

# Awareness of respiratory distress among college students -A questionnaire-based study

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## ABSTRACT

**Introduction:** Respiratory distress is defined as an inappropriate degree of breathing effort based on an assessment of respiratory rate, rhythm, and character. Acute respiratory distress syndrome (ARDS) is a medical emergency. It can occur in people who already have lung disease or in those with previously normal lungs. This disorder used to be called adult respiratory distress syndrome, although it can occur in children. The most important aspect of the evaluation of a child with respiratory distress is observation of the child's breathing pattern and a brief, directed history and physical examination. Once the cause is identified, treatment should be started quickly to avoid progression to respiratory failure. Any disease or condition that injures the lungs can cause ARDS. More than half of the people with ARDS develop it as a consequence of a severe, widespread infection (sepsis) or pneumonia. **Materials and Methods:** A total of 100 college-going students participated in the survey. 12 questionnaires were prepared and linked to online SurveyPlanet. Awareness of respiratory distress and its related complications was surveyed and results were obtained. **Results:** Results obtained were analyzed through pie charts and bar graphs. Major four responses were taken into consideration which was of high importance in the study and by analysis 16 students are at a high risk of having ARDS. **Conclusion:** Not many these days are aware of the complications of ARDS. The smallest incident that might have taken place in an individual childhood which affected the lung can have a life-threatening condition later in life.

**KEY WORDS:** Acute respiratory distress syndrome, Chronic obstructive pulmonary disease, Survey planet

## INTRODUCTION

Respiratory distress or otherwise called as acute respiratory distress syndrome (ARDS) is a severe lung condition which occurs when fluid fills up the air sacs in the lungs. It can also be caused due to serious trauma. Most patients with ARDS require a period of artificial ventilation on an intensive care unit (ICU) to survive. Although ARDS is reasonably uncommon in population terms, the treatment is very resource intensive and comprises a substantial proportion of the workload of most ICUs. ARDS is also defined as an acute life-threatening inflammatory lung injury with clinical manifestation of hypoxia and stiff lungs due to increased pulmonary vascular permeability and almost always requiring mechanical ventilation support.<sup>[1]</sup>

ARDS was also called previously as acute lung injury both are characterized by rapid onset of respiratory failure following a variety of direct and indirect lung insults. Ashbaugh *et al.*, in 1967, first described ARDS<sup>[2]</sup> and since then, there have been multiple studies addressing the various clinical aspects of the syndrome, its pathogenesis, risk factors, and treatment. However, despite the intense research, only few effective therapies for ARDS have been postulated, including the lung protection strategies. Multitude of etiologies is present which have the potential to trigger the clinical syndrome of ARDS which can be grouped as direct and indirect causes of the disease. Direct causes would include those that cause primary injury to the lung epithelium, such as pneumonia, aspiration, toxic inhalation, and drowning. Indirect causes would include those that cause lung injury in the setting of systemic inflammation and diffusely damage the vascular endothelium of the lung. These include but are not limited to extrapulmonary sepsis, non-cardiogenic shock, trauma, transfusions,

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Q1 Age: \*

Q2 In your opinion do you think respiratory distress is a serious problem today? \*

Q3 Have you had any fast breathing or shortness of breath at rest? \*

Q4 In your opinion does air pollution have an effect on respiratory distress? \*

Q5 Are you exposed to any toxic substances or smell you are allergic of? \*

Q6 Does anyone in the family have respiratory disorders? \*

Q7 Have you had any injuries from car accidents or fall that affected the lung and breathing? \*

Q8 Do you often have confusion or exhaustion? \*

Q9 Do you smoke or does anyone surrounding you or your family members smoke? \*

Q10 Have you had any lung related issues or disorders? \*

Q11 Did you have any breathing related issues as an infant? \*

Q12 Have you had any uncomfortable breathing problems while sitting? \*

Figure 1: The questionnaire

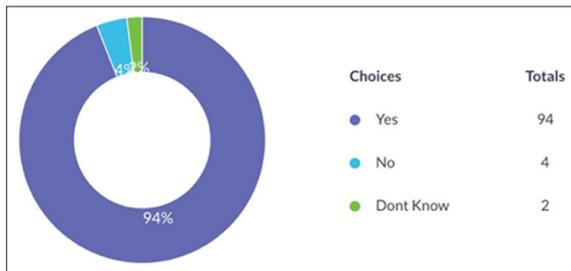


Figure 2: Smoker

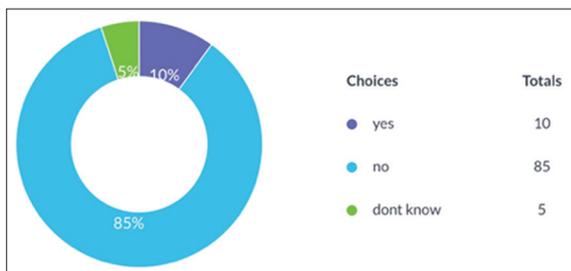


Figure 3: Accident that injured lung

pancreatitis, drug overdose, and vasculitis.<sup>[3,4]</sup> Once these insults provoke a dysregulated host systemic inflammatory response in the lung, ARDS develops within the first 12–48 h of exposure. Diffuse injury to the alveolar capillary membrane precipitates edema of the airspaces and interstitium with the development of a protein-rich neutrophilic exudate compromising gas exchange and reducing lung compliance.<sup>[2]</sup>

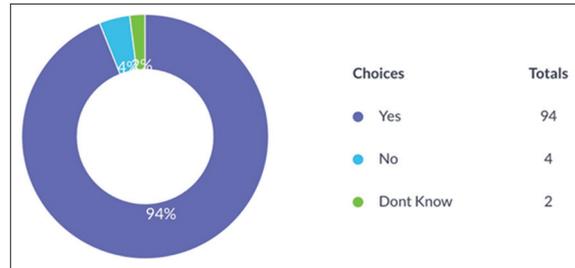


Figure 4: Serious disorder

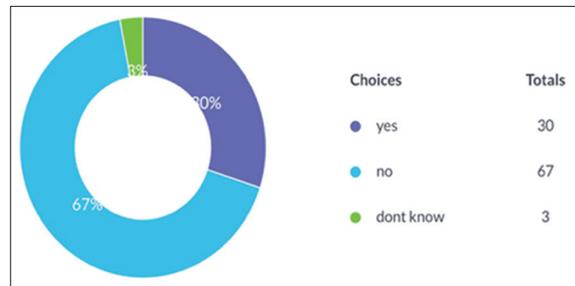


Figure 5: Hereditary

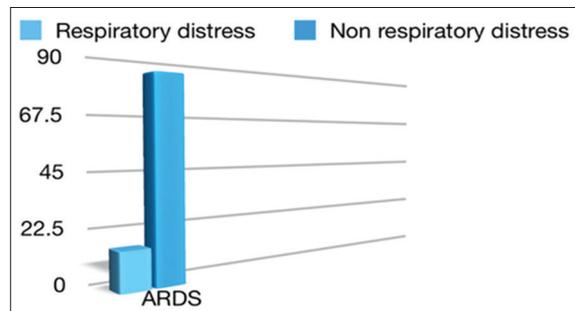


Figure 6: Number of individuals who are affected

ARDS is divided into three categories: Mild, moderate, and severe. The category is determined by comparing the level of oxygen in the blood with the amount of oxygen that needs to be given to achieve that level. For a clinician in 2015, the main consequences of making the diagnosis of ARDS concern the supportive therapy he or she will apply to the patient. Three major physiological derangements are considered: First, a major defect in oxygenation; second, a poor efficiency of the lungs at eliminating CO<sub>2</sub>; and third, a major reduction in lung volumes and compliance making ARDS a severe restrictive lung disease. For each component, the key issue in daily management is the price to pay to improve the physiological consequences of these problems.<sup>[5]</sup> It took many years to realize that the price of normalizing physiological parameters was often unacceptably high and to put the problem of visual inspection with Lugol’s iodine central to our clinical approach.<sup>[6]</sup> Thus, evaluating the three components is essential since the management strategy may be based on this assessment: (i) Assessment of gas exchange and oxygenation, which includes the influence of hemodynamics or intracardiac shunt, (ii) dead space,

which can be assessed grossly by calculating the “corrected” level of minute ventilation that would be needed for normalizing arterial CO<sub>2</sub> tension,<sup>[7]</sup> and (iii) lung volume assessed indirectly through the decrease in compliance or directly by measuring end-expiratory lung volume.<sup>[8]</sup>

Measurement of esophageal pressure helps to determine the lung mechanics and separate the effect of the chest wall.<sup>[9]</sup> In addition, the assessment of lung recruitability may be of great help to individualize the settings for mechanical ventilation and choose the level of positive end-expiratory pressure needed to keep the lung sufficiently open to minimize the risks of repeated opening and closing of alveoli. In addition, we now have better knowledge of what may worsen ARDS and this knowledge has been used to try to prevent the development of ARDS. Moreover, the number of ventilator-free days declined from mild to severe ARDS, and the more severe stages of ARDS were associated with a progressive increase in lung weight as evaluated by computed tomography scan and shunt fraction.

The reliability of the chest radiographic criteria of ARDS has been demonstrated to be moderate, with substantial interobserver variability.<sup>[10,11]</sup>

Early identification of patients at risk for developing ARDS and implementation of preventive strategies becomes an important approach for critically ill patients admitted to ICU, particularly patients receiving mechanical ventilation. ARDS is not frequently present at the time of visiting the emergency room or hospital admission, and it frequently occurs over a period of hours to days following the clinical insult. A large multicenter observation study demonstrated that ARDS develops within a median of 2 days after hospital admission and also markedly increases in-hospital mortality in this patient population.<sup>[12]</sup>

Many patients, therefore, develop ARDS during hospital admission due to a second hit, but from potentially preventable exposures. Ahmed *et al.*<sup>[13]</sup> demonstrated that inadequate antimicrobial therapy, medical and surgical adverse events, hospital-acquired aspiration, ventilation with high tidal volumes, and greater volumes of blood transfusion and fluid administration were significantly associated with the secondary development of ARDS.

There are many risk factors and etiologies of ARDS; hence, this study will provide an accurate knowledge about ARDS for students who are unaware.

## MATERIALS AND METHODS

A cross-sectional-based study is conducted among 100 college-going students. A survey-administered

questionnaire was prepared to assess and evaluate the awareness of respiratory distress among college students [Figure 1]. The questionnaire was prepared through online SurveyPlanet. The data were collected and results are obtained through pie charts and bar graphs.

## RESULTS

The data was systematically collected and statistically analyzed. Results were interpreted and discussed in detail.

## DISCUSSION

From the data obtained from this study, 18 students reported smoking habits or people surrounding them who smokes [Figure 2]. Assessing the toxic effects of cigarette smoke in the respiratory tract requires consideration of the complexity of the mixture inhaled and the possibility of synergistic interactions among its many components. Although it is little studied, the possibility of numerous interactions has great plausibility due to the myriad components of cigarette smoke and the interlocking pathways of lung injury. 10 students reported that they faced accidents during childhood or as an infant [Figure 3]. Neonatal respiratory distress is a syndrome in premature infants caused by developmental insufficiency of pulmonary surfactant production and structural immaturity in the lungs. It can also be a consequence of neonatal infection.<sup>[14-16]</sup> Sepsis, bacterial pneumonia, multiple trauma, and aspiration pneumonia are the most common predisposing factors, accounting altogether for more than 70% of cases.<sup>[17]</sup> Overall, mortality from ARDS has not decreased substantially since the publication of the 1967 report, and the current survival rate approximates 45% in all major epidemiological series.<sup>[18,19]</sup> Sepsis-related ARDS has a higher overall disease severity, poorer recovery from lung injury, and higher mortality than non-sepsis-related ARDS.<sup>[20]</sup>

Ninety-four students accepted that respiratory distress is becoming a serious problem today [Figure 4]. 30 students reported their families having lung disorders and lung-related issues [Figure 5]. Chronic obstructive pulmonary disease (COPD) is one of the most common respiratory diseases and is projected to be the fourth leading cause of death worldwide by 2030 and places a huge economic burden on society. The main risk factor for COPD is smoking; however, air pollutants, respiratory infections, genetic factors, and hereditary are among other risk factors of COPD.<sup>[21]</sup>

By analysis as a whole, 16 positive responses were obtained by students who are at a risk of having respiratory distress syndrome [Figure 6]. Studies

have also shown that ARDS most commonly affects hospitalized people who are very ill.

As part of the therapy for the underlying disease, patients with ARDS invariably require mechanical ventilation to decrease the work of breathing and to improve oxygen transport.

## CONCLUSION

Respiratory distress or ARDS has higher risks, complications, and mortality rates. Major four responses taken from the survey that is smoking, trauma, accidents, and lung disorders are said to have higher chances of developing ARDS. Early detection and prevention is necessary for survival.

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