

## Reality of Life and Environmental Changes after COVID-19 Pandemic in India

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### Abstract

COVID-19 is a global burden which, as the pandemic progresses through its various phases, continues to redefine everyday lifestyle-related habits, environment, education and employment in a significant way. In determining the degree of changes in lifestyle-related behaviours, the interplay of the magnitude of COVID-19 infection with different social, economic, environmental and cultural constructs could vary from country to country. There is a lack of evidence that assesses the effects of COVID-19 on Indian lifestyle-related behaviours. Some main questions, such as which lifestyle habits are most affected, how severe the effect of COVID-19 on these behaviours is, what are the reasons for these changes, and which demographic segment is most affected, should be investigated. We conducted this research to assess the effect of COVID-19 on lifestyle and environmental changes encountered by people during the pandemic, taking into account these questions. The answers to these questions will provide a fundamental basis for developing effective lifestyle change recommendations during this period.

**Keywords:** Life style changes; Pandemic; Covid-19

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### Introduction

India continues to struggle and is uncertain when the peak will come. Researchers are interested in the creation of hypotheses and models for prediction. It is certain that contaminated cases of COVID-19 were under control during the first phase of the lockdown [1]. Viral epidemic research has generally shown negative effects, such as depression and anxiety, feelings of terror, tension and concern [2], psychological distress [3] and also stigma and xenophobia against people suspected of being infected with the disease [4]. Fear of the disease has reportedly also led to suicides in many cases [suicide is the leading cause of more than 300 lockdown deaths in India, according to The Economic Times [2020]. Essentially, much of the literature focuses on adverse disease outcomes, requiring an analytical move to preventive as well as optimistic COVID-19 outcomes. The Government of India [central and state level] is working intensively to minimise the number of daily cases and consequences and is taking all necessary steps to combat the challenges and threats posed by this growing invisible pandemic war involving the public, medical associations, nurses, NGOs, police forces, including paramilitaries. The only possible reason for the control and treatment of the pandemic was the earnest efforts of all frontline workers, particularly medical doctors, nurses, health workers, sanitation workers, police staff, volunteers, and the active support and obedience of the people of India. Also the Indian government got critically involved with the COVID-19 outbreak and started scanning every person (Figure 1). There is a chance to have the second wave of

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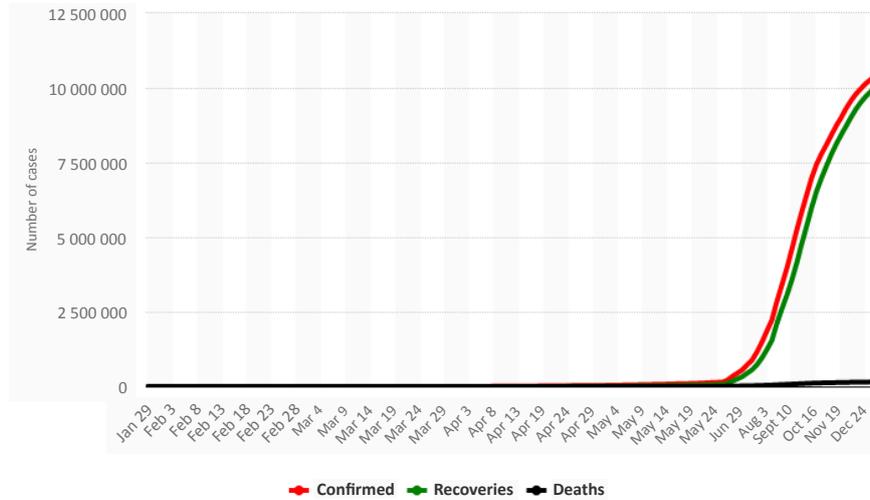
COVID-19 and if that occurs India will suffer in huge from every aspect (Tables 1 and 2) [5].

### Treatment practices

Hydroxychloroquine [HCQ] is prescribed as a chemoprophylaxis treatment for asymptomatic healthcare staff treating COVID-19 cases, frontline employees and asymptomatic contacts with reported cases with no vaccine or antiviral drug available against SARS-CoV-2, although a combination of hydroxychloroquine-azithromycin is recommended for patients with extreme illness.

### Indian medicine

Recommendations on preventive measures and improving immunity based on Ayurvedic literature and scientific publications were made by the AYUSH Ministry with clear references to respiratory health. Medicinal plants such as *Tinosporacordifolia* [for chronic fever], *Andrographispaniculate* [for fever and cold], *Cydoniaoblonga*, *Zizyphus jujube*, *Cordiamyxa* [for immunomodulatory, anti-allergic, smooth muscle relaxant



**Figure 1** Cumulative of the coronavirus [COVID-19] confirmed, recovered and deceased numbers across India from January 29, 2020 to January 7, 2021.

**Table 1** Prevalence of covid-19 in India.

State	Active cases	Confirmed cases	Death	Recovery
Andaman and Nicobar Islands	17	4963	62	4884
Andhra Pradesh	2450	885037	7131	875456

**Table 2** Trends of Covid-19 in India.

Andhra Pradesh	2450	885037	7131	875456
Arunachal Pradesh	63	16777	56	16658
Assam	2995	216635	1064	212576
Bihar	3908	256991	1439	251644
Chandigarh	259	20342	327	19756
Chhattisgarh	8550	290084	3505	278029
Dadar & Nagar Haveli; Daman & Diu	4	3382	2	3376
Delhi	3354	630506	10691	616461
Gujarat	7595	252397	4344	240458
Haryana	2547	265234	2956	259731
Himachal Pradesh	922	56521	949	54650
Jammu and Kashmir	1768	122651	1911	118972
Jharkhand	1382	116961	1048	114531
Karnataka	9344	928055	12163	906548
Kerala	63547	814259	3323	747389
Ladakh	183	9621	127	9311
Lakshadweep	0	0	0	0
Madhya Pradesh	7651	249082	3718	237713
aharashtra	52288	1971552	51276	1867988
Manipur	477	28693	365	27851
Meghalaya	151	13631	143	13337
Mizoram	90	4293	9	4194
Nagaland	247	11987	85	11655
Odisha	1890	332106	1945	328271
Puducherry	304	38477	638	37535
Punjab	2858	169225	5447	160920
Rajasthan	6585	313425	2736	304104
Sikkim	322	5989	129	5538
Tamil Nadu	6971	826943	12228	807744
Telangana	4524	290309	1568	284217
Tripura	72	33306	385	32849
Uttar Pradesh	10864	593680	8504	574312
Uttarakhand	4003	93777	1578	88196
West Bengal	7538	561321	9957	543826
Total	216522	1E+07	152558	1E+07

and anti-influenza activity], Arsenicum album 30 [for SARS-CoV-2 Effective], AgastyaHaritaki [for upper respiratory infections], Anuthaila, Adatho album 30 [for SARS-CoV-2 Effective], and Eupatorium perfoliatum because of their antiviral, anti-inflammatory and antioxidant properties, was considered and recommended to be favourable for the COVID-19 treatment and helps to boosting immunity [6].

Ministry of AYUSH recommended few health care measures and self-care guidelines for enhancing immunity to fight against COVID-19 with ayurvedic procedures, like drinking warm water throughout the day, regular practice of Yogasana, Pranayama and meditation for at least 30 min, intake of spice item like Haldi [Turmeric], Dalchini [Cinnamon], Kalimirch [Black pepper], Shunthi [Dry Ginger] and Munakka [Raisin] - once or twice a day, application of sesame/oil/coconut oil in the nostrils every morning/evening, oil pulling therapy, intake of chavanprash [10 gm/day], Jeera [Cumin], Dhaniya [Coriander] and Lahsun [Garlic], drinking herbal tea/decoction [Kadha] made from Tulsi [Basil], Golden Milk- Half teaspoon Haldi [turmeric] powder in 150 ml hot milk - once or twice a day, etc. Additionally, steam inhalation with fresh pudina, clove powder with honey can be taken to fight against dry cough/sore throat [7].

## Is COVID-19 Favors Positive Environment?

### Positive effect

**Air pollution:** India's air pollution is extreme and adversely affects human health, causing more than 3,50,000 new cases of childhood asthma and 16,000 annual premature deaths[86]. This is due to the presence in the air produced from fossil fuel burning and mainly from the transport sector in India of NO<sub>2</sub> and particulate matter in the range of 2.5-10 µm diameter[8].

**Water pollution:** In developing countries like India and Bangladesh, where domestic and industrial waste is pumped into rivers without treatment, water pollution is a common phenomenon [9]. The main industrial sources of emissions have decreased or completely stopped during the lockdown era, which helped reduce the pollution load [10]It is also found that, the concentration of pH, electric conductivity [EC], DO, BOD and chemical oxygen demand [COD] has reduced almost 1–10%, 33–66%, 45–90%, and 33–82% respectively in different monitoring stations during the lockdown in comparison to the pre-lockdown period [11].

**Noise pollution:** Quarantine and lockdown initiatives enable people to stay at home and limit worldwide commercial activity and connectivity, thereby reducing the noise level in most cities [12]. For example, in the recent lockdown period, the noise level of Delhi, India's capital, has been drastically reduced by around 40-50 percent [13]. The noise levels of Govindpuri metro station [Delhi] are reduced by 50-60 dB, from 100 dB, due to reduced vehicle movement during the lockdown time [14]. Noise levels in the Delhi residential area have been reduced by 55 dB [daytime] and 45 dB [night] to 40 dB [daytime] and 30 dB [night] respectively, according to India's Central Pollution Control Board [CPCB][15]. As a consequence, city dwellers now enjoy bird chirping, which

normally ranges from 40-50 dB. In addition, the number of flights and vehicular movements around the world has significantly decreased due to travel restrictions, which have consequently lowered the level of noise pollution. For example, passenger air travel in Germany has been reduced by more than 90 percent, car traffic has decreased by > 50 percent, and trains run < 25 percent above the normal rates [16].

The climate is probably the only sector in this COVID-19 scenario that has had an extremely positive effect.[17]. After 30 years, South Asian River Ganges dolphins were also spotted back in the Ganga River. In the town of Navi Mumbai, tens of thousands of flamingos have gathered. The birds normally migrate to the area every year, but residents have reported that their numbers have increased massively this year. The Uttarakhand Pollution Control Board also reported that Har-ki-water Pauri's in Haridwar is 'suitable for drinking after chlorination' due to the lack of industrial drainage waste into the river[17].

### Negative effect on environment

- The amount of medical waste increased from 550-600 kg/day to about 1000 kg/day at the time of the first lockdown process [18]. Such a sudden rise and proper management of hazardous waste has become an important problem for the local waste management authorities.

- According to recent published literature, SARS-CoV-2 viruses are reported to exist on cardboard every day and on plastics and stainless steel for up to 3 days [19]. Thus, hospital-generated waste should be adequately handled to minimise more infection and environmental contamination, which is now a global concern.

- Though, experts and responsible authorities suggest for the proper disposal and segregation of household organic waste and plastic based protective equipment [hazardous medical waste], but mixing up these wastes increases the risk of disease transmission, and exposure to the virus of waste workers [20].

- Massive amounts of disinfectants have recently been used to destroy the SARS-CoV-2 virus in highways, industrial, and residential areas. This widespread use of disinfectants can destroy non-targeted beneficial organisms, which can contribute to ecological imbalances [21].

### Changes in medical facilities

On 24 March 2020, due to sudden lockdown compliance, millions of migrant workers were forced to face an uncertain future without family, food, and jobs. Typically, over 50 million people have migrated to Maharashtra and Delhi for work from Assam, Bihar, Madhya Pradesh, Odisha, Punjab, Rajasthan, Uttar Pradesh, and West Bengal[22,23]. These people were forced to drive out of their cities and return to their homes in the countryside because of the lockdown [24]. Staff with children, pregnant women, and the elderly were forced to walk on foot in the absence of transport facilities[25]. Hence, after the Partition of India in 1947, India witnessed the second-largest reverse mass in its history.

As of 24 March, in India, 1.3 billion people were in lockdown situations. For the urban poor who live in slums or closed and

small areas, social distancing, suggested in India, is difficult to adopt. The capital of Maharashtra state, Mumbai [18.93 ° N, 72.83 ° E], also known as the commercial hub of India, is renowned for its large number of slums. Health facilities in India have had a critical time. Under the usual scenario, there were 3.2 beds available for rural people per 10,000 people and 11.9 beds for urban people [69,70], which had to be expanded to accommodate COVID-19 patients. Some disruptions and inconsistencies were found for the other treatments because of the busy schedule for COVID-19 events. There was no trouble operating the Children's Tuberculosis, Meningitis, Measles, Whooping Cough, Tetanus, Hepatitis B, and Diphtheria Vaccine Program. Chemotherapy facilities have also been noted for adults with disrupted kidney dialysis [22,23]. Although stadiums were turned into isolation wards, quarantine facilities.

## Employment

In India, which is therefore only appropriate for urban upper and middle class citizens and is difficult for the rural agriculture-based population, additional directives for workplaces such as work from home [WfH] were advised. India still lacks places with computer facilities and the internet, and this WfH is therefore a challenge [26]. The Indian IT industry was not prepared for the lockdown and Work from home situation, primarily with call centres and outsourcing of information processes [27]. However, during the COVID-19 lockout and WfH scenario, a 60% rise in the demand for Wi-Fi network equipment, e.g. routers and mobile hotspot dongles, was observed in India, causing a little boost to the telecommunications industry.

The unemployment rate increased to 19% after a month of lockdown and overall unemployment was 26% across India by 24th April. Hence, the lockdown has a havoc impact on small, medium, and large enterprises of the country, which led to no job and economic downturn condition [28].

## Education

Because of COVID-19 in India, the educational system is also currently at a halt. The educational institutions were closed during this lockdown period, hampering the overall teaching-learning process and education system due to the lack of access to online and computer systems among all students in rural India due to the

disparity in economic conditions. Nevertheless, the connectivity of android mobile and 4G connections, mobile phones in India's urban sector, has contributed to the online running of schools, where rural parts have been deprived of education [29].

## Effect of human Psychology

Isolation, anxiety, instability, economic turmoil are a few problems that, due to COVID-19, can greatly cause psychological distress among people [30]. Poverty, poverty, hunger is still a problem in India that will be exacerbated because of COVID-19. Mass unemployment is likely to generate anger and lead individuals to chronic stress, anxiety, depression, dependency on alcohol, and self-harm.

India reported 1,34,516 suicides in 2018 for a nation with the largest number of poor and malnourished, and people with depression and anxiety. A 50-year-old man diagnosed with a viral disease reportedly had a persistent fear of having COVID-19 infected on Feb 12, 2020, and this led him to commit suicide [31]. From 19 March to 2 May, 338 deaths due to lockdown involving suicides resulting from fear of corona, self-isolation, hunger, and financial distress were reported [32]. Furthermore, suicide cases have been identified as a result of alcohol prohibition [33] during the lockdown period [34,35].

## Conclusion

This pandemic affects human life style and environment directly or indirectly, and the global economy, which eventually affects the atmosphere and the climate. It reminds us of how environmental elements have been ignored and human-induced climate change has been implemented. In addition, COVID-19 teaches us to work together to fight against the threat to humanity. While the environmental impacts of COVID-19 are short-term, joint and proposed time-oriented efforts will improve the protection of the atmosphere and save the planet from the consequences of global climate change.

## Consent for publication

Not applicable.

## Competing interests

The authors declare no conflict of interest.

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