



COVID-19 AND BREATHING EXERCISE: EFFECT ON SPO2 LEVELS

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ABSTRACT

Background and aim: Breathing can help restore diaphragm function and increase lung capacity. In this study, we observed the effect of beathing exercise on Severity on covid-19 infection. **Methods:** A retrospective study of 20 COVID patients admitted at MSH, Palakwah, Una was conducted. Co-operative patients who were hemodynamically stable, and SpO2 90 to ≤93% on presentation, were included. All the patients were asked to perform breathing exercise everyday twice for 30 mins. **Results:** In this study, 10% in <41-year age group, 75% in 41-60 age group, and 15% aged above 60 years. 65% were males and 35% female. Obesity was the most common comorbidity (40%) followed by hypertension (35%). Mean duration of stay was 7.28±7.60 days. Face mask to 45% patients, Nasal prongs to 40% and NRBM to 15% patients. **Conclusion:** Breathing exercises improve SpO2 levels in Mild COVID-19 patients.

KEYWORDS : COVID-19, Breathing exercise, SpO2

INTRODUCTION

The World Health Organization (WHO) reported more than 43 million confirmed cases of SARS-CoV-2 infection and more than one million deaths globally,¹ with India contributing to >600,000 confirmed patients and >100,000 deaths until October 29, 2020.² The first patient in India was reported from Kerala,³ and gradually COVID-19 has engulfed the entire country. Patients with SARS-CoV-2 infection may have mild-to-asymptomatic illness, but some rapidly progress to acute respiratory distress syndrome (ARDS), multi-organ dysfunction syndrome (MODS) and death.⁴

Deep breathing can help restore diaphragm function and increase lung capacity. Deep breathing exercises can also lessen feelings of anxiety and stress, which are common for someone who experienced severe symptoms or was admitted to a hospital.⁵ In this study, we observed the effect of beathing exercise on Severity on covid-19 infection.

METHODS

This study included 20 patients with COVID-19 infection requiring oxygen supplementation. All patients were diagnosed with COVID-19 disease by RT-PCR (Real time-polymerase chain reaction) technique. Patients who were hemodynamically stable, SpO2 90 to ≤93% on presentation, and able to adjust their prone position were included in the study. Those who were hemodynamically unstable, drowsy, or uncooperative were excluded from the study.

Continuous vital signs were monitored. A wake prone position was explained to every patient and they were encouraged to spend as much time in prone position as they could tolerate. The target time in prone position was 5 to 6 hours per day. Pruning was performed 1 hour after meals to avoid gastrointestinal side effects. Specific COVID-19 treatment was given to all patients according to the institutional protocol which included remdesivir, dexamethasone, and low-molecular weight heparin. Target for discharging from HDU was SpO 2 of >95% and P/f ratio of >200 mm Hg. Patients were shifted toward when they were weaned off oxygen at least for 24 hours.

Data were presented as mean, standard deviation, frequency, percentage. Paired t- test was used to compare SPO 2 levels at different point of time. P value<0.05 was considered significant. Statistical analysis was performed using SPSS v21.0 (IBM, USA).

RESULT

In this study, 10% in <41-year age group, 75% in 41-60 age group, and 15% aged above 60 years. 65% were males and 35% female. Obesity was the most common comorbidity (40%)

followed by hypertension (35%). Mean duration of stay was 7.28±7.60 days (Table 1). Face mask to 45% patients, Nasal prongs to 40% and NRBM to 15% patients (Table 2).

Table 1: General characteristics

General characteristics	Frequency (n=20)	Percentage
Age		
<41	2	10%
41-60	15	75%
>60	3	15%
Sex		
Male	13	65%
Female	7	35%
Comorbidities		
Diabetes	4	20%
Hypertension	7	35%
Obesity	8	40%
COPD	1	5%
Mean hospital stay (day)	7.28±2.60	

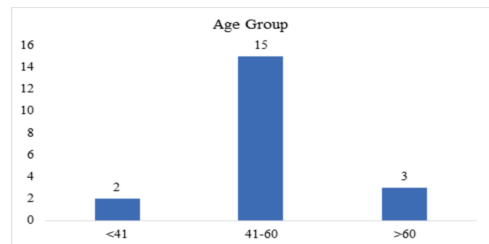


Figure 1: Age Group

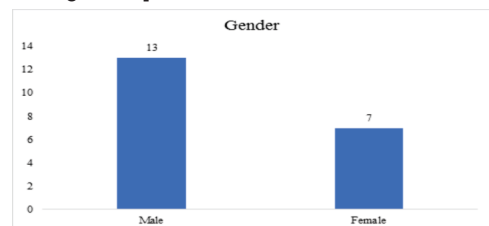


Figure 2: Gender

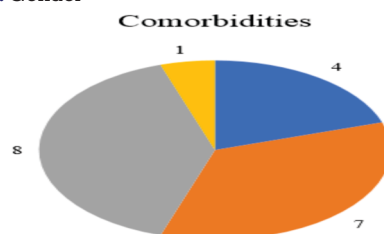


Figure 3: Comorbidities

Table 2: Mode of oxygen therapy

Mode of Oxygen therapy	Frequency (n=20)	Percentage
Face Mask	9	45%
Nasal Prongs	8	40%
NRBM	3	15%

Mode of Oxygen Therapy

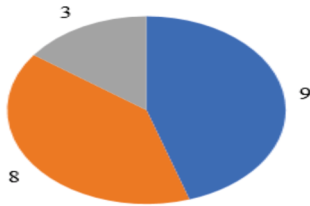


Figure 4: Mode of Oxygen Therapy

Effect of breathing exercise in SpO₂

We observed that breathing exercise significantly improved SpO₂ level from day-1 to the day of discharge.

Table 3: SpO₂

	On Day	Day-1	Day of Discharge
SpO ₂	90.55±5.70	96.30±2.10	99.10±2.30
P value	<0.0001		

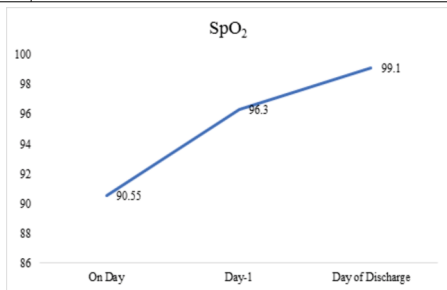


Figure 5: SpO₂

DISCUSSION

SARS-CoV-2 is one of the most virulent pathogens causing severe acute respiratory illness along with MERS and swine flu in humans. Initial case studies from China demonstrated COVID-19 to be a respiratory illness with a spectrum ranging from mild illness (81%), severe respiratory distress (14%) and critical illness in five per cent with a case fatality rate of around 2.4 per cent.⁶ Considerable disparities in demographic and clinical patterns have been observed between countries across different continents.

Patients in our study were younger (75% aged 41-60 years) compared to those in China (median age – 56 yr.),⁷ New York (median age – 63 yr),⁸ or Italy (median age – 63 yr).⁹ Although similar age pattern (mean age of 40.3 yr) was observed in a study done by Gupta et al.¹⁰ at another tertiary care hospital from northern India.

According to the American Lung Association, “If practiced regularly, breathing exercises can help rid the lungs of accumulated stale air, increase oxygen levels and get the diaphragm to return to its job of helping you breathe.” We observed that breathing exercise significantly improved SpO₂ level from day-1 to the day of discharge. There are no studies in literature as per our knowledge, evaluating the role of breathing exercise in COVID-19 patients.

CONCLUSION

Breathing exercises improve SpO₂ levels in Mild COVID-19 patients.

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