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## A STUDY TO EVALUATE THE EFFECTIVENESS OF VALSALVA MANEUVER IN REDUCING PAIN AND ANXIETY DURING CANNULATION OF AV FISTULA AMONG PATIENTS UNDERGOING HEMODIALYSIS AT ASHWIN HOSPITAL, COIMBATORE

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### ABSTRACT

Pain and anxiety are an unpleasant feeling and emotional experience which results in physical and psychological disturbances. As an effective nursing care relies on patient physical and psychological comfort during cannulation of Av fistula. A Quasi experimental study was conducted to assess the level of pain and anxiety during cannulation of AV fistula. Valsalva maneuver was employed for the experimental group before the cannulation and after the intervention, post-test was done to assess the level of pain and anxiety after the treatment. The data was analyzed using descriptive and inferential statistics and was found out that in the experimental group for the level of pain, the pre-test and post-test mean score was 4.96 and 1.43 and the obtained 't' test value was 5.178. Also, the level of anxiety for the pre-test and post-test mean score was 11.9 and 6.0 and the obtained 't' test value was 5.254. The significance achieved was at the level of 0.05. The result showed that there was significant reduction in pain and anxiety during cannulation of AV Fistula among the experimental group of patients undergoing hemodialysis.

### KEYWORDS

Av fistula, Valsalva maneuver and Undergoing hemodialysis.

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### INTRODUCTION

WHO says chronic kidney disease is a condition in which there is a loss of renal function overtime. It is an emergent global health problem. Renal replacement therapy is considered as a financial burden for the patient. Hemodialysis is commonly used as renal replacement therapy. About 2.2 million patients were undergoing hemodialysis in around

29,170 dialysis units all over the world. The main aim of hemodialysis treatment is to eliminate excess fluid and waste products from the blood through the dialyzer and to carry a clear and filtered blood back to the patient.

### **Need for the study**

Pain is ranked only second to the fear of death. Anxiety of injection by needles affects at least 10% of the population and in severe cases may lead to avoidance of medical care. Hemodialysis patients are frequently exposed to the pain resulting from inserting by needle to their fistula for about 300 times which must continue in their lifetime (or) until a successful kidney transplant.

Valsalva maneuver is a Noninvasive, Non pharmacological and effective method to reduce pain associated with cannulation of Arteriovenous Fistula patients undergoing Hemodialysis. Valsalva maneuver increases the Intrathoracic pressure leading to activation of baroreceptors and thus stimulation of vagus nerve. Vagal nerve stimulation causes pain relief and effective technique to deal with anxiety.

Pain assessment and management are considered as the nursing priority and one of the important aspects of clinical nursing and one of the therapies to reduce pain is Valsalva maneuver.

Valsalva maneuver was introduced as a pain-reducing method in venous cannulation in several studies, but the effect of this maneuver in pain reduction resulted from arteriovenous fistula (AVF) cannulation in patients undergoing hemodialysis. The practice of breathing exercises can decrease stress and strain through the reduction in sympathetic activity and enhancement of parasympathetic activity. Breathing exercises include various forms of yoga exercise, slow lip pursing exercise, blowing balloon exercise.

### **Statement of the problem**

A study to evaluate the effectiveness of Valsalva Maneuver in reducing pain and anxiety during Cannulation of AV fistula among patients undergoing hemodialysis at Ashwin hospital, Coimbatore.

### **Objectives**

- To assess the level of pain and anxiety during

cannulation of AV fistula among the experimental group of patients undergoing hemodialysis.

- To evaluate the effectiveness of Valsalva maneuver on the level of pain and anxiety during the cannulation of AV fistula among the experimental group of patients undergoing hemodialysis.
- To compare the pre-test and post-test level of pain and anxiety during the cannulation of AV fistula among the experimental group of patients undergoing hemodialysis.
- To associate the post-test level of pain and anxiety during the cannulation of AV fistula among the experimental group of patients undergoing hemodialysis with their selected demographic and clinical variables.

### **Hypothesis**

- There is a significant reduction in the level of pain and anxiety during cannulation of AV Fistula in the experimental group.
- There is a significant association between the level of pain and anxiety with selected demographic and clinical variables.

### **METHODS AND DATA ANALYSIS**

The approval for conducting this study was obtained. Data collection was done for a period of one month. The purpose and duration of the study was explained to them and consent was obtained from the patients who were interested and willing to participate. Totally 30 patients were selected, Pre-test was done on the first sitting of hemodialysis during cannulation of AV fistula. The structured questionnaire using interview schedule technique was used to collect the data from the patients before hemodialysis began.

On the second sitting of the hemodialysis before the start of hemodialysis, the investigator demonstrated the Valsalva maneuver, and instructed the patients to take deep breath and to expel the air forcefully for 10-20 secs in the plastic tube attached with the party balloon.

On the third sitting of hemodialysis the Post-test was conducted after the cannulation of the Av fistula with the structured questionnaire and assessment

tools for pain and anxiety.

### **Population and Sampling**

The target population of the study were the patients undergoing hemodialysis with AV Fistula at Ashwin Hospital, Coimbatore. The samples selected for the present study were the patients with AV Fistula who met the inclusion and exclusion criteria. Consent for participation was obtained. Non probability convenient sampling technique was used for selecting the samples.

The calculated paired 't' test value  $t = 5.178$  was found to be statically significant at  $p < 0.05$  level. This indicated that there is a significant difference between the pre-test and the post-test level of pain among the experimental group of patients undergoing hemodialysis during the cannulation of AV Fistula. This shows that the Valsalva maneuver had an effect in reducing the pain.

The calculated paired 't' test value  $t = 5.254$  was found to be statically significant at  $p < 0.05$  level. This indicated that there is a significant difference between the pre-test and the post-test level of anxiety among the experimental group of patients undergoing hemodialysis during the cannulation of AV Fistula. This shows that the Valsalva maneuver had an effect in reducing the anxiety.

### **RESULTS**

Among the 30 patients in the experimental group for the pre-test level of pain, 7(23.3%) patients experienced severe pain, 15(50%) experienced moderate pain, 8(26.7%) experienced mild pain and there were nil patients with no pain. In the pre-test level of anxiety, 9(30%) patients experienced severe anxiety, 13(43.3%) experienced moderate anxiety, 6(20%) experienced mild anxiety and 2(6.7%) experienced minimal level of anxiety.

In the post-test level of pain, none of the patients experienced severe pain, 6(20%) experienced moderate pain, 14(46.7%) experienced mild pain and 10(33.3%) had no pain at all. In the post-test level of anxiety, 1(3.3%) patient experienced severe anxiety, 8(26.7%) experienced moderate anxiety, 10(33.3%) experienced mild anxiety and 11(36.7%) experienced minimal level of anxiety.

In the experimental group for the level of pain, the mean value of the pre-test was 4.96 and the post-test was 1.43 and the standard deviation of the pre-test was 1.92 and post-test was 1.45. The obtained 't' value was 5.178 and it is found to be statistically significant at the level of  $p < 0.05$  for the level of pain. The level of anxiety of the patients, the mean value of the pre-test was 11.9 and the post-test was 6.0 and the standard deviation of the pre-test was 4.36 and post-test was 3.85. The obtained 't' value 5.254 was found to be statistically significant at the level of  $p < 0.05$  for the level of anxiety.

The Chi square was calculated to find out the association of the post-test level of pain and anxiety it is found that there is a significant association with the duration of hemodialysis. In the level of anxiety there is a significant association of age of the patient, weight of the patient, personal habits there is a significant association in duration of diagnosis of renal failure, duration of hemodialysis, duration of present AV Fistula, no access related problem and location site of the AV Fistula of the experimental group of patients undergoing hemodialysis.

**Table No.1: Frequency and Percentage distribution of Demographic variables of the experimental group of patients undergoing hemodialysis (n=30)**

S.No	Demographic Variables	Experimental Group		
		f	%	
1	Age In Years	a) Less than 30 years	3	10.0
		b) 31-40 years	4	13.3
		c) 41-50 years	8	26.7
		d) 51-60 years	11	36.7
		e) 61-70 years	4	13.3
2	Gender	a) Male	23	76.7
		b) Female	7	23.3
3	Weight of the Patient	a) 41-50Kg	8	26.6
		b) 51-60Kg	11	36.7
		c) 61-70Kg	6	20
		d) Above 70Kg	5	16.7
4	Education	a) No Schooling	8	26.7
		b) Primary School	7	23.3
		c) Secondary School	8	26.7
		d) Higher Sec. School	5	16.7
		e) Graduation	2	6.6
5	Occupation	a) Self Employed	8	26.6
		b) Govt. Job	2	6.7
		c) Private Job	12	40
		d) Retired	2	6.7
		e) Unemployed	6	20
6	Monthly Income	a) Rs.5,000 - 10,000	12	40
		b) Rs.10,001 - 15,000	6	20
		c) Rs.15,001 - 20,000	7	23.3
		d) Above Rs. 20,000	5	16.7
7	Dietary Patten	a) Vegetarian	3	10
		b) Non-Vegetarian	8	26.7
		c) Mixed	19	63.3
8	Personal Habits	a) Smoking	12	40
		b) Alcoholic	11	36.7
		c) Tobacco Chewing	4	13.3
		d) None	3	10

**Table No.2: Frequency and Percentage distribution of Clinical variables of the Experimental group of patients undergoing hemodialysis (n= 30)**

S. No	Clinical Variables	Experimental Group		
		f	%	
1	Duration of Diagnosis of Renal failure	a) Less than 1 year	3	10.0
		b) 2-5 years	8	26.7
		c) 6-10 years	11	36.7
		d) 11-15 years	4	13.3
		e) More than 15 years	4	13.3
2	Duration of Haemodialysis	a) Less than 1 year	3	10.0
		b) 2-5 years	11	36.7
		c) More than 5 years	16	53.3
3	Duration of present AV Fistula	a) 2-6 months	3	10.0
		b) 7-12 months	8	26.7
		c) 13-18 months	8	26.7
		d) 19-24 months	11	36.6
4	Frequency of Haemodialysis cycles per week	a) One	0	0
		b) Two	5	16.7
		c) Three	25	83.3
5	Do you have Access associated problem	a) Yes	6	20.0
		b) No	24	80.0
6	If "Yes", specify	a) Infection	0	0
		b) Inflammation	0	0
		c) Redness	1	16.7
		d) Hematoma	3	50.0
		e) Bleeding	2	33.3
7	AV fistula needle size	a) 15G	21	70.0
		b) 16G	9	30.0
8	Location site of AV Fistula	a) Right radial-cephalic	2	6.7
		b) Left radial-cephalic	11	36.7
		c) Right brachial-cephalic	3	10.0
		d) Left brachial-cephalic	14	46.6
9	Blood vascularity in the AV Fistula hand	a) Palpable pulse	8	26.7
		b) Active thrill	19	63.3
		c) Feeble thrill	3	10
		d) No pulse ANDW No thrill	0	0

**Table No.3: Frequency and Percentage distribution of Pre-test and Post-test level of Pain in the experimental group (n=30)**

S. No	Level of Pain	Pre-test		Post test	
		f	%	f	%
1	No Pain	0	0	10	33.3
2	Mild Pain	8	26.7	14	46.7
3	Moderate Pain	15	50	6	20
4	Severe Pain	7	23.3	0	0

**Table No.4: Comparison of pre-test and post-test level of pain among the patients in the experimental group undergoing haemodialysis using paired ‘t’ test (n=30)**

S.No	Measurement	N	Mean	Mean difference	Standard deviation	Calculated ‘t’ value	Table value
1	Pre-test	30	4.96	3.53	1.92	5.178*	2.05
2	Post-test	30	1.43		1.45		

**Table No.5: Frequency and Percentage distribution of Pre-test and Post-test level of Anxiety in the experimental group (n=30)**

S. No	Level of Anxiety	Pre-test		Post-test	
		f	%	f	%
1	Minimal	2	6.7	11	36.7
2	Mild	6	20	10	33.3
3	Moderate	13	43.3	8	26.7
4	Severe	9	30	1	3.3

**Table No.6: Comparison of pre-test and post-test level of anxiety among the patients in the experimental group undergoing haemodialysis using paired ‘t’ test (n=30)**

S.No	Measurement	N	Mean	Mean difference	Standard deviation	Calculated ‘t’ value	Table value
1	Pre-test	30	11.9	5.9	4.36	5.254*	2.05
2	Post-test	30	6.0		3.85		

## CONCLUSION

The Valsalva maneuver is non-pharmacological intervention for reducing the level of pain and anxiety during cannulation of Av Fistula among patients undergoing hemodialysis. The study conducted, proved that the Valsalva maneuver is effective in reducing the level of pain and anxiety during the cannulation of Av Fistula.

## RECOMMENDATION

- Valsalva maneuver can be adapted as a clinical nursing procedure to reduce the levels of pain and anxiety during any invasive procedures.
- Training can be provided to the Staff nurses regarding the practice of Valsalva maneuver as a routine clinical practice.
- A comparative study can be conducted between the control and experimental group of dialysis patients at various sitting intervals.
- A similar study can be conducted in a larger population group.

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## CONFLICT OF INTEREST

We declare that we have no conflict of interest.

## BIBLIOGRAPHY

1. Lewis S M. Medical surgical nursing, *Mosby Company, Philadelphia*, 2017.
2. Sharon Nicholas. Non pharmacological approaches to pain managements, Clinical Service Department, *Jaypee Brothers, New Delhi*, 2013.
3. Politand Hungler. Nursing Research, *Lippin Publishers*, 6<sup>th</sup> Edition, 2014, 416-417.
4. Smeltzer C S, Bare B. Brunner and Suddarth’s test book of medical surgical nursing, *Lippincott Williams and Wilkins, USA*, 10<sup>th</sup> Edition, 2014.
5. Larry E. Core. Curriculum for nephrology of nursing, *American Nephrology Association*, 3<sup>rd</sup> Edition, 2015.

6. Elhametal. Annals of tropical medicine and public health, *Med Know Publications and Media Limited*, 10(5), 2017.
7. Valerie A Luyckx, Marcello Tonelli, John W Stanifer. World health organization, *Bulletin of the World Health Organization*, 96(6), 2018, 414-422D.
8. Sabitha *et al.* *Indian Journal of Nephrology*, *Cureus Publisher*, 2017.
9. Davtalab and Shahidi. Comparing the effects of Valsalva maneuver and ice massage at Hoku point methods on pain intensity within the needle insertion to the arteriovenous fistula (AVF) for patients undergoing hemodialysis in the selected hospitals in Isfahan in 2015, *International Journal of Medical Research and Health Sciences*, 5(S), 2017, 101-107.
10. Kitty J. Jager, Csaba Kovesdy, Robyn Langham, Mark Rosenberg Vivekanand Jha Carmine Zoccali. A single number for advocacy and communication-worldwide more than 850 million individuals have kidney diseases, *Kidney International*, 96(5), 2019, 1048-1050.
11. <http://dx.doi.org/10.2471/BLT.17.206441>.
12. <http://atmph.org/text.asp?2017/10/5/1322/217503>
13. Vadakedath S, Kandi V. Dialysis. A Review of the mechanisms underlying complications in the management of chronic renal failure, *Cureus*, 9(8), 2017, e1603.

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