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Case Report

Stand-alone Ayurvedic intervention with home quarantine in COVID-19 – Outcomes of clinical practice

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ABSTRACT

This article reports the treatment outcomes of 167 COVID-19 positive patients who were treated with a stand-alone Ayurvedic therapeutic intervention. The main outcomes are quick resolution of symptoms, no deterioration in any of the cases and safe treatment for patients with multiple comorbidities. There was no observed mortality. There were no adverse events due to the Ayurvedic medications. The treatment was undertaken in an out-patient setting and at a low cost.

The efficacy and safety of the treatment, and the quick resolution of symptoms were demonstrated. This shows that if COVID-19 patients are treated with Ayurvedic medicines early in the course of COVID-SARS-2 infection, Ayurveda has the potential to prevent progression and deterioration of the disease, with decreased morbidity and mortality.

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1. Introduction

The World Health Organisation (WHO) declared the novel coronavirus disease (COVID-19) outbreak a Public Health Emergency of International Concern (PHEIC) in 2020 [1]. COVID-19 is a new disease. Regarding the treatment for new diseases Ayurvedic texts say: "... it is not always possible to name all types of diseases in definite terms. When aggravated, the one and the same *dosha* (disease-causing factor) may cause manifold diseases depending upon the various etiological factors and the sites of manifestation. So a physician should try to comprehend the nature of the disease, the site of its manifestation and etiological factors and should then quickly initiate the treatment." [2].

The pathophysiology of Ayurveda at the outset, defines the factors which cause disease in the body as *Vata*, *Pitta* and *Kapha*, also known as the *doshas*. Factors, both internal or external, alter the equilibrium of the *doshas* for disease to take root in the body [3]. This approach to the treatment of diseases eliminates the necessity for discovering newer vaccines and tailor-made drugs to treat each

new disease. Based on our assessment of COVID-19 patients, this disease is identified as a *vata-kapha jwara* and the treatment protocols used here are in line with this diagnosis [4,5].

Community transmission of COVID-19 was detected in the city of Chennai in June 2020 [6]. We report the first 167 patients with confirmed COVID-19 between the 24th of May 2020 and the 29th of August 2020 who were treated with Ayurvedic medicines. These were among the first 188 patients of which, 21 dropped out for reasons listed below. The medicines used are from the treatment protocol provided by the Ministry of AYUSH (MoA), Govt of India [7]. There are no co-interventions such as physiotherapy, sun bath, etc.

It is assumed that COVID-19 is a self-limiting disease and Ayurvedic treatments are given to asymptomatic or mild and moderate cases only. Even where official Ayurvedic COVID care centres are established, cases with comorbidities are referred to Allopathic hospitals. In our stand-alone Ayurvedic treatment for COVID-19, several patients with multiple comorbidities were treated.

2. Management approach

These are the outcomes of clinical practice with standalone Ayurvedic intervention which was documented and reported. This was at an Ayurvedic Out-patient clinic in Chennai. We have

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analysed the first 167 consecutive patients with confirmed COVID-19 who were treated with Ayurvedic intervention from 24th of May 2020 to 29th of August 2020 and the outcomes are presented here. The inclusion criteria were as follows: 1) COVID-19 positive by RT-PCR test - 139 patients (83%), or Lung CT changes suggestive of COVID-19 pneumonia - 4 patients (2%); Influenza Like Illness (ILI) in someone with a positive contact history to COVID-SARS2 with a laboratory confirmation - 24 patients (14%), 2) Patient willing to home-quarantine and self-monitor 165 patients (98.5% of the total number of patients), or if in a COVID Care Centre only on ayurvedic medicines provided by us - 2 patients (1.5% of the total number of patients) and 3) Patients willing to take only Ayurvedic medicines and not any Allopathic interventions for COVID-19. There was only one exclusion criterion: When the patient wanted to combine both Allopathic and Ayurvedic medical therapy, he/she was excluded. In other words, the treatment protocol was a stand-alone Ayurvedic intervention. In the same period, of the 228 patients who approached us for Ayurvedic intervention, 40 patients were excluded based on the above exclusion criterion.

The procedure consisted of the following four steps:

1. Telephonic consultation to elicit history for an accurate diagnosis.
2. Treatment intervention such as diet, regimen and classical Ayurvedic medicines utilized
3. Daily follow-up of the patient through tele-consultation until all symptoms of COVID-19 were resolved
4. Convalescence medicines to restore their energy and immunity

In the initial phase of the treatment which saw 188 COVID-19 patients, the number of dropouts, after initiating treatment, was 21. The reasons included: Fear of deterioration of their condition and the lack of cardio-respiratory support in an ICU setting (11 patients); coercion by government staff and police to get admitted to Government or private hospitals, or quarantine centres (2 patients); Lack of nursing support (4 patients); Difficulty with the regulation of diet and regimen (*pathyam*) (4 patients).

As the pandemic has not been brought under control, patients continue to visit the Ayurvedic centre. Only those outcomes, based on the treatment of initial 167 cases are being presented. The reporting of time for recovery is done based on variables such as age, symptoms and comorbidities.

2.1. Ayurvedic patient management

The guidelines provided by the MoA, Govt of India, were followed for the treatment of COVID-19 patients [7]. The Case Record Form provided by the MoA, Govt of India was used to fill in the case history and get the consent form signed by the representative of the patient. A long conversation with the patient also helped to elicit travel and contact history, and list of long-term medications taken for underlying diseases, as well any previous medications taken for COVID-19.

The diet and regimen were common to all patients. Those foods and regimen which further aggravated the disease-causing *doshas*, i.e., *vata* and *kapha* were prohibited [8]. The patients were advised to consume rice, green gram lentils and boiled vegetables added with pepper, cumin and coriander. Sleeping during the day and keeping awake later than 10:00 pm were prohibited. Bathing was forbidden if the patient had fever. Specific needs of patients were met on a case-by-case basis. Medicines were prescribed depending on their comorbidities.

2.1.1. Rationale for intervention

Initially, treatment for *nava jwara* was followed. Diet and regimen have been explained above. Medicines consisted mostly of

churnas, *kashayas*, and tablets, which were individualised according to the patient's presenting symptoms, comorbidities and their *avastha* (condition). *Anupanas* (adjuvants) used were honey, ginger juice, boiled and cooled water, and warm water. The patients were spoken to and monitored at least once or twice a day, and whenever necessary, several times a day to assess various parameters such as temperature, cough, breathlessness, body pain, digestion, bowel movement, urination, appetite, pattern of the fever and remission of symptoms. If the fever prolonged beyond six days, and the patient no longer exhibited symptoms of *nava jwara*, they were prescribed milk and ghee in the diet, as well as medicated milk and the appropriate medicated ghee. During convalescence, fat-free meat soup and *rasayana* preparations were prescribed.

The medicines used for treatment are listed in [Appendix A](#). The MoA, Govt of India guidelines ([Appendix B](#)) have been uploaded as Supplementary Material.

2.2. Patient details

We report 167 patients treated between the 24th of May 2020 and the 29th of August 2020.

The age of patients ranged between 4 and 92 years. The mean (\pm SD) age of the patients was 44 ± 17 years, median age was 44 years; 95 patients (57%) were men; and 60 patients (36%) had one or more comorbidities. The median time for recovery of the patients was 6 days and for those with comorbidities was 6 days. Symptoms began 6.5 ± 4.7 days prior to the start of treatment. Of the 167 cases, 109 (65%) presented with respiratory disease symptoms, 11 (7%) were asymptomatic, and 47 (28%) had symptoms other than respiratory, and 91 (54%) had more than three symptoms ([Table 1](#)). All patients recovered from COVID-19 infection.

The most common symptoms were fever, general weakness, cough and sore throat; 100 (60%) patients had fever, 101 (60%) had general weakness, 69 (41%) had cough, 61 (37%) had sore throat, 43 (26%) had headache, 20 (12%) had dyspnoea, 24 (14%) had nausea and vomiting and 25 (15%) had diarrhoea. Temperatures measured were between 99°F and 104°F. Fever was mostly low-grade (less than 100.4°F) in 53 (32%) patients. Only 8 (5%) patients had fever greater than 102°F ([Fig. 1](#)).

As illustrated in [Fig. 2](#), 60 (36%) had comorbidities, and 29 (17%) had more than one comorbidity. The most common underlying disease was diabetes mellitus 34 (20%) and 29 (17%) had hypertension. Among the total number of patients, 32 (17%) were 60 years of age or above and 28 (17%) had a BMI between 30 and 40 ([Table 2](#)). We have included patients with comorbidities, elderly, BMI greater than 30 and smokers as those in the high-risk category.

2.3. Comorbidities and COVID-19

The risk factors for a poor outcome includes older age, male gender, comorbidities such as diabetes, hypertension, immunosuppression, and cancer [9–12]. The comorbidities we treated included diabetes mellitus, hypertension, chronic kidney disease (undergoing haemodialysis), coronary artery disease, cancer with and without metastasis, in the midst of chemotherapy and radiation therapy, chronic obstructive pulmonary disease, obesity, and immunosuppression.

3. Outcome measures

The main outcome was quick resolution of symptoms. As can be seen from [Fig. 3](#) the mean time of recovery was 6.3 ± 2.7 days. [Fig. 4](#) shows the average recovery time for patients according to age. The youngest age group of children aged less than 10 years recovered in

Table 1

Patient details.

Demographic Information	
Total No.	167
Age: Mean, SD, Median	44, 17, 44
Age: Min, Max	4, 92
Sex	
Female	72 (43%)
Male	95 (57%)
BMI > 30	28 (17%)
Age > 60	29 (17%)
Comorbidities	
Diabetes	34 (20%)
Hypertension	29 (17%)
Cancer	5 (3%)
Asthma	11 (7%)
COPD	4 (2%)
CKD	4 (2%)
Smoking	3 (2%)
Symptoms	
Onset (prior to start of treatment)	6.5 ± 4.7
Respiratory	109 (65%)
Other than Respiratory	47 (28%)
Asymptomatic	11 (7%)
More than 3 symptoms	91 (54%)

5 days. The mean time for recovery for patients with comorbidities was 6.7 ± 2.9 days, and for the high-risk patients was 6.5 ± 2.92 days. Median time for recovery for both categories was 6 days.

4. Limitations

Almost all the patients who came for Ayurvedic treatment were first-time patients exposed to Ayurveda. Therefore, the instructions on diet and regimen were altogether new to them, as were the medicines and the way to use them. Though the patients were in touch with their Ayurveda physicians over the telephone, this was the first time they were dealing with and monitoring a disease by

themselves and that too under quarantine. An in-patient facility, perhaps could have helped to lower the dropout rate. It would have also provided an opportunity to choose more appropriate therapy from a wider range of medicines and diet, according to the patient's condition.

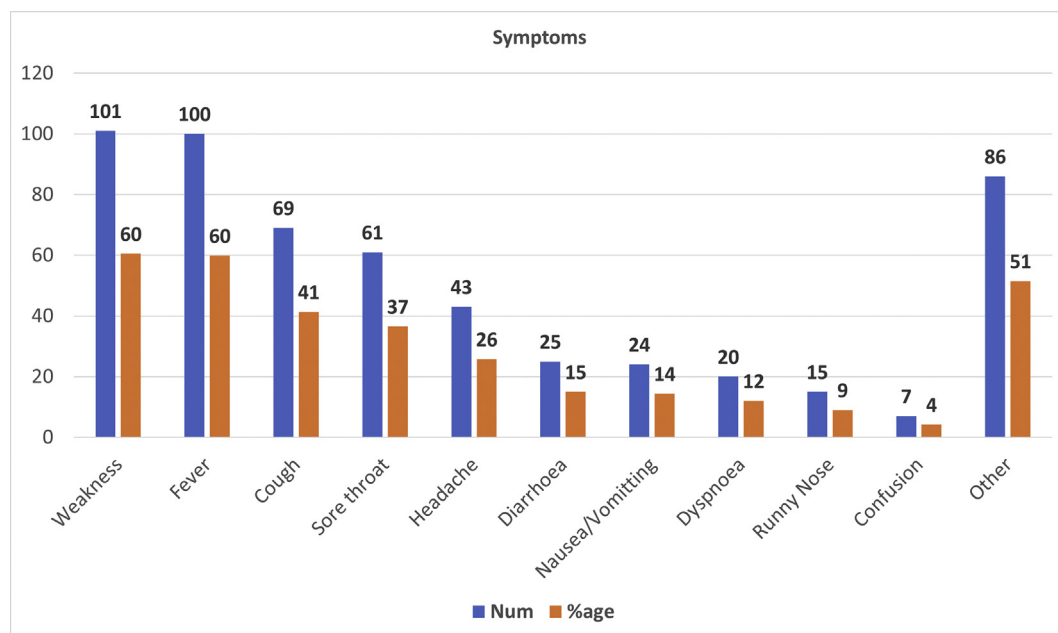
5. Discussion

According to Modern Western Medicine (MWM), COVID-19 is a disease produced by SARS-CoV-2 infection which affects multiple organs resulting in their dysfunction. The virus gains access into the cell through the ACE-2 receptor and replicates inside the cell and gets released from the cell to infect other cells. ACE-2 receptor is ubiquitous and is found in many organs resulting in their involvement in COVID-19 disease [13]. Till date there are no effective therapeutic strategies to overcome SARS-CoV-2 infection [14]. The Ayurvedic approach on the other hand, is based on the diagnosis of *vata-kapha jwara*. The Ayurvedic therapeutic intervention based on this diagnosis has had an excellent outcome. There was no deterioration in the clinical conditions observed amongst the patients who completed treatment, until resolution of their symptoms and/or negative test result.

Two patients with a high COVID-19 score (25 and 29) [Supplementary Fig 1 and Fig 2](#) recovered well within a short period. A score of anything beyond 18 is indicative of mortality in short-term follow-up [15,16].

Although oxygen saturation (SpO₂) levels using non-invasive pulse oximeter were not monitored, there were patients who were using a pulse oximeter who reported lower levels of SpO₂. The lowest reported was 79%. Despite hypoxemia, these patients recovered within a short period of time. An oxygen saturation level below 93% is indicative of hypoxemia [17].

There are many advantages to an Ayurvedic approach. Depending on the intensity of the disease and the different presenting symptoms, medicines were prescribed. One medicine-fits-

**Fig. 1.** Symptoms.

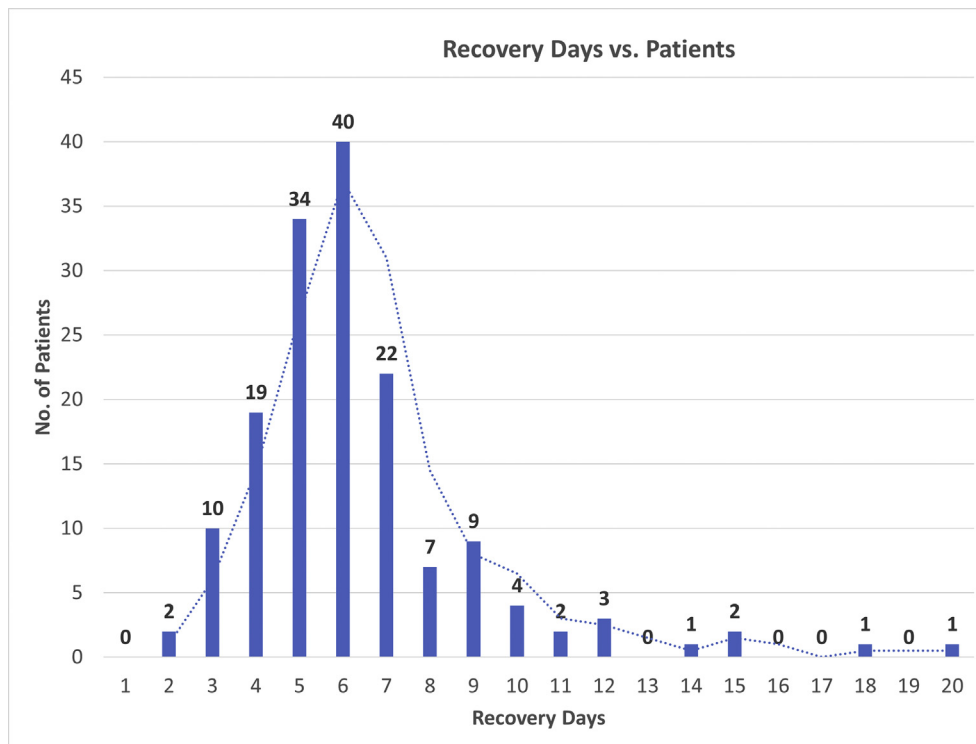


Fig. 2. Percentage of patients with comorbidities.

Table 2

Age-wise comorbidities and risk factors.

Age Range	Gender		Comorbidities		BMI 30-40	
	Male	Female	Yes	No	Yes	No
0–18	8	3	1	10	0	11
18–30	12	11	3	20	2	21
30–40	19	14	3	30	6	27
40–50	20	14	13	21	5	29
50–60	16	18	18	16	11	23
60–70	12	9	13	8	3	18
≥70	8	3	9	2	1	10
Total	95	72	60	107	28	139

all approach was avoided. Improved results were achieved because of the personalised treatment approach. Asymptomatic and symptomatic patients were given different sets of medicines according to their condition. Safe treatment was possible for patients who were high-risk, with comorbidities such as diabetes, chronic kidney disease (undergoing haemodialysis), heart disease, hypertension, cancer, lung disease, immuno-compromised, elderly, obesity (BMI 30 and above) etc.

This article is based on an ongoing Ayurvedic treatment, of which the initial 167 patients who completed treatment are being presented. Some of the most notable factors include: absence of mortality due to COVID-19 in this group of patients despite the fact that the Ayurvedic treatment handled many high-risk patients. Patients experienced no deterioration and hence needed no emergency ICU care.

According to Dr. Anthony Fauci, Director, National Institute of Allergy and Infectious Diseases, USA, the biggest challenge of the COVID-19 pandemic is the absence of medicines from MWM for

patients in the early stages of the disease [18]. This means that MWM's biggest lacuna is its inability to provide treatment or prophylaxis which can protect or prevent this disease from advancing from an early stage into a serious condition. Medicines such as zinc, vitamin C, and antibiotics are not scientifically proven for the treatment of COVID-19; whereas medicines such as Remdesivir and Dexamethasone which are mandated for use in hospitalized patients with COVID-19 cannot be used on mild and moderate cases [18,19]. Therefore, MWM is relying heavily on the self-limiting nature of the disease. This is the major reason for the high rate of mortality and morbidity in COVID-19 when it is solely managed by MWM.

On the other hand, the Ayurvedic approach and treatment of COVID-19 in the early stages, prevents the progression of the disease into a more serious stage. Ayurvedic therapy can be safely and effectively used in patients with comorbidities with no mortality and morbidity as documented here. It has also been shown that a good out-patient treatment and management was possible with Ayurveda for COVID-19.

The use of Ayurvedic therapy in the treatment of COVID-19 is cost-effective. The cost incurred both by the government and the patients when the disease is handled by Ayurveda, is a miniscule proportion of what it is when treated by the MWM. The medicines and treatment are inexpensive. A cost-benefit analysis comparing two different modes of treatment – Ayurveda and MWM would be instructive.

There are many medicines for *vata-kapha jwara* such as COVID-19. There is wide scope for Ayurveda physicians all across India to choose medicines which they are familiar with, depending on their availability. India possesses a vast resources in Ayurveda in terms of professionals and therapeutic modalities; however, only miniscule

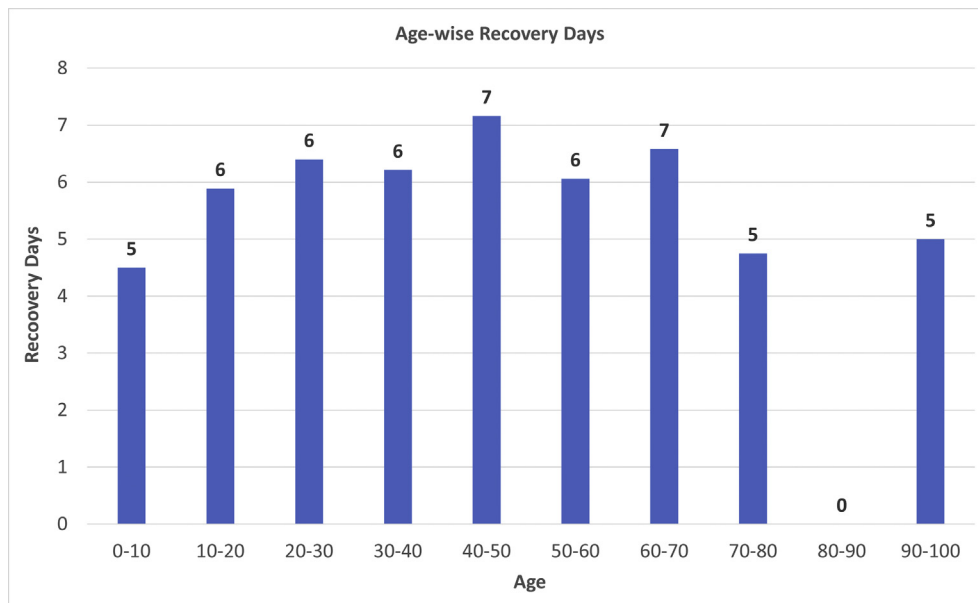


Fig. 3. Mean time for recovery.

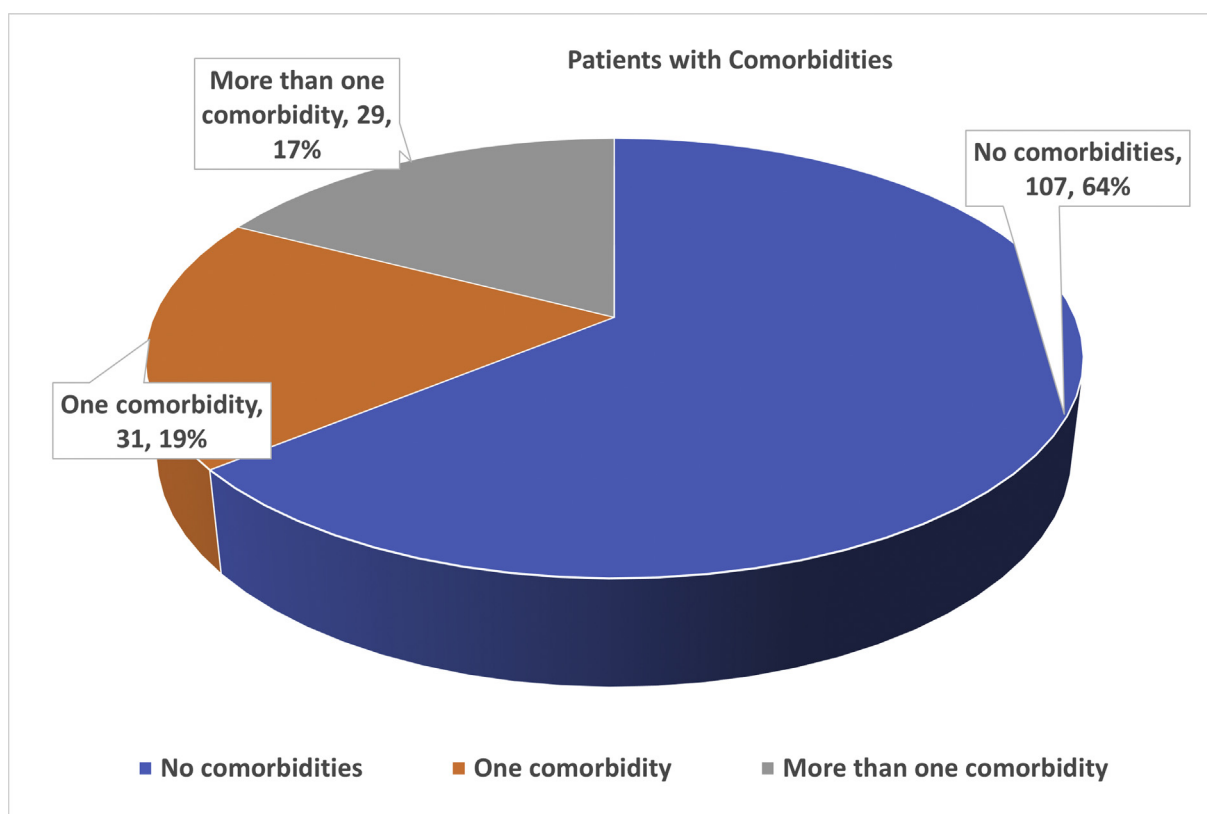


Fig. 4. Age-wise recovery.

support and patronage from the State (around 1.5% or less of the health budget) is allotted for the same [20].

6. Conclusion

The successful application of Ayurvedic treatment for COVID-19 hopefully would encourage health care policy-makers in India to

take note of its success, low cost, and superior outcome. It can be safely assumed based on the available data, that the mortality from COVID-19 could have been drastically reduced, had Ayurveda been allowed to play the central role in treatment and prevention of this disease in India. It would be of great interest and benefit if a study comparing the Ayurvedic and MWM treatments, is undertaken to fully understand the efficacy of Ayurvedic treatment.

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Conflict of interest

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jaim.2021.04.015>.

References

- [1] World Health Organisation. Timeline: WHO's COVID-19 respons. 2020, 30 January. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline>.
- [2] Ram Karan, Sharma, Vaidya Bhagwan Dash. of Agnivesha. In: Samhita Charaka, editor. Text with English translation of Ayurveda Dipika commentary of Chakrapanidatta. Sutra Sthana; Trishothiyamadyaya: chapter 18, verses 44-47. Varanasi: Chowkhambha Sanskrit Series, Reprint; 2003. p. 345.
- [3] Prof KR. Srikantha Murthy, translator, Ashtanga Hrdayam of Vagbhata, Sutra Sthana; Ayushkameeyadhyaya: chapter 1, Verse 20. Varanasi: Krishnadas Academy; 2003. p. 12. Reprint.
- [4] Ram Karan, Sharma, Vaidya Bhagwan Dash. of Agnivesha. In: Samhita Charaka, editor. Text with English translation of Ayurveda Dipika commentary of Chakrapanidatta. Chikitsa Sthana; Jwara Chikitsa: chapter 3, verse 100. Varanasi: Chowkhambha Sanskrit Series, Reprint; 2003. p. 139.
- [5] Prof KR. Srikantha Murthy, translator, Ashtanga Hrdayam of Vagbhatacharya, Nidana Sthana, Jwara Nidana, chapter 2, Verse 25. Varanasi: Krishnadas Academy; 2003. p. 16. Reprint.
- [6] Narayan Pushpa. Chennai a ticking time bomb, more tests must to defuse it. The Times of India; 2020 (online), May 27, 2020, <https://timesofindia.indiatimes.com/city/chennai/chennai-a-ticking-time-bomb-more-tests-must-to-defuse-it/articleshow/76021061.cms>.
- [7] GUIDELINES for AYURVEDA PRACTITIONERS for COVID 19. Ministry of AYUSH, Government of India; 2020. https://health.ncog.gov.in/ayush-covid-dashbaord/assets/Classified/Ayurveda_Guidelines.pdf.
- [8] Ram Karan, Sharma, Vaidya Bhagwan Dash. of Agnivesha. In: Samhita Charaka, editor. Text with English translation of Ayurveda Dipika commentary of Chakrapanidatta. Chikitsa Sthana; Jwara Chikitsa: chapter 3, verses 138-139. Varanasi: Chowkhambha Sanskrit Series; 2003. p. 149. Reprint.
- [9] COVID-19 High risk groups. World Health Organisation; 2020. <https://www.who.int/westernpacific/emergencies/covid-19/information/high-risk-groups>.
- [10] Maragakis Lisa. Coronavirus and COVID-19: who is at higher risk?; [online] Johns Hopkins medicine. June 2020. Last accessed August 7th 2020, <https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/coronavirus-and-covid19-who-is-at-higher-risk>.
- [11] Jordan Rachel E, Adab Peymane, Cheng KK. Covid-19: risk factors for severe disease and death. BMJ 2020;368:m1198. <https://doi.org/10.1136/bmj.m1198>.
- [12] "Evidence used to update the list of underlying medical conditions that increase a person's risk of severe illness from COVID-19", Centers for Disease Control and Prevention. Updated, <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/evidence-table.html>. [Accessed 28 July 2020].
- [13] Renu Kaviyarasi, Pureti Lakshmi Prasanna, Abilash Valsala Gopalakrishnan. Coronaviruses pathogenesis, comorbidities and multi-organ damage – a review. Life Sci 15 August 2020;255:117839. <https://doi.org/10.1016/j.lfs.2020.117839>. Available online 22 May 2020.
- [14] Sanders JM, Monogue ML, Jodlowski TZ, Cutrell JB. Pharmacologic treatments for coronavirus disease 2019 (COVID-19): a review. J Am Med Assoc 2020;323(18):1824–36. <https://doi.org/10.1001/jama.2020.6019>. <https://jamanetwork.com/journals/jama/fullarticle/2764727>.
- [15] Francone M, lafrate F, Masci GM, Coco S, Cilia F, Manganaro L, et al. Chest CT score in COVID-19 patients: correlation with disease severity and short-term prognosis. Eur Radiol 2020. <https://doi.org/10.1007/s00330-020-07033-y>.
- [16] Hu Y, Zhan C, Chen C, Ai T, Xia L. Chest CT findings related to mortality of patients with COVID-19: a retrospective case-series study. PLoS One 2020;15(8):e0237302. <https://doi.org/10.1371/journal.pone.0237302>.
- [17] Jiang Xie, , Naima Covassin Zhengyang Fan Prachi Singh Wei Gao Guangxi Li, Kara Tomas, Somers Virend K. Association between hypoxemia and mortality in patients with COVID-19. Mayo Clin Proc June 2020;95(6):1138–47. <https://doi.org/10.1016/j.mayocp.2020.04.006>.
- [18] Fauci Antony. Coronavirus Q&A wit Anthony Fauci. MD", interviewed by Dr. Bauchner, JAMA network. 2020. Recorded August 3, 2020.(19:55), <https://www.youtube.com/watch?v=8PgmAWgi1A>.
- [19] Ahmed MH, Hassan A. Dexamethasone for the treatment of coronavirus disease (COVID-19): a review. SN Compr. Clin. Med. 2020;2:2637–46. <https://doi.org/10.1007/s42399-020-00610-8>.
- [20] Girija PLT, Mukundan TM, Srinivas MD. Ayurveda for revitalising Healthcare in India. 1st ed. Chennai: Sanjeevani Ayurveda Foundation; 2017. p. 39–41.