

**A STUDY TO ASSESS THE EFFECTIVENESS OF PRONE POSITION ON OXYGEN SATURATION AMONG ACUTE RESPIRATORY DISTRESS SYNDROME PATIENTS ADMITTED IN INTENSIVE CARE UNIT OF DHIRAJ HOSPITAL, VADODARA.**

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## **Abstract**

**Introduction:** Acute respiratory distress syndrome (ARDS) is a life-threatening lung condition that control more oxygen from getting to the lungs and into the blood. Acute respiratory distress syndrome is a type of respiratory failure characterized by rapid onset of widespread inflammation in the lungs.

**Aim:** this study aimed to assess the effectiveness of prone position on oxygen saturation among acute respiratory distress syndrome patients.

**Material and methods:** Pre-experimental research one group pre-test post-test research study was conducted among 20 ARDS patient in a tertiary care hospital after obtaining ethical permission. A non probability –purposive sampling technique was used to select the samples. Self structured tool which consists of demographic and biological parameter was utilized to collect the information and SPO<sub>2</sub> probe used to assess the oxygen saturation among ARDS patient. Inferential and descriptive statistics used with SPSS (version 20) software.

**Results:** In pre-test score majority of patient 12(60%) were in mild condition, followed by 4(20%) respondents had moderate condition and only 2(10%) had severe and normal condition. After given intervention, revealed that majority 9 (45%) of patient had normal saturation level and 7(35%) had a mild condition and 4(20%) had moderate and none of them severe condition on oxygen saturation among ARDS patient. The pre-test mean score of before intervention 91.3 it was increase up to 94.1 in post-test. Calculated ‘t’ value was 5.984 at 0.05 level of significance. Prone position was found significant in improving oxygen saturation among ARDS patient

**Conclusion:** SPO<sub>2</sub> probe is very useful to check oxygen saturation among ARDS patient in critical care unit. It also concludes that through prone position intervention patients improve the saturation level and also further complication. It will be helpful to patients and his/her family to save the hospital treatment cost along with minimal hospitalization duration period.

**Keywords:** *Effectiveness, prone position, oxygen saturation, ARDS patient, intensive care unit*

**Introduction** Acute respiratory distress syndrome (ARDS) is a life-threatening lung condition that control more oxygen from getting to the lungs and into the blood. Infants can also have respiratory distress syndrome. Acute respiratory distress syndrome is a type of respiratory failure characterized by rapid onset of widespread inflammation in the lungs. Clinical manifestation shortness of breath, fast breathing and bluish skin coloration. Among those who survive, a decreased quality\_of\_life is relatively common.<sup>1</sup>. Acute respiratory distress syndrome (ARDS) is characterized by radio graphical diffuse bilateral infiltrates, decreased respiratory compliance, small lung volumes and severe hypoxemia. Correction of life threatening hypoxia and improvement of respiratory mechanics and lung volumes are the main treatment goals.<sup>2</sup> Randomized, controlled trials have confirmed that oxygenation is significantly good results when patients is having in the prone position than when they are in the supine position.<sup>3</sup>

**Objectives:** The main objective was to assess the effectiveness of prone position on oxygen saturation among acute respiratory distress syndrome patients and to find out the association between before prone position on oxygen saturation and selected demographic and clinical variables.

**Hypothesis:**

**H<sub>1</sub>:** There will be significant differences of oxygen saturation level before and after prone position among ARDS patients.

**H<sub>2</sub>:** There will be significant association between selected demographic and clinical variable with pre-test level of oxygen saturation among ARDS patient.

**Material and methods:** Pre-experimental research one group pre-test post-test research study was conducted among 20 ARDS patient in a tertiary care hospital after obtaining ethical permission. A non probability –purposive sampling technique was used to select the samples. Self structure tool which consists of demographic and biological parameter was used to collect the information and SPO2 probe used to assess the oxygen saturation among ARDS patient. . On the first day of procedure, samples (ARDS patient) were selected as per inclusion criteria by purposive sampling technique. After maintaining initial report, purpose of the study was

explained and a written informed consent was obtained from the study subject. Demographic and clinical data was collected and risk assessment was done to assess the oxygen saturation by using SPO2 probe. After obtaining demographic and clinical data the oxygen saturation of participant was assessed by using SPO2 probe. After assessments of oxygen saturation respondent were provided with prone position for 30 min. After an intervention the oxygen saturation was assessed. After an intervention post-test of oxygen saturation participants<sup>4</sup>

## **Results**

### **Section 1: Description of demographic and clinical variable**

In demographic variable majority 8(40%) of the ARDS patients were in the age group between 41 and 50 years, most 14 (70%) of them were male, highest 8 (40%) of them had heart rate of 71-80 beats/min, similar 6 (30%) of them had respiratory rate 23-26 breaths/min and 11-14 breaths/min and highest 12 (60%) of them had blood pressure of 130/80 mm of Hg.

### **Section 2: Pretest and post level of acute respiratory distress patients according to their oxygen saturation.**

In pre-test, majority of patient 12(60%) were in mild condition, followed by 4(20%) had moderate condition and only 2(10%) had severe and normal condition. After given intervention, revealed that majority 9 (45%) of them had normal saturation level and 7(35%) had a mild condition and 4(20%) had moderate and none of them severe condition on oxygen saturation among ARDS patient.

**Table: 1 Comparison between pretest and post-test) of prone position**

<b>One Group</b>	<b>Mean ± SD</b>	<b>Mean difference</b>	<b>Paired t-test</b>
Pre-test	91.3 ± 4.31	2.8	t=5.984
Post-test	94.1 ± 3.07		p= 0.000**

\*\*\* highly significant at  $p \leq 0.05$

Above table 1 shows the comparison of mean between pre-test and post-test level of oxygen saturation among ARDS patients. The pre-test mean score was 91.3 with standard deviation 4.31.

Same as that, in the post-test; mean score was 94.1 with standard deviation 3.07. The paired t-test value was 5.984 at 0.05 level of significance; hence the hypothesis,  $H_1$  was accepted.

**Section 3: There was no any significant association between before on oxygen saturation level before prone position and selected demographic, clinical variables** such as age, gender, heart rate, respiratory rate and blood pressure, hence hypothesis  $H_2$  was rejected.

### **Discussion**

As per **Rossetti, H B.**, study there was a notable clinical improvement in oxygenation (> 15%) was detected in 78.0% of patients. Maximum improvement was seen after 30 minutes in 12.5% of responding patients and after 180 minutes in 40.6%.in my study after providing prone position for 30 minutes after immediately check the oxygen saturation maximum improvement in (5-10%) was detected in 45% of patients.<sup>4</sup> Even in present study, there was an improvement seen after administering prone position After giving intervention, revealed that majority 9 (45%) of them had normal saturation level and 7(35%) had a mild condition and 4(20%) had moderate and none of them severe condition on oxygen saturation among ARDS patient.

However, **Rossetti, H B**, didn't found any significant associations between Prone Position response and age, gender, weight, PEEP level, tidal volume, respiratory rate, PaO<sub>2</sub>/ FiO<sub>2</sub> or duration of mechanical ventilation were detected. <sup>4</sup> Similarly, current study also not found significant association between prone position and demographical data (age, gender) and clinical variables.

A study carried out by **Simin Jahani B**, study the prone position has a significant relation to Oxygen Arterial Blood (Sao<sub>2</sub>) and Pressure of Arterial Oxygen (pao<sub>2</sub>), (p-value<0.05).<sup>5</sup> However, there was no significant relationship between the prone position and physiological signs. In present study, the pre-test mean score of before intervention 91.3 it was increase up to 94.1 in post-test. But calculated't value is 5.984 is <0.05 level of significance. Prone position was found significant in improving oxygen saturation among ARDS patient there is no similar results in my study<sup>2</sup>

## **Conclusion**

This chapter deals with the analysis and interpretation of the data Description of the samples according to their biological parameter characteristics, Assess the oxygen saturation before prone position among acute respiratory distress syndrome patients. Assess the effectiveness of prone position on oxygen saturation among acute respiratory distress syndrome patients. Find out the association between before prone position on oxygen saturation and selected demographic and clinical variables

**Ethical Clearance:** Ethical clearance was obtained from institutional ethical committee of Sumandeep Vidyapeeth Deemed University, Vadodara. Informed consent was drawn from study participants.

## **References**

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