Research Article

A COMPARATIVE STUDY TO ASSESS THE EFFECTIVENESS OF SUPINE POSITION VERSUS PRONE POSITION ON IMPROVING OXYGEN SATURATION AMONG PATIENTS WITH RESPIRATORY DISORDER ADMITTED IN RESPIRATORY UNITS IN SELECTED HOSPITAL, GUWAHATI, ASSAM

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ABSTRACT

Body positioning is one of the method that optimize oxygen transport by manipulating effect of gravity on cardiopulmonary and cardiovascular function. Positioning should be an integral part of respiratory care, especially when prophylaxis is aimed. Turning patient supine to lateral to prone to lateral, at least hourly makes a difference between living and dying for intensive care patient. Positioning reduces atelectasis and improves gas exchange. Quantitative research approach with Pre-experimental (One-group pretest-posttest) design was adopted for this study. Purposive Sampling Technique with sample size of 57 was adopted in this study. The tool used for data collection was Demographic Performa and Clinical Measurement Performa. The analysis was done by using both descriptive and inferential statistics in terms of frequency distribution, percentage, mean, standard deviation, paired 't' test. Paired t-test was used. The findings of the study revealed that there was significant difference between supine position (t-value=1.25, which was not significant at p<0.05 level of significance) and prone position (t-value=3.70, which was significant at p<0.05 level of significance) on improving oxygen saturation among patients with respiratory disorder. On the basis of the findings, the researcher concluded that prone position is more effective than supine position on improving oxygen saturation among patients with respiratory disorder and the researcher believed that prone position might be helpful and can be applied as a non-pharmacological therapy in the nursing care with respiratory disorder.

INTRODUCTION

Body positioning is one of the method that optimize oxygen transport by manipulating effect of gravity on cardiopulmonary and cardiovascular function. Positioning should be an integral part of respiratory care, especially when prophylaxis is aimed. Body positions that stimulate the normal physiological effects of gravity and position change on oxygen transport are the clinical priority, being "upright and moving" is the physiological body positions. Whether body positions are assumed actively by the patient or the patient is positioned passively by the physical therapist depends on the patient's status and needs.[1]

According to a report by the World Health Organisation (WHO) 2015, the deaths due to lung diseases in India were on the rise accounting for 11 per cent of the total deaths. As many as 142.09 in every one lakh, died of one form of lung disease or the other giving India the dubious distinction of ranking first in lung disease deaths in the world.[2]

MATERIALS AND METHOD

In this study Pre-experimental (One-group pretest-posttest) design was adopted. 57 patients with respiratory disorder such as Pneumonia, Pleural Effusion, COPD, Bronchitis who were admitted in respiratory units of Gauhati Medical College and Hospital, Guwahati, Assam were selected by using purposive sampling technique. Data was collected by using Clinical Measurement Performa. To ensure the reliability of the tool, portable pulse oximeter was sent to the physics laboratory of Assam Downtown University for the calibration. The tool consists of measurement of 4 medical parameters that includes Respiratory rate, Heart rate, Oxygen saturation and Blood pressure which has been monitored at the beginning and ending of each of the 30 minutes of supine position and prone position. Ethical permission has been taken from the ethical committee

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of Assam downtown University as well as from the Gauhati Medical College and Hospital, Gauhati, Assam.

The analysis was done by using both descriptive and inferential statistics in terms of frequency distribution, percentage, mean, standard deviation, paired 't' test.

RESULT AND DISCUSSION

The findings of the study showed that Majority 39 (68.4%) of the patient were male, Maximum 27 (47.4%) of the patient belongs to the age group of 51 years and above, Maximum 24(42.2%)of the patients were unemployed, Maximum 23 (40.4%) of the Patients had a history of respiratory disorder for a duration of 6month-1 year, Maximum 29 (50.8%) of the patients had a history of smoking, Most of the patient i.e. 17 (29.8%) were diagnosed as COPD and 17(29.8%) of them had pleural effusion, Most of the patient i.e. 28 (49.1%) doesn't have any comorbid conditions, Majority 49 (85.9%) of the patient were without oxygen therapy prescription.

Table 1 Frequency and percentage distribution of demographic variables of patients with respiratory disorder

N=57

Sl. No.	Sample characteristics	Frequency (f)	Percentage (%)
1.	**Gender**		
	a) Male	39	68.4
	b) Female	18	31.6
2	**Age in Years**		
	a) 20-30	7	12.2
	b) 31-40	11	19.2
	c) 41-50	12	21.2
	d) 51 and above	27	47.4
3	**Occupation**		
	a) Unemployed	24	42.2
	b) Self employed	21	36.8
	c) Private job	9	15.8
	d) Govt. job	3	5.2
	a)		
4	**History of Respiratory Disorder**		
	a) yes with duration		
	i) <6month	16	28.2
	ii)6month- 1 year	23	40.4
	iii) >2year	13	22.8
	b) No	5	8.6
5	**History of Smoking**		
	a) Yes		
	b) No	29	50.8
		28	48.2
6	**Type of respiratory disorder diagnosed**		
	a) Pneumonia	11	19.2
	b) COPD	17	29.8
	c)Bronchitis	12	21.2
	d) Pleural effusion	17	29.8
7	**Presence of Comorbid Condition**		
	a) Heart disease		
	b) Blood disorder	10	17.5
	c) Thyroid disorder	4	7.1
	d) Any other	7	17.2
	e) No history of comorbid	8	14.1
	Condition	28	49.1
8	**Oxygen therapy Prescription**		
	b) Yes	8	14.1
	c) No	49	85.9

The data in table 1 showed the frequency and percentage distribution of selected demographic variables of the patient with respiratory disorder.

With regards to gender, majority 39 (68.4%) of the patient were male. Maximum 27 (47.4%) of the patient belongs to the age group of 51 years and above, Maximum 24(42.2%)of the patients were unemployed, Maximum 23 (40.4%) of the Patients had a history of respiratory disorder for a duration of 6month-1 year, Maximum 29 (50.8%) of the patients had a history of smoking. Most of the patients i.e. 17(29.8%) were diagnosed as COPD and 17(29.8%) of them had pleural effusion, Most of the patients i.e. 28 (49.1%) doesn't have any comorbid conditions. Majority 49 (85.9%) of the patients were without oxygen therapy prescription.

Table 2 Frequency and percentage distribution of medical variables on supine position

Parameter	pre-test		Post-test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Tachypnea	34	59.6	34	59.6
Bradypnea	1	1.8	1	1.8
Normal	22	38.6	22	38.6
Tachycardia	42	73.6	40	70.2
Bradycardia	1	1.8	1	1.7
Normal	14	24.6	16	28.1
Hypertension	28	49.2	29	50.8
Hypotension	24	42.1	23	40.4
Normal	5	8.7	5	8.8

At the beginning of the 30 minutes on supine position, majority (59.6%) of the patients had tachypnea, Majority (73.6%) of the patients had tachycardia, Maximum (49.2%) of the patients had hypertension.

Whereas at the ending of the 30 minutes on supine position, majority (59.6%) of the patients had tachypnea, Majority (70.2%) of the patients had tachycardia, Maximum (50.8%) of the patients had hypertension.

Table 3 Frequency and percentage distribution of medical variables on prone position

Parameter	pre-test		Post-test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Tachypnea	39	68.4	30	52.6
Bradypnea	1	1.8	3	5.2
Normal	17	29.8	24	42.2
Tachycardia	38	66.6	38	66.6
Bradycardia	3	5.2	4	7.1
Normal	16	28.2	15	26.3
Hypertension	28	49.1	24	42.2
Hypotension	21	36.8	15	26.3
Normal	8	14.1	18	31.5

At the beginning of the 30 minutes on prone position, majority (68.4%) of the patients had tachypnea, Majority (66.6%) of the patients had tachycardia, Maximum (49.1%) of the patients had hypertension Whereas at the ending of the 30 minutes on prone position, majority (52.6%) of the patients had tachypnea, Majority (66.6%) of the patients had tachycardia, Maximum (42.2%) of the patients had hypertension.

Table 4 Paired t-test assessing the effectiveness of supine and prone position on improving oxygen saturation among patients with respiratory disorders

N=57

Intervention	Section	Mean	Mean difference	Standard deviation (SD)	Standard deviation difference	t-value	df	Inference
Supine	Pre-test	94.3	0.2	3.17	0.14	1.25	56	NS
	Post-test	94.5		3.31				
Prone	Pre-test	94.3	0.5	3.39	0.12	3.70	56	S
	Post-test	94.8		3.51				

S=Significant, NS=Not significant at <0.05 level of significance

Table 4 showed that the results of the t value presented in the table indicates that there was significant difference between supine position and prone position in which prone position was more effective on improving oxygen saturation among patient with respiratory disorder. Hence, the research hypothesis (H_3) was accepted and null hypothesis was rejected.

DISCUSSION

An eight item Demographic Performa was used to collect the sample characteristics. The Performa includes gender, age, occupation, history of respiratory disorders, history of smoking, diagnosis, presence of comorbid conditions and oxygen prescriptions. With regards to Gender, Majority 39 (68.4%) of the patient were male, with regards to the Age, Maximum 27 (47.4%) of the patient belongs to the age group of 51 years and above. With regards of the Occupation, Maximum 24(42.2%) of the patients were unemployed. With regards to the History of respiratory disorders, Maximum 23 (40.4%) of the Patients had a history of respiratory disorder for a duration of 6month-1 year. With regards to the History of Smoking, Maximum 29 (50.8%) of the patients had a history of smoking. With regards to the Diagnosis, Most of the patient i.e. 17 (29.8%) were diagnosed as COPD and 17(29.8%) of them had pleural effusion. With regards to the presence of Comorbid conditions, Most of the patient i.e. 28 (49.1%) doesn't have any comorbid conditions. With regards to the Oxygen prescriptions, Majority 49 (85.9%) of the patient were without oxygen therapy prescription.

At the beginning of the 30 minutes on supine position, majority (59.6%) of the patient had tachypnea, Majority (73.6%) of the patient had tachycardia, Maximum (49.2%) of the patient had hypertension. Whereas at the ending of the 30 minutes on supine position, majority (59.6%) of the patient had tachypnea, Majority (70.2%) of the patient had tachycardia, Maximum (50.8%) of the patient had hypertension.

At the beginning of the 30 minutes on prone position, majority (68.4%) of the patient had tachypnea, Majority (66.6%) of the patient had tachycardia, Maximum (49.1%) of the patient had hypertension. Whereas at the ending of the 30 minutes on prone position, majority (52.6%) of the patient had tachypnea, Majority (66.6%) of the patient had tachycardia, Maximum (42.2%) of the patient had hypertension.

The results of the t value indicates that there was significant difference between supine position and prone position in which prone position was more effective on improving oxygen saturation among patient with respiratory disorder.

CONCLUSION

The present study was conducted to compare the effectiveness of supine position versus prone position among patients with respiratory disorder in selected hospital in Guwahati, Assam.
The findings of the study revealed that there was a significant difference between supine position (t-value=1.25, which was not significant at p<0.05 level of significance) and prone position (t-value=3.70, which was significant at p<0.05 level of significance) on improving oxygen saturation among patients with respiratory disorder.

On the basis of the findings, the researcher concluded that prone position was effective than supine position on improving oxygen saturation among patients with respiratory disorder and can be applied in the nursing care of the patients with respiratory disorder.

References

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