



## TO STUDY THE CLINICAL EFFECTIVENESS OF NON INVASIVE VENTILATION COMPARED WITH OXYGEN THERAPY IN PATIENTS WITH BILATERAL PNEUMONIA AND TYPE I RESPIRATORY FAILURE

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### ABSTRACT

**Aim** To study the clinical effectiveness of non invasive ventilation compared with oxygen therapy in patients with bilateral pneumonia and type i respiratory failure. **Material And Methods** The design of present research study is Observational/Comparative study. Patients attended the OPD, IPD and referred from other departments to the Department of Pulmonary Medicine for detection of bilateral pneumonia. However, patients who were clinically diagnosed with bilateral pneumonia are included in the study according to inclusion-criteria. The duration of present study was three month, January 2021 to April 2021. **Result** This was documented that non-invasive ventilation found to be more clinically effective in patients diagnosed with bilateral pneumonia and type 1 respiratory failure as compared to oxygen therapy.

### KEYWORDS :

#### INTRODUCTION

Pneumonia is a disease known to humanity from antiquity. Pneumonia is an acute inflammation of the pulmonary parenchyma that can be caused by various infective and non-infective origins, presenting with physical and radiological features compatible with the pulmonary consolidation of a part or parts of one or both lungs. Pneumonia is one of the leading causes of death and morbidity, both in developing and developed countries and is the commonest cause (10%) of hospitalization in adult and children.

Clinical manifestations of pneumonia include sudden onset of fever with or without chills, cough production with purulent sputum, shortness of breath, pleuritic chest pain. Extrapulmonary symptoms like headache, myalgia, fatigue, sore throat, nausea, vomiting and diarrhea are also common. The diagnostic tests can be done by specialized laboratories in many countries. Reverse transcriptase-polymerase chain reaction (RT-PCR) will provide the most timely and sensitive detection of the influenza infection. Samples from the upper respiratory tract, including a combination of nasal or nasopharyngeal samples, and a throat swab are advised. Respiratory Failure is one of the complications of disease process, which needs aggressive treatment with oxygen therapy, non invasive ventilation or invasive ventilation, depending on the severity of disease and if left untreated can lead to death of the patient.

This study attempts to study the clinical effectiveness of non invasive ventilation compared with oxygen therapy in patients with bilateral pneumonia and type 1 respiratory failure. The purpose of undertaking this study is to study biochemical parameters, association of risk factors and end result of patients with bilateral pneumonia and type 1 respiratory failure. There is a lack of scientific research in our population that shows the clinical effectiveness of non invasive ventilation compared with oxygen therapy in patients with bilateral pneumonia and type 1 respiratory failure.

#### AIM & OBJECTIVES

To study the clinical effectiveness of non invasive ventilation compared with oxygen therapy in patients with bilateral pneumonia and type 1 respiratory failure.

To study cases of bilateral pneumonia. To study biochemical parameters of patient with bilateral pneumonia. To study the end result of patient with bilateral pneumonia. To study association of risk factors in both groups.

#### MATERIAL AND METHODS

##### Research Design:

The design of present research study is Observational/Comparative study.

##### Subjects:

Patients attended the OPD, IPD and referred from other departments to the Department of Pulmonary Medicine for detection of bilateral pneumonia. However, patients who were clinically diagnosed with bilateral pneumonia are included in the study according to inclusion-criteria.

##### Study Duration:

The duration of present study was three month, november 2021 to feb 2022.

#### RESULT & DISCUSSION

A total of one hundred patients who were clinically diagnosed with bilateral pneumonia and type I respiratory failure who either received noninvasive ventilation (group 1) or oxygen therapy (group 2) had participated in the present study. All selected patients were planned to generate the comparative clinical effectiveness of noninvasive ventilation compared with oxygen therapy in patients with bilateral pneumonia and type 1 respiratory failure for this observational/comparative study purpose.

Comparison between risks factors of two groups demonstrated that smoking, alcoholism and chronic lung disease found to be more prevalent among patients of group 2

treated with oxygen therapy as compared to group 1 treated with non-invasive ventilation. Further, comparison between risks factors of two groups also showed that the upper respiratory tract infections were more prevalent among patients diagnosed with bilateral pneumonia of group 1 treated with non-invasive ventilation as compared to group 2 treated with oxygen therapy.

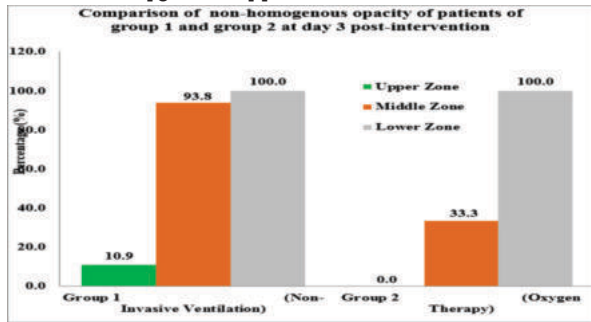


Figure 1.0- Bar diagram presented the assessment of chest x-ray examination of between selected patients of group 1 (NIV) and group 2 (OT) at day 3 post-intervention.

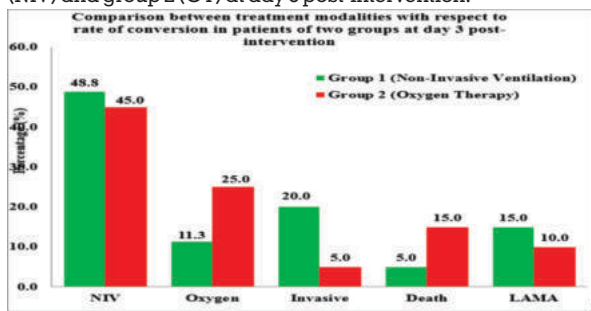


Figure 2.0- Bar diagram presents the assessment and comparison between treatment modalities with respect to rate of conversion among patients of group 1 (NIV) and group 2 (OT) at day 3 post intervention.

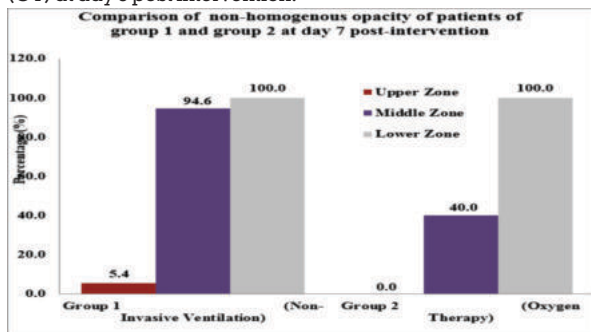


Figure 4.8- Bar diagram presented the assessment of chest x-ray examination between selected patients of group 1 (NIV) and group 2 (OT) at day 7 post-intervention.

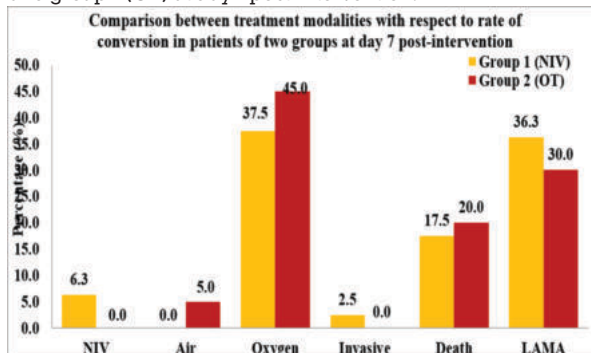


Figure 3.0- Bar diagram presents the assessment and comparison between treatment modalities with respect to rate of conversion of modalities among patients of group 1 (NIV) and group 2 (OT) on day 7 post intervention.

Further, analysis reported that the upper respiratory tract infection found more common among patients of group 1 (31.3%) diagnosed with bilateral pneumonia as compared to patients of group 2 (25.0%) diagnosed with bilateral pneumonia. This was noted that smoking (20.0%) and alcoholism (15.0%) found to be more prevalent among patients diagnosed with bilateral pneumonia of group 2 as compared to smoking (13.8%) and alcoholism (2.5%) among patients diagnosed with bilateral pneumonia of group 1. Analysis about chronic lung diseases showed that the patients diagnosed with bilateral pneumonia of group 2 (15.0%) were more prone to chronic lung diseases as compared to patients diagnosed with bilateral pneumonia of group 1 (7.5%). Lastly, this was also documented that none (0.0%) of the patients either belonged to group 1 or group 2, observed immunosuppression (HIV/AIDS). The comparison of outcomes between non-invasive ventilation and oxygen therapy among survived patients with bilateral pneumonia and type 1 respiratory failure were carried out after intervention among survived patients at day 3 and day 7 post interventions.

However, the comparison between outcomes of modalities was done to observe the conversion rate of modalities among patients such as from non-invasive ventilation to oxygen therapy or vice versa or from non-invasive ventilation to invasive ventilation or oxygen therapy to invasive ventilation etcetera among survived patients on day 3 and day 7 post intervention. However, the deaths and cases that left against medical advices were also taken into account. The comparison between non-invasive ventilation and oxygen therapy among patients with bilateral pneumonia and type 1 respiratory failure was carried out to compare the clinical effectiveness of noninvasive ventilation as compared to oxygen therapy in patients.

The comparison between non-invasive ventilation and oxygen therapy at day 3 revealed that the statuses of most of the patients of group 1 intervened with non-invasive ventilation found to be improved as compared to oxygen therapy.

Overall, comparison in effectiveness of modalities demonstrated on day 3 post interventions that there was large improvement (60.0%) in outcome of the non-invasive ventilation as compared to deterioration (50.0%) by oxygen therapy.

**CONCLUSION**

The comparison between non-invasive ventilation and oxygen therapy demonstrated that the post intervention statuses at day 7 of most of the patients of group 1 intervened with non-invasive ventilation found to be better and improved as compared to oxygen therapy. This was documented that non-invasive ventilation found to be more clinically effective in patients diagnosed with bilateral pneumonia and type 1 respiratory failure as compared to oxygen therapy.

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