

ORIGINAL ARTICLE

The Frequency of Dyspnea among Patients Presenting to the Emergency Department of Tertiary Care Hospital

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ABSTRACT

Dyspnea is a frequent presenting symptom in emergency rooms across the world, and it can be difficult to diagnose. The goal of our research is to determine the prevalence of dyspnea among the patients who visit our hospital emergency department.

Place and Duration: In the Pulmonology and Medicines department of Avicenna Teaching Hospital, DHA Lahore and Akhtar Saeed Trust Teaching Hospital, Lahore for six months duration from 21st January 2021 to 20th July 2021.

Methods: In the Emergency and Pulmonology department of hospital, a cross-sectional study was conducted after receiving agreement from the institutional review committee. The consecutive sampling approach was used to acquire a total of 400 samples. As part of standard procedure, all patients were triaged at the emergency room. After receiving consent permission from the patient or carer, the participants were accepted into the research. For binary data, a point estimate with a 95% confidence interval, as well as frequency and percentage, were generated. R 3.5.3 was used to conduct the statistical analysis (2019-03-11).

Results: The frequency of dyspnea among patients who attended a tertiary care hospital and emergency department was 54 (13.5 percent) at the 95 percent confidence level (4.2-15.2 percent). The red, orange, and yellow groups were allocated to 14 (13.1 percent), 50 (46.7 percent), and 43 (40.2 percent) patients, respectively. The median age was 64, and 74 (69 percent) of those who took part were under the age of 60. Sixty-seven (62.6%) of the participants were females, whereas 40 (37.34%) were males. Ambulances were used by 44 (41.1 percent) of the persons who arrived. Cough and fever were the most common linked symptoms, accounting for 59 (51.1%) and 44 (41.1%) of all cases, respectively.

Conclusions: In comparison to previous researches, the prevalence of dyspnea among patients accessing our hospital's emergency department is greater. For quality improvement, this necessitates systematic and rapid dyspnea management.

Keywords: Dyspnea, Shortness of breath, Chronic obstructive pulmonary diseases, Emergency medicine

INTRODUCTION

Dyspnea, often known as shortness of breath, is a communal complaint in emergency rooms across the world¹⁻². It can be difficult to diagnose in an emergency room since it might be the predominant symptom of cardiovascular, respiratory, metabolic, neuromuscular, as well as obesity³⁻⁴. Despite the fact that numerous researches on dyspnea in EDs have been published from high-income countries, Dyspnea is unknown in our community in terms of prevalence, distribution, diagnostic method, treatment method, and outcomes⁵⁻⁶. ED treatment should be standardized in low-income countries like Pakistan so as to avoid unintended waste of scarce resources. The study's findings might be utilized to guide more cost-effective techniques for enhancing the quality of patient treatment in the emergency department. In this study, the primary goal was to determine how common dyspnea is among patients in an emergency department at a tertiary care hospital.

METHODOLOGY

This descriptive cross-sectional research study conducted was at the department of Pulmonology and Emergency department of Avicenna Teaching Hospital, DHA Lahore and Akhtar Saeed Trust Teaching Hospital, Lahore for six

months duration from 21st January 2021 to 20th July 2021. All patients were triaged as part of regular protocol. If a patient over the age of 18 appeared to the hospital emergency department with objective or subjective evidence of dyspnea, the triage nurse notified the duty doctor. The individuals were admitted into the analysis after acquiring knowledgeable permission from the subject itself or caregiver. Dyspnea as a result of drug overdose/poisoning, trauma and unwillingness to provide permission were all ruled out. The sample size was determined using a 95% confidence interval, a 50% probability, and a 5% margin of error.

Using a non-response rate of 4%, 400 was the sample size and consecutive sampling method was used. The information was gathered on a pre-designed proforma and put into Microsoft Excel. R 3.5.3 was used to conduct the statistical analysis. 95 percent probability estimate for binary data, the CI was generated along with the percentage and frequency.

RESULTS

The prevalence of dyspnea was 54 (13.5%) (4.2-15.2 percent) with 95 percent CI among 400 patients who visited to our hospital emergency department. The patients median age presenting with dyspnea as their predominant

complaint was 65 years (IQR=55-73), with 33 (61.1%) of those under 60 years old. 36 of them (66.7%) were ladies. A total of 28 patients (51.8%), came via ambulance. 9 (16.7%), 25 (46.3%), and 20 (37.1%) patients were allocated to the red, orange, and yellow groups, correspondingly. 7 (77.8%) patients were assigned to the red group, followed by 12 (48%) and 5 (25%) patients assigned to the orange and yellow categories who reached via ambulance (Figure 1)

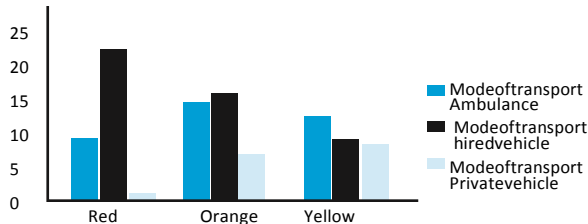


Figure 1: Mode of transport conferring to the triage category

Table 1: shows the characteristics of patients.

Variable	n (%)
Age in years Median (IQR)	65 (55-73)
Gender	
Female	36 (66.7)
Male	18 (33.3)
Education	
No formal education	38 (70.4)
Primary level	19 (35.2)
High school	7 (12.9)
Higher education	8 (14.8)
Triage category	
Red	9 (16.7)
Orange	25 (46.3)
Yellow	20 (37.1)
Green	0 (0)
Mode of arrival	
Ambulance	28 (51.9)
Borrowed vehicle	17 (31.5)
Own vehicle	9 (16.7)
Smoking status	
Non-smoker	21 (38.9)
Active smoker	10 (18.5)
Past smoker	23(42.6)
Comorbidities	
Chronic Obstructive Pulmonary Disease	29 (53.7)
Diabetes	5 (9.3)
Cardiac	4 (7.4)
Hypertension	3 (5.6)
Asthma	2 (3.7)
Alcoholism	2 (3.7)
Others	6 (11.1)
None	3 (5.6)
Dyspnea duration in days Median (IQR)	4 (2-7)
Earlier EDvisits	27 (50)
Usage of domiciliary oxygen	11 (20.4)

15 patients (27.8%) were current smokers.29 of the patients (53.7%) had chronic obstructive pulmonary disease (COPD), and 11 (20.4%) required facility-based oxygen therapy. Patients visited the emergency department in 53.7 percent of cases last year.3 patients (10.3%)

presented within one week, 7 (24.1%) within one to four weeks, 12 (41.4%) within one to six months, 4 (13.8%) among 6-12 months, and 3 (10.3%) within one year. 27 patients (50%) have previously been admitted to the hospital (Table 1).

Cough, fever, chest discomfort, and edoema were all associated symptoms. The most common investigations done on 48 (88.9%) and 46 (85.2%) patients, respectively, were CBC and RFTS. The ECG and CXR were performed on 38 (70.4%) and 36 (66.7%) of the patients, respectively. In 6 (11.1 percent) of the patients, a lung ultrasonography was performed.As shown in figure 1, symptoms were classified to diagnose affecting the respiratory & cardiovascular 7 (12.9%), respiratory system (46.3%), metabolic 6 (11.1), neuropsychiatric 4 (7.4%), cardiovascular 2 (3.7%), & gastrointestinal symptoms 3(5.5%).

Table 2: Diagnosis of the cases.

Variable	n (%)
ED Diagnosis	
Respiratory	25 (46.3)
Cardiovascular and Respiratory	7 (12.9)
Metabolic	6 (11.1)
Respiratory with others	5 (9.3)
Neuropsychiatric	4 (7.4)
Cardiovascular	2 (3.7)
Gastrointestinal	3 (5.5)

A total of 26 people (48.1%) were hospitalized. In the medical ward, 20 patients (76.9%) were hospitalised, while 6 patients (23.1%) were admitted to the ICU/HDU. Patients stayed in the ED for one to twenty hours before being decided for discharge from the ED. 4 patients in the red category (44.4%) were hospitalised, whereas 13 patients in the yellow group (65%) were discharged.

DISCUSSION

Dyspnea is a common ED presentation, according to our research, with an13.5% prevalence rate. 48.1% percent of these patients needed to be admitted to the hospital, indicating that they were a significant user of acute healthcare resources⁷⁻⁸. The respiratory system was the most prevalent diagnosis (46.3 percent)⁹. In addition, 16.7% of patients reported undifferentiated mix conditions [respiratory and cardiovascular disorders (12.9%) or respiratory diseases combined with others (9.3%)]. This has consequences for service delivery, protocol-based treatment, and training. Rather of focusing on a specific condition, we used a syndromic method to identify people with dyspnea¹⁰⁻¹¹. Because patients who appear to the ED do not have a predetermined diagnosis, this approach is critical. This presents a significant challenge to ED doctors, who must be armed with extensive information and a protocol-based approach in order to evaluate the likely aetiology and severity of the condition in order to provide appropriate therapy¹².

Kelly et al. conducted major research in Southeast Asia and Australasia to look at the diagnosis and outcomes of ED patients with dyspnea. No study has ever reported the prevalence of shortness of breath as the primary complaint of patients who present to a Pakistani hospital

emergency department¹³⁻¹⁴. However, a few studies on particular illnesses such as COPD and asthma have been conducted. According to Pakistan's Ministry of Health, chronic obstructive pulmonary disease is the third leading etiology of YLD and third leading cause of mortality (after IHD)¹⁵.

In a study of those exposed to biomass smoke, those who were exposed had a higher rate of respiratory symptoms, and city dwellers were more likely to have productive coughs¹⁶. The incidence, caseload, underlying cause, and patient outcomes with dyspnea that appear to the emergency room are all reported in this study, which is the first of its kind in Pakistan¹⁷. This study has frequency of dyspnea about 13.5%, which is analogous to studies completed in India (6.3%), Asia-Pacific area (6.3%) and Europe (7.4%). The highest numbers of cases of dyspnea were seen in a busy emergency department in Pakistan (behind renal colic and fever), stress the importance of collecting good statistics in low-resource settings for maximizing limited resources¹⁸⁻¹⁹. An additional study of ED patients found that patients with shortness of breath who were evacuated by ambulance had severe comorbidities and were more likely to end up in the hospital. Our analysis revealed a similar result, with 77.8 percent of patients classified as red coming by ambulance. There were 16.7 percent of patients who did not utilize ambulance services²⁰.

The utmost communal analyses were respiratory disorders and mixed systems (cardiovascular, respiratory and other indications), which agrees with Kelly et al's findings, which found that lower respiratory tract infection, COPD and heart failure accounted for more than 60% of cases, but there was a wide range of diagnoses²¹. COPD was shown to be the most common comorbidity in our study, with 20.4% of the patients requiring domiciliary oxygen. Dyspnea and a persistent cough are well-known COPD symptoms. Acute COPD exacerbation is a foremost reason of death and morbidity in South Asian countries²². A considerable number of dyspneic patients showed dangerous vital signs such as tachycardia (52.5 percent with pulse 120) and hypoxia at the time of presentation (75.5 percent with oxygen saturation). This could be due to the fact that lung ultrasound is a new technique with a small quantity of clinicians qualified in its use. Lung ultrasonography has been proven to have superior accurateness in monotonous clinical examination of dyspneic patients in the emergency department for discriminating aetiology of dyspnea²³. The authors found that the method can be implemented even in resource-constrained environments. We recognise that further research is needed in this area in order to enhance and standardise the quality of care in the ED without squandering Pakistan's limited resources. This study's findings have ramifications for future ED staff education. Given the lack of data in the ED context, this work might provide a useful basis for future research. Researchers might seek to improve treatment of dyspnea associated with mixed etiologies, observe quality improvement in COPD management, and to educate and fully use developing diagnostic methods such as lung ultrasonography, which are both viable and cost-effective even in resource-limited situations. Although our analysis

may not represent all Pakistan EDs, the population served by EDs includes both urban and rural residents. The diagnostic categories were determined by the treating ED physician's view, which may have changed after more assessment and investigation. The result of patients admitted to inpatient institutions was not followed in this study.

CONCLUSIONS

Dyspnea is more common than in previous research among patients who attend our hospital's emergency department. According to the study, the majority of dyspnea patients had a respiratory or respiratory with cardiac or other system involvement, and the findings may be used to design new evaluation, investigation, and therapy methods.

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