



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



COVID-19 pandemic and lock-down protocols: Impact in an indian tertiary cancer center

Dear editor

On January 30, COVID-19 was declared a global emergency and on 11 March 2020 as a pandemic by WHO [1]. India reported its first case on 30 January 2020 [2]. On, 22 March 2020, the Government of India announced a 14-hour curfew. To control the spread of COVID-19, the first phase of the nationwide lockdown was implemented from 24 March 2020 for 21 days till 14th April 2020 [2–4]. The second phase of lockdown was for 19 days till May 3rd, followed by phases 3 and 4 each for 14 days with relaxations. For more than 2 months India was under lockdown till 31st May 2020. Relaxations and services were restored with exceptions in the containment zones [3,4].

Cancer, a disease characterized by uncontrolled proliferation of cells with evasion of apoptosis is another challenge to mankind owing to the high morbidity and mortality rates. Every year there are about 18.1 million people diagnosed with cancer. Around 9.6 million die every year due to cancer. In India, 1.1 million people are diagnosed every year, of which a majority are diagnosed only during the terminal stage [5].

Cancer patients are most susceptible to secondary infections due to immunosuppression caused by anticancer therapy [6]. During this pandemic, health care resources have been redirected towards the treatment of COVID-19 patients [7]. For example, some of the cancer centers were converted to COVID-19 treatment facilities [8]. Due to travel restrictions and fear of exposure to the virus cancer screening, research, clinical trials were significantly impaired [5,7].

As frequent hospital visits can increase the risk of exposure to the virus [9], cancer patients must battle between increased risk of COVID-19 infection and adverse effects of postponing anticancer treatment [5]. There was a major reduction in the patients reporting to cancer centers even in large metropolitan cities [10,11]. Globally, irrespective of income status, data show a downfall in the number of patients accessing cancer treatment. Delayed treatment will have a serious public health impact in the coming years, with a predicted surge in the mortality rate within the next 5–10 years [8]. To assess the impact of COVID-19 and nationwide lockdown protocols, we assessed the changes in the in-patient flow in a tertiary cancer center in Chennai, India from January

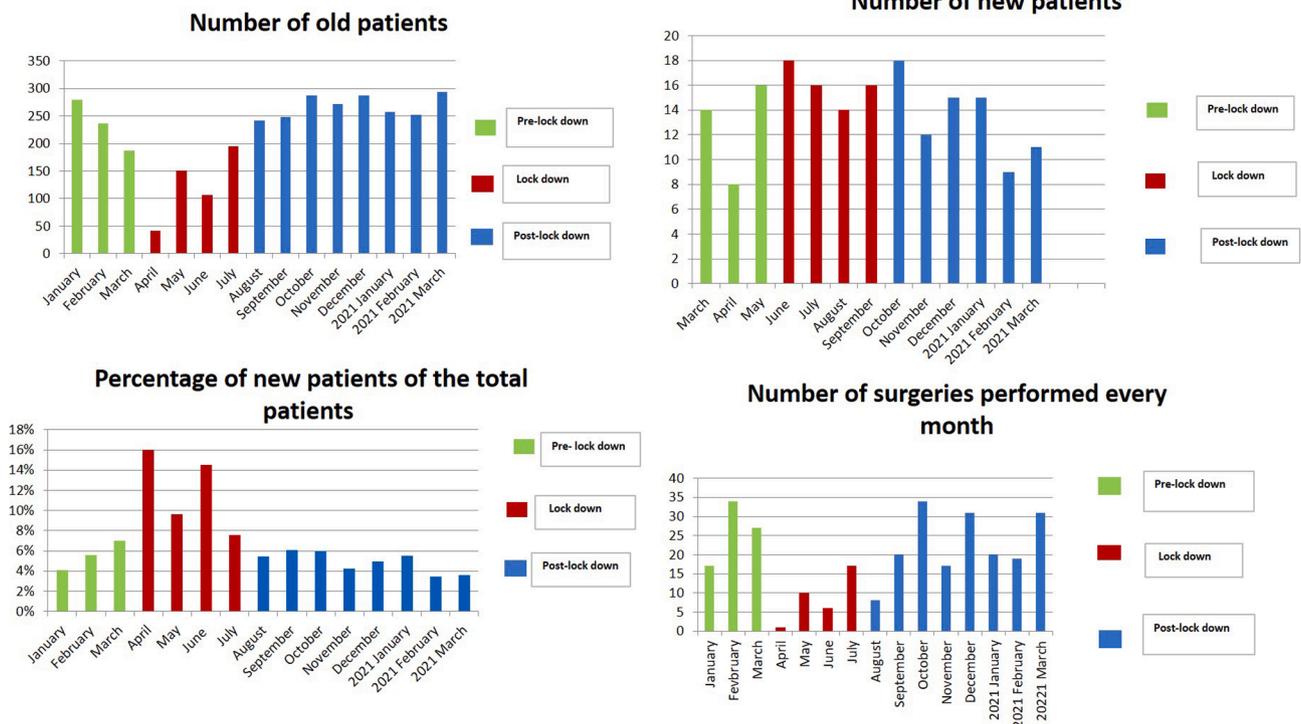


Fig. 1. Descriptive statistics of the number of patients and surgical procedures from January 2020 to March 2021

<https://doi.org/10.1016/j.oraloncology.2021.105484>

Received 29 July 2021; Received in revised form 2 August 2021; Accepted 6 August 2021

Available online 11 August 2021

1368-8375/© 2021 Elsevier Ltd. All rights reserved.

2020 to March 2021. The records of the number of new and old in-patients who were admitted to a Tertiary Cancer Centre in Chennai, India for diagnosis, treatment, or follow-up visits of cancer were assessed from January 2020 to March 2021. The number of surgical procedures performed every month was also recorded. The obtained data were presented as descriptive statistics.

The number of the new, and old in-patients who were admitted to the center every month from January 2020 to March 2021 is depicted in Fig. 1. April 2020 had the least number of old and new patients visiting the center. The total number of old patients was highest in March 2021, however, the number of new patients was highest in June and October 2020. The number of old and new patients visiting the center and the number of surgeries performed was the least in April 2020 owing to the intense lockdown imposed by the Government [2–4]. During such disastrous situations, the initiation of teleconsultation is the only choice that can be provided to the patients [12]. The number of new patients was highest in April, depicting the awareness of patients who suspected cancer and had reported for early diagnosis. The total number of old patients were highest in March 2020, which can be attributed to the fact that awareness of COVID and the national lockdown was imposed on 24th March 2020 [2–4]. The number of new patients was highest in June and October 2020 and number of surgical procedures were highest in February and October 2020 that could be attributed to the process of unlocking down, relaxation of rules and vaccination drive [2,4,13]. Thus, this unforeseen crisis has taught us to provide adequate cancer diagnosis and cure without jeopardizing the curve of a pandemic by taking adequate safety protocol, and using telemedicine, as early management of this dreaded disease is the only way for improvement of prognosis despite the pandemic situation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- [1] Rawat K, Kumari P, Saha L. COVID-19 vaccine: A recent update in pipeline vaccines, their design and development strategies. *Eur J Pharmacol* 2021;892:173751. <https://doi.org/10.1016/j.ejphar.2020.173751>.
- [2] Sardar T, Nadim SS, Rana S, Chattopadhyay J. Assessment of lockdown effect in some states and overall India: A predictive mathematical study on COVID-19 outbreak. *Chaos Solitons Fractals* 2020;139:110078. <https://doi.org/10.1016/j.chaos.2020.110078>.
- [3] Ray D, Subramanian S. India's lockdown: an interim report. *Indian Econ Rev* 2020; 1–49. <https://doi.org/10.1007/s41775-020-00094-2>.
- [4] Krishan K, Kanchan T. Lockdown is an effective “vaccine” against COVID-19: A message from India. *J Infect Dev Ctries* 2020;14:545–6. <https://doi.org/10.3855/jidc.12931>.
- [5] Pareek P, Vishnoi JR, Kombathula SH, Vyas RK, Misra S. Teleoncology: The Youngest Pillar of Oncology. *JCO Glob Oncol* 2020;6:1455–60. <https://doi.org/10.1200/GO.20.00295>.
- [6] De Guzman R, Malik M. Dual challenge of cancer and COVID-19: Impact on health care and socioeconomic systems in Asia Pacific. *JCO Glob Oncol* 2020;6:906–12. <https://doi.org/10.1200/GO.20.00227>.
- [7] Ramachandra C, Sugoora P, Karjol U, Arjunan R, Altaf S, Halkud R, et al. Outcomes of cancer surgery during the COVID-19 pandemic: Preparedness to practising continuous cancer care. *Indian J Surg Oncol* 2020;1–5. <https://doi.org/10.1007/s13193-020-01250-z>.
- [8] Ranganathan P, Sengar M, Chinnaswamy G, Agrawal G, Arumugham R, Bhatt R, et al. Impact of COVID-19 on cancer care in India: a cohort study. *Lancet Oncol* 2021;22:970–6. [https://doi.org/10.1016/S1470-2045\(21\)00240-0](https://doi.org/10.1016/S1470-2045(21)00240-0).
- [9] Venkatesulu BP, Chandrasekar VT, Girdhar P, Advani P, Sharma A, Elumalai T, et al. A systematic review and meta-analysis of cancer patients affected by a novel coronavirus. *JNCI Cancer Spectr* 2021;5:pkaa102. <https://doi.org/10.1093/jncics/pkaa102>.
- [10] Valentini V, Pucci R, Battisti A, Cassoni A. Head and neck cancer cannot wait for this pandemic to end: Risks, challenges and perspectives of oral-maxillofacial surgeon during COVID-19. *Oral Oncol* 2020;106:104758. <https://doi.org/10.1016/j.oraloncology.2020.104758>.
- [11] Al-Maweri SA, Halboub E, Warnakulasuriya S. Impact of COVID-19 on the early detection of oral cancer: A special emphasis on high risk populations. *Oral Oncol* 2020;106:104760. <https://doi.org/10.1016/j.oraloncology.2020.104760>.
- [12] Lurie N, Carr BG. The role of telehealth in the medical response to disasters. *JAMA Intern Med* 2018;178:745–6. <https://doi.org/10.1001/jamainternmed.2018.1314>.
- [13] Bhuyan A. India begins COVID-19 vaccination amid trial allegations. *Lancet* (London, England) 2021;397:264. [https://doi.org/10.1016/S0140-6736\(21\)00145-8](https://doi.org/10.1016/S0140-6736(21)00145-8).

Theerthika Dillibabu

Sri Venkateswara Dental College and Hospital, Chennai, India

Saranya Varadarajan

Department of Oral Pathology and Microbiology, Sri Venkateswara Dental College and Hospital, Chennai, India

Thodur Madapusi Balaji

Tagore Dental College and Hospital, Chennai, India

Priyanka Balakrishnan

Sri Venkateswara Dental College and Hospital, Chennai, India

Shashank Tangutur

Bala Vidya Mandir School, Chennai, India

Shankargouda Patil

Department of Maxillofacial Surgery and Diagnostic Sciences, Division of Oral Pathology, College of Dentistry, Jazan University, Jazan, Saudi Arabia

A. Thirumal Raj*

Department of Oral Pathology and Microbiology, Sri Venkateswara Dental College and Hospital, Chennai, India

* Corresponding author.

E-mail address: thirumalraj666@gmail.com (A.T. Raj).