Review Article

Assessing the Role Of Vitamins for COVID-19 Treatment

Abstract

Acute SARS-Covid-2, also known as coronavirus (COVID-19), seemed in Wuhan metropolis, China, in month of December 2019. On March 11, 2020, a global epidemic has been announced.

As the sector responds to COVID-19 virus and which is the less important clinical remedy, commentary has been shifted to various methods that can help to toughen the immune system in order to fight against various viral and bacterial infections. considering that the Corona contamination considerably impacts the body defense with many irritative and harmful responses, medicinal corporations are working to develop a unique tablets and vaccines in opposition to Corona virus which is beneficial for people in order to fight with corona disease.

A properly balanced diet can play a chief role in keeping typical fitness with the aid of controlling persistent infectious illnesses. A nicely balanced diet or food regimen, inclusive of nutrients A, B, C, D, E, and vit. k, can help with numerous infectious illnesses. This research ambitions to talk over and gift with the ultra-modern records at the position of nutrients inside the COVID-19 treatment, as these nutrients play a very important role in covid treatment.

Deficiency of these types of nutrients can cause a decrease or low resistance of mmune working, which is one of the predominant reasons that purpose terrible immune device. that is a story evaluate of the capabilities of Corona virus and facts of getting use vitamins as precautionary measures to convey down the incidence and dying of sufferers struggling with COVID

Overview: Corona virus is the fundamental explanation of a new found called COVID.. The clinical components of COVID-19 are actually similar to going before communicated eruptions in the 21st century, focus East respiratory problem (MERS) and genuine extraordinary breath condition (SARS) (1). each SARS and MERS have been communicated to make bats and sending them to individuals (1). On December 31, 2019, the world prosperity affiliation (WHO) announced that SARS-CoV-2 changed into answerable for COVID-19 and that on March eleven,

2020, it became broadcasted a general plague. the standard area of interest of COVID-19 development is the human breathing system (1), despite the way that particular organ structures similarly are anxious. the fundamental sign of pneumonia of dark not actually settled forever in a crowd of patients related to the issue in Wuhan, Hubei domain, China. different signs and indications fuse fever, dry hack, dyspnoea, sore throat, headache, wooziness, standard shaky part, hurling and the runs have been illustrated (2). it's far now prominent that COVID-19 has complex breath signs going from moderate signs and incidental effects to hypoxia with extreme respiratory strain issue (ARDS) (1). The Angiotensin-changing over enzyme2 (ACE2) receptor is used to attack SARS-CoV-2 in human cells (3).

The investigation of illness transmission estimations for COVID-19 show that seizures are a significant part of the time more important genuine in people past 60 years of age who're more prepared or have prosperity conditions which consolidate lung or coronary heart issue, diabetes. teenagers underneath the age of 10 are affected at this point by and by not at high ranges as the degree is incredibly low. despite the way that no sex changed into saw essentially, men overshadowed women as a result of smoking and drinking (4). The consistently record shows tremendous developments in new conditions from stand-apart districts/countries (5). there may be no enrolled drug for COVID-19 considering a shortfall of all around data about the organism to manage the reaction (6). Remdesivir is the most un-troublesome FDA-upheld fix inside the US for COVID-19 casualties and the most outrageous chose foundation. it is by and by used for casualties in crisis centers every yr with outrageous conditions (7). two significant walks in fighting COVID-19 sicknesses are dietary and safe limit (8). Specialists are working across the clock to track down the right game plan, and up to that point, it's far our fundamental commitment to screen and by and by not subvert our prosperity and augmentation the shot at COVID-19. a couple of supplements and minerals can expect essential parts in strengthening the resistant structure and in decreasing issue. the fundamental clarification of this study is to focus in on the conceivable retouching limit of enhancements A, B, C, D, E and k as a securing energizer in COVID-19 casualties. arrangement of supplements as an ensuring energizer .It is fittingly mounted that an insufficiency of good food can disturb and unfavorably influence the immune contraption through ailment. current evidence has shown the occupation of dietary supplementation, and at whatever point oversaw at ideal measurements higher over recommended, it very well may be useful in cutting down the viral weight inside the blood and

inside the remainder of COVID-19 patients. supplements are critical in the wellbeing improvement plan in light of their malignancy anticipation specialist properties and safe results (6). different them change quality enunciation in safe cells and sponsorship the turn of events and detachment of safe cells. supplements C and E go probably as convincing cell fortifications in the fight in opposition to free progressives (nine). it has been tentatively formed that the body can be denied of these enhancements, while engaging infections in light of the need to reestablish the safe machine, in a disturbing way of life, burdens including viral pollutions, diabetes, weight issues, which immediately influence healthy status(9)

Discussion

Function of vit.A in COVID-19

Vit A have its place in own group of retinyl-esters and is likewise called retinoic acid (RA) (10), which regulates the diverse genes worried inside the immune reaction (11). vitamin A acts as a T-cellular maker, making it less difficult for the immune gadget and for delivery (10). Retinoid directly stimulates the express interferon gene expression (ISGs), inclusive of the retinoic acid-inducible gene I (RIG-I) and IFN regulatory issue

Function of vit. B in COVID-19

Supplement B is a trademark substance and is seen to be involved inside the production of red platelets (RBCs). supplement B tangled wires 8 supplements, to be explicit, thiamine [B1], riboflavin [B2], niacin [B3], pantothenic destructive [B5], pyridoxine [B6], biotin [B7], folate, or folic destructive [B9], cyanocobalamin [B12]. It plays out a central occupation in dealing with the invulnerable structure and adds to the working of the gastrointestinal obstacle. (12).

Vit. B1 (thiamine)

Thiamine is a coenzyme supportive resource in energy creation inside the human body, keeps a reliable temperature, and which is ingested into fat , and is huge for the working of the restless and immune system (13). it has been referred to that supplement B1 has an effect while circling back to macrophages, and smothers oxidative strain debilitating the gathering of NF-kappa B (14). Thiamine deficiency impacts the immune system structure due to different triggers like broadened pestering, oxidative strain,

Immune issues, which keep to cause the gathering of twisted antibodies (15) It changed into documented that thiamine plays a vital limit in killing the SARS-CoV-2 disease by making sharp and cell antibodies. thusly, okay degrees of thiamine help to create antibodies against SARS-CoV-2 casualties (6).

Vit. B2 (riboflavin)

diet B2 is a neuroactive compound with immunomodulatory properties , and its deficiency gives pattern for expressing the type of infection. it's been determined that riboflavin affords a shielding impact in comparison to CCL4-induced liver harm by using TNF, in experimental animal models, which threatens to be recruited as a hepato protecting agent (15). UV radiation. Riboflavin lead to irreversible damage to nucleic acids which lead to the prevention of bacterial recurrence. consequently, it can be used to lessen blood plasma tiers in COVID patient to lessen the risk of transfusion-COVID spread .

Vitamin B3 [niacin]

Niacin affects changing the advancement of quieting go betweens and safe cell improvements. thusly, it has an impact which is converse to combustible, paying little heed to the way that its results have not been true to form depicted. It obstructs CXC chemokine, CXCL-8/IL-8 selection, neutrophil development sped up by using lipid go between leukotriene (LT) B4 (in mice), and connection (16). diminished levels of IL-6, IL-1, and TNF-in recuperated alveolar macrophages. late information suggest a focused in on IL-6 can in like manner decline unsettling influence in COVID-19 casualties (17).

besides, niacin goes probably as a non combustible trained professional; decreases neutrophil entrance in patients with flight course hindrance (18). One clinical record communicates that nicotinamide reduces the shot at spoiling and empowers the safe system. if you analyze the helpful homes of niacin, it will in general be used as a frivolity in the treatment of COVID-19 casualties (19).

Vitamin B6 [pyridoxine]

diet B6 has an impact on the internal / regenerative immune system, characteristic, and proliferation of immune cells (19). people with vitamin B6 deficiency are identified by way of

inhibiting cytokine / chemokine release. studies display that nutrition B6 intermediates immune responses with the aid of IFN-gamma (20). recent research has proven that the pyridoxine supplement facilitates relieve the symptoms of COVID-19 by way of improving immune responses, lowering cytokines that assault irritation, helping endothelial veracity, and stopping hypercoagulability.

vitamin B9 (folic acid, folate)

Folate is a huge eating routine for DNA and protein mixture and plays out a major limit in the body response. latest assessments has seen that folic destructive curbs furin, a compound liable for viral and viral pollutions, and upsets the restricting of the SARS-CoV-2 spike protein. in this manner first and foremost stages, folic destructive can be useful in controlling COVID-19-related breath issue (21). force research has uncovered that folic destructive and its auxiliaries, 5-methyl tetrahydrofolic destructive, and tetrahydrofolic destructive lead to vivacious relationship with SARS-CoV-2 (22)

vitamin B12 [cobalamin / cyanocobalamin]

vit.B can change chemokine/cytokine plan and modify correspondences between safe cells stressed in pathophysiological pathways. thusly, it is upheld that it may get ready for various viral and bacterial pollutions. further, as it also accepts an essential part inside the law of the safe structure and adds to the limit of the gastrointestinal limit, it can play an indispensable limit in guaranteeing and securing the (COVID-19) as there's verification that probiotics involving bifidobacterial and lactobacilli can coordinate safe responses as properly. safeguard in opposition to sicknesses, close by breathing illnesses (23

Function of vit. C in COVID

supplement C is remarkable called for its foe of bacterial properties, including conveying interferon-alpha collecting, fixing cytokines, cutting down disturbance, overhauling endothelial strife, and restoring mitochondrial work (24). inside the mid 30s and 70s, Linus Pauling (Nobel Prize victor) saw the incredible effect of diet C on colds (25). there may be a few proof to show the homes of food C (26). diet C helps the safe gadget with combatting illnesses and diseases. It helps with putting off dead cells and fix new cells . different investigation have shown that supplement C supplementation reduces the danger related with extravagant breathing sicknesses

(24). layout dispersed with the aide of Hem involving sepsis and extreme respiratory strain issue (ARDS) (27). there may be a few calculated and direct affirmation revealing the ampleness of diet C in the treatment of casualties with COVID-19. One Cochrane review with a randomized administered starter showed a tremendous decrease in cool signs with oral association of 0.2 g/day of supplement C. One fundamental in adult patients showed a part subordinate decrease in pneumonia with measurements of supplement C (28). in this manner, learns at the circumstance of sustenance C extraordinarily for COVID-19 adds worthwhile records (Carr 2020)

.Function of vit. D in COVID-19

Supplement D is a secosteroid with quieting and malignancy anticipation specialist properties. It grants stay aware of the bodys calcium-phosphorus absorption. a couple of investigation have exhorted that food D hinders weight issues of quieting cytokines ,malignancy rottenness part (29). it's also drawn in with changing the safe response to powerful and invulnerable framework illnesses. light releases brilliant B radiation, that is held into the skin and results in the difference in seven-dehydrocholesterol into cholecalciferol. taking into account that food sources do now not give adequate measures of supplement D. as needs be, elevating of oral implantations is reliably required. a recently out of the plastic new notification has observed that the temperature and collection of metropolitan networks affected by COVID-19 are really like the most affected districts (30). that is critical because people have low degrees of sustenance D in more broad nations (31). beforehand, supplement D need was referred to in casualties from extraordinarily prepared regions. further, the inescapability of food D need shifts in different districts of each us of a, restricting our ability to work with results.

Function of vit.E in COVID-19

supplement E plays a urgent limit in overseeing and aiding the working of the immune structure as a strong cell support (32). diet E goes probably as a free forager, diminishes oxidative strain, and curbs free progressives that include insignificant electrons and really astonishing and broken cells. Strange electrons produce open oxygen species (ROS) that respond speedy with oxygen. (33). Regardless its malignant growth anticipation specialist properties , supplement E additionally has an ensuring component. Alpha-tocopherol is an inhibitor of protein kinase C, versatile duplication and division from clean muscle cells, monocytes and platelets. supplement E moreover will grow the level of prostacyclin through quelling the processing of arachidonic

destructive essential to confining of veins and restriction of platelet aggregation (diet E-prosperity capable Sheet). research have referred to that raised supplement E utilization has huge blessings in keeping safe limit in more settled people appeared differently in relation to more energetic individuals (34***)***

.Function of vit.k in COVID-19

Vit k, a fats-dissolvable supplement, has a spot with the two-methyl-1,four-naphthoquinone own family (slow down 2012). it is obviously seen in different dinners and is open as a dietary enhancement in two philosophies: K1 (phylloquinone) and K2 (which consolidates different menaquinones, MKs) (35).

Vit .k is a compound and goes probably as a co-synthetic stressed in heestasis through making proteins and various body limits (36). Amidst inadequacy of supplement OK hepatic part, thicker substances than extrahepatic are more average. Organization Gla protein (MGP), a supplement k-generally based protein, loosen up fragile tissues with an adaptable fiber corruption inhibitor. To secure the extracellular system of the lungs from infection on account of unsettling influence, there is an improvement inside the centralization of Matrix Gla (MGP) protein in the lungs of SARS-CoV-2 casualties, which propels the usage of supplement k in extra supplement k shops (37). Covid can influence venous and vein thromboembolic infection in view of outrageous illness, hypoxia, immobilization, and diffuse intravascular coagulation (DIC). it could similarly cause blood clusters and cause naughtiness to the liner of the lungs. As supplement K1 is obligated for activating the components of hepatic coagulation, so it helps with engaging thrombotic disarrays in casualties with COVID (38-43)

Set out the summary and conclusion

existing healing advantages of vitamins A, B, C, D, E, and k with immunomodulation in COVIDsufferers were evaluated and analyzed in line with available evidence. Antibacterial and antioxidant homes are concerned in lots of immune structures and enhance the immune system in diverse ways. The addition of vitamins and s will have a effective impact on COVID-19 contamination. but, there may be a loss of pre-surgical research and clinics related to vitamins within the control of COVID-19. Exploring the potential function of vitamin supplementation and the diverse medical research conducted. by reviewing numerous research, it may be

concluded that good enough diet supplementation need to be taken into consideration as enhancing the results of SARS-CoV contamination. The present day state of affairs has caused extra powerful vaccines, and focused drug remedy paintings is being executed; these are the most costly and complex processes with a small supposed spectrum feature. In assessment, the nutrition is a less expensive and less complicated technique when supported via strong medical research, and has broader capability and long-time period health benefits. while you're looking at some of health blessings and risks, nutrients may be justified by means of negligent risks. This compares with the risks related to new tablets and other vaccines. consequently, nutritional dietary supplements look like a promising way of contamination with SARS-CoV.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

References

1. Alwaqfi NR, Ibrahim KS. COVID-19: an update and cardiac involvement. J Cardiothorac Surg. 2020;15(1):1–6. Doi: 10.1186/s13019-020-01299-5. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
2. Angulo A, Chandraratna RA, LeBlanc JF, Ghazal P. Ligand induction of retinoic acid receptors alters an acute infection by murine cytomegalovirus. J Virol. 1998;72(6):4589–4600. Doi: 10.1128/JVI.72.6.4589-4600.1998. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
3. Ashour HM, Elkhatib WF, Rahman M, Elshabrawy HA. Insights into the recent 2019 novel coronavirus (SARS-CoV-2) in light of past human coronavirus outbreaks. Pathogens. 2020;9(3):186. Doi: 10.3390/p MYNTRA500against viral infections. Nutrients. 10.3390/nu12041181 [PMC free article] [PubMed]
4. Cannell JJ, Vieth R, Umhau JC, Holick MF, Grant WB, Madronich S, Garland CF, Giovannucci E. Epidemic influenza and vitamin D. Epidemiol Infect. 2006;134(6):1129–

1140. Doi: 10.1017/S0950268806007175. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

5. Carr AC. A new clinical trial to test high-dose vitamin C in patients with COVID- 19. Crit Care. 2020;24(1):1–2. Doi: 10.1186/s13054-020-02851-4. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
6. Carr AC, Maggini S. Vitamin C, and immune function. Nutrients. 2017;9(11):1211. Doi: 10.3390/nu9111211. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
7. Cascella M, Rajnik M, Cuomo A, Dulebohn SC, Di Napoli R (2020) Features, evaluation and treatment coronavirus (COVID-19). In: Statpearls [internet]. StatPearls Publishing
8. Chang EL, Simmers C, Knight DA. Cobalt complexes as antiviral and antibacterial agents. Pharmaceuticals. 2010;3(6):1711–1728. Doi: 10.3390/ph3061711. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
9. Chaturvedi UC, Shrivastava R, Upreti RK, 2004. Viral infections and trace elements: a complex interaction. Curr Sci 1536–54. https://www.jstor.org/stable/24109032
10. Cole-Jeffrey CT, Liu M, Katovich MJ, Raizada MK, Shenoy V (2015) ACE2, and microbiota: emerging targets for cardiopulmonary disease therapy. J Cardiovasc Pharmacol 66(6):540 [PMC free article] [PubMed]
11. Collins JF (2016) Molecular, genetic, and nutritional aspects of major and trace minerals. Academic Press
12. Colunga Biancatelli RML, Berrill M, Marik PE. The antiviral properties of vitamin C. Taylor & Francis. 2020 doi: 10.1080/14787210.2020.1706483. [PubMed] [CrossRef] [Google Scholar]
13. Derbyshire E, Delange J. COVID-19: is there a role for immunonutrition, particularly in the over 65s? BMJ Nutrition, Prevention & Health. 2020;3(1):100–105. Doi: 10.1136/bmjnph-2020-000071. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
14. Dey S, Bishayi B. Killing of S. aureus in murine peritoneal macrophages by ascorbic acid along with antibiotics chloramphenicol or ofloxacin: correlation with inflammation. Microb Pathog. 2018;115:239–250. Doi: 10.1016/j.micpath.2017.12.048. [PubMed] [CrossRef] [Google Scholar]

15. Dutta PK, Keller J, Yuan Z, Rozendal RA, Rabaey K. Role of sulfur during acetate oxidation in biological anodes. Environ Sci Technol. 2009;43(10):3839–3845. Doi: 10.1016/j.micpath.2017.12.048. [PubMed] [CrossRef] [Google Scholar]

16. Ekert PG, Vaux DL. Apoptosis and the immune system. Br Med Bull. 1997;53(3):591–603. Doi: 10.1093/oxfordjournals.bmb.a011632. [PubMed] [CrossRef] [Google Scholar]

17. Evgen'ev MB, Frenkel A (2020) Possible application of H2S-producing compounds in the therapy of coronavirus (COVID-19) infection and pneumonia. Cell Stress Chaperones, pp 1–3 [PMC free article] [PubMed]

18. Fischer AJ, Linnemann NJ, Krishnamurthy S, Pócza P, Durairaj L, Launspach JL, et al. Enhancement of respiratory mucosal antiviral defenses by the oxidation of iodide. Am J Respir Cell Mol Biol. 2011;45(4):874–881. Doi: 10.1165/rcmb.2010-0329OC. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

19. Frieman M, Yount B, Heise M, Kopecky-Bromberg SA, Palese P, Baric RS. Severe acute respiratory syndrome coronavirus ORF6 antagonizes the STAT1 function by sequestering nuclear import factors on the rough endoplasmic reticulum/Golgi membrane. J Virol. 2007;81(18):9812–9824. Doi: 10.1128/JVI.01012-07. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

20. Furuya A, Uozaki M, Yamasaki H, Arakawa T, Arita M, Koyama AH. Antiviral effects of ascorbic and dehydroascorbic acids in vitro. Int J Mol Med. 2008;22(4):541–545. Doi: 10.3892/ijmm_00000053. [PubMed] [CrossRef] [Google Scholar]

21. Gheblawi M, Wang K, Viveiros A, Nguyen Q, Zhong J-C, Turner AJ, et al. Angiotensin-converting enzyme 2: SARS-CoV-2 receptor and regulator of the renin-angiotensin system: celebrating the 20th anniversary of the discovery of ACE2. Circ Res. 2020;10:1456–1474. Doi: 10.1161/CIRCRESAHA.120.317015. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

22. Gombart AF, Pierre A, Maggini S (2020) A review of micronutrients and the immune system–working in harmony to reduce the risk of infection. Nutrients. 10.3390/nu12010236 [PMC free article] [PubMed]

23. Gudas LJ (2012) Emerging roles for retinoids in regeneration and differentiation in normal and disease states. Biochim Biophys Acta (BBA)-Molecular Cell Biol Lipids. 1821(1):213–21. 10.1016/j.bbalip.2011.08.002. [PMC free article] [PubMed]

24. Guillin OM, Vindry C, Ohlmann T, Chavatte L. Selenium, selenoproteins and viral infection. Nutrients. 2019;11(9):2101. Doi: 10.3390/nu11092101. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

25. Haase H. Innate immune cells speak manganese. Immunity. 2018;48(4):616–618. Doi: 10.1016/j.immuni.2018.03.031. [PubMed] [CrossRef] [Google Scholar]

26. Habib MB, Sardar S, Sajid J (2020) Acute symptomatic hyponatremia in setting of SIADH as an isolated presentation of COVID-19. IDCases. E00859 [PMC free article] [PubMed]

27. Han JE, Jones JL, Tangpricha V, Brown MA, Hao L, Hebbar G, et al. High dose vitamin D administration in ventilated intensive care unit patients: a pilot double blind randomized controlled trial. J Clin Transl Endocrinol. 2016;4:59–65. Doi: 10.1016/j.jcte.2016.04.004. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

28. Heikkinen T, Järvinen A. The common cold. Lancet. 2003;361(9351):51–59. Doi: 10.1016/S0140-6736(03)12162-9. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

29. Hemila H. Vitamin E administration may decrease the incidence of pneumonia in elderly males. Clin Interv Aging. 2016;11:1379–1385. Doi: 10.2147/CIA.S114515. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

30. Hemilä H, Chalker E (2013) Vitamin C for preventing and treating the common cold. Cochrane database Syst Rev. 10.1002/14651858.CD000980.pub4 [PMC free article] [PubMed]

31. Hemilä H, Chalker E. Vitamin C can shorten the length of stay in the ICU: a meta-analysis. Nutrients. 2019;11(4):708. Doi: 10.1002/14651858.CD000980.pub4. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

32. Herr C, Shaykhiev R, Bals R. The role of cathelicidin and defensins in pulmonary inflammatory diseases. Expert Opin Biol Ther. 2007;7(9):1449–1461. Doi: 10.3390/nu11040708. [PubMed] [CrossRef] [Google Scholar]

33. Hu Y, Li W, Gao T, Cui Y, Jin Y, Li P et al (2017) The severe acute respiratory syndrome coronavirus nucleocapsid inhibits type I interferon production by interfering with TRIM25-mediated RIG-I ubiquitination. J Virol. 10.3390/v13010047 [PMC free article] [PubMed]

34. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan. China Lancet. 2020;395(10223):497–506. Doi: 10.1016/S0140-6736(20)30183-5. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

35. Janssen R, Walk J. Vitamin K epoxide reductase complex subunit 1 (VKORC1) gene polymorphism as determinant of differences in Covid-19-related disease severity. Med Hypotheses. 2020;144:110218. Doi: 10.1016/j.mehy.2020.110218. [PMC free article] [PubMed] [CrossRef] [Google Scholar

36. Acharya, Sourya, Samarth Shukla, and Neema Acharya. "Gospels of a Pandemic- A Metaphysical Commentary on the Current COVID-19 Crisis." JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH 14, no. 6 (June 2020): OA01–2. https://doi.org/10.7860/JCDR/2020/44627.13774.
37. Arora, Devamsh, Muskan Sharma, Sourya Acharya, Samarth Shukla, and Neema Acharya. "India in 'Flattening the Curve' of COVID-19 Pandemic - Triumphs and Challenges Thereof." JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 43 (October 26, 2020): 3252–55. https://doi.org/10.14260/jemds/2020/713.
38. Bawiskar, Nipun, Amol Andhale, Vidyashree Hulkoti, Sourya Acharya, and Samarth Shukla. "Haematological Manifestations of Covid-19 and Emerging Immunohaematological Therapeutic Strategies." JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 46 (November 16, 2020): 3489–94. https://doi.org/10.14260/jemds/2020/763.
39. Burhani, Tasneem Sajjad, and Waqar M. Naqvi. "Telehealth - A Boon in the Time of COVID 19 Outbreak." JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 29 (July 20, 2020): 2081–84. https://doi.org/10.14260/jemds/2020/454.
40. Butola, Lata Kanyal, Ranjit Ambad, Prakash Keshaorao Kute, Roshan Kumar Jha, and Amol Dattaroa Shinde. "The Pandemic of 21st Century - COVID-19." JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 39 (September 28, 2020): 2913–18. https://doi.org/10.14260/jemds/2020/637.
41. Dasari, Venkatesh, and Kiran Dasari. "Nutraceuticals to Support Immunity: COVID-19 Pandemic- A Wake-up Call." JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH 14, no. 7 (July 2020): OE05–9. https://doi.org/10.7860/JCDR/2020/44898.13843.
42. Dhok, Archana, Lata Kanyal Butola, Ashish Anjankar, Amol Datta Rao Shinde, Prakash Kesharao Kute, and Roshan Kumar Jha. "Role of Vitamins and Minerals in Improving Immunity during Covid-19 Pandemic - A Review." JOURNAL OF EVOLUTION OF

MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 32 (August 10, 2020): 2296–2300. https://doi.org/10.14260/jemds/2020/497.

43. Gawai, Jaya Pranoykumar, Seema Singh, Vaishali Deoraoji Taksande, Tessy Sebastian, Pooja Kasturkar, and Ruchira Shrikant Ankar. “Critical Review on Impact of COVID 19 and Mental Health.” JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 30 (July 27, 2020): 2158–63. https://doi.org/10.14260/jemds/2020/470.