Journal of
Clinical and Pharmaceutical Research
RESEARCH OPEN ACCESS

A Study on the Assessment of Mental Cognitive Functions among the COPD Patients of Various Severity Stages

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ARTICLE INFO

Article History:
Received: 10.05.2022
Revised: 22.06.2022
Accepted: 11.07.2022

Keywords :
CAT
COPD
MMSE

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ABSTRACT

Aim: The main aim of the study is to assess the mental cognitive functions among COPD patients of different severity stages.

Materials and methods: This was a cross sectional study conducted for a period of 6 months in outpatient department of respiratory medicine. A total of 100 patients of both gender and of all age groups, who were diagnosed with COPD were included in the study.

Results: Majority of the patients were observed with severe COPD (48%) followed by very severe COPD (26%). Majority of the patients were with moderate cognitive impairment (42%) followed by mild cognitive impairment (32%). Majority of the patients were observed to be with grade II (53%) followed by grade-I (23%). Most of the patients with very severe COPD were observed with moderate cognitive impairment (46.2%) followed by severe cognitive impairment (42.3%).

Conclusion: In this study, majority of the patients with COPD were in the age group 45-54 years and most of the patients were observed with severe COPD. Majority of the patients were with moderate cognitive impairment and most of the patients were observed to be with grade II severity. Clinical pharmacists should take the responsibility in creating awareness regarding the cognitive functions among the COPD patients which may impact treatment strategies.

Introduction

Chronic obstructive pulmonary disorder (COPD) is a chronic inflammatory lung disease that is characterized by persistent respiratory airflow limitations. Mental cognitive functions encompass the domains of perception, attention, learning, memory, decision making and language abilities. The most common age of onset is more than 50 years. More than 14% of individuals who were aged more than 65 years may have COPD [1].

COPD associated with mental cognitive disorder

Smoking, dust, silica, genetic conditions and environmental factors causes chronic bronchitis and emphysema. Due to hypoxia or restriction of oxygen that supplied to the brain causes gradual death and impairment of brain cells causes cognitive impairment. If oxygen supply is insufficient to meet the metabolic demands of the brain due to impaired lung mechanics or inadequate respiratory function in COPD patients, this can trigger the loss of vulnerable cerebral neurons [2].

Arterial hypoxia seems to be the major cause for cognitive impairment which leads to high levels of oxygen desaturation and increasing the risk of cognitive impairment. Moreover lower cognitive performance has been found to be related to elevated carbondioxide tension (PCO2) and the occurrence of hypercapnia at rest or during activity [3]. The main aim of this study was to assess the mental cognitive functions among the COPD patients of various severity stages.

Materials and methods

This was a cross sectional study conducted for a period of 6 months in the outpatient department of respiratory medicine at GSL general hospital, Rajahmundry. A total of 100 patients of both gender and of all age groups, who were diagnosed with COPD were included in the study. For the evaluation of COPD impact on health status, the COPD assessment test (CAT) is a validated test which was used in this study. The Mini-Mental State Examination (MMSE) is the best-known and the most often used short screening tool for providing an overall measure of cognitive impairment in clinical, research and community settings was used for the assessment of cognitive impairment. Another scale called mMRC

(Modified Medical Research Council) Dyspnea Scale was used in this study that quantifies the disability attributable to breathlessness, and is useful for characterizing baseline dyspnea in patients with respiratory diseases [4-11].

Results and Discussion

In this study, a total of 100 patients were diagnosed with COPD where 60 (60%) were observed to be males and 40 (40%) were observed to be females. Table 1 represents the age wise categorization of the patients with COPD. Majority of the patients with COPD were in the age group 45-54 years (24%).

Table 1: Age wise categorization of the patients with COPD

Age (in years)	Male (%)	Female (%)	Total (%)
25-34	3 (5)	7 (17.5)	**10 (10)**
35-44	7 (11.7)	7 (17.5)	**14 (14)**
45-54	14 (23.3)	10 (25)	**24 (24)**
55-64	13 (21.7)	7 (17.5)	**20 (20)**
65-74	12 (20)	5 (12.5)	**17 (17)**
75-84	11 (18.3)	4 (10)	**15 (15)**
Total	**60 (100)**	**40 (100)**	**100 (100)**

Table 2 represents the categorization of the patients observed with COPD based on their severity which was assessed by using chronic obstructive pulmonary disease assessment test (CAT) scale. Majority of the patients were observed with severe COPD (48%) followed by very severe COPD (26%). The mean score was observed to be 24.72 (±7.13).

Table 2: Categorization of the patients observed with COPD based on their severity

CAT Scale (Score)	Total (%)
Mild COPD (0-10)	5 (5)
Moderate COPD (11-20)	21 (21)
Severe COPD (21-30)	48 (48)
Very Severe COPD (31-40)	26 (26)
Total	**100 (100)**

Table 3 represents the categorization of the patients with COPD based on mini mental health status examination score. Majority of the patients were with moderate cognitive impairment (42%) followed by mild cognitive impairment (32%). In this study, the mean score was observed to be 18.23 (±5.69). No cognitive impairment was observed among 12% patients.

Table 3: Categorization of the patients with COPD based on mini mental health status examination score

Interpretation	Total (%)
Severe (0-10)	14 (14)
Moderate (11-20)	42 (42)
Mild (21-25)	32 (32)
No cognitive impairment (25-30)	12 (12)
Total	**100 (100)**

Table 4 represents the categorization of the patients with COPD based on mMRC grade. Majority of the patients were observed to be with grade II (53%) followed by grade I (23%). In this study, the mean score was observed to be 2.04 (±0.75).

Table 4: Categorization of the patients with COPD based on mMRC grade

Grade	Total (%)
Grade I	23 (23)
Grade II	53 (53)
Grade III	21 (21)
Grade IV	3 (3)
Total	**100 (100)**

Table 5 represents the categorization of the patients with COPD by establishing the association between CAT score with MMSE score. Most of the patients with very severe COPD were observed with moderate cognitive impairment (46.2%) followed by severe cognitive impairment (42.3%).

Table 5: Association between CAT score with MMSE score

Severity	Mild COPD	Moderate COPD	Severe COPD	Very Severe COPD	Total
Severe	0 (0)	2 (9.5)	1 (2.1)	11 (42.3)	14 (14)
Moderate	0 (0)	7 (33.3)	23 (47.9)	12 (46.2)	42 (42)
Mild	1 (20)	9 (42.9)	20 (41.7)	2 (7.7)	32 (32)
No cognitive impairment	4 (80)	3 (14.3)	4 (8.3)	1 (3.8)	12 (12)
Total	**5 (100)**	**21 (100)**	**48 (100)**	**26 (100)**	**100 (100)**

Conclusion

In this study, majority of the patients with COPD were in the age group 45-54 years and most of the patients were observed with severe COPD. Majority of the patients were with moderate cognitive impairment and most of the patients were observed to be with grade II severity. Clinical pharmacists should take the responsibility in creating awareness regarding the cognitive functions among the COPD patients which may impact treatment strategies.

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