A proposed ABCD scoring system for patient's self assessment and at emergency department with symptoms of COVID-19

1. Introduction

COVID -19 is a global pandemic and has the common symptoms in COVID-19 infection are fever, cough, myalgia and fatigue [1]. Pre-existing comorbidities are associated with severe disease and may have impact on the overall outcomes [2,3]. Limited medical resources are a concern for all countries during this pandemic and the identification of high risk patients at early stage will be is helpful to avoid serious events and mortality in COVID-19. Currently there are limited tools available about grading of patients with corona infections at a medical centre [4—7].

At present no scoring system has been described from medical professionals in Indian subcontinent. We propose a new tool for patient self-assessment, for emergency department of hospital with symptoms of COVID-19. The score is named as "ABCD Scoring system" and we have prepared a color coding based triage system based on the final score.

2. Material and methods

First described score is for patient's self-assessment at home. The components included were age of patient, symptoms that includes breathlessness, cough, fever, fatigue and associated preexisting co-morbidities. The patient and his attendants can calculate their individual score and sum up the final score (Figs. 1 and 2). The patients can subdivide themselves into three subgroups based on the score. According to the final score a color box that includes green, yellow and red color can be marked. Finally, they can mark their score color into a pyramid prepared at the end of scoring method.

The second described score is for patient assessment at a COVID-19 emergency department or screening centre or during the admission process at a hospital. This score includes age of the patient,

breathlessness, O2 saturation, chest x-ray, cough, fever, fatigue and associated preexisting co-morbidities. The paramedical staff and the attending doctor can calculate their individual score and sum up the final score (Figs. 3 and 4). Finally, they can mark their score color into a pyramid prepared at the end of scoring method.

3. Results

The score for patient self assessment and screening centre were developed using the variables which outputs a value from 0,1,2. The final score was calculated by performing a sum of all the points. Three category we're prepared that included mild (0—3), moderate (4—6) and severe (>6). According to the final score a color box that includes green, yellow and red color were marked. This was followed by marking the score color into a pyramid at the end of scoring method (Fig. 3). In patient self-assessment score for mild category suggestion was to observe and if symptoms persist then should consult the doctor, for moderate category suggestion was to consult a doctor and in sever category suggestion was to consult a corona treating centre. In emergency department score for mild category suggestion was to treat patient symptomatically, in moderate category suggestion was to provide semi critical care with oxygen supplementation and in severe category suggestion was for to provide critical care with artificial ventilation. (Figs. 3 and 4).

4. Discussion

This study is, to best of our knowledge, is the first scoring tool that can utilized by patient himself, screening centers and hospital for predicting severity of disease with COVID-19 infection. In current score for patient at screening centre or during admission in hospital included a chest radiograph. The radiologic features in patients with COVID-19 are bilateral pulmonary infiltrates and ground glass opacity. Also in current scores dyspnea and oxygen saturation were included as an evaluation of pulmonary para meters. We reviewed the literature on various scoring systems for COVID-19 and compared them with current score [4—7] (Table 1).

The current scoring tool is easy to remember due to alphabets A, B, C, D; and patients, health care professionals can easily use it. Secondly as it is an objective method and easily reproducible for assessment in COVID-19 infection. The color coding system into green, yellow and red color is similar to the traffic signal pattern and making it universal for use without language barrier. The scores are categorized into 3 subgroups groups and assigned 3 color as green(mild), yellow(moderate), red(severe). The three symbols

ABCD Scoring system for by Patient self assessment at home with symptoms of COVID-19

Patient Name: **Age and Gender :**

A-B-C-D	Variable	Score	
		0	**1**
Age (Years)	Young , Elderly	0-50	>50
Body ache	Body ache & fatigue	No	Yes
Body temperature	High	No	Yes
Contact	Contact with COVID-19 patient	No	Yes
Cough	Dry or with sputum	No	Yes
Comorbidities	Smoker	No	Yes
	Cancer	No	Yes
	Hypertension & Chronic heart disease	No	Yes
	Chronic renal disease	No	Yes
	Diabetes Mellitus	No	Yes
Dyspnea	Difficulty in breathing	No	Yes
Total Score			

Fig. 1. ABCD Scoring system for patient self-assessment with symptoms of COVID-19.

used in pyramid are yellow color (resting person or observation/ mild disease), green color (walking person or consult doctor/moderate disease) and red color (consult COVID centre/severe disease/ ICU stay or Ventilator support). Higher score indicates increased severity and demands for intensive care. The advantages of this scoring system can help the health care workers to priorities the severe patients and early transfer to the intensive care. Also these tools may aid in planning different management modalities. The patients can be subdivided according to the scoring system into various categories which will help in utilizing the limited medical resources in an efficient manner. Similar triage systems have been described in literature in mass causality and war like situations [8].

4.1. Limitations of this study

The limitation of our study is that there is lack of validation of current scoring system. We propose a multi-centre study for the validation of current score and refinement according to its findings.

5. Conclusion

The ABCD scoring system is a tool can be useful as a medical triage system and subdivide patients according to the required treatment. The easy to use and remember system can be a helpful guide for health care professionals along with clinical findings for better management of patients with COVID-19 infection.

Triage system

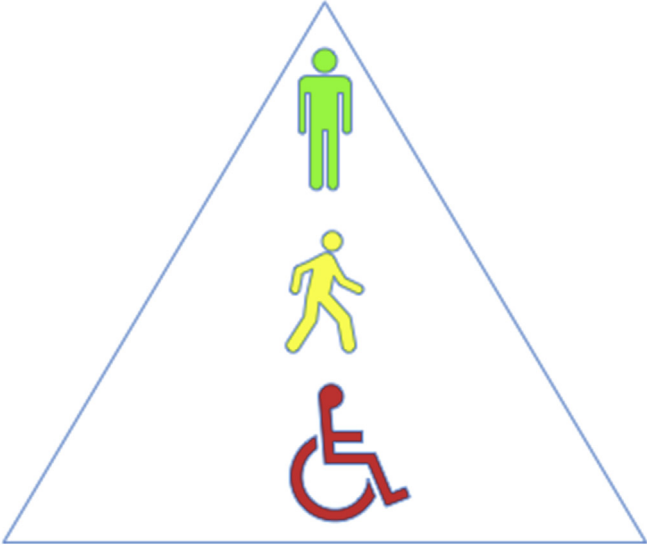| Green	Yellow	Red
0-3	4-6	>6
Mild	Moderate	Severe
Observation: If symptoms increase consult a doctor	Active treatment:Consult a doctor	Urgent care: Consult at a Corona Centre

Total Score=

Fig. 2. Triage system according to ABCD scoring system for patient self-assessment.

ABCD Scoring system for assessment by Health care professional at Emergency department in patient with symptoms of COVID-19

Patient Name: Age and Gender :

A-B-C-D	Variable	Score	
		0	1
Age (Years)	Young , Elderly	0-50	>50
Body temperature	>100.4 Fahrenheit	No	Yes
Cough	Dry or with sputum	No	Yes
Contacts	Contact with COVID-19 patient	No	Yes
Comorbidites	COPD/Smoker	No	Yes
	Cancer	No	Yes
	Hypertension & Chronic heart disease	No	Yes
	Chronic renal disease	No	Yes
	Diabetes mellitus	No	Yes
Chest radiograph	Ground Glass & Bilateral patchy shadows	No	Yes
Dyspnea	Respiratory rate >25/minute O2 saturation:<90%	No	Yes
Total Score			

Fig. 3. ABCD Scoring system for health care professionals at emergency department in hospital admission for patients with symptoms of COVID-19.

Triage system

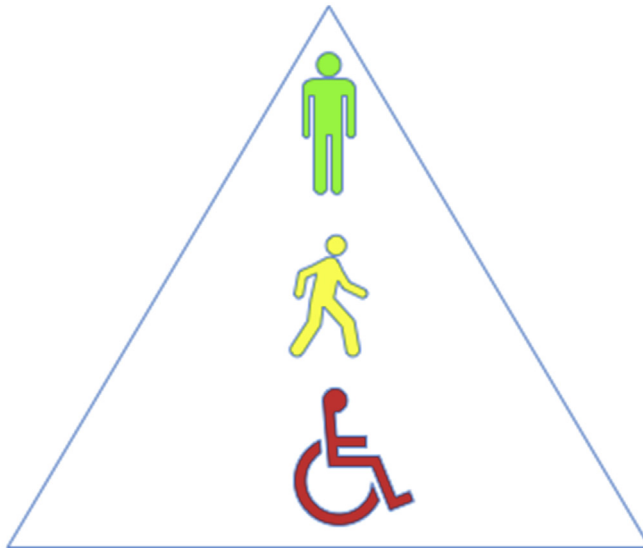| Green	Yellow	Red
0-3	4-6	>6
Mild	Moderate	Severe
Observartion: Symptomatic treatment in ward	Active treatment: Semi-critical care & Oxygen supplementation	Urgent treatment: Critical & Intensive care

Total Score=

Fig. 4. Triage system according to ABCD scoring system for health care professionals at emergency department.

Table 1
Review of Literature and comparison of various scoring tools for assessment in COVID-19.

Authors	Title of Score	Origin of score	Severity risk score/Progression risk score	Components of score
Duca et al[5]	Brescia-COVID respiratory severity scale	Italy	Severity risk	Patient Wheezing Respiratory rate Pa O2 Sp O 2 Chest Xray
Dong et al[6]	CALL Score	China	Progression Risk	Age Comorbidity Lymphocyte count LDH
Lee Wallis et al[7]	Covid-19 Severity Score	South Africa	Severity Risk	Comorbidities Mobility Assessment Temperature Pulse Respiratory rate Systolic BP
Shi et al[4]	Host Risk Score	China	Severity risk	Age Sex Hypertension
Current Study	ABCD score	India	Severity risk Score1: Patients self assessment Score 2:At Emergency department in hospitals	A: Age B: Body ache B: Body temperature C: Contact with COVID patient C: Cough C: Comorbidities C: Chest X-ray and CT scan D:Dyspnea/Respiratory rate/O2 saturation

Declaration of competing interest

Nil.

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