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Human health care against COVID-19 via environmental management

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ABSTRACT: Although vaccines are successfully developed against Severe Acute Respiratory Syndrome Coronavirus-19 (COVID-19), and many anticancer, anti-malarial, antibiotic drugs have been repurposed against the disease, it has been just impossible to save valuable human lives in specific conditions. Therefore, medical care has been developed against COVID-19 but not fully able to save human life from the disease. As a result, the third wave is noticed in many countries. Preventive methods such as social distancing, wearing masks, and hand salinization have been accepted as the main strategies to break the chain of the disease. Due to the reduction in pollution under less or no industrial and vehicular operations, water and air ecosystems have been restored in an unseen manner. Especially, NO_2, SO_2 and particulate matters etc. modulated higher expression of angiotensin-converting enzyme 2, the receptor of Severe Acute Respiratory Syndrome Coronavirus -2 in humans have also been emphatically documented. Therefore, along with medical care, environmental protection (especially to regulate NO_2 emissions) along with practicing COVID-19 guidelines is to be maintained fully to combat COVID-19 the disease. Human beings must use this knowledge and experience as a spotlight to save nature in current and future times.

1. INTRODUCTION

The massive damage caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) in the loss of human life, economy, education, share markets etc. has been documented. This loss has occurred universally mainly due to the high contagious nature of the virus to cause Severe Acute Respiratory Syndrome Coronavirus-19 (COVID-19) pandemic. Loss of human lives under the unprecedented initial medical failures due to lack of specific medicine against the disease has been documented. The COVID-19 caused by the mutated from of the previously existing Coronaviruses has created a disastrous condition globally. Its wide and speed of spreading made it pandemic quickly and rolling data indicates that the virus has infected 196,916,506 people out of which 4,208,099 have died across 216 countries and the condition is predicted to be more severe if steps are not taken in time in many countries (Worldometer, 2021). In one hand, it has made a catastrophic condition in the entire world to make it stand still, especially the modern human are found off the street, on the other hand, the disease has many positive side effects starting from transferring the open-handed power to nature for self-regeneration to the reduced greenhouse effects via less consumption of fossil fuel induced decrease in emissions of associated gases including CO_2, NO_2 and SO_2 etc. (Paital & Agrawal, 2020). On the other hand, the loss to economy was observed under the COVID-19 induced lockdowns and shutdowns are the well noticed factors. One gain has been documented under these massive losses is self-nurturing nature (Figure 1).

Although the power consumption in COVID-19 patients' care centres including hospitals, isolation sectors etc. are increased nearly by 50-70%, the overall power consumption (from fossil oil, coal, conventional electrical energy from thermal, nuclear and hydroelectricity etc.) globally is reduced significantly in a never seen manner. Also, the world has compensated the daily energy demand from renewable energy resources up to some extent. Massive reduction of vehicular and industrial operations gave a chance to humans to breathe cleaner air (about 90% of the population don't breathe cleaner air due to pollution) and has provided a better visibility as observed in India, China and Italy. Aquatic ecosystems are also escaping from the clutch of the pollution mainly due to drastic diminished industrial discharges, for example as observed in Venice canals of Italy and Yamuna River of New Delhi. So, Mother Nature has been regenerating via COVID-19 induced lockdowns or shutdowns. In this article, a comprehensive review has been made on COVID-19 induced changes in greenhouse effects, CO_2 and NO_2 emission, fossil fuel use, and energy consumption. All nations must learn from

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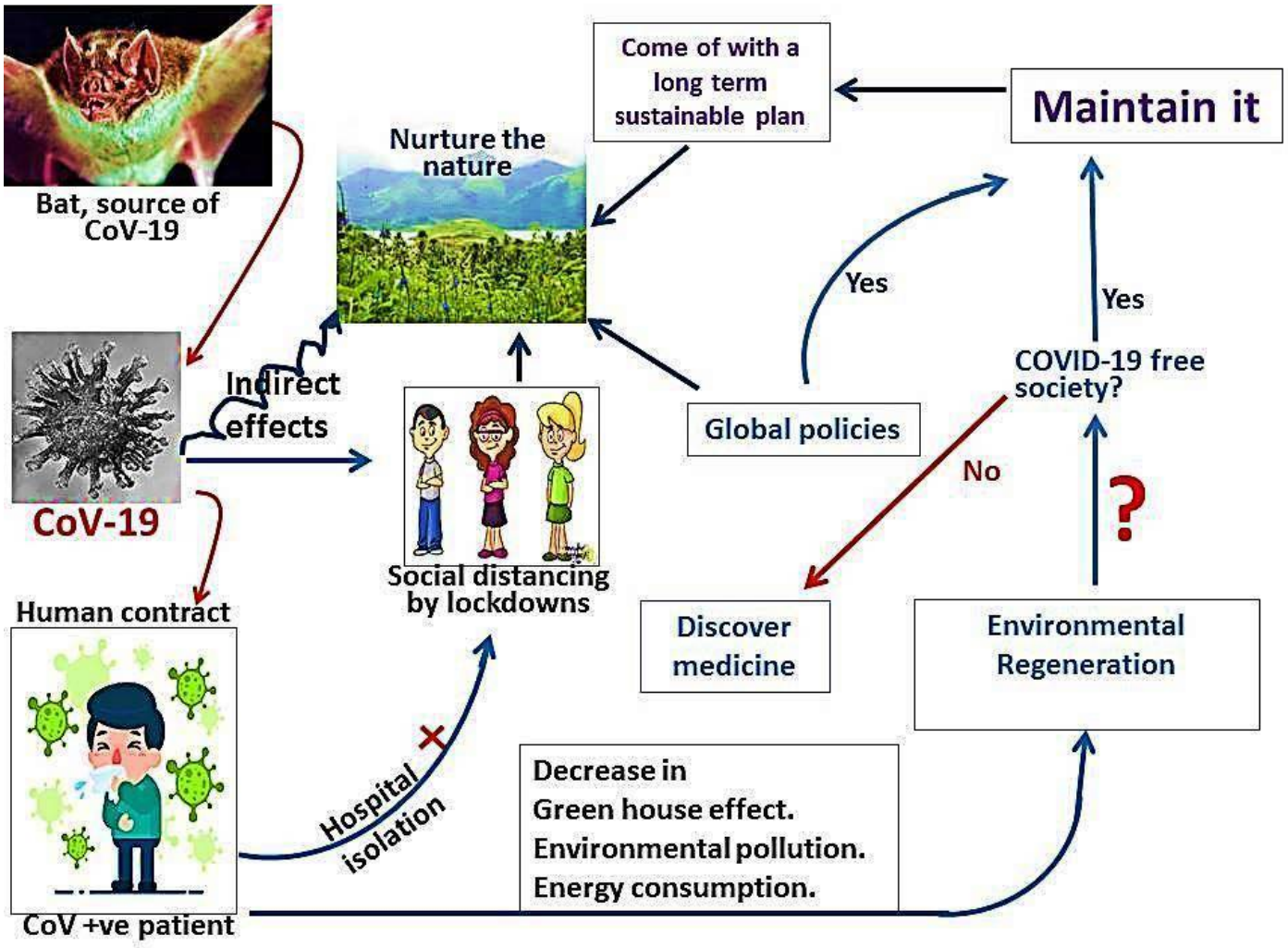

Figure 1. A model showing the mode oftransmission of the virus and the possible preventive measures. Themode of transmission of SARS-CoV-2 is believed to be originated from bat. Thezoonotic origin of the virus although had devastating effects on the world, ithas huge positive effects on the environment. Environment found to beself-nurtured under the COVID-19 induced lockdowns as a result industrial andvehicular operation was minimized and it decreased pollution level.

the regeneration opportunity and other beneficial impacts of COVID-19 must use the knowledge as spotlights to institute future policies to protect the environment (Paital, Das, & Behera, 2020).

The COVID-19 pandemic caused by SARS-CoV-2 has been devastating the world in its 1st, 2nd and subsequent 3rd waves hit to the world WHO (2020c). Very few countries have recovered partially or fully from the grip of the disease while many are still suffering from the deadly disease (Öztoprak & Javed, 2020). Human to human transmission of COVID-19 through respiratory droplets and particulate matters like substances forces governments to adapt shutdown and lockdowns (Paital, 2020; Paital & Agrawal, 2020; Paital, Das, & Behera, 2020; Paital, Das, & Parida, 2020; WHO, 2020a). On the other hand, without antiviral medicines and or other pharmaceuticals but with vaccines, continued efforts are on to prevent the disease. Lockdowns and shutdowns were the measures adapted by many centuries to get read of the virus, on the other hand, it helped the nature to revive in quite an unseen manner (Boldog et al., 2020; Das et al., 2021; Muhammad et al., 2020; Paital, Das, & Behera, 2020). This is the central focus of this article. Under the less or no industrial and vehicular operations, improvement in many sectors has been noticed. Reduction in greenhouse gas emissions, lower consumption on natural resources, improvement in air and water qualities have been detected. Although, waste water mediated transmission of SARS-CoV-2 has been identified (Figure 2).

Undoubtedly, medical care for COVID-19 has been improved as compared to 2019 when the disease started in China. Drugs such as ivermectin, doxycycline, and hydroxychloroquine, azithromycin and many other drugs are repurposed and about 22 candidate vaccines have been approved by World Health Organisation (WHO, 2021b). It

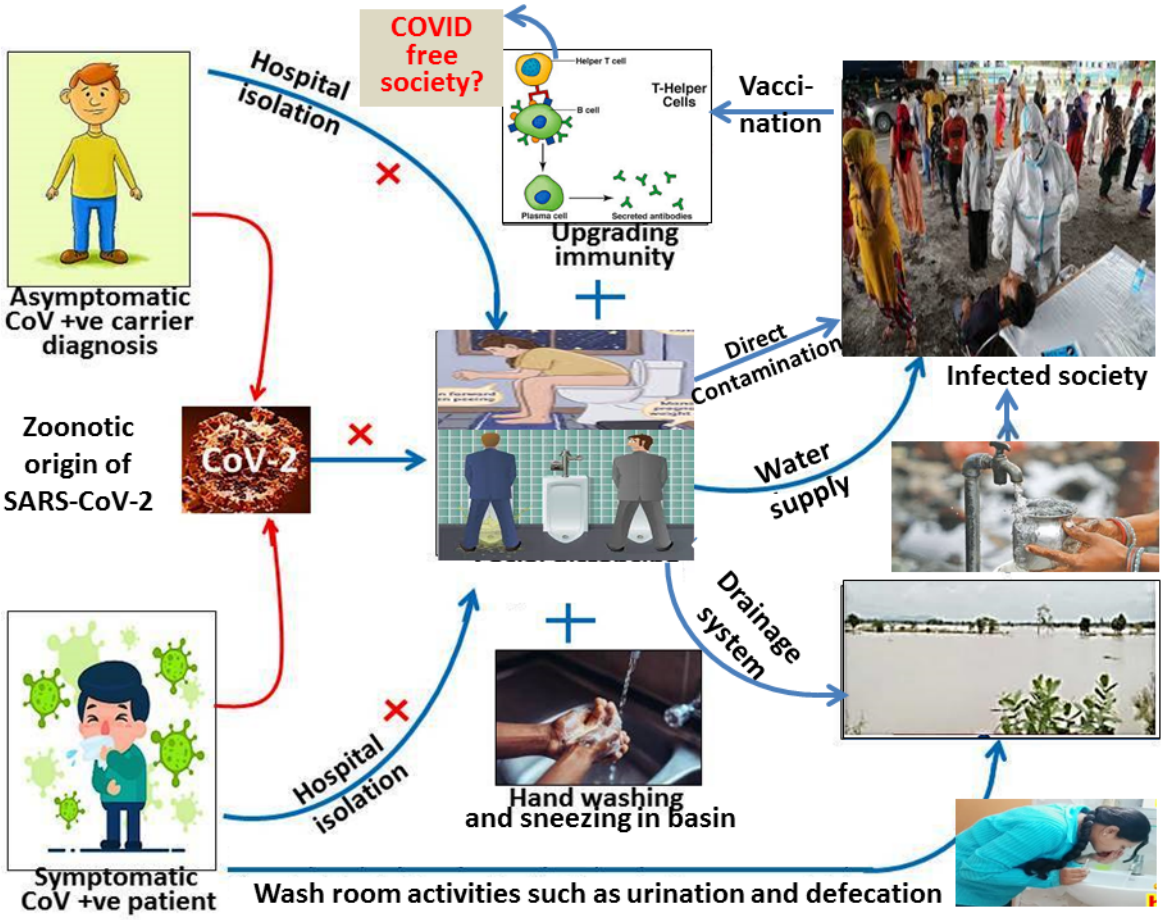

Figure 2. Possible mode of waste watermediated contamination and transfer of SARS-CoV-2. Stillnow, the theory of zoonotic origin of the virus has been established. However,the urination, defecation and sneezing activities of infected patients inhospital or under home isolation or even from the various places for theasymptomatic persons, SARS-CoV-2 enters into water bodies through drainagesystem. Then they could infect healthy people via drinking water or otheractivities in the contaminated water. Although, vaccination can prevent theinfection but re-infection after vaccination put a question marks on it.

seems that such medical improvement is not sufficient as many countries have been experiencing the 3rd wave of the disease and many vaccinated and recovered patients from COVID-19 are found to contract the disease again. It indicates lacunae in gaining in depth knowledge about the disease and the causative agent in one hand, and the alternative preventive methods such as adapting social distancing, wearing appropriate masks and hand sanitization. Angiotensin-converting enzyme -2 (ACE 2) present mainly in the human respiratory cell surface acts as the receptor for the spike protein of SARS-CoV-2 and the over expression of ACE 2 under high exposure to pollutants such as NO_2 has been established (Paital & Agrawal, 2020). On the other hand, the air pollutants that aggravate lung diseases have positive correlation with severity or infection rate of the disease. Therefore, along with medical care, environmental protection is equally important to combat the disease successfully. The reasons behind the above argument are explained below, because COVID-19 has also many positive impacts for long term effects (Sahin et al., 2019, 2021) that may reduce the risk of the disease and future pandemics, is the central theme of this article.

2. REDUCTION IN EMISSIONS OF GREENHOUSE GASES

Concerning the current situation of COVID-19 pandemic along with shutting down the factories, stalling economic activities and implementing extensive travel restriction rules, the immense drop in carbon emissions and the reduction of Green House Gases (GHGs) emissions have been observed across the globe. Aviation and driving contribute 11% and 72% of the transport aspects of the GHGs emissions respectively. It is therefore obvious that, the more these restrictions are to be proceed, the more GHGs emanations are to be lowered (Muhammad et al., 2020) According to the WHO (WHO, 2020c), dramatic drop in the emission of GHGs, has led to reduced air pollution in the big cities and this consequently helps to make COVID-19 less fatal.

Air pollution monitoring satellites from the European Space Agency (ESA) and National Aeronautics and Space Administration (NASA) provide evidence for a significant plummeting of GHGs following the COVID-19 pandemic.

This is due to the complete stop of noxious gas being emitted by vehicles. Significant decrease in the levels of nitrogen dioxide (NO_2) by ESA and NASA pollution monitoring satellites was also reported over China.

According to a report conducted by (Parsons, 2020), the reduction of human caused factors of the emissions of CO_2 and massive O_3 depleting chemicals has led to the healing of Earth Ozone Layer in the atmosphere during this outbreak. The ozone recovery in the atmospheric circulation at the world's poles in May 2020 was noticed. Scientific Ozone Community confirms that this driving change has happened for the first time after 1987.

Despite the pandemic damaging some sectors of the global economy, it can have a positive influence on the environment by resulting in cleaner air and increased visibility. Overall, average annual temperatures are expected to decrease, resulting in rising precipitation and snow levels. This in turn lowers coastal-erosion rates and impacts local populations and resource development as well as increases green land coverage and thereby, agriculture and forestry may be affected by changing weather patterns. Tourism and travel industry can also be affected following recent changes (Henriques, 2020).

The reduction of GHGs has also expressly or implicitly impacted on the environment. If such low emissions will continue by any means then the environment is anticipated to both decrees the danger of heat-related deaths and diseases and reduce few categories of air contamination along with diminishing diseases caused by air pollution. The climate is expected to create less severe heat waves, floods. These may raise crop yields. The risk of erosion and wetlands elimination will be reduced. Climate change can modify animal species habitat as well as their interaction with each other, which could fundamentally change current ecosystems (Melillo, 2017). The benefits of the reduced GHGs emissions will be resulting in minimising overall energy consumption and saving more energy sources, in marinating carbon storage that can enhance in managing and developing ecosystems and forests, in innovating technologies that can improve and be design production systems to promote energy efficiency and diminish GHGs emissions harms. Adapting GHGs reduction aim can be accounted for by the landscape and biogenic GHGs emissions of paper production, including carbon debt (Mckechnie & Wolf, 2010).

However, some authors disagree that these results will not last for 20 years. They argue that the vast majority level of emitting GHGs such as CO_2 correlated to natural sources and human activities predominantly burning fossil fuels as well as agriculture or land clearing. Therefore, COVID-19 pandemics have not that much control over GHGs reduced levels (Watts & Kommenda, 2020). It is also reported that, even though the environment is healing in some ways of spreading less GHGs on the surface, the COVID-19 impact on increasing electricity and waste consumption can be a future challenge (Chakraborty & Maity, 2020).

Although stalling economic activities positively affect the environment by protecting and improving natural resources, the economic system is taking precedence over the very foundation on these natural resources (Epa, 2020). Muhammad et al. (Muhammad et al., 2020) better clarify this statement and note; despite the fact that the decreasing concentration in the GHGs are already having an impact on the environment, human health and the economy, and cerate its positive effect on the nature and environment, if the pandemic goes on a long time, any stimulus would more likely concentrate to compensate the economic loss regardless of the influence on the environment. So, it seems that the outbreak has an affirmative impact on the environment as long as it remains for a short while, otherwise recovering a huge economic crisis will more likely because greater damage to the environment (Harvey, 2020). National and international collaborations are suggested to achieve such goals. On the surface, lower emissions of harmful greenhouse gases is good news. However, we must continue cutting global emissions every year for the next decade in order to combat global warming. While the pandemic may have helped in getting the ball rolling on saving the planet, we must continue to do so when it is all over.

There should be a strategy to minimise the harm, received by the Ozone layer, in a way that humans should take control of their life-saving activities and reduce GHGs emissions as far as they can. Otherwise, a stall or a complete stop of the economic activities and then suddenly re-starting to meet the postponed targets will bring irreparable loss and negative outcome to the environment especially Ozone Layer. We should bear this in mind that, soon when the lockdown is over; people start business and purchasing, so as a result of responding to the high rate of demands and fulfilling clients' expectations, the only element that will be eroded under high pressure is the environment. Therefore, the strategy of controlling and monitoring CO_2, CH_4, and Nitrous Oxide is needed to protect the O_3 layer.

3. DIMINISHING CONSUMPTION ON NATURAL RESOURCES

Energy consumption in countries that followed complete or partial lockdowns found to experience a magnificent decrease in energy consumption. In fully lockdown counties such as India, USA, Germany, UK, China and Italy, all industries were shut down in the first and subsequent phases of lockdowns (Cohen, 2020; IEA, 2020). In such places, the use and depletion of fossil fuel and energy in electrical from various sources in industrial sectors as well as in Government offices such as secretariats, educational sectors and private organizations has been dramatically reduced. Although in all COVID-19 hospitals of all 216 affected nation has been experiencing approximately 5 and 50% enhance of energy consumption (to facilitate medical care to the COVID-19 patients) in mid-March 2020 and mid-April 2020, respectively, rest of the sectors has been experiencing the opposite trend. Considering the daily average energy consumption data in 30 countries (those are severely affected by COVID-19) up to mid-April 2020 indicates that a reduction of 25% energy consumption per week has been

noticed in fully lockdown nations. The above value was 18% for the partial lockdown countries (Sarkar, 2020; SEE, 2020).

Overall, such a reduction in energy demand would continue depending on the extension of lockdown; however, it can be limited to under 4% or even more for some long period in post-COVID-19 timings, if steps are taken to maintain it. However, another positive side effect of the reduction of global conventional energy supply and demand from electricity, fossil fuel including coal, gas and nuclear power sectors under COVID-19 that energy demand from above sources has been partially replaced by renewable energy sources. This must be continued and encouraged globally, nationally, locally and finally at community and household level. On one hand, it will make the world partially independent from conventional energy supply chains, and on the other hand, it will make a safeguard against fossil fuel combustion induced emissions and pollution (Bulut, 2017).

Therefore, efforts must continue for a transition from conventional to clean energy resources as a sustainable energy-source. Global calls for all continued coordinated policy plans should be come up with a well-designed manner and be implemented even at household level. For example, massive implementation and monitoring of solar panels and windmills at household, community and even at industrial sectors (Destouni & Frank, 2010; Ergun et al., 2019), and it would ground the opportunities that would provide chances for cleaner sources of energy.

4. IMPROVEMENT IN AIR QUALITY

NO_2 level in major countries including Spain, Italy, France, United States of America (USA), China and India before and during lockdown indicates a huge improvement. According to data collected by the ESA and NASA, China, Italy, France and Spain observed a 20-30% decrease, the USA a 30% decrease and India a 40-50% decrease in NO2 emissions during the lockdown period.

Outdoor air pollution has been responsible for the annual death of about 4.2 million people worldwide (Gerretsen, 2020). Lack of clean fuel allows people to inhale many toxic products including Particulate Matters (PM2.5), NO_2, CO_2, SO_2 and ozone (O_3). It causes a surplus annual death of ~8.8 million (Lelieveld et al., 2020) in which only NO_2 contributes to develop 4 million respiratory disorders in children such as paediatric asthma yearly. The worry is that in spite of the fact that decreased discuss contamination may bring wellbeing picks up within the brief term, outflows will rise when the crisis ends, and meanwhile climate arrangement will be side-lined as governments centre to begin with on abating the spread of the infection, and after that on jump-starting slowed down economies.

5. IMPROVEMENT IN WATER QUALITY

By considering water quality improvements during coronavirus pandemic, it is known that the role of ecosystem has been highlighted by using these water resources during the lockdown period while the economy and the society have been completely overlooked; however, existing experiences might be valuable data for decision makers to adopt proper scenarios in integrated management of water resources in the future.

6. IMPROVEMENT IN TRAFFIC AND TRANSPORT

The effect of COVID-19 on future travel/transportation patterns is an important topic and future research opportunity. The transport was almost ceased in many places that allowed ceasing vehicular emissions (Mousazadeh, Paital, & Naghdali, 2021).

7. IMPROVEMENT IN ENVIRONMENTAL HEALTH

Hand washing is regarded as one of the most important barriers to cross-infection and promotes effective hygiene behaviour towards the environment. So far, hand washing and wearing face masks are considered first and the foremost prevention measures to stop the spreading of the disease in the environment (Baghchechi et al., 2020). Soap and water (20 min washing), or alcohol-based hand sanitizer (60-95%) (CDC, 2020) have been recommended to be used to additionally prevent other viral illnesses such as cold and flu. To prevent infections and killing germs, it is necessary to wash hands for 20 seconds (CDC, 2017).

Another rule that can preserve our environmental health from this pandemic is to follow social distancing, that means to keep a specific distance, which establishes a safe space between individuals. Exact measures of social distancing designate staying at least 6 feet away from each other, in every aspect of public and professional domains. With respect to environment health, social distancing offers a very strong and powerful preventive measure in transmission of COVID-19 virus in near vicinity, which ultimately lowers down the possibility of spread of coronavirus (Paital, Das, & Behera, 2020). As once, a person is infected with the coronavirus disease then instantaneously it creates sources to disturb the health of its surrounding environment. COVID-19 can persist in the environment for variable periods of times on any surface, and depends on factors such as temperature, sunlight, and humidity. The main reason to enforce social distancing is to prevent contact with infected people and contaminated surfaces. Moreover, use of surgical masks helps to reduce the transmission risk COVID-19.

Coronavirus outbreaks in the environment are most common when people are outdoors, traveling, in restaurants and catered events, schools and institutional settings, as well as health-care facilities settings. As this pandemic has been creating a severe damage on environmental health, and waste generated from COVID-19, has started traveling its journey across all media. Several socio environmental measures like social distancing and stay-at-home rules have already been taken to manage this crisis, which have shown positive signs (Saadat et al., 2020). Overall, there is a need to monitor all those measures, which are employed at global scale. Overall, very soon with collective efforts, the world will be free from this epidemic not only from humans but also from the environment.

Generally, facemasks are less effective and low adherence in controlling seasonal respiratory infections. However, during a severe pandemic like COVID-19 facemask wearing can offer greater resistance to pandemic transmission when there is a limited supply of antiviral drugs (WHO, 2020b).

Apart from airborne transmission, a possible carrier for the virus can be water and wastewater treatment plants where sewage water is stored and treated for different purposes including safe and clean drinking water. However, till to date, the detectable level of coronavirus in water sources is found to be very low. Recently, danger of water being the source of the viral transporter due to specimens of water containing virus found in sewage wastewater treatment plants of Paris (Wurtzer et al., 2020). However, due to implementation of global stay at home rule, the coronavirus levels in the water has seen a sharp decline.

With an increased demand for disposable gloves, face-mask, blank, I.V. bags etc., there has been an abundance of health waste in the wake of the COVID-19 pandemic. In Wuhan, China, the generation of medical waste has multiplied and has increased from 40 to 240 tons per day due to the current pandemic. Moreover, this can increase the risk for the safety and cleanliness for health care workers (Klemeš et al., 2020). Efforts to dispose of the waste by incineration has been underway by the governments but piles of such wastes have stocked up the medical waste facilities and so far, the provisions of personal protective equipment (PPE) and guidelines to protect waste workers have been disorganized.

Surfaces such as doorknobs, handles, handrails, elevator buttons, electrical switches, cabinet handles, computer keypads, faucet handles, table surfaces, countertops and home appliances that carry the virus can infect a person via hands to nose. Such objects can carry the live virus up to 6 hours and after that the SARS-CoV-2 virus is supposed to be inactivated automatically. It is very important to disinfect these surfaces with diluted bleach spray at regular intervals in the contaminated areas (CDC, 2020b).

There is a need to increase the number of activities to raise the public awareness about how COVID-19 infections are spread in the environment. To limit the extent of infections of coronavirus in any environmental venue, the education and training of facemask wearing, hand washing and personal hygiene can be introduced at elementary school level. In fact, very careful and responsible approaches from humans are required as they carry these diseases because of their carelessness or, simply, normal social interaction like handshaking, hugging, and even kissing as a form of greeting. Overall, medical professionals are searching for more reliable solutions to secure human health from these pandemic and high hopes guides towards lessons learned about how to seriously reduce risk of acquiring a viral infection (Figure 1).

The above discussion clearly demonstrate that COVID-19 has many positive effects although it has a strong correlation with ACE 2 that acts as the receptor for spike protein of SARS-CoV-2 and it over expressed under air pollutants such as SO_2 and NO_2 (Paital & Agrawal, 2020). Therefore, along with medical care, social distancing, and sanitization and wearing of appropriate masks, environmental strategies must be taken to reduce the pollution. Reduction in NO_2 emission and other pollutants especially air pollution may prevent the disease efficiently when combined with medical care and it may also prevent such future pandemics (Paital & Agrawal, 2020).

8. ENVIRONMENTAL MANAGEMENT TO IMPROVE HUMAN HEALTH CARE AGAINST COVID-19

In many parts of the world, especially in metro and non-metro-cities India, China, Italy, Germany and even USA, the pollution level is found to be high. It is estimated that 9 out of 10 people usually are breathing polluted air that falls below the air quality standard set by the WHO Paital (2020); Paital and Das (2021) (Paital, 2020, Paital et al., 2021, WHO, 2021e). About 91% people lives where the air quality is below standard set by WHO and it leads to 4.2 million deaths per year under exposure to outdoor air pollution. Similarly, the number of death is 3.8 million per year under the exposure to household emissions that mainly include smoke from dirty cook stoves and fuels (WHO, 2021a). It clearly indicates the worry factor to be taken care of for public health.

In relation to the above data for air pollution and the current rate of COVID-19 induced death correlation, a possible link between air pollution and SARS-CoV-2 infection has been established. The chance of infection and rate of severity under COVID-19 is found to be aggravated in people who suffer from respiratory disorders such as chronic obstructive pulmonary diseases, asthma and other lung issues. These diseases have a strong positive correlation with air pollution (Paital & Das, 2021) Therefore, in area where air pollution is documented above the standard value, a spike in the chance of infection and rate of aggravation in COVID-19 has been reported. It indicates an urgent need of the control of air pollution for the public health management for the control of COVID-19 and associated pulmonary diseases (Paital & Das, 2021).

Angiotensin-converting enzyme -2 present in the cell surface of mainly respiratory organs and that acts as the receptor of the spike protein of the SAR-CoV-2 get over expressed under the exposure to air pollutant emissions such as NO, NO_2 and SO_2 (Das et al., 2021)· Such correlations have already proved in many places including India, China and Italy. Therefore, the pollution spike needs to be managed in a faster and multidisciplinary way along with COVID-19 management for a long term benefit to public health (Paital & Das, 2021).

Water pollution is also a bigger issue worldwide (Rath et al., 2021). At present, contamination and detection of mainly the RNA of SARS-CoV-2 in waste water become an issue worldwide (Mousazadeh, Ashoori, et al., 2021). Therefore, decontamination of waste water especially from COVID-19 care hospitals and self-isolation centres needs special attention in relation to public health.

Overall, air pollution can mediate COVID-19 infection airborne factors. These are listed as 1) particulate matters such as PM2.5 and PM5 that can transport the viral particles

as studied in many parts of world in one hand (Paital & Agrawal, 2020). On the other hand particulate matters are also responsible for the many respiratory diseases including chronic inflammatory lung diseases (COPD). As a result COPD leads to the high infection rate and severity of COVID-19 in human population (Das et al., 2021). Air pollution such as emissions of SO_2 and especially NO_2 lead to many respiratory complications in human that indirectly welcome the SARS-CoV-2 infection. More specifically, exposure to NO_2 and SO_2 pollution leads to the expression of ACE-2 in human respiratory epithelial cells. The expressed ACE-2 protein acts as a receptor for spike protein of SARS-CoV-2, as a result it intensifies the chance of infection and severity in the disease. Although, wearing mask and monitoring social distancing may prevent SARS-CoV-2 infection up to many extend, but this practice is not a permanent cure to the disease. So, prevention of air pollution seems to be one of the important factors for public health management from COVID-19.

Similarly, waste water (containing the shredded SARS-CoV-2 viral particles in urine) from the COVID-19 care hospitals or from the self-quarantine centres found to contain the RNA of SARS-CoV-2 (Das et al., 2021; Mousazadeh, Ashoori, et al., 2021). The viral RNA particles have enough potential to increase the COVID-19 infection, as a strong and positive correlation between infection rate and detection of SASR-CoV-2 in waste water has been observed across the world (Mousazadeh, Ashoori, et al., 2021).

Finally, the open defecation by the infected patients in some parts of the world also found to contaminate the soil of the respective area (Das et al., 2021). The viral particles from soil may eventually meet to the nearest water bodies and/or may infect healthy subjects due to improper sanitization practices. Therefore, a total environmental approach is suggested as one of the approaches to prevent COVID-19 infection. Use of clean energy could be an alternative source to prevent air pollution.

9. CONCLUSION

COVID-19 has made a catastrophic situation globally by taking 342,029 human lives. The speed of transmission of the disease is so high that the world is still struggling to develop medicines or vaccines against it. On the other hand, due to lockdowns, use of fossil fuel, oil, and conventional energy resources has been drastically reduced. Use of renewable energy resources has increased. Nevertheless, nature is found to take her position on earth in a never seen manner. Air, water, soil and noise pollution has been reduced dramatically. Reduction in greenhouse effects and associated events are declined in COVID-19 periods as compared to Pre-COVID-19 time periods. All these happened by only one act by the human i.e. keeping themselves locked at home to get rid of the infection from COVID-19. However, it is expected that such positive effects of COVID-19 may not continue in post-COVID-19 period after reopening of industries and vehicular operations. Therefore, this is the right time not only to lose the chance to help Mother Nature for her complete revival but also to formulate, implement and strictly monitor global, national and local policies to maintain the revived nature. COVID-19 induced lockdown has positive environmental effects. It has reduced the greenhouse effects and emissions of NO_2 and CO_2. Energy consumption is also reduced during lockdown periods globally. Renewable energy sources have increased. Reduction in pollution is another thing along with medical care and other COVID-19 guidelines such as social distancing, hand sanitization and wearing of appropriate masks and COVID-19 induced positive changes must be continued by global policies.

CONFLICTS OF INTEREST

Author has no conflict of interest associated with this article.

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AUTHOR CONTRIBUTIONS

BPP - Research concept and design, Collection and/or assembly of data, Data analysis and interpretation, Writing the article, Critical revision of the article, Final approval of the article.

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