

Clinical management practices adopted by physiotherapists in India for chronic obstructive pulmonary disease: A national survey

Aripta Jingar, Gopala Krishna Alaparathi, Vaishali K, Shyam Krishnan, Zulfeequr, Unnikrishnan B¹

Departments of Physiotherapy, ¹Community Medicine, Kasturba Medical College (A constituent institute of Manipal University), Mangalore, India

ABSTRACT

Background and Objective: Evidence supports the use of pulmonary rehabilitation in the treatment of chronic obstructive pulmonary disease (COPD) patients both during acute exacerbation and at later stages. It is used in India; but, to date, there has been no study that has investigated the structure of pulmonary rehabilitation programs for COPD patients in India. The recent study aims to determine the current practice patterns of Indian Physiotherapists for COPD patients admitted in Intensive Care Units (ICUs) and wards in terms of assessment and treatment. **Materials and Methods:** A questionnaire-based survey was conducted across India. Questionnaires were distributed to around 800 physiotherapists via E-mail. Physiotherapists with a Master Degree and a specialization in cardiopulmonary science or a minimum of 1 year of experience in treating cardiopulmonary patients were included. The questionnaires addressed assessment measures and treatment techniques given to COPD patients. **Results:** A total of 342 completed questionnaires were received, yielding a response rate of 43.8%, with a majority of responses from Karnataka, Maharashtra and Gujarat. The assessment and treatment techniques used were almost similar between ICUs and wards. More than 80% of the responders carried out the assessment of certain respiratory impairments in both ICUs and wards. An objective measure of dyspnea was taken by less than 40% of the responders, with little attention given to functional exercise capacity and health-related quality of life. Eighty-five percent of the responders used Dyspnea-relieving strategies and traditional airway clearance techniques in both ICUs and wards. Eighty-three percent of the responders were giving patients in the wards training for upper and lower extremity. Fifty percent were giving strength training in the wards. **Conclusion:** Whether patients are admitted in ICUs or Wards, the practice pattern adopted by Physiotherapists to treat them vary very little with respect to certain measures taken. Assessment predominantly focused on respiratory impairment measures, followed by dyspnea-quantifying measures, with little attention given to functional exercise capacity and health-related quality of life measures. Treatment techniques given were concentrated on dyspnea-relieving strategies, airway clearance techniques and upper and lower extremity exercises, with little attention given to strength training.

KEY WORDS: Chest physiotherapy, chronic obstructive pulmonary disease, rehabilitation, survey

Address for correspondence: Mr. Gopala Krishna Alaparathi, Asst. Professor- Selection Grade, Department of Physiotherapy, Kasturba Medical College (A Constituent Institute of Manipal University), Bejai, Mangalore - 575004, India. E mail: alaparthigopal@yahoo.co.in

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is characterized by airflow limitation that is not fully

reversible and is usually both progressive and associated with an abnormal inflammatory response of the lungs to noxious particles or gases. Airflow obstruction in COPD results from chronic bronchitis and emphysema.^[1]

By 2020, globally speaking, COPD is expected to rise to the third position as the cause of disability-adjusted life years according to the baseline projections made in the Global Burden of Disease Study. In India, the prevalence of COPD is 4.1%, with a male to female ratio of 1.56:1, and the prevalence ratio in smokers and non-smokers is 2.65:1.^[2]

Individuals with moderate to severe COPD experience frequent episodes of transient worsening in health

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status during acute exacerbation.^[3] Acute exacerbation is characterized by dyspnea, increase in sputum purulence and increase in sputum volume.^[4] Patients experiencing frequent exacerbation are known to have a poor quality of life and an accelerated decline in lung function.^[5]

An Indian COPD patient spends about 30% of his income on disease management, and 70% of the cost goes for treatment of acute exacerbation.^[3,6] Medical care is given that is focused on lung pathology, but COPD patients also experience secondary impairments such as peripheral muscle, cardiac, nutritional and psychological dysfunction.^[7,8]

Evidence supports the use of pulmonary rehabilitation in the treatment of patients with COPD both in acute exacerbation and at later stages.^[5,9,10] Components of pulmonary rehabilitation such as dyspnea-relieving strategies, airway clearance techniques, upper and lower extremity training, strength training, inspiratory muscle training and positive expiratory pressure devices for sputum clearance have been proven to reduce dyspnea, improve exercise capacity and enhance the health-related quality of life and reduce the length of hospital stay.^[5,9-11]

Pulmonary rehabilitation is used in India for COPD patients,^[12] but, to date, there have been no studies that have investigated the structure of the pulmonary rehabilitation program in India for COPD patients. A study carried out in Canada attempted to plot the pattern of physiotherapy practice employed to treat cases of acute exacerbation of COPD in Canada.^[3]

Documenting current practice patterns is an important step in the development of best practice guidelines. Therefore, we undertook a survey to determine the current practices in the areas of assessment and treatment adopted by Indian physiotherapists' for the management of COPD patients admitted in both the ICU and the wards.

MATERIALS AND METHODS

Study design and protocol

The study was conducted after getting written approval from the Ethical Committee and the Time-Bound Research Committee of Kasturba Medical College, Mangalore. A prospective cross-sectional survey was conducted across India, in which around 800 questionnaires were sent to physiotherapists who held a Master's Degree in physiotherapy with a specialization in cardiopulmonary science or a minimum 1 year experience of treating COPD patients. The questionnaire was sent to participants via E-mail. The questionnaire used by us was a valid one, taken from a Canadian research article, with the permission of the author.^[3]

The questionnaire included questions regarding assessment measures and treatment techniques used

by physiotherapists for COPD patients. The assessment and treatment techniques that were asked depended on whether the patient in concern was admitted to the ICU or the wards. Answers had to fall into the grades: "Always," "Frequently," "Sometimes," "Rarely" and "Never."

Assessment measures were divided into impairment measures, dyspnea-quantifying measures, functional exercise capacity and health-related quality of life measures. Treatment techniques were divided into dyspnea-relieving strategies, traditional treatment methods and the use of mechanical devices for airway clearance and mobilization.

Statistical analysis

Responses were numerically coded to allow for descriptive summaries and frequency analysis of the data using SPSS version 16. Frequency variables regarding assessment, treatment and education were merged in order to create three responses; "always or frequently", "sometimes" and "rarely or never."

RESULTS

Response

A total of 800 questionnaires were distributed to physiotherapists in the following states: Andhra Pradesh, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal. A total of 342 questionnaires were completed and returned to us, the investigator. This made for a response rate of 42.75%. The majority of responders were from Karnataka ($n = 161$ [47.07%]), Gujarat ($n = 60$ [17.54%]) and Maharashtra ($n = 54$ [15.78%]) [Figure 1].

Assessment

The frequency with which different assessment measures were used in the ICUs and the wards are given in Tables 1 and 2 and Figures 2 and 3. More than 90% of the responders marked "always or frequently" for the component impairment measures for patients in the ICUS. These included physical examination ($n = 315$ [92.2%]), pulse oximeter ($n = 337$ [91.7%]), heart rate ($n = 337$ [98.5%]), respiratory rate ($n = 336$ [98.3%]), blood pressure ($n = 329$ [96.2%]) and chest X-ray ($n = 314$ [91.8%]). Arterial blood gas analysis was marked "always or frequently" by 88.3% ($n = 302$) of the responders. In dyspnea-quantifying measures, more than 40% of the responders used "always or frequently" on the Medical Research Council (MRC) dyspnea scale ($n = 158$ [46.2%]) and the Borg Scale ($n = 188$ [55%]).

More than 80% of the responders marked "always or frequently" for the impairment measures component of the assessment technique for patients in the wards. These included physical examination ($n = 300$ [87%]), heart rate ($n = 322$ [94.2%]), respiratory rate ($n = 335$ [98%]), blood pressure ($n = 311$ [91.1%]) and chest

X-ray ($n = 291$ [85.1%]). The other component of the impairment measures like pulse oximeter ($n = 266$ [77.7%]), arterial blood gas analysis ($n = 209$ [61.1%]), pulmonary function test ($n = 138$ [40.4%]) and peripheral muscle strength ($n = 203$ [59.4%]) were used with varying frequency. More than 40% of the responders marked “always or frequently” for dyspnea-quantifying measures

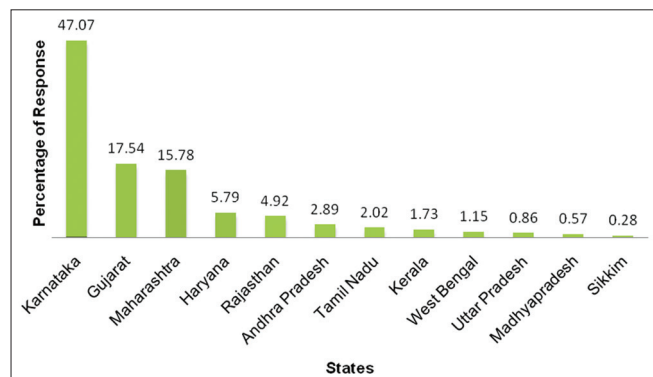


Figure 1: Response rate obtained from different states. The Y axis indicates the percentage of response from different states. The X axis indicates states where the questionnaires were sent

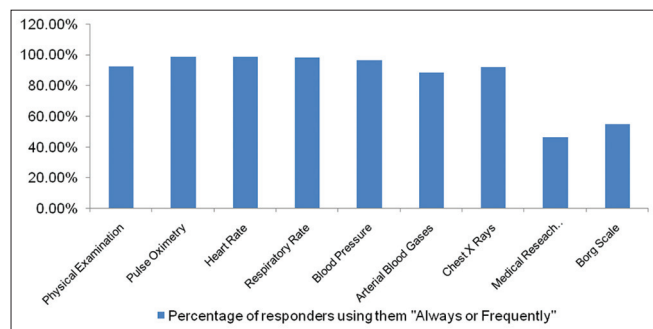


Figure 2: The assessment measures used in the Intensive Care Unit for chronic obstructive pulmonary disease patients

Table 1: The assessment measures used in intensive care units

Assessment measures	Always or frequently (%)	Sometimes (%)	Rarely or never (%)
Physical examination	315 (92.2)	23 (6.72)	4 (1.16)
Pulse oximetry	337 (98.5)	5 (1.46)	0
Heart rate	337 (98.5)	4 (1.16)	0
Respiratory rate	336 (98.3)	3 (0.9)	2 (0.6)
Blood pressure	329 (96.2)	32 (9.4)	3 (0.9)
Arterial blood gases	302 (88.3)	32 (9.4)	7 (2.5)
Chest X-rays	314 (91.8)	26 (7.6)	1 (0.3)
Medical research council dyspnea scale	158 (46.2)	91 (26.6)	91 (15.5)
Borg scale	188 (55)	75 (21.9)	78 (22.8)

Table 2: The assessment measures used in wards

Assessment measures	Always or frequently (%)	Sometimes (%)	Rarely or never (%)
Physical examination	300 (87.7)	40 (11.7)	2 (0.6)
Pulse oximetry	266 (77.8)	53 (15.5)	23 (8.7)
Heart rate	322 (94.2)	13 (3.8)	7 (2.04)
Respiratory rate	335 (98)	5 (1.16)	1 (0.3)
Blood pressure	311 (91.1)	12 (3.5)	19 (5.6)
Arterial blood gases	209 (61.1)	97 (28.4)	36 (10.5)
Chest X-rays	291 (85.1)	47 (13.7)	4 (1.2)
Pulmonary function tests	203 (59.4)	71 (20.76)	68 (19.9)
Peripheral muscle strength	203 (59.4)	89 (26.02)	50 (14.6)
Medical research council dyspnea scale	143 (41.8)	114 (33.3)	85 (24.8)
Borg scale	185 (54.1)	105 (30.7)	52 (15.2)
Baseline dyspnea index	58 (16.9)	63 (18.4)	221 (64.7)
Transitional dyspnea index	33 (9.7)	57 (16.7)	252 (73.68)
2 min walk test	83 (24.3)	58 (17)	200 (25.5)
6 min walk test	232 (67.8)	77 (22.5)	33 (9.3)
12 min walk test	35 (10.3)	51 (14.9)	255 (74.6)
Self-paced walk test	66 (19.2)	52 (15.2)	224 (65.6)
Chronic respiratory questionnaire	68 (19.9)	37 (10.8)	236 (69)
St. George respiratory questionnaire	45 (13.2)	32 (9.4)	265 (77.5)
Pulmonary function status and dyspnea questionnaire	37 (10.8)	41 (12)	264 (77.2)
Short form 36	62 (18.2)	54 (15.8)	226 (66.1)

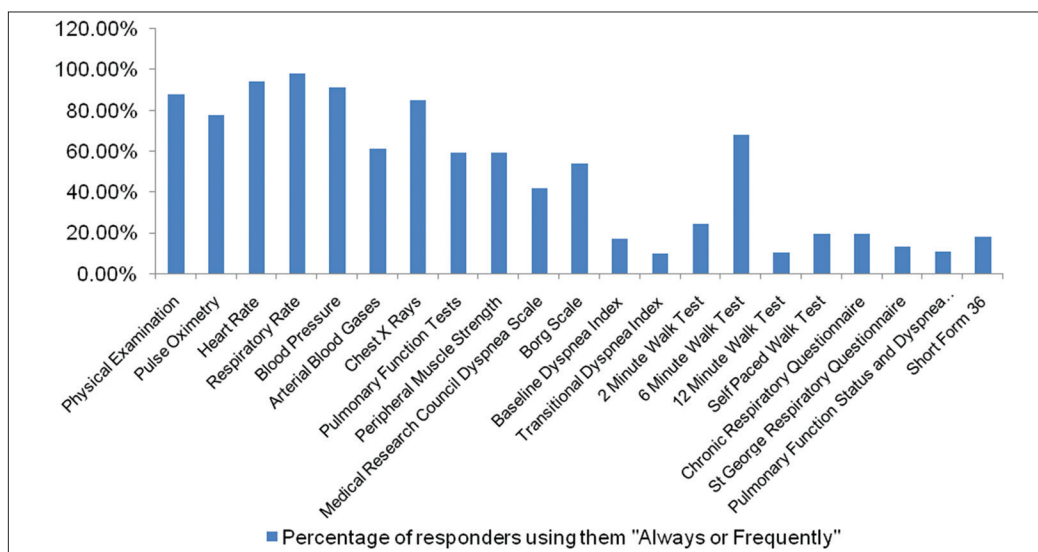


Figure 3: The assessment measures used in wards for chronic obstructive pulmonary disease patients

employing the MRC dyspnea scale ($n = 143$ [41.8%]) and the Borg Scale ($n = 185$ [54.1%]). More than 60% ($n = 205$) of the responders “rarely or never” used the baseline dyspnea index (BDI) and the transitional dyspnea index (TDI). The “functional exercise capacity measures,” which were used “always or frequently” include the 6-min Walk Test ($n = 232$ [67.8%]), 2-min Walk Test ($n = 83$ [24.3%]), 12-min Walk Test ($n = 35$ [10.3%]) and Self-Paced Walk Test ($n = 66$ [19.2%]).

More than 65% of the responders indicated that they “rarely or never” used the “health-related quality of life measures,” such as the Chronic Respiratory Questionnaire ($n = 236$ [69%]), St. George’s Respiratory Questionnaire ($n = 265$ [77.5%]), Pulmonary Functional Status and Dyspnea Questionnaire ($n = 264$ [66.2%]) and Short Form 36 ($n = 226$ [66.2%]) for patients admitted in the wards.

Treatment

The frequency with which individual treatment techniques were used in the ICUs and wards are given in Tables 3 and 4 and Figures 4 and 5. In the ICU, more than 90% of the responders used percussion ($n = 321$ [93.6%]), vibration ($n = 329$ [96.2%]) and suctioning ($n = 322$ [94.2%]) “always or frequently.” Positioning was used “always or frequently” by 89.2% ($n = 307$) of the responders, and facilitator techniques by $n = 267$ (78.3%). More

than 55% of the responders “always or frequently” used humidification ($n = 193$ [56.3%]) and nebulization ($n = 202$ [59.3%]). Mobilization was “always or frequently” given by 90.4% ($n = 309$) of the responders.

More than 90% of responders marked “always or frequently” for the use of pursed-lip breathing and positioning to relieve dyspnea in patients admitted to the wards. The percentage of responders using pursed-lip breathing was 96.2% ($n = 329$)

Table 3: The treatment techniques used in intensive care units

Treatment techniques	Always or frequently (%)	Sometimes (%)	Rarely or never (%)
Positioning	307 (89.2)	24 (7)	10 (2.9)
Percussion	321 (93.6)	14 (4.1)	6 (1.8)
Vibration	329 (96.2)	11 (3.8)	1 (0.3)
Suctioning	322 (94.2)	13 (3.8)	6 (1.6)
Facilitation techniques	267 (78.3)	56 (16.4)	17 (5)
Humidification	193 (56.3)	54 (15.7)	95 (27.7)
Nebulization	202 (59.3)	59 (17.25)	81 (23.68)
Mobilization	309 (90.4)	29 (8.47)	3 (0.87)

Table 4: The treatment techniques used in wards

Treatment technique	Always or frequently (%)	Sometimes (%)	Rarely or never (%)
Pursed lip breathing	329 (96.2)	12 (3.5)	1 (0.3)
Positioning	314 (91.8)	24 (7.1)	4 (1.2)
Postural drainage	317 (92.5)	22 (6.4)	2 (0.6)
Percussion	324 (94.7)	14 (4.1)	3 (0.9)
Vibration	332 (97.1)	9 (2.6)	1 (0.3)
Active cycle of breathing	203 (59.3)	118 (34.5)	21 (6.1)
Facilitated coughing	265 (77.5)	49 (14.3)	28 (8.2)
Suctioning	238 (69.6)	73 (21.3)	31 (9)
Facilitation techniques	192 (56.14)	25 (7.3)	125 (36.5)
Inspiratory muscle training	145 (39.2)	65 (19)	143 (41.8)
Humidification	185 (54.4)	80 (23.4)	77 (22.6)
Nebulization	195 (57.1)	60 (17.5)	87 (25.4)
Upper extremity training	273 (80)	74 (21.6)	13 (3.8)
Lower extremity training	273 (80)	37 (10.8)	17 (4.9)
Strength training	223 (50)	78 (22.8)	91 (23.6)
Flutter	88 (25.7)	67 (19.6)	187 (54.7)
RC-Cornet®	37 (10.8)	41 (12)	264 (77.2)
Acapella	40 (11.7)	30 (8.8)	272 (79.5)
Quake	10 (3)	18 (5.3)	314 (91.8)

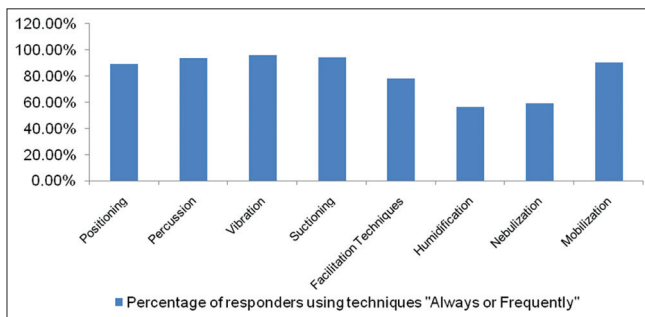


Figure 4: The treatment techniques used in the Intensive Care Unit for chronic obstructive pulmonary disease patients

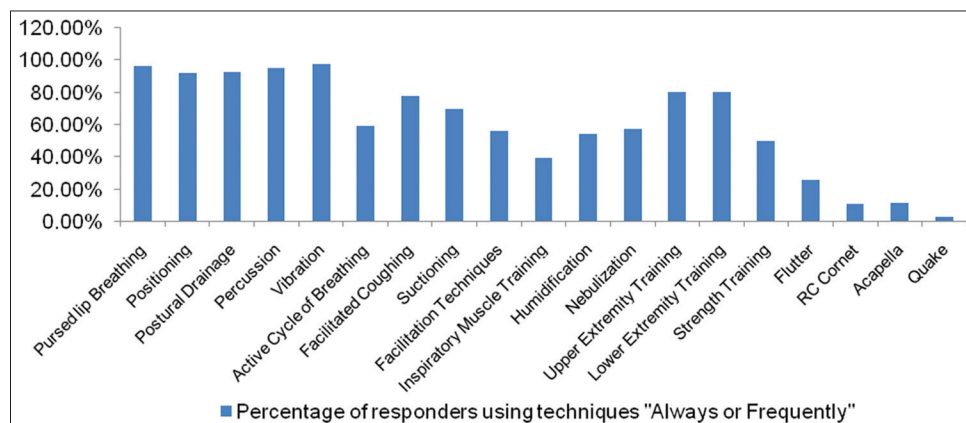


Figure 5: The treatment techniques used in wards for chronic obstructive pulmonary disease patients

and positioning to relieve dyspnea at 91.8% ($n = 314$). Traditional airway clearance techniques were used “always or frequently” by more than 90% of the responders. These included postural drainage ($n = 317$ [92.5%]), percussion ($n = 324$ [94.7%]) and vibration ($n = 332$ [97.1%]). Facilitated coughing was used “always or frequently” by $n = 265$ (77.5%); facilitatory techniques were used “always or frequently” by $n = 192$ (56.4%); and suctioning techniques were used by $n = 238$ (69.6%) of the responders. More than 50% of the responders “always or frequently” used humidification ($n = 185$ [54.4%]) and nebulization ($n = 195$ [57.1%]). Inspiratory muscle training was given “always or frequently” only by 145 (39.2%) of the responders. Upper and lower extremity movements were given “always or frequently” by $n = 273$ (80%) of the responders. Equipment used “always or frequently” for airway clearances included Flutter ($n = 88$ [25.7%]), RC Cornet ($n = 37$ [10.8%]), Acapella ($n = 40$ [11.7%]) and Quake ($n = 10$ [3%]).

DISCUSSION

To the best of our knowledge, this is the first study reporting on practice patterns adopted by Indian physiotherapists for COPD. The novel findings of the study were:

- Physiotherapists use similar assessment and treatment techniques for patients, whether they were admitted to ICUs or wards.
- Assessment predominantly focused on certain respiratory impairment measures such as physical examination, pulse oximeter, heart rate, respiratory rate, blood pressure, arterial blood gas analysis and chest X-ray. The assessment was carried out on almost equal frequency in the ICUs and in the wards. But, other impairment measures like pulmonary function tests and peripheral muscle strength were used by fewer responders in their clinical practice in the wards. Dyspnea measures (MRC and Borg Scale) were used only by half the number of responders both in the ICUs and in the wards. Functional exercise capacity and health-related quality of life measures (2 Minute walk test, 6 Minute walk test, 12 Minute walk test, Self-Paced Walk Test, Chronic respiratory questionnaire (CRQ), St. George respiratory questionnaire (SGRQ), Pulmonary function status and dyspnea questionnaire (PFSDQ) and Short form 36) were rarely adopted as assessment measures in the wards.
- The most commonly used treatment techniques in both ICUs and wards were positioning, traditional airway clearance techniques (such as postural drainage, percussion, vibration) and upper and lower extremity training. But, inspiratory muscle training and strength training were given by a small number of responders. Equipment for airway clearance such as Flutter, RC Cornet, Acapella and Quake were used by very few responders.

Assessment in ICU

COPD includes inflammation of the lung,

particularly the smaller airways, because of the imbalance between proteases-antiproteases and oxidants-antioxidants (oxidative stress) in the lungs. This pathogenesis leads to pathophysiologic abnormalities that include mucous hypersecretion and ciliary dysfunction, airflow obstruction and hyperinflation, pulmonary hypertension and systemic effects. In advanced stages of COPD, gas exchange abnormality occurs, which is characterized by arterial hypoxemia with or without hypercapnia. Through assessment of respiratory impairments, we can get information regarding thoracic configuration, pattern and effort of breathing, typical findings on a chest X-ray and any abnormality in arterial blood gases (ABGs).^[13] In our study, assessment of patients (whether in the ICUs or in the Wards) was predominantly (more than 60%) focused on certain impairment measures such as physical examination, hemodynamic parameters, chest X-ray and arterial blood gas analysis.

Respiratory impaired patients experience dyspnea as a predominant symptom. Most of the patients seek medical advice for the same.^[14] Dyspnea was assessed in accordance with activities of daily living and during exercises.^[15] Scales like Medical Research Council (MRC) dyspnea scale and baseline dyspnea index (BDI) measure dyspnea during activities of daily living, whereas the Borg Scale can measure dyspnea during exercises. A transitional dyspnea index (TDI) is used to predict change in dyspnea as compared with an earlier stage.^[14] In our study, the MRC and the Borg scales were used by nearly half the number of responders, whereas BDI and TDI were used by very few responders (<15%).

Assessment in wards

Our study results showed that assessment in wards had predominantly focused on the same respiratory impairment measures as employed in ICUs. Along with the other impairment measures, pulmonary function test and peripheral muscle weakness were also assessed in wards.

Pulmonary function abnormalities in COPD include reduction in maximal forced expiratory flow, increased airway resistance and decrease in inspiratory capacity.^[13] Forced expiratory volume in 1 s is used to classify the severity of COPD, and acts as a predictor of mortality.^[16] However, pulmonary function test reports were referred to only 40% of the responders.

Peripheral muscle weakness and earlier onset of muscle fatigue is seen in cases of COPD because of muscle wasting and shift in fiber-type composition. Also, many factors such as a decrease in activity level, hypoxemia, malnutrition, oxidative stress, systemic inflammation and the use of corticosteroids, leads to peripheral muscle weakness in patients with COPD.^[17] Studies have shown that upper limb muscles are weak and get fatigued earlier when compared with lower limb muscles.

When compared with lower limb exercises, upper limb exercises resulted in higher metabolic and ventilatory demands as well as in a more intense sensation of dyspnea and greater fatigue.^[19] Therefore, the assessment of peripheral muscle strength must be carried out. In our study, only 49% of the responders assessed peripheral muscle strength.

As peripheral muscle strength reduces, exercise capacity is reduced in about 40% of COPD patients, which leads to a further reduction in the health-related quality of life. Functional exercise capacity along with health status is an important clinical index to predict severity of the condition in COPD patients.^[19] Our study results showed that the most commonly assessed functional exercise capacity test in the wards was 6 MWT (65% of the responders). This tool changes the track of therapeutic intervention in patients with COPD. It is also a diagnostic tool for exercise-induced hypoxemia.^[20] The 12 MWT is also a prognostic tool, but, in case of severe COPD, the 6 MWT is more useful. In our study, we observed that the 2 MWT, the 12 MWT and the Self-Paced Walk Test were used very little (10-20% of the responders) as compared with the 6 MWT.^[21]

Long-standing cases of COPD are known to have poor health-related quality of life, indicating that improving the quality of life of such individuals should be a major goal in the rehabilitation process as mentioned in Global initiative for chronic obstructive lung disease (GOLD), American thoracic society (ATS) and British thoracic society (BTS) guidelines.^[21] Thus, the quality of life of the patients should be assessed using a specifically designed questionnaire. This has become an established outcome measure for evaluating the efficacy of therapeutic interventions. It can be measured by generic health measures (SF 36) and disease-specific measures (CRQ and SGRQ). Of the two kinds of measures, the disease-specific measures (CRQ and SGRQ) give a clearer indication of the efficacy of the line of treatment.^[22] In our study, we found that more than 50% of the responders “Never” used health-related quality of life measures, either specific or generic.

Treatment in ICUs

The positioning in ICUs is used with the aim of improving ventilation/perfusion matching, lung volumes and muco-ciliary clearance, and is also used with the aim of reducing the work of breathing thus leading to relief from dyspnea. Treatment efficacy for positioning in the ICU has level “C” evidence.^[23] In our study, we found that most of the (85%) responders used positioning as a treatment modality.

Mobilization in the form of limb exercises and early mobilization has been found to be safe and effective for COPD patients in the ICU. Limb exercises (passive, active assisted or active resisted) given in the ICU help to maintain joint range of motion, soft tissue length, muscle

strength and function, the level of evidence being “D.”^[23] Studies have reported that early physical activity in the ICU for COPD patients (intubated and non-intubated) is well-tolerated and effectively increases exercise capacity and health-related quality of life.^[24,25] In our study, mobilization was found to be given in the ICU by 90% of the responders.

Excessive secretion retention is one of the causes of acute exacerbations and poor health-related quality of life. Pulmonary rehabilitation programs incorporating airway clearance techniques have been shown to reduce dyspnea, improve exercise tolerance and health-related quality of life. Conventional chest physiotherapy techniques such as postural drainage, percussion and vibration are considered to be the gold standard of treatment in clinical practice.^[26] According to recent clinical practice guidelines for COPD, manual percussion is not considered an effective technique in enhancing mucus clearance.^[27] Percussion and vibrations used in the ICU have level “C” evidence.^[23] In our study, we found that airway clearance techniques such as postural drainage, percussion and vibrations were used by more than 90% of the responders.

Treatment in wards

Treatment for dyspnea should be a priority in a pulmonary rehabilitation program. Strategies such as pursed-lip breathing and positioning can relieve dyspnea, which has level 1 A evidence.^[11] Pursed-lip breathing slows down respiratory rate and decreases expiratory resistive loading thus decreasing airway narrowing during expiration. All these factors contribute to dyspnea relief.^[28] In our study, pursed-lip breathing was used by most responders (96%). Various kinds of body positioning (forward leaning, half-lying, high side lying) used for dyspnea relief can help to decrease the work of breathing, improve V/Q mismatch and drain secretions and, in this way, diminish the sensation of dyspnea.^[29] In this study, 92% of the responders “always or frequently” used positioning for relieving dyspnea.

Airway clearance techniques used in the wards include postural drainage, percussion, vibration, facilitated coughing and the employment of various respiratory devices available for airway clearance. The effectiveness of conventional chest physiotherapy techniques in wards has level of evidence “C.”^[23] Our study results showed that conventional chest physiotherapy techniques for airway clearance were used by more than 90% of the responders. We surveyed the use of mechanical devices (Flutter, Acapella, RC Cornet and Quake) for airway clearance in COPD. Among them, the most commonly used was Flutter. A large number of responders (more than 80%) did not use these devices as they were expensive and were meant for individual use, something that cannot be afforded by most patients.

Improving peripheral muscle function is a central focus

of pulmonary rehabilitation. Upper extremity training in COPD helps to decrease dyspnea and dynamic hyperinflation and to increase exercise capacity, which makes the activities of daily living easier.^[30] Greater benefits have been observed with unsupported arm exercises than with supported arm exercises. Training of the upper extremity as a part of a pulmonary rehabilitation program has a grade 1A recommendation.^[11] The main focus of lower extremity endurance exercise training is walking, stationary cycling, rowing and various treadmill exercises. This training helps to improve exercise performance, relieves the symptoms of the disease and improves the quality of life. Training the lower extremity has grade 1A recommendation in pulmonary rehabilitation.^[11] In our study, upper extremity and lower extremity exercises were given by 83% of our responders.

Reduction in peripheral muscle strength has been reported in COPD patients, and progressive resistance exercise can lead to an increase in muscle strength and to an improved quality of life.^[31] Evidence of 1A suggests that the strength-training component should be added to the pulmonary rehabilitation program for COPD patients.^[11] In our study, we noted that strength training was given by 50% of the responders.

Inspiratory muscle training significantly increases inspiratory muscle strength and endurance. This improves exercise capacity and quality of life, and also decreases dyspnea.^[32] According to level of evidence (1B), training of inspiratory muscle should not be prescribed routinely.^[11] In our study, we found that inspiratory muscle training was given by a very small number of responders (<40%).

CONCLUSION

Whether patients are admitted to ICUs or wards, the practice patterns used by physiotherapists in India is similar with respect to certain measures. Assessment predominantly focuses on pulmonary impairment measures (both in the ICUs and the wards) with little attention given to measure functional exercise capacity for patients admitted in the wards. Treatment predominantly focuses on airway clearance techniques and the mobilization of the patient (both in the ICUs and the wards). There is a discordance between assessment measures used and treatment technique applied. This may be due to a lack of preexisting guidelines for the management of COPD patients. Further research is needed to identify factors responsible for influencing the practice patterns of physiotherapists.

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Announcement

Fellowship of Indian Chest Society

Fellowship of Indian Chest Society is open for members of Indian Chest Society. This fellowship is to recognize members of the Indian Chest Society who have excelled in the field of Respiratory Medicine. The fellowship will be given after the approval of the application by a High Power Credential Committee. The process of selection of fellowship is highly objective, transparent and accountable. The Credential Committee assesses and scores all the applications as per predefined criteria and recommends 10 top scorers for fellowship each year. To be eligible the applicant should have completed at least five years as a primary (life) member and there should be no indictment in professional/academic misconduct ever. The selected fellow will be allowed to use "FICS" as a subtitle. The fellowship fee is Rs.10,000/- to be paid only on selection or invitation. For further details please refer to Indian Chest Society website www.indianchestociety.in or contact at following address:

Dr. Dheeraj Gupta
Convener, Credential Committee ICS,
Professor of Pulmonary Medicine,
Postgraduate Institute of Medical Educations and Research (PGIMER),
Chandigarh-160012. India.
Emails: dheeraj@indiachest.org; dheeraj1910@gmail.com