of pain and selected demographic variables such as Age, gender, education, occupation, culture and previous experience of intravenous cannulation. So, the research hypothesis (H2) was rejected.

CONCLUSION

A Quantitative approach, A two group non- equivalent control group post test research design, quasi experimental study was conducted on a Subjects of 80 peripheral intravenous cannulation patients through purposive sampling technique using structurequestion-based tool and numerical rating scale. The data collection period was 4 weeks from 10/07/2023 to 24/07/2023 at selected hospital of Valsad district. (The data collection of Period is 4 weeks. The study results shows that calculated value of unpaired "t" test =

7.56 which is greater than the table value of unpaired "t" test: 1.64 (df 78) at the level of P<0.05. hence, hypothesis H1 is accepted and H01 is rejected. Comparison of overall mean score between the experimental control group results revels that, In the experimental group 2.50% Subjects experience no pain; 57.50 % Subjects experience mild pain and 40% Subjects experience moderate pain. In the control group10% Subjects experience mild pain; 75% Subjects experience moderate pain and 15% subjects were experiencing severe pain. The chi- squarevalue shows that there is no association between the level of pain scale score and selected demographic variables in experimental and control group. So, the null hypothesis (H02) is accepted and research hypothesis (H2) was rejected in the experimental and control group.

REFERENCE

1) Cesaro P, Ollat H. Pain and its treatments. NATIONAL LIBRARY OF MEDICINE, 1997 Eur Neurol. 1997;38(3):209-15. Doi: 10.1159/000113375. PMID: 9363833. Available form: Pubmed.ncbi.nlm.nih.gov.

2) Campbell, James N. The fifth vital sign revisited. PAIN INTERNATIONAL ASSOCIATION FOR THE STUDY OF PAIN ,2016 JANUARY 157(1): 3-4, | DOI: 10.1097/pain. Available form: journals, IWW.com.

3) Rashmi Kadyan; Assessment and Evaluation of Effectiveness of Valsalva Maneuver on Pain Reduction during IV Cannulation Among Adults, INTERNATIONAL JOURNAL OF HEALTH AND RESEARCH SCIENCE,2017 AUGUST,7(8):278-280 available form: http://www.ijhsr.org/.

4) Hamda Ahmed Mohamed; Valsalva Maneuver: Reducing Procedural Pain and Anxiety for Patients Undergoing Peripheral Intravenous Cannulation EGIPTYAION JOURNAL OF NURSING AND HEALTH SCIENCE. 2021,2(2):44- 48 available form: Hamda.Ahmed@alexu.edu.eg.

5) Jackson et al,; Peripheral intravenous cannulation: reducing pain and localcomplication, BRITISH JOURNAL OF NURSING,2020 APRIL,29(8):15-17.

6) Hamda Ahmed Mohamed; Valsalva Maneuver: Reducing Procedural Pain and Anxiety for Patients Undergoing Peripheral Intravenous Cannulation EGIPTYAION JOURNAL OF NURSING AND HEALTH SCIENCE. 2021,2(2):46- 47 available form: Hamda.Ahmed@alexu.edu.eg.

7) Brennan, FRACP, Fachpm, FABPM, FFPMANZCA. PAIN MANAGEMENT: A FUNDAMENTAL HUMAN RIGHT. ANAESTHESIA &ANALGESIA 2007 JULY 105(1): 205-221, DOI: 10.1213/01.ane.0000268145.52345.55.

8) Shival Srivastav[1]; Radia T. Jamil[2]; Roman Zeltser[3]. VALSALVA MANUVER Treasure Island (FL): Stat Pearls NATIONAL LIBRARY OF MEDICINE,2023 AUGUST, Bookshelf ID: NBK537248MID:

9) www. Ncbi.nlm.gov Eun J anaesthesiology. 2004.J 21 (3);214-16.

10) www. Pubmed.com Intravenous cannulation pain management, Est Afr.Medj. 2000Jun.77(6); 229 – 302.