Clinicoepidemiological profile of COVID-19 patients admitted at a teaching institute in a hilly area of India during the second wave—A retrospective observational study

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ABSTRACT

Introduction: COVID-19 ongoing pandemic has resulted in millions of deaths globally, and India has recorded the second highest number of confirmed cases till now. In the absence of effective treatment, it becomes crucial to know about the course of the disease in hospital settings for effective patient care. The present study discusses the clinicoepidemiological, haematological and biochemical determinants among survivors and non-survivors of COVID-19 patients admitted to a tertiary care hospital in a hilly area.

Methods: A record-based cross-sectional study was carried out at the government hospital from March 2021 to June 2021, which included all confirmed cases of 18 years and above. Demographic details, delayed admission, co-morbidities and laboratory parameters were collected.

Results: Out of a total of 1267 COVID-19 patients, the mean age of survived and succumbed was 50.77 ± 16.1 and 60.50 ± 14.2 years, respectively (P < 0.001). The mean survival time in males (17.7 days) was lesser compared to that in females (20.3 days). Two hundred and twelve of them practised self-medication. The mean duration of delayed testing (2.95 ± 2.3 vs 3.36 ± 2.2 days), mean values of haemoglobin (11.39 ± 2.1 vs 12.5 ± 1.7), platelet count (193.8 ± 94.6 vs 253.1 ± 105.9), leucocyte count (11.53 ± 5.72 vs 9.11 ± 5.21), neutrophil–lymphocyte ratio (10.0 ± 2.9 vs 7.3 ± 3.5), urea (61.16 ± 51.8 vs 30.2 ± 21.2) and creatinine (2.13 ± 2.9 vs. 1.1 ± 0.3) among the two groups were statistically significant (P < 0.001). Increasing age, contact history, hypertension [OR 3.2 (95% CI, 1.40–7.39)], diabetes [OR 1.9 (95% CI, 0.81–4.40)] and chronic kidney disease [OR 15.4 (95% CI, 5.23–45.71)] were found to be associated with increased risk of mortality (P < 0.005).

Conclusions: Public health interventions like contact tracing, testing and early identification of laboratory parameters and treatment on priority would help in providing effective care so that the mortality can be reduced.

Keywords: COVID-19, epidemiological, mortality, risk factors, survival analysis

Introduction

Since the origin of the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from Wuhan City of China in 2019 and followed by the World Health Organization (WHO) declaring it as pandemic on 11 March 2020, the world is witnessing a major public health crisis through this pandemic in the form of loss...
of lives, social and economic crisis. The second wave of the pandemic started during February 2021 in India is still witnessing a huge number of cases ranging from asymptomatic or mild to severe disease forms which require admission to the intensive care unit (ICU).

As of 3 July 2021, the COVID-19 pandemic has resulted in 182,319,261 cases and 3,954,324 deaths. And India has reported 495533 active cases and 401050 deaths, becoming the country with the second highest number of confirmed cases.

Studies have reported wide variations in clinical presentation and mortality pattern in COVID-19 across the nations. In India, situation is even different among the states with regard to the presentation of COVID-19. One-third of the COVID-19 infections usually are asymptomatic and recover without any complications. The majority of the mild or moderate cases present with features like fever, cough, breathlessness, myalgia, fatigue, pneumonia and anosmia.

During the first wave of the pandemic, the proportion of severe cases that required hospitalization and oxygen support was in the range of 12% to 37% across the globe as reported by various studies. In India, 14% of cases were severe and about 5% required intensive care.

The severity and mortality in the case of COVID-19 disease depend on factors such as geriatric age, male gender and co-morbidities like obesity, diabetes, renal conditions and hypertension as reported by various studies.

Haematological parameters such as high total leucocyte count (TLC) with neutrophilia, lymphopenia, thrombocytopenia leukocytosis and biochemical parameters like elevated levels of bilirubin, serum urea, creatinine and hepatic enzymes are significantly associated with high fatality among those who are admitted to the intensive care unit (ICU).

In the absence of effective treatment for COVID-19, public health interventions at the primary care level such as vaccination, wearing masks, maintaining adequate physical distance, hand hygiene and early identification and control of risk factors that result in mortality are of the utmost need of the hour in bringing down mortality among the patients. As the data regarding risk factors are still sparse in the Indian setting, this study was conducted to compare the clinical, epidemiological, haematological and biochemical determinants among survivors and non-survivors of COVID-19 patients admitted to a tertiary care hospital in a hilly area of South India.

Methods

A record-based cross-sectional study was carried out at the government district hospital that was converted as Dedicated COVID Hospital (DCH) from March 2021 to June 2021. This was the only tertiary care centre in the entire Kodagu District which was managing the COVID-19 cases, and it is equipped with 300 beds and COVID-19 patients are being managed free of cost as per guidelines issued by the Ministry of Health and Family Welfare, Government of India. Approval from Institutional Ethics Committee (KoIMS/IEC/09/21-22) was obtained for conducting the study.

Inclusion criteria

Data of all the confirmed COVID-19 patients who were aged more than 18 years admitted during the period from 1 March 2021 to 15 June 2021 were included in the study.

Exclusion criteria

The data of those who were less than 18 years having COVID-19 were excluded from the study.

Data collection

Case records containing follow-up charts and Case Investigation Form (CIF) developed by National Cooperative Development Corporation (NCDC) were collected from the medical records section of the DCH after obtaining approval from the concerned academic authority. Revised guidelines issued by the Ministry of Health and Family Welfare, Government of India, on clinical management of adult COVID-19 cases were used for disease classification as follows.

Mild cases

Patients with uncomplicated upper respiratory tract infection may have mild symptoms such as fever, cough, sore throat, nasal congestion, malaise and headache.

Moderate cases

Adults with the presence of clinical features of dyspnoea and/or hypoxia, fever, cough, including SpO2 90 to ≤93% on room air, and respiratory rate more or equal to 24 per minute.

Severe cases: Adults with clinical signs of pneumonia plus one of the following: respiratory rate >30 breaths/min, severe respiratory distress and SpO2 ≤90% on room air.

Details of demographic and clinical data like age, gender, time interval between onset of symptoms to testing and admission to hospital, clinical symptoms and co-morbidities such as hypertension, diabetes, chronic kidney disease, respiratory and thyroid illnesses and malignancies were collected from the case record. Details regarding biochemical and haematological parameters were also collected. The outcomes were classified as survivors and non-survivors as per the revised discharge policy.

The operational definition for a history of contact was considered as a contact is a person that is involved in any of the following: providing direct care without proper personal protective equipment (PPE) for COVID-19 patients or staying in the same close environment of a COVID-19 patient (including workplace, classroom, household, gatherings) or travelling together in close
proximity (1 m) to a symptomatic person who later tested positive for COVID-19. History of smoking was considered when there was a positive history of smoking in the current smoker or the former smoker.

**Statistical analysis**

The collected data were entered in MS Excel, and SPSS software version 25.0 was used for statistical analysis. Descriptive statistics were applied to depict continuous variables and frequency, and percentages were applied for categorical variables. For comparing the mean scores of biochemical and haematological parameters between survivors and non-survivors, independent t test/Z score at 1% level of confidence was considered. To determine the effect of significant factors on survival and non-survival estimates, multiple regression analysis was carried out, odds ratio with confidence interval (CI) was estimated, and P value < 0.05 was considered as significant. Kaplan–Meier method was used to find out the probability of survival estimates between the groups.

**Results**

A total of 1267 COVID-19-positive patients admitted in the tertiary care hospital were included in the study. The mean age was 52.53 ± 16.28 years and for those who survived and succumbed was 50.77 ± 16.18 and 60.50 ± 14.26 years, respectively (P < 0.001), and one-third were aged more than 60 years. Around 63 per cent of the total patients were males [Table 1].

The mean duration of delayed testing in those who succumbed to COVID-19 was 3.36 ± 2.26 days when compared to 2.95 ± 2.37 days among those who survived (P < 0.015). Six hundred and nineteen (48.9%) were presented with the severe condition at the time of admission, and among them 191 (30.8%) expired despite receiving treatment as per guidelines.

Out of the total of 1267 patients, 122 (9.6%) had a history of contact with COVID-19-positive patients and 73 (5.8%) were having a history of smoking. With regard to self-medication, 212 (16.7%) of the patients took over-the-counter medications before getting admitted to the hospital. It was also noted that only a per cent of the patients received either one or two doses of vaccine against COVID-19.

Around 452 (35.7%) had co-morbidities such as diabetes and hypertension (9.7%), diabetes only (7.8%), hypertension only (7.0%), respiratory disease (2.7%), chronic kidney disease (2.2%), cerebrovascular disease (1.2%) and other (5.1%) conditions such as epilepsy, hypothyroidism, etc.

The mean values of laboratory parameters among those who did not survive than those who got discharged were haemoglobin (11.39 ± 2.12 vs 12.5 ± 1.7), platelet count (193.8 ± 94.6 vs 253.1 ± 105.9), total leucocyte count (TLC) (11.53 ± 5.72 vs 9.11 ± 5.21), neutrophil–lymphocyte ratio (NLR) (10.0 ± 2.9 vs 7.3 ± 3.5), blood urea (61.16 ± 51.85 vs 30.2 ± 21.2) and serum creatinine (2.13 ± 2.98 vs 1.1 ± 0.3), and this difference was found to be statistically significant (P < 0.001).

Figure 1 depicts the survival estimates of COVID-19 patients admitted to the hospital at different time intervals from the date of onset of symptoms to admission in days. The mean duration between onset of symptoms and admission was 5.2 days, and the median was 4 days. The survival probability was more than 80% when the patient was admitted within 7 days from the onset of symptoms as compared to those admitted after a week, and thereafter the probability of survival gradually declined.

It was observed that the mean survival time in male patients (17.75 days) was lesser when compared to female patients (20.37 days), and this difference was not statistically significant (P < 0.96) [Figure 2].

Multivariate logistic regression analysis showed that increasing age had an increased risk of death, and this was statistically significant [Table 2]. Patients in the age group of 41–50 years had 3.4 (95% CI, 1.50–7.85) times increased risk of death when compared to 31–40 years of age group. Those in the age group of 51–60 years had 2.2 (95% CI, 1.00–5.23) times, 61–70 years had 2.4 (95% CI, 1.08–5.33) times and more than 70 years had 4 (95% CI, 1.71–9.74) times increased risk of mortality. Those who had a history of contact with a COVID-19-positive patient had 14.2 (95% CI, 7.12–28.43) times increased risk of dying when compared to those who did not. Similarly, patients who took self-medication and not vaccinated also had a higher risk of mortality. These differences were found to be statistically significant.

There was a statistically significant difference between increased risk of mortality in those patients who were having co-morbidities such as hypertension only (OR 3.2 (95% CI, 1.40–7.39; P < 0.006), diabetes only (OR 1.9 (95% CI, 0.81–4.40; P < 0.05), chronic kidney disease (OR 15.4 (95% CI, 5.23–45.71; P < 0.001), cerebrovascular disease (OR 20.2 (95% CI, 3.70–110.07; P < 0.001) and others (OR 1.9 (95% CI, 4.67–31.37; P < 0.001).
Table 1: Clinicoepidemiological and laboratory characteristics of study participants

| Variables                                | Discharged (n=1038) | Death (n=229) | Total (n=1267) | P*     |
|------------------------------------------|--------------------|---------------|----------------|--------|
| Age (years)                              | 50.77±16.18        | 60.50±14.26   | 52.53±16.28    | <0.001 |
| Number of days delayed between the onset of symptoms and testing | 2.95±2.37          | 3.36±2.26     | 3.03±2.35      | 0.015  |
| Age group (years) n (%)                  |                    |               |                |        |
| <30                                      | 118 (11.4)         | 2 (0.9)       | 120 (9.5)      | <0.001 |
| 31-40                                    | 191 (18.4)         | 24 (10.5)     | 215 (17.0)     |        |
| 41-50                                    | 200 (19.3)         | 36 (15.7)     | 236 (18.6)     |        |
| 51-60                                    | 221 (21.3)         | 45 (19.7)     | 266 (21.0)     |        |
| 61-70                                    | 204 (19.7)         | 63 (27.5)     | 267 (21.1)     |        |
| >70                                      | 104 (10.0)         | 59 (25.8)     | 163 (12.9)     |        |
| Gender                                   |                    |               |                |        |
| Male                                     | 653 (62.9)         | 149 (65.1)    | 802 (63.3)     | 0.54   |
| Female                                   | 385 (37.1)         | 80 (34.9)     | 465 (36.7)     |        |
| H/O contact                              |                    |               |                |        |
| Yes                                      | 30 (2.9)           | 92 (40.2)     | 122 (9.6)      | <0.001 |
| No                                       | 1008 (97.1)        | 137 (59.8)    | 1145 (90.4)    |        |
| H/O smoking                              |                    |               |                |        |
| Yes                                      | 51 (4.9)           | 22 (9.6)      | 73 (5.8)       | 0.006  |
| No                                       | 987 (95.1)         | 207 (90.4)    | 1194 (94.2)    |        |
| Self-medication                          |                    |               |                |        |
| Yes                                      | 45 (4.3%)          | 167 (72.9)    | 212 (16.7)     | <0.001 |
| No                                       | 993 (95.7%)        | 62 (27.1)     | 1055 (83.3)    |        |
| Vaccination status                       |                    |               |                |        |
| Two doses                                | 4 (0.4)            | 0 (0.0)       | 4 (0.3)        | <0.001 |
| One dose                                 | 15 (1.4)           | 46 (20.1)     | 61 (4.8)       |        |
| No                                       | 1019 (98.0)        | 183 (79.9)    | 1202 (94.9)    |        |
| Triaging on admission                    |                    |               |                |        |
| Mild                                     | 284 (27.4)         | 15 (6.6)      | 299 (23.6)     | <0.001 |
| Moderate                                 | 326 (31.4)         | 23 (10.0)     | 349 (27.5)     |        |
| Severe                                   | 428 (41.2)         | 191 (83.4)    | 619 (48.9)     |        |
| Co-morbidities                           |                    |               |                |        |
| None                                     | 744 (71.7)         | 71 (31.0)     | 815 (64.3)     | <0.001 |
| Hypertension                             | 67 (6.5)           | 22 (9.6)      | 89 (7.0)       |        |
| Diabetes                                 | 70 (6.7)           | 29 (12.7)     | 99 (7.8)       |        |
| Diabetes and hypertension                | 87 (8.4)           | 36 (15.7)     | 123 (9.7)      |        |
| Chronic kidney disease                   | 14 (1.3)           | 14 (6.1)      | 28 (2.2)       |        |
| Respiratory disease                      | 17 (1.6)           | 17 (7.4)      | 34 (2.7)       |        |
| Cerebrovascular disease                  | 4 (0.4)            | 11 (4.8)      | 15 (1.2)       |        |
| Others                                   | 35 (3.4)           | 29 (12.7)     | 64 (5.1)       |        |
| Laboratory parameters with a normal range|                    |               |                |        |
| Haemoglobin (12-16) gm/dl                | 12.5±1.7           | 11.3±2.12     | 12.3±1.8       | <0.001 |
| Platelet count (150-400) ×10^9/L         | 253.1±105.9        | 193.8±94.6    | 242.4±106.4    | <0.001 |
| Total leucocyte count (4.0-10) ×10^9/L   | 9.1±5.21           | 11.5±5.72     | 9.5±5.3        | <0.001 |
| Neutrophil-lymphocyte ratio (0.43-2.75)  | 7.3±3.5            | 10.0±2.9      | 7.8±3.6        | <0.001 |
| Ferritin (704.7-883.3) μmol/L           | 704.7±883.3        | 1212.7±1674.0 | 796.5±1087.2   | <0.001 |
| Total protein (6.4-8.2) g/dl            | 7.5±24.8           | 7.0±4.4       | 7.4±22.6       | 0.54   |
| Serum albumin (3.4-5.0 ) g/dl           | 3.6±12.3           | 3.5±4.9       | 3.6±11.4       | 0.93   |
| Serum bilirubin (0.2-1.0 ) mg/dL        | 1.3±4.8            | 1.1±4.7       | 1.3±4.8        | 0.51   |
| Aspartate transaminase (15-37) U/L      | 55.1±52.2          | 74.6±137.8    | 41.2±37.0      | 0.03   |
| Alanine transaminase (16-63) U/L        | 39.6±36.9          | 48.7±36.8     | 58.6±75.0      | 0.02   |
| Alkaline phosphatase (46-116) U/L       | 82.8±36.3          | 93.1±66.3     | 84.6±43.4      | <0.001 |
| Blood urea (17.1-49.2) mg/dl            | 30.2±21.2          | 61.1±51.8     | 35.8±31.5      | <0.001 |
| Serum creatinine (0.7-1.3) mg/dl        | 1.1±0.3            | 2.13±2.9      | 1.3±1.3        | <0.001 |

**Discussion**

The COVID-19 pandemic remains a major global public health challenge that has affected more than 182 million and around 4 million deaths worldwide as of 3 July 2021. This novel virus disease is of a highly infectious type requiring a multipronged approach involving primary care and family physicians in augmenting the efforts required for bringing down the burden of morbidity and mortality.
In our study, the majority of deaths (53%) occurred in the older age group of more than 60 years, which was similar to findings by Priya S et al.[7] in which 59% of deaths occurred in the older age group and various studies[5,24‑28] across the globe. Age-related factors such as declining immune functions, variations in quality and quantity of mucins and glycoproteins on the mucosal barriers and a gradual decline in clearing the inhaled particles could be attributed to increased risk of mortality among the elderly population.[29]

Our study also reported that there was a significant difference in the mean duration of delayed testing from the onset of symptoms among the non-survivors when compared to those who were discharged. This might be one of the reasons for increased risk of mortality among the COVID-19 patients. The probability of survival was more than 80% if the patients got admitted within a week as compared to delayed admission, and this was in concordance with the findings by Priya S[7] who reported that it was more than 90% within 1 week and 80% between 7 and 10 days from the symptom onset to admission and gradually declined thereafter.

In the present study, gender-wise distribution showed a male predominance in the disease which is similar to the study by Gupta N et al.[6] in which more than two-thirds of the COVID-19-affected patients were males and also similar to studies[25‑27,30,31] conducted worldwide. This might be due to increased outdoor exposure behaviour and gender-wise variations in angiotensin-converting enzyme levels.[24]

There was a higher proportion of deaths observed in males (65.1%) when compared to females; the study by Li Q in China reported similar findings. This could be due to the factors such as decreased susceptibility to viral infections and protection attributed to X chromosomes in the female population as noted by Guan WJ et al.[24] and Channappanavar R et al.[33]

Around 40% of those who died had a history of contact with COVID-19-positive patients when compared to only 2.9% in the survivor group, and the study by Chen N et al.[34] also reported the same. Among the non-survivors, 72.9% had practised self-medication to COVID-19 when compared to those who survived. The practice of self-medication has become very much predominant during this pandemic time as noted by Wegbom AI in Nigeria.

Although our study reported a higher proportion of vaccination in the non-survivor group in contrast to the discharged patients, this cannot be validated due to the factors like availability of vaccines and phase-wise implementation of immunization programme to different categories of beneficiaries.

The other statistically significant factors noted in comparison with those survived and those who died were the presence of co-morbid conditions such as diabetes, hypertension, chronic kidney disease and cerebrovascular diseases (P < 0.001). Similar findings were reported by a study conducted in southern India by Priya S[7] in which the most common co-morbidities noted

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**Table 2: Multivariate logistic regression analysis of clinicoepidemiological risk factors with mortality among COVID-19 patients**

| Variables                              | Odds ratio | 95% CI     | P    |
|----------------------------------------|------------|------------|------|
| Age group (years) n (%)                |            |            |      |
| <30                                     | 0.3        | (0.02-0.82)| 0.04 |
| 31-40                                   | 1          |            |      |
| 41-50                                   | 3.4        | (1.50-7.85)| 0.003|
| 51-60                                   | 2.2        | (1.00-5.25)| 0.048|
| 61-70                                   | 2.4        | (1.08-5.33)| 0.030|
| >70                                     | 4.0        | (1.71-9.74)| 0.001|
| Gender                                  |            |            |      |
| Male                                    | 0.9        | (0.54-1.58)| 0.774|
| Female                                  | 1          |            |      |
| H/O contact                             |            |            |      |
| Yes                                     | 14.2       | (7.12-28.43)| 0.000|
| No                                      | 1          |            |      |
| H/O smoking                             |            |            |      |
| Yes                                     | 1.5        | (0.59-4.05)| 0.373|
| No                                      | 1          |            |      |
| Co-morbidities                          |            |            |      |
| Yes                                     | 3.8        | (2.33-6.30)| 0.000|
| No                                      | 1          |            |      |
| Co-morbidities (individual)             |            |            |      |
| None                                    | 1          |            |      |
| Hypertension                            | 3.2        | (1.40-7.39)| 0.006|
| Diabetes                                | 1.9        | (0.81-4.40)| 0.013|
| Diabetes and hypertension               | 2.1        | (0.94-4.74)| 0.068|
| Chronic kidney disease                  | 15.4       | (5.23-45.71)| 0.000|
| Respiratory disease                     | 3.1        | (0.85-11.23)| 0.086|
| Cerebrovascular disease                 | 20.2       | (3.70-110.07)| 0.001|
| Others                                  | 12.1       | (4.67-31.37)| 0.000|
| Vaccination status                      |            |            |      |
| Two doses                               | 1          |            |      |
| One dose                                | 2.5        | (0.19-32.22)| 0.480|
| No                                      | 8.7        | (3.44-22.20)| 0.001|
| Self-medication                         |            |            |      |
| Yes                                     | 6.5        | (35.61-106.18)| 0.000|
| No                                      | 1          |            |      |

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**Figure 2: Kaplan-Meier estimate of survival probability of patients based on their admission time after their onset of symptoms among males and females**
among non-survivors were chronic kidney disease (61.5%), malignancy (50%), lung disease (18.6%), diabetes (13.5%) and hypertension (11.3%). This association between the presence of one or more co-morbidities and increased mortality is well documented in studies conducted by Rivera-Izquierdo M et al.\textsuperscript{[23]} Bhandari S et al.\textsuperscript{[27]} Sherwal BL et al.\textsuperscript{[28]} and Wang C et al.\textsuperscript{[34]} However, studies conducted in other parts of India reported no association between co-morbidities and death and this could be due to differences in studies’ sample size.\textsuperscript{[5,20]}

In the present study, univariate analysis showed low haemoglobin, low platelet count, high TLC and high NLR among the non-survivors in comparison with those who survived. This difference was found to be statistically significant ($P < 0.001$), and these results are in concordance with the findings by Aggarwal A and Tiwari N et al.\textsuperscript{[37,38]}

In our study, we found that increasing age from 41 years, history of contact with a positive patient, smoking, pre-existing conditions like hypertension alone or in combination with diabetes and chronic kidney disease had a higher risk of mortality among the admitted COVID-19 patients. Studies by Marimuthu Y et al.\textsuperscript{[5]} reported that 1.4 (95% CI, 0.6–3.0) times in 41–50 years of age group, male gender [OR 1.7 (95% CI, 1.1–2.6)], smoking [OR 6.2 (95% CI, 3.6–10.8)] and co-morbidities [OR 4.0 (95% CI, 2.5–6.3)] were significantly associated with increased mortality among COVID-19 patients. The study conducted in a rural part of India by Priya S\textsuperscript{[3]} reported the same, indicating that the presence of these multiple risk factors will increase the mortality among the COVID-19 patients.

**Limitations**

Our study is a record-based retrospective one conducted in a government tertiary care centre which was the only available health centre providing patient care to those affected with COVID-19 in the entire district could be one of the limitations of our study in generalizing the results given the rapidly changing scenario of the pandemic for which evidence needs to be updated accordingly. The findings of chest radiograph and biomarkers could not be analysed as reported in the study. However, the results of the study are comparable with the available literature across the world.

**Conclusions**

Our study on health care records of 1267 COVID-19 patients from the only tertiary care centre available in the entire hilly area on which the population depends on COVID-19 care showed that there was a significant delay in getting tested after the onset of symptoms, which need to be addressed through surveillance mechanisms such as house-to-house survey and effective contact tracing so that further transmission of infection can be prevented. Issues such as self-medication to the diseases such as COVID-19 which is rapidly changing its dynamics must be addressed by behaviour change communication in the community. The role of primary care physicians is vital in addressing these issues to reduce the severity and the consequences of this novel disease.

To summarize, there exists a significant association between increasing age, presence of co-morbidities like hypertension, diabetes, chronic kidney disease, smoking and increased mortality among COVID-19 patients. Early identification of laboratory parameters such as leucocytosis, high NLR, thrombocytopenia and normal renal function parameters would help in providing effective care so that the mortality can be reduced.

Hence, it is recommended that the health care workers including primary care physicians must be oriented in identifying the disease in the early stages through active public health strategies like testing, tracing and treatment on a priority basis. Community health campaigns addressing the issues of risk factors for non-communicable diseases would play an important role during this pandemic.

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**Conflicts of interest**

There are no conflicts of interest.

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