

## After-Effects of Covid-19 Pandemic on Human Society

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### Abstract

The deadly corona virus (COVID-19) pandemic, which broke out in China and spread to most other nations of the world, brought forth unquantifiable short- and long- term devastating effects on the economies and social systems of virtually all nations of the globe. Besides deaths, it has also left untold effects on all other facets of life in every nation of the world, directly and indirectly alike. This paper scholarly describes the effects of COVID-19 on the economies and social systems of nations of the world. It maintains that so many things went amiss. For example, most of the normal analogue ways of life shifted to digital activities. Yet, less than 50% of the world's population can duly use the modern information and technology needed for digital activities. The pandemic confronted humanity with challenges beyond immediate or short-term solution; not even science, religion or polity, individual or group could offer such a solution. The study concludes that the effects of the pandemic cut across all sectors and obtain in all nations of the world. It calls for more research and efforts, and on all concerned authorities to rise to the challenge of not only preventing the spread of the scourging pandemic but also finding a lasting solution that would eradicate it totally from our society. Also, operational legislations would prevail on individuals to adhere to the established ethics and safety precautions..

**Keywords:** COVID-19; Economy; Social Systems; Humanity; World

### Introduction

The corona virus, aka Covid-19, is a virus that broke out in Wuhan, China in late 2019 [23,39]. From there, the virus spread rapidly across the globe, infecting and killing billions globally [4,13,16,23,24,35,40]. This virus has never been reported in humans until its first case in Wuhan, China. On 8 February, 2020, 2019-nCoV-induced pneumonia became officially known as novel corona virus pneumonia in China [16,13,24].

On 11 February 2020, the World Health Organization named the deadly disease Covid-19 [35] in view of when it emerged. Since then, nations of the world have been battling with this pandemic, causing unprecedented panic in all and sundry cross the globe, as millions of lives are wiped out by the deadly virus. The COVID-19 pandemic badly hit life routine of people without any discrimination of race, na-

tion, gender, geographical boundaries and economic status. Therefore, this article sets out describe the short- and long- term devastating socio-economic effects of the Covid-19 pandemic on general note.

### General overview of COVID-19 and control strategies

Population of human being is rising day by day (approximately 6.8 billion globally) and correlated with a variety of serious public health concerns, including infectious diseases. During the last thirty years, several viral epidemics have caused a large number of deaths worldwide. These include Middle East Respiratory Syndrome (MERS-CoV) in 2012; H1N1 influenza in 2009 and Severe Acute Respiratory Syndrome (SARS) coronavirus prevailed in 2002 to 2003. Corona viruses belong to the family of single-stranded positive sense RNA viruses that have been isolated in various species of animals. They are proven to have inter-specie transmission potential. These viruses are very infectious or communicable and have widespread prevalence in humans. More so, they are responsible for about 30% of common flu or cold to further severe infections such as SARS and MERS [10,11,28].

Coronavirus survive best in dry and cool environment. The virus is unable to survive at high temperature and humidity level. SARS-CoV-2 is unstable to ultraviolet rays, some organic solvents (chloroform, ether, ethanol and chlorine-based disinfectants, etc.) and heat that destroy its protective covering respectively. It is reported that COVID-19 cannot survive well when RH (relative humidity) below 70% and temperature is more than 28°C. The outbreak of COVID-19, reported in Wuhan, had 82% with that of human genetic source (SARS-CoV) and 89% nucleotide identity with bat genetic source (CoVZXC21). Therefore, the reported virus was considered a result of mutation from a strain found in bats and named as SARS-CoV-2. Pangolins serve as intermediate host and humans are final host for SARS-CoV-2 (COVID-19). COVID-19 can stay alive for up to 3 days on hard surfaces (stainless steel and plastic) at temperatures of 21 - 23°C and 40% relative humidity. Also, it can be alive for approximately one month at 4°C [6].

The new mutant coronavirus disease (COVID-19) outbreak, which began in Wuhan on 31 December 2019, is increasing rapidly in most countries of world. The virus is closely related to MERS and SARS that were responsible of 862 deaths in 2012. The respiratory infection, corona virus disease, is named as COVID-19 by the WHO on February 11, 2020. It is also called SARS-CoV-2. COVID 19 cases were first reported in China; followed by Thailand and Japan on 13<sup>th</sup> and 16<sup>th</sup> January 2020 respectively. When the disease spread across over eighteen countries of the world, the outbreak was declared an international public health emergency by the WHO on January 30, 2020. The first case of a similar infection was identified in the USA (precisely California) on February 26, 2020, which differed from that which originated from China [8,25].

The reported cases of COVID-19 have been reported to be about 81 million worldwide, out of which about 1.8 million deaths have occurred. Approximately 486,634 total cases of COVID-19 infection and a total of 10,311 deaths respectively were reported in Pakistan. Up to December 29, 2020, the prevalence of COVID-19 in different provinces of the country is reported as: 217,636 positive cases in Sindh; 140,188 in Punjab; 18,218 Baluchistan; Gilgit Baltistan, 4,866; Azad Jammu and Kashmir recorded 8352; KPK (Khyber Pakhtunkhwa) had 59,255 and 38,146 in Islamabad. However, out of these reported cases, 440,660 were recovered. A total of 6,819,699 tests were performed to confirm the positive corona cases (Ministry of National Health Services, 2020).

Winter season is usually associated with flu season. Most of the countries around the globe are facing the issue of COVID-19 second wave. It means there is the presence of both viruses together and co-infection with both viruses is really seems to be further exaggerating the situation. Many complication evolution cases have been already reported in this regard (Center). The prevalence of the virus has been diagnosed in many other countries (up to 213) afterwards (Khan., *et al.* 2020; WHO, 2020). The new mutant coronavirus (COVID-19) has shown high prevalence. We have not developed any kind of immunity against this new novel pathogen until someone is infected and then recovered. Therefore, COVID-19 is prevailing, infecting and affecting the health in a way quite different to other common viruses. On a

general note, COVID-19 spreads from one individual to another amongst those having close contact. The virus can also be spread by respiratory droplets discharged when an infected person sneezing and/or coughing and severely affects the respiratory system in later stages.

Corona virus is highly prone to mutation. It is recently reported that novel corona virus new strains have been identified in South Africa and United Kingdom [41]. The Chief Medical Officer of England reported that new corona virus strain can be highly contagious and serious preventive measures are required to control its spreading. Due to the emergence of new variant of this virus, UK government has imposed a complete lock down to minimize the risk of spreading it. Most of the countries also stopped the flights to control the spread of new strain [41].

### COVID-19 and treatment efforts

There is currently no proper remedy available for COVID-19. However, mechanical ventilation and hemodynamic therapy are being used to manage respiratory dysfunction and septic shock. Chinese conventional herbal medicine 4-MU (4-Methylumbelliferone) is reported to be used effectively in China. Moreover, antiviral therapy with Lopinavir 400mg P/O, Ritonavir 100 mg P/O, Chloroquine 500 mg P/O and Hydroxychloroquine 400 mg P/O are also claimed to be helpful in the reduction of viral load [19]. These scholars add that Aspirin is also helpful to reduce the critical effect of COVID-19, especially in diabetic and cardiovascular patients.

Remdesivir is an inhibitor of RNA polymerase against multiple RNA viruses, including Ebola and has shown therapeutic and prophylaxis effect for Corona virus disease. Dexamethasone therapy has also shown good results to treat the serious patients. Recently, the Government of Punjab, Pakistan, also approved the use of Actemra (Tocilizumab) to treat COVID-19. However, these are not approved therapeutic treatments. The Corona Experts Advisory group has also issued standard operating procedures (SOPs) with regard to the use of the Actemra injection.

### COVID-19 and the economy of Pakistan

COVID-19 emergency unfairly hit the economy of the world, underdeveloped and developing countries alike. That of Pakistan is not an exception. According to Asian Development Bank, Pakistani economy has diminished by 3.3% in 2019 to 2.6% by 2020 (Humanitarian Response, 2019). During such crises, the COVID-19 lockdown was an intense decision for a nation like Pakistan, as countless destitute individuals would be starving to death. That would mean double death indices. Pakistan, as a nation with the guidance of health and government officials, defeated the disaster with great courage and endurance. The Government also decided to privatize some of the state-run industries, including Pakistan Steel Mills, which led to the over 9300 employees to become unemployed. Overall, the Government of Pakistan declared an economy loss of Rs 2.5 trillion due to the corona-virus pandemic on April 2, 2020.

Economic organizations, like World Bank and International Monetary Fund, are seriously worried about the economic loss of COVID-19 pandemic. A slowdown in domestic economies and a decline in global trade are obvious and their effects might be long-lasting [42]. Economists are struggling in devising the useful measure to coup the economic loss along with fighting the prevailing issues of the pandemic [43]. A great pressure from investors has been faced by the stock exchange market during this period. Stock market has faced a very high decline since the financial crisis of 2008. Economic forecasts suggest that economic effect of COVID-19 pandemic on travel and trade industries is in trillions and continuously rising. Both industries are involved in the global supply chain. However, central banks are easing financial terms and conditions to overcome the economic impact of pandemic.

Poultry industry is a rapidly growing industry in the world. Poultry market around the world has been reached to about \$319.2 billion in 2019. It has thus shown 5.5% compound annual growth rate (CAGR) since 2015. It is projected to raise at a CAGR of 6.1% to approximately \$405 billion by the end of 2023 and it will reach \$645.7 billion by growing at CAGR of 6.8% by the end of 2030.

Poultry industry has been suffered with a huge economic loss during this pandemic period. Currently, this industry is trying to get back to its full strength. There was decreased profit gain from chicken and eggs market. Moreover, high mortality rate due to unidentified causes during the present winter weather has further marred the economic prospects of this sector. The COVID-19 pandemic also caused interruptions in meat supply due to suspension of different airlines of the world. Broiler producers have experienced disturbance in the supply chain of chicken meat due to the closure of restaurants. Similarly, livestock sector was also badly hit by the COVID-19 pandemic. Studies estimate that there was about \$13.6 billion loss to the US cattle industry due to pandemic [44].

### Beyond the economic effects of COVID-19 on society

Social set up of all the nations around the world is also affected by COVID-19 pandemic. Most of the normal life shifted to digital activities. Currently people are avoiding get together in order to maintain social distances. Universally, about 55% of the individuals are reported to have no appropriate social insurance (UNDP, 2020). COVID-19 pandemic may cause long lasting devastating effects on the economy, psychological well-being, jobs creation that would be the possible cause of increased criminal activities, starvation, etc. in the coming years. The pandemic is not just causing high death rate but also mental disaster to the rest of the world. Mass isolation could cause a feeling of aggregate insanity, dread and nervousness in wellbeing laborers working in emergency clinics, inpatient and outpatient care, nursing homes and all seclusion units.

The clinical human services laborers, who are uncovered and in direct contact with the affirmed and suspected corona virus cases, are defenseless against both contamination and psychological wellness issues like stress, fright, and encountering loss and injury, among others. With the coming of COVID-19 in Pakistan and other countries, clinical specialists have been feeling the squeeze, including high danger of disease, deficient hardware for wellbeing from infection, seclusion, fatigue, and the absence of contact with family. The seriousness is bringing about additional psychological well-being issues, which adversely impact on clinical specialists' dynamic capacity as well as have long haul adverse impact on their general prosperity [45]. On the other hand, during COVID-19 pandemic, the people of Pakistan became more aware of hygiene and disinfection procedure. This change has not only led to a cut down in the overall expenses on health commodities but also reduced the death rate. The pandemic thus taught Pakistanis a great lesson to that end. This lesson is certainly applicable to the people of all other nations of the world. For example, washing hands and face, sanitising hands, cleaning hard surfaces and using certain drugs, herbal medicine and alcoholic substances and products are all lessons learnt from the pandemic.

Also, COVID-19 pandemic is to be likely linked with severe psychiatric issues [46]. Recent data has illustrated that COVID-19 positive patients have been involved with psychological disturbances, such as insomnia, anxiety, depression and delirium [45]. Severe psychopathological sequelae can occur by the indirect infection through an immune reaction or by the direct infection of central nervous system [23]. Different studies, including those *in vivo*, *in vitro* and clinical trials, have shown that the coronaviruses can cause neural damage and are potentially neuropathic in nature [23]. In spite of potential brain infiltration, production of associated cytokines due to corona virus infection can cause psychiatric symptoms by triggering neuro-inflammation [23].

### COVID-19 impact on the education system

COVID-19 badly hit the education system worldwide. Rich students of prosperous background who have access to technology make themselves able to learn through online system. Others, who could not, got detached from learning throughout the lockdown. COVID-19 also exposed the weakness of education system. Educational institutions remained closed for a long time during the lockdown to control the COVID-19 pandemic. Most of the educational and business activities shifted to online system thus the demand of digital media increased. Academic activities got paralyzed for too long a time. Upon resumption, a lot of activities were not covered before moving over to new topics and sessions.

Students had to depend on their media resources of internet, television or radios and thereby could not prepare well. It is an indisputable fact that professional degree students were the most affected students, who are bound to remain deficient in their field knowledge. Teachers and students faced much difficulty in joining online education in time due to connectivity problems in remote and village areas. Parents, especially working parents, remained worried and frustrated about the children's career.

### COVID-19 and food habits

Balanced diet has been reported to boost the immunity [5,13]. COVID-19 also changed the eating habits of humans. People became aware of the significance of balanced diet and specific nutrients (protein rich diet, Vitamin C, D, B1, B6 and B12, calcium, phosphorus, iron, zinc, copper and chromium) to support the immunity as effect of some specific nutrients to control the COVID-19 have been reported [1,9,14,15,18,26,29,34,47-50].

During the pandemic, people were advised to use quality foods and fruits that are rich in Vitamin C, such as citrus fruits, strawberries, cherry, watermelon, papaya, tomatoes and lemon etc [14]. Fast food sales became low, unlike before. People tried to avoid drugs, alcohols, sodas and cold drinks. In some nations like Nigeria, eateries, bars, hotels, clubs and so on, where alcohol of different kind is, were barred. Only essential commodities were allowed to be sold. In Asian region, the use of honey, phytochemicals and herbs such as ginger, onion, garlic, cinnamon, senna leaves and black cumin was encouraged as a traditional herbal therapy against respiratory infection during the pandemic [2,20-22,31-33,51].

### Overall impact of COVID-19 on massive global activities

Although COVID-19 appeared as a major misfortune for the world in 2020, which influenced all the divisions of society and could be assessed precisely, some efforts are made to lessen the overall impact of COVID-19 on the globe. Firstly, lockdown has been forced globally, bringing about a huge number of dollars' misfortunes to the carriers and the travelling industry. Secondly, logical gatherings, conferences, games, style shows and marriage parties have been strongly greatly affected in various capacities, owing to efforts made at staying away from whatever could make contacting possible.

Movement restrictions, land borders closure, the imposition of travelling bans, good neighborliness and friendship, diplomacy and intergroup relations, the suspension of religious activities (home worshipping rather than group), etc. rose with the pandemic. For example, Kingdom of Saudi Arabia has restricted Umrah (journey) for the pioneers to Mecca and Medina and allowed only few visitors for pilgrim to avoid the disaster on annual Hajj days. In addition, most of the universities, colleges and schools of the world remained closed and a large number of students could not get proper education. Medical health care professionals did not continue their activities due to the threat of COVID-19 pandemic. Some of the health workers got infected, sacked for refusing to work without preventive gadgets, and affected indirectly by virtue of its effects on their families respectively.

Consequent upon health workers' decline to work amidst the hazards, patients suffered devastating health conditions. In nations like Nigeria a wholesome number of people refrained from hospitals, clinics and so on for health check-ups. Going there could result to being labeled a Covid-19 carrier/patient without the person really testing positive for the virus. Be it as it may, the lockdown difficult situation reduced child labor rate in both developed and developing countries. Human trafficking and smuggling across boarder was almost impossible. Security operative became faced with the challenge of taking up a new role of checking persons' Covid-19 status. There were different matters arising from the situation. These include corruption, misappropriation for fund meant for the control of the pandemic, abuse of human rights, police harassment of civilians, the misuse of social media for fake news and information that tensed people up the more and so on.

Also, the pandemic shattered a lot of activities. It incurred so much cost for nations and brought untold economic hardships on people across the globe. It plagued many with pains, irreparable losses, depression, trauma and anxiety. Recovered victims are bound to suffer some stigma. Covid-19 caused psychological, political, educational, intergroup relations and domestic problems. The educational problems arising from the lockdown and the expenses on new strategies in schools have worsened the fallen standard of education in many nations (e.g. Nigeria). It has created employment issues in some nations and worsened the unemployment in nations like Nigeria. It generated lots of domestic issues. Examples include quarrels and fight between neighbours, spouses, tenants and landlords, friends, roommates, siblings, parents and children, and between/among relatives; aggression leading to domestic violence, bankruptcy, increased poverty, hunger and starvation; sexual abuse and related issues; increased pregnancy ratio; health issues arising from lack of exercise, and so on.

Being that academic activities were on standstill research is also badly affected. COVID-19 emerged as a major global health crisis [37] which tremendously affected scientific research throughout the globe. Amongst the ethical issues of COVID-19 health emergency is the allocation of limited healthcare resources properly and honestly without any discrepancy [27,36,37,53]. People are also thinking that COVID-19 is prepared in laboratory. God forbid that it happens so. If it is proven to be true, then it is great stain on the face of humanity and scientific knowledge.

### Conclusion and Recommendation

As concisely explained in fair details above, corona virus rose from China and spread to other parts of the world. It has plagued the world with difficulties that would last for decades, if not centuries. It exerted drastic effects on both humans and phenomena alike. Animals suffer the effects indirectly from humans and phenomena. What is most surprising is the fact that since its emergence to date, no real lasting solution has been discovered and offered. Not even science could offer any reasonable remedy to the epidemic. Religion could not either. It seemingly defies all efforts so far at wiping it out of the planet Earth, though all hope is not yet lost.

Well, the fact that some of those infected were recovered or treated and discharged, it implies that there are several remedies to it. What is yet to come against it is that which will get rid of it completely. On the whole, the deadly pandemic has left unquantifiable effects on both developed and developing nations alike in various regards. It manifests social, economic, health, psychological, diplomatic, political, educational, sales and market, and domestic effects, among others. Put simply, the effects of the pandemic cut across all facets of life (sectors) and obtain in all nations of the world.

There is an urgent need to raise ethical modeling of the scientific community throughout the globe. It is recommended that research should focus on urgently controlling the spread of this epidemic and exploiting the experience of current pandemic to develop global research platforms that should work to get pre-ready for any next unforeseen pandemic. Institutional review and medical ethics boards (IRBs) and research ethics committees (RECs) around the world should govern the work of research labs and ethical status of research staff. It is strongly suggested that scientists should be allowed to work in laboratories after proper screening of their attitude, behavior, manner and values. Strong operational legislations should be evolved and enforced so as for every individual to be conscious of doing all the needful in curbing it or its spread.

### Bibliography

1. Abuelgasim H., *et al.* "Effectiveness of honey for symptomatic relief in upper respiratory tract infections: a systematic review and meta-analysis". *BMJ Evidence-Based Medicine* (2020): 111336.
2. Ahmad MF., *et al.* "An updated knowledge of Black seed (*Nigella sativa* Linn.): Review of phytochemical constituents and pharmacological properties". *Journal of Herbal Medicine* 25 (2021): 100404.

3. Ameen NMA., *et al.* "Effect of Nigella sativa and bee honey on pulmonary, hepatic and renal function in Sudanese in Khartoum state 5.31 (2011): 6857.
4. Bernheim A., *et al.* "Findings in coronavirus disease-19 (COVID-19): Relationship to duration of infection". *Radiology* (2020): 200463.
5. Calder PC., *et al.* "Optimal nutritional status for a well-functioning immune system is an important factor to protect against viral infections". *Nutrients* 12 (2020): 1181.
6. Carolyn Machamer. How Long Can The Virus That Causes Covid-19 Live On Surfaces? (2020).
7. Chakhtoura M., *et al.* "Commentary: myths and facts on vitamin D amidst the COVID-19 pandemic". *Metabolism* 109 (2020): 154276.
8. Chu HY., *et al.* "Seattle Flu Study Investigators. Early detection of Covid-19 through a citywide pandemic surveillance program". *The New England Journal of Medicine* (2020).
9. De Melo AF and Homem-de-Mello M. "High-dose intravenous vitamin C may help in cytokine storm in severe SARS-CoV-2 infection". *Critical Care* 24 (2020): 500.
10. De Wilde AH., *et al.* "Host factors in coronavirus replication". *Current Topics in Microbiology and Immunology* 419 (2018): 1-42.
11. De Wit E., *et al.* "SARS and MERS: recent insights into emerging coronaviruses". *Nature Reviews Microbiology* 14.8 (2016): 523-534.
12. Emanuel EJ., *et al.* "Fair allocation of scarce medical resources in the time of COVID-19". *The New England Journal of Medicine* 382.21 (2020): 2049-2055.
13. Ferrara F., *et al.* "The central role of clinical nutrition in COVID-19 patients during and after hospitalization in intensive care unit". *SN Comprehensive Clinical Medicine* 11 (2020): 1-5.
14. Feyaerts AF and Luyten W. "Vitamin C as prophylaxis and adjunctive medical treatment for COVID-19?" *Nutrition* 79-80 (2020): 110948.
15. Gholamnezhad Z., *et al.* "Preclinical and clinical effects of Nigella sativa and its constituent, thymoquinone: A review". *Journal of Ethnopharmacology* 190 (2016): 372-386.
16. Guan WJ., *et al.* "Clinical characteristics of 2019 novel coronavirus infection in China". *Medrxiv Preprint* (2020): 20020974.
17. Heinzerling A., *et al.* "Transmission of COVID-19 to health care personnel during exposures to a hospitalized patient-Solano County, California, February 2020". *Morbidity and Mortality Weekly Report* 69 (2020): 472-476.
18. Hoang BX and Han B. "A possible application of hinokitiol as a natural zinc ionophore and anti-infective agent for the prevention and treatment of COVID-19 and viral infections". *Medical Hypotheses* 145 (2020): 110333.
19. Horby P., *et al.* "Effect of dexamethasone in hospitalized patients with COVID-19: preliminary report". *Med Rxiv* (2020).
20. Infusino F., *et al.* "Diet supplementation, probiotics, and nutraceuticals in SARS-CoV-2 infection: a scoping review". *Nutrients* 12 (2020): 1718.
21. Khan M., *et al.* "COVID-19: A Global Challenge with Old History, Epidemiology and Progress So Far". *Molecules* 26.1 (2020): 39.
22. Kulyar MF-e-A., *et al.* "Potential influence of Nigella sativa (Black cumin) in reinforcing immune system: A hope to decelerate the COVID-19 pandemic (2020): 153277.

23. Li Q., *et al.* "Early transmission dynamics in Wuhan, China, of Novel coronavirus–infected pneumonia". *The New England Journal of Medicine* (2020).
24. Lupia T., *et al.* "2019 novel coronavirus (2019-nCoV) outbreak: A new challenge". *Journal of Global Antimicrobial Resistance* 21 (2020): 22-27.
25. McMichael TM., *et al.* "Public Health – Seattle and King County; EvergreenHealth; CDC COVID-19 Investigation Team. COVID-19 in a long-term care facility–King County, Washington, February 27–March 9, 2020". *Morbidity and Mortality Weekly Report* 69 (2020): 339-342.
26. Name JJ., *et al.* "Vitamin D and Vitamin C: Perspectives for COVID-19 With a Focus on Physical Tissue Barrier Integrity". *Frontiers in Nutrition* 7 (2020): 606398.
27. NIHC. National Institute for Health Care Excellence. COVID-19 rapid guideline [NG159]: a critical care in adults". *NICE Guideline* (2020).
28. Paules CI., *et al.* "Coronavirus Infections—More Than Just the Common Cold". *The Journal of the American Medical Association* 323.8 (2020): 707-708.
29. Read SA., *et al.* "The Role of Zinc in Antiviral Immunity". *Advances in Nutrition* 10.4 (2019): 696-710.
30. SCIR. Statement from the Chief Investigators of the Randomised Evaluation of COVID-19 thERapY (RECOVERY) Trial on hydroxychloroquine (2020).
31. Sultana S., *et al.* "Authentication of herbal drug Senna (*Cassia angustifolia* Vahl.): A village pharmacy for Indo-Pak Subcontinent". *African Journal of Pharmacy and Pharmacology* 6.30 (2012): 2299-2308.
32. Tavakkoli A., *et al.* "Review on Clinical Trials of Black Seed (*Nigella sativa*) and Its Active Constituent, Thymoquinone". *Journal of Pharmacopuncture* 20.3 (2017): 179-193.
33. Ulasli M., *et al.* "The effects of *Nigella sativa* (Ns), *Anthemishyalina* (Ah) and *Citrus sinensis* (Cs) extracts on the replication of coronavirus and the expression of TRP genes family". *Molecular Biology Reports* 41.3 (2014): 1703-1711.
34. Wessels I., *et al.* "The potential impact of zinc supplementation on COVID-19 pathogenesis". *Frontiers in Immunology* 11 (2020): 1712.
35. WHO. Coronavirus disease (COVID-19) pandemic (2020).
36. WHO. Guidance for Managing Ethical Issues in Infectious Disease Outbreaks (2016).
37. WHO. Ethical standards for research during public health emergencies: Distilling existing guidance to support COVID-19 R and D (2020).
38. World Health Organisation– WHO. 'Clinical management of severe acute respiratory infection when novel coronavirus (nCoV) infection is suspected". *Interim Guidance* (2020).
39. Holshue ML., *et al.* "Washington State 2019-nCoV Case Investigation Team. First Case of 2019 Novel Coronavirus in the United States". *The New England Journal of Medicine* 382.10 (2020): 929-936.
40. Wang H., *et al.* "The genetic sequence, origin, and diagnosis of SARS-CoV-2". *European Journal of Clinical Microbiology and Infectious Diseases* 39.9 (2020): 1629-1635.
41. Tanika Deuskar. "Emory Develops Free Online Tool to Assess COVID-19 Symptoms. Coronavirus, News (2020).

42. Homi Kharas and Kristofer Hamel. "Turning back the Poverty Clock: How will COVID-19 impact the world's poorest people? (2020).
43. Anderson RM., *et al.* "How will country-based mitigation measures influence the course of the COVID-19 epidemic?" *Lancet* 395.10228 (2020): 931-934.
44. Derrell S Peel., *et al.* "Economic Damages to the U.S. Beef Cattle Industry Due to COVID-19 (2020).
45. Rogers JP., *et al.* "Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic". *Lancet Psychiatry* 7.7 (2020): 611-627.
46. Troyer EA., *et al.* "Are we facing a crashing wave of neuropsychiatric sequelae of COVID-19? Neuropsychiatric symptoms and potential immunologic mechanisms". *Brain, Behavior, and Immunity* 87 (2020): 34-39.
47. Chakhtoura M Napoli and N Fuleihan G. "Myths and Facts on Vitamin D Amidst the COVID-19 Pandemic. 109 (2020): 154276.
48. Liu A., *et al.* "Disappearance of antibodies to SARS-CoV-2 in a -COVID-19 patient after recovery". *Clinical Microbiology and Infection* 357 (2020): 1162-1163.
49. Liu X., *et al.* "Patterns of IgG and IgM antibody response in COVID-19 patients". *Emerging Microbes and Infections* A9 (2020): 1269-1274.
50. Liu Y., *et al.* "Clinical features and progression of acute respiratory distress syndrome in coronavirus disease 2019 (2020b).
51. Kwakman P and Zaat S. "Antibacterial components of honey". *International Union of Biochemistry and Molecular Biology Life* 64.1 (2012): 48-55.
52. Ezekiel J Emanuel., *et al.* "An Ethical Framework For Global Vaccine Allocation". *Science* 369.6509 (2020): 1309-1312.
53. Heinzerling A., *et al.* "Transmission of COVID-19 to Health Care Personnel During Exposures to a Hospitalized Patient - Solano County, California, February 2020". *Morbidity and Mortality Weekly Report* 69.15 (2020): 472-476.

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