IJCRR
Section: Healthcare
Sci. Journal Impact
Factor: 6.1 (2018)
ICV: 90.90 (2018)

Copyright@IJCRR

Will Alternative Medicine Help Us to Fight Against COVID-19

A. Sankari Niveditha¹, Geetha RV², Lakshminarayanan Arivarasu³

¹Saveetha Dental College, Saveetha Institute of Medical & Technical Sciences, Saveetha University, Chennai, India; ²Department of Microbiology, Saveetha Dental College, Saveetha Institute of Medical & Technical Sciences, Saveetha University, Chennai, India; ³Department of Pharmacology, Saveetha Dental College, Saveetha Institute of Medical & Technical Sciences, Saveetha University, Chennai, India.

ABSTRACT

Introduction: Complementary and Alternative Medicines is a group of diverse medical and healthcare systems, practices, and products that are not considered to be part of conventional medicine. Alternative medicine has been used to treat various illnesses, including viral infections. COVID-19, a new strain of Coronavirus 2019 (SARS-CoV-2) causes mild to moderate respiratory illness in humans. There is a high risk among the elderly and those people with heart and lung disease, asthma, low CD4 counts, or diabetes. These Chinese medicines were used in similar conditions in 2003 during the SARS outbreak with documented clinical successes. The AYUSH ministry in India has suggested alternative medicines such as Ayurveda, Homeopathy, and Unani practice that could act as an immunity booster against the deadly novel coronavirus. Many people are seeking alternative medicine as these have been used to treat many viral diseases. But there is no scientific evidence that these alternative medicines can prevent or cure the illness COVID-19.

Aim: This review is done to find whether alternative medicines help us to fight against COVID-19.

Materials and Method: In this review, data were collected related to COVID-19, herbal medicine, and alternative medicine from Google Scholar, PubMed, SciFinder, and ScienceDirect using keywords. Nearly 48 articles related to the topic had been reviewed and interpreted.

Result: This review demonstrates the usage of alternative medicines against COVID19. As there is no specific treatment or vaccine available for COVID 19 at present, many people are seeking alternative medicine to boost immunity to fight against the deadly virus. But there is no scientific evidence that these alternative medicines can prevent or cure the illness COVID-19. It is important to be safe by staying at home, maintaining social distance, and proper hygiene. It is also important to boost the immune system and follow a proper diet during this pandemic.

Key Words: Ayurveda, COVID 19, Immunity, Treatment, Traditional, CAM

INTRODUCTION

Complementary and Alternative Medicines is a group of diverse medical and healthcare systems, practices, and products that are not considered to be part of conventional medicine. Alternative medicine aims in achieving the healing effects of the medicine that lacks biological plausibility and is often unproven. Complementary medicine (CM), complementary and alternative medicines (CAM), Integrative medicines (IM), and holistic medicine are of the same phenomenon. Alternative therapies rely on pseudoscience rather than medical science. Traditional practices are “alternative” as it is used outside their original setting and are without any proper scientific explanation or evidence. They are also called new-

age medicine, pseudomedicine, unconventional medicine, or unorthodox medicine. The traditional alternative medicine may include Acupuncture, Ayurveda, Homeopathy, Naturopathy, and Chinese medicines. The most commonly used complementary modalities are massage, acupuncture, naprapathy, reflexology, osteopathy, cupping, and spiritual healing. Complementary medicines are usually used along with standard medical treatments. For example, acupuncture helps to lessen some side effects of cancer treatments. CAM can be broadly classified based on five major domains as alternative medical systems, mind-body interventions, biologically-based treatments, manipulative and body-based methods, and energy therapies. More than 80% of the world's population uses Complementary and Alternative Medicines

Corresponding Author:

Dr. R V Geetha, Associate Professor; Department of Microbiology, Saveetha Dental College, Saveetha Institute of Medical and Technical Science (SIMATS), Saveetha University, Chennai, India; Mobile: 9710456203; Email: geetha@saveetha.com

ISSN: 2231-2196 (Print)

ISSN: 0975-5241 (Online)

Received: 20.08.2020

Revised: 17.09.2020

Accepted: 16.10.2020

Published: 03.11.2020

(CAMs). In the U.S, CAM was used by about 38% of adults and 12% of the children¹. According to the World Health Organization has estimated over 100 million users of CAM in Europe². Many people from different cultures are following their alternative medicines³ and strategies in order to sustain their immune power against COVID-19.

Alternative medicine has been used to treat various illnesses, including viral infections. Herbal, dietary, complementary, and natural therapies have been used widely for the prevention and treatment of viral infections. The traditional Chinese herbal medicines were used for treating novel coronavirus (COVID 19) pneumonia⁴. These Chinese medicines were used in similar conditions in 2003 during the SARS outbreak with documented clinical successes⁵. The National Administration of Traditional Chinese Medicine (NATCM) has formulated a herbal formula through which there was a 90% response rate out of 214 clinical cases of COVID 19 related pneumonia⁶. Despite initial clinical successes and promising research, the cure rate for COVID-19 remains difficult to achieve and, even with integrative medicine available, remains an extremely dangerous contagion.

The AYUSH ministry suggested alternative medicines such as Ayurveda, Homeopathy, and Unani practice that could act as an immunity booster against the deadly novel coronavirus. TN Kabasurakudineer against COVID 19 was implemented by the government in many stores and is used by the public. But Medical experts criticized that there is no proven scientific evidence. The aim of the study is to find whether alternative medicines help us to fight against COVID 19.

COVID-19

COVID 19, a new strain of Coronavirus 2019 (SARS-CoV-2) is a zoonotic virus and the incubation period is about 2-14 days and it may vary. The symptoms are respiratory disorders, coughing, fever, shortness of breath, pain or pressure in the chest, confusion, bluish lips, and difficulty breathing, some can be even asymptomatic. The fatal complications are pneumonia, severe acute respiratory syndrome, kidney failure, and sepsis. There is a high risk among the elderly and those people with heart and lung disease, asthma, low CD4 counts (including some HIV patients), or diabetes. The outbreak of the coronavirus disease 2019 (COVID 19) emerged in Wuhan City, China, in late 2019 and has now reached pandemic status⁷. The novel coronavirus has been named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), whereas the disease associated with it is referred to as COVID 19. Club-shaped glycoprotein spikes in the envelope give the virus a crown-like or coronal appearance. During the initial days, the risk factors were travel history and viral exposure. It spreads via respiratory droplet, aerosol, and thorough super spreaders^{8,9}. Clinical severity of

COVID 19 was higher among adults aged greater 65 years old¹⁰. People with pre-existing conditions like diabetes and heart diseases are at higher risk¹¹. High prevalence of comorbidities with confirmed cases was about 26% and those who died from COVID-19 had a higher prevalence of about 67.2%¹². Asymptomatic carriers play an important role in the transmission of the disease¹³.

Clinical Manifestation

Common symptoms reported in adults with COVID-19 are fever, dry cough, and fatigue; severe cases have been associated with dyspnoea and bilateral ground-glass opacities on chest CT. Symptoms in children include flu-like syndrome, fluctuating fever, pneumonia, and upper respiratory signs like cough, sore throat, stuffy nose, sneezing, and rhinorrhea. COVID 19 patients showed respiratory as well as gastrointestinal symptoms¹⁴. A decreased sense of taste and smell may occur¹⁵. The loss of smell symptom was observed in 30% of confirmed cases in China. Sepsis was frequently observed complications. Computed tomography was used for diagnosis¹⁶. The gold standard for diagnosis is by real-time reverse transcription-polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab. The time delay between the incident of infection and the time taken for him or her to develop symptoms is called incubation. 95% of them would develop symptoms within 13 days of infection¹⁷. The basic reproduction number of SARS-CoV-2 in the early outbreak in China was estimated to be 2¹⁸.

Potential Treatment Options

There is presently no vaccine¹⁹ or specific antiviral drug regime which is used for the treatment of critically ill patients. The management of patients mainly focuses on the provision of supportive care with oxygenation, ventilation, and fluid management, treatment of symptoms, isolation, and experimental measures²⁰. Combination treatment of low-dose of systemic corticosteroids and anti-virals and atomization inhalation of interferon has been encouraged as part of critical COVID 19 management²¹. Antiviral agents, including oseltamivir (75 mg every 12h orally), ganciclovir (0.25 g every 12h intravenously), and lopinavir/ritonavir tablets (400/100 mg twice daily). Remdesivir is currently under trials and has been known to prevent MERS-CoV. An old anti-malarial, chloroquine phosphate, has been effective in inhibiting the exacerbation of pneumonia due to its antiviral and anti-inflammatory activities^{22,23}. Cell plasma-based therapy and the role of mesenchymal stem cells are emerging²⁴.

Chinese Traditional Medicines

Traditional Chinese medicines were used in treating COVID 19 patients. There was widespread use of Traditional Chinese Medicine during the last SARS-COV outbreak. The five most commonly used herbs were *Astragali radix* (Huangqi),

Glycyrrhizae radix Et Rhizoma (Gancao), *Saposhnikovia radix* (Fangfeng), *Atractylodis macrocephalae* Rhizoma (Baizhu), and *Lonicerae japonicae* Flo²⁵. Chinese medicines have a positive role in fighting against COVID-19²⁶. But this cannot be used to treat patients with lethal lung injury and in cases of uncontrolled immune responses²⁷ of COVID 19 in elderly²⁸. 85% of COVID-19 patients received combined treatment with regular medication²⁹ and traditional remedies in China³⁰.

Alternative Medicines

Alternative Medicines are common amongst people with chronic ailments such as rheumatologic conditions³¹, breast cancer, asthma, inflammatory bowel disease,^{32,33} headache, back problems, and chronic pain, as well as degenerative conditions³⁴ like multiple sclerosis³⁵. There has been the usage of alternative medicines in other viral diseases³⁶. Chinese medicines used in the management of viral myocarditis³⁷. The herbal complementary therapies used in the treatment of influenza³⁸. Complementary and alternative medicines are used among persons living with HIV³⁹. The perceived effect of an alternative practice arises from the belief that it will be effective (placebo effect).

Usage of CAM

The usage of Complementary Alternative Medicines is showing a remarkable increase in support. The poor compliance⁴⁰ and long-term side effects of conventional medicines brings the large CAM users⁴¹. Homeopathy was frequently used in Far East countries, Pakistan, and UAE⁴². The usage of CAM is based on past experiences⁴³. In Africa traditional medicine is used for about 80% primary healthcare due to the lack of access to conventional medicines. In a study of alternative medicine usage in India, 79% of CAM users indicated that they had positive outcomes with their treatments³⁵.

Advantages and Disadvantages

There are both advantages and disadvantages in using CAM. The disadvantage is that a physician is unaware to alternative medicines usage and their side effects on drug interactions⁴⁴. The advantages are its natural⁴⁵, no side effects⁴⁶, easy avail-

ability, rapid symptomatic⁴⁷, and instant relief for mild ailments⁴⁸.

CONCLUSION

This review demonstrates the usage of alternative medicines against COVID-19. As there is no specific treatment available for COVID-19, many people are seeking alternative medicine as alternative medicines have been used to treat many viral diseases. But there is no scientific evidence that these alternative medicines can prevent or cure the illness COVID-19. The usage of certain alternative medicines may not be safe. Some help in boosting the immune system but not a complete cure. It is important to be safe by staying at home, maintaining social distance, and proper hygiene. It is also important to boost the immune system and follow a proper diet during this pandemic.

ACKNOWLEDGEMENTS

We thank Saveetha Dental College for the support to carry out this study.

Conflict of Interest: Nil

Source of Funding: Nil

REFERENCES

1. Obalum DC, Ogo CN. Usage of Complementary and Alternative Medicine (CAM) among osteoarthritis patients attending an urban multi-specialist hospital in Lagos, Nigeria. *Niger Postgrad Med J* [Internet]. 2011 Mar;18(1):44–7. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/21445112>
2. Rapaport MH. Patients' preference for complementary and alternative medicine presents challenges for research. *J Clin Psychiatry* [Internet]. 2015 Jul;76(7):e886–7. Available from: <http://dx.doi.org/10.4088/JCP.14com09470>
3. Vaishali M, Geetha RV. Antibacterial activity of Orange peel oil on *Streptococcus mutans* and *Enterococcus*-An In-vitro study [Internet]. Vol. 11, *Research Journal of Pharmacy and Technology*. 2018. p. 513. Available from: <http://dx.doi.org/10.5958/0974-360x.2018.00094.x>
4. Li T. Diagnosis and clinical management of severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) infection: an operational recommendation of Peking Union Medical College Hospital (V2.0). *Emerg Microbes Infect* [Internet]. 2020 Mar 14;9(1):582–5. Available from: <http://dx.doi.org/10.1080/22221751.2020.1735265>
5. Li G, Fan Y, Lai Y, Han T, Li Z, Zhou P, et al. Coronavirus infections and immune responses. *J Med Virol* [Internet]. 2020 Apr;92(4):424–32. Available from: <http://dx.doi.org/10.1002/jmv.25685>
6. Hui DS, I Azhar E, Madani TA, Ntoumi F, Kock R, Dar O, et al. The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health - The latest 2019 novel coronavirus outbreak in Wuhan, China. *Int J Infect Dis* [Internet]. 2020 Feb;91:264–6. Available from: <http://dx.doi.org/10.1016/j.ijid.2020.01.009>

7. 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 [Internet]. Vol. 395, *The Lancet*. 2020. p. 497–506. Available from: [http://dx.doi.org/10.1016/s0140-6736\(20\)30183-5](http://dx.doi.org/10.1016/s0140-6736(20)30183-5)
8. Tu H, Tu S, Gao S, Shao A, Sheng J. Current epidemiological and clinical features of COVID-19; a global perspective from China [Internet]. *Journal of Infection*. 2020. Available from: <http://dx.doi.org/10.1016/j.jinf.2020.04.011>
9. Shahana RY, Muralidharan NP. Efficacy of mouth rinse in maintaining oral health of patients attending orthodontic clinics [Internet]. Vol. 9, *Research Journal of Pharmacy and Technology*. 2016. p. 1991. Available from: <http://dx.doi.org/10.5958/0974-360x.2016.00406.6>
10. Lai C-C, Shih T-P, Ko W-C, Tang H-J, Hsueh P-R. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents* [Internet]. 2020 Mar;55(3):105924. Available from: <http://dx.doi.org/10.1016/j.ijantimicag.2020.105924>
11. Sanche S, Lin YT, Xu C, Romero-Severson E, Hengartner N, Ke R. High Contagiousness and Rapid Spread of Severe Acute Respiratory Syndrome Coronavirus 2 [Internet]. Vol. 26, *Emerging Infectious Diseases*. 2020. Available from: <http://dx.doi.org/10.3201/eid2607.200282>
12. Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet* [Internet]. 2020 Mar 28;395(10229):1054–62. Available from: [http://dx.doi.org/10.1016/S0140-6736\(20\)30566-3](http://dx.doi.org/10.1016/S0140-6736(20)30566-3)
13. Young BE, Ong SWX, Kalimuddin S, Low JG, Tan SY, Loh J, et al. Epidemiologic Features and Clinical Course of Patients Infected With SARS-CoV-2 in Singapore. *JAMA* [Internet]. 2020 Mar 3; Available from: <http://dx.doi.org/10.1001/jama.2020.3204>
14. Zou L, Ruan F, Huang M, Liang L, Huang H, Hong Z, et al. SARS-CoV-2 Viral Load in Upper Respiratory Specimens of Infected Patients. *N Engl J Med* [Internet]. 2020 Mar 19;382(12):1177–9. Available from: <http://dx.doi.org/10.1056/NEJMc2001737>
15. Xydakis MS, Dehghani-Mobaraki P, Holbrook EH, Geisthoff UW, Bauer C, Hautefort C, et al. Smell and taste dysfunction in patients with COVID-19. *Lancet Infect Dis* [Internet]. 2020 Apr 15; Available from: [http://dx.doi.org/10.1016/S1473-3099\(20\)30293-0](http://dx.doi.org/10.1016/S1473-3099(20)30293-0)
16. Clinical findings in a group of patients infected with the 2019 novel coronavirus (SARS-Cov-2) outside of Wuhan, China: retrospective case series [Internet]. *BMJ*. 2020. p. m792. Available from: <http://dx.doi.org/10.1136/bmj.m792>
17. Nie X, Fan L, Mu G, Tan Q, Wang M, Xie Y, et al. Epidemiological characteristics and incubation period of 7,015 confirmed cases with Coronavirus Disease 2019 outside Hubei Province in China. *J Infect Dis* [Internet]. 2020 Apr 27; Available from: <http://dx.doi.org/10.1093/infdis/jiaa211>
18. Zhao S, Lin Q, Ran J, Musa SS, Yang G, Wang W, et al. The basic reproduction number of novel coronavirus (2019-nCoV) estimation based on exponential growth in the early outbreak in China from 2019 to 2020: A reply to Dhungana. *Int J Infect Dis* [Internet]. 2020 May;94:148–50. Available from: <http://dx.doi.org/10.1016/j.ijid.2020.02.025>
19. Pratha AA, Ashwatha Pratha A, Geetha RV. Awareness on Hepatitis-B vaccination among dental students-A Questionnaire Survey [Internet]. Vol. 10, *Research Journal of Pharmacy and Technology*. 2017. p. 1360. Available from: <http://dx.doi.org/10.5958/0974-360x.2017.00240.2>
20. Centers for Disease Control and Prevention (CDC). CDC Yellow Book 2020: Health Information for International Travel [Internet]. Oxford University Press; 2019. 704 p. Available from: <https://play.google.com/store/books/details?id=gAuXDwAAQBAJ>
21. Cunningham AC, Goh HP, Koh D. Treatment of COVID-19: old tricks for new challenges. *Crit Care* [Internet]. 2020 Mar 16 [cited 2020 Jun 3];24(1):1–2. Available from: <https://ccforum.biomedcentral.com/articles/10.1186/s13054-020-2818-6>
22. Maajida Aafreen M, Geetha RV, Lakshmi Thangavelu. Evaluation of anti-inflammatory action of *Laurus nobilis* in vitro study of anti-inflammatory action of *Laurus nobilis* in vitro study. *ijrps* [Internet]. 2019 Apr 14;10(2):1209–13. Available from: <https://pharmascope.org/index.php/ijrps/article/view/408>
23. Wu J, Liu J, Zhao X, Liu C, Wang W, Wang D, et al. Clinical Characteristics of Imported Cases of Coronavirus Disease 2019 (COVID-19) in Jiangsu Province: A Multicenter Descriptive Study [Internet]. *Clinical Infectious Diseases*. 2020. Available from: <http://dx.doi.org/10.1093/cid/ciaa199>
24. Mair-Jenkins J, Saavedra-Campos M, Kenneth Baillie J, Cleary P, Khaw F-M, Lim WS, et al. The Effectiveness of Convalescent Plasma and Hyperimmune Immunoglobulin for the Treatment of Severe Acute Respiratory Infections of Viral Etiology: A Systematic Review and Exploratory Meta-analysis [Internet]. Vol. 211, *Journal of Infectious Diseases*. 2015. p. 80–90. Available from: <http://dx.doi.org/10.1093/infdis/jiu396>
25. Luo H, Tang Q-L, Shang Y-X, Liang S-B, Yang M, Robinson N, et al. Can Chinese Medicine Be Used for Prevention of Coronavirus Disease 2019 (COVID-19)? A Review of Historical Classics, Research Evidence and Current Prevention Programs. *Chin J Integr Med* [Internet]. 2020 Apr;26(4):243–50. Available from: <http://dx.doi.org/10.1007/s11655-020-3192-6>
26. Lythgoe MP, Middleton P. Ongoing Clinical Trials for the Management of the COVID-19 Pandemic. *Trends Pharmacol Sci* [Internet]. 2020 Jun;41(6):363–82. Available from: <http://dx.doi.org/10.1016/j.tips.2020.03.006>
27. Smiline A, Vijayashree JP, Paramasivam A. Molecular characterization of plasmid-encoded blaTEM, blaSHV and blaCTX-M among extended spectrum β -lactamases [ESBLs] producing *Acinetobacter baumannii*. *Br J Biomed Sci* [Internet]. 2018 Oct;75(4):200–2. Available from: <http://dx.doi.org/10.1080/09674845.2018.1492207>
28. Koh G. Faculty Opinions recommendation of Effectiveness of convalescent plasma therapy in severe COVID-19 patients [Internet]. Faculty Opinions – Post-Publication Peer Review of the Biomedical Literature. 2020. Available from: <http://dx.doi.org/10.3410/f.737695760.793573172>
29. Shahzan MS, Sohaib Shahzan M, Smiline Girija AS, Vijayashree Priyadharsini J. A computational study targeting the mutated L321F of ERG11 gene in *C. albicans*, associated with fluconazole resistance with bioactive compounds from *Acacia nilotica* [Internet]. Vol. 29, *Journal de Mycologie Médicale*. 2019. p. 303–9. Available from: <http://dx.doi.org/10.1016/j.mycmed.2019.100899>
30. Chen X, Liu Y, Gong Y, Guo X, Zuo M, Li J, et al. Perioperative Management of Patients Infected with the Novel Coronavirus: Recommendation from the Joint Task Force of the Chinese Society of Anesthesiology and the Chinese Association of Anesthesiologists. *Anesthesiology* [Internet]. 2020 Jun;132(6):1307–16. Available from: <http://dx.doi.org/10.1097/ALN.0000000000003301>
31. Paramasivam A, Vijayashree Priyadharsini J, Raghunandhakumar S. N6-adenosine methylation (m6A): a promising new molecular target in hypertension and cardiovascular diseases. *Hypertension* [Internet]. 2020 Jun;75(6):1307–16. Available from: <http://dx.doi.org/10.1097/ALN.0000000000003301>

- pertens Res [Internet]. 2020 Feb;43(2):153–4. Available from: <http://dx.doi.org/10.1038/s41440-019-0338-z>
32. Girija SAS, Jayaseelan VP, Arumugam P. Prevalence of VIM- and GIM-producing *Acinetobacter baumannii* from patients with severe urinary tract infection [Internet]. Vol. 65, *Acta Microbiologica et Immunologica Hungarica*. 2018. p. 539–50. Available from: <http://dx.doi.org/10.1556/030.65.2018.038>
33. Girija As S, Priyadharsini J V. CLSI based antibiogram profile and the detection of MDR and XDR strains of isolated from urine samples. *Med J Islam Repub Iran* [Internet]. 2019 Feb 8;33:3. Available from: <http://dx.doi.org/10.34171/mjiri.33.3>
34. Girija ASS, Smiline Girija AS, Vijayashree Priyadharsini J, Paramasivam A. Plasmid-encoded resistance to trimethoprim/sulfamethoxazole mediated by *dfrA1*, *dfrA5*, *sul1* and *sul2* among *Acinetobacter baumannii* isolated from urine samples of patients with severe urinary tract infection [Internet]. Vol. 17, *Journal of Global Antimicrobial Resistance*. 2019. p. 145–6. Available from: <http://dx.doi.org/10.1016/j.jgar.2019.04.001>
35. Singh V, Raidoo DM, Harries CS. The prevalence, patterns of usage and people's attitude towards complementary and alternative medicine (CAM) among the Indian community in Chatsworth, South Africa. *BMC Complement Altern Med* [Internet]. 2004 Feb 4 [cited 2020 Jun 3];4(1):1–7. Available from: <https://bmccomplementmedtherapies.biomedcentral.com/articles/10.1186/1472-6882-4-3>
36. Priyadharsini JV, Vijayashree Priyadharsini J, Smiline Girija AS, Paramasivam A. In silico analysis of virulence genes in an emerging dental pathogen *A. baumannii* and related species [Internet]. Vol. 94, *Archives of Oral Biology*. 2018. p. 93–8. Available from: <http://dx.doi.org/10.1016/j.archoralbio.2018.07.001>
37. Li Y, Liu X, Guo L, Li J, Zhong D, Clarke M, et al. Traditional Chinese herbal medicine for treating novel coronavirus (COVID-19) pneumonia: protocol for a systematic review and meta-analysis [Internet]. Available from: <http://dx.doi.org/10.21203/rs.2.23447/v2>
38. Mousa HA-L. Prevention and Treatment of Influenza, Influenza-Like Illness, and Common Cold by Herbal, Complementary, and Natural Therapies. *J Evid Based Complementary Altern Med* [Internet]. 2017 Jan;22(1):166–74. Available from: <http://dx.doi.org/10.1177/2156587216641831>
39. Halpin SN, Carruth EC, Rai RP, Edelman EJ, Fiellin DA, Gibert C, et al. Complementary and Alternative Medicine Among Persons living with HIV in the Era of Combined Antiretroviral Treatment. *AIDS Behav* [Internet]. 2018 Mar;22(3):848–52. Available from: <http://dx.doi.org/10.1007/s10461-017-1866-7>
40. Priyadharsini JV, Vijayashree Priyadharsini J, Smiline Girija AS, Paramasivam A. An insight into the emergence of *Acinetobacter baumannii* as an oro-dental pathogen and its drug resistance gene profile – An in silico approach [Internet]. Vol. 4, *Heliyon*. 2018. p. e01051. Available from: <http://dx.doi.org/10.1016/j.heliyon.2018.e01051>
41. Bishop FL, Lewith GT. Who Uses CAM? A Narrative Review of Demographic Characteristics and Health Factors Associated with CAM Use [Internet]. Vol. 7, *Evidence-Based Complementary and Alternative Medicine*. 2010. p. 11–28. Available from: <http://dx.doi.org/10.1093/ecam/nen023>
42. Burford G, Bodeker G, Ong C-K. Financing traditional, complementary and alternative health care services and research [Internet]. *Traditional, Complementary and Alternative Medicine*. 2006. p. 41–60. Available from: http://dx.doi.org/10.1142/9781860949135_0003
43. Rodrigues-Neto JF, Figueiredo MFS, de Faria AA. Prevalence of the use of homeopathy by the population of Montes Claros, Minas Gerais, Brazil [Internet]. Vol. 127, *Sao Paulo Medical Journal*. 2009. p. 329–34. Available from: <http://dx.doi.org/10.1590/s1516-31802009000600002>
44. Silva P, Bonifácio B, Ramos M, Negri K, Bauab TM, Chorilli M. Nanotechnology-based drug delivery systems and herbal medicines: a review [Internet]. *International Journal of Nanomedicine*. 2013. p. 1. Available from: <http://dx.doi.org/10.2147/ijn.s52634>
45. Ashwin KS, Muralidharan NP. Vancomycin-resistant enterococcus (VRE) vs Methicillin-resistant *Staphylococcus Aureus* (MRSA). *Indian J Med Microbiol* [Internet]. 2015 Feb;33 Suppl:166–7. Available from: <http://dx.doi.org/10.4103/0255-0857.150976>
46. Selvakumar R, NP M. Comparison in benefits of herbal mouthwashes with chlorhexidine mouthwash: A REVIEW [Internet]. Vol. 10, *Asian Journal of Pharmaceutical and Clinical Research*. 2017. p. 3. Available from: <http://dx.doi.org/10.22159/ajpcr.2017.v10i2.13304>
47. Marickar RF, Geetha RV, Neelakantan P. Efficacy of contemporary and novel Intracanal medicaments against *enterococcus faecalis*. *J Clin Pediatr Dent* [Internet]. 2014 Autumn;39(1):47–50. Available from: <http://dx.doi.org/10.17796/jcpd.39.1.wmw9768314h56666>
48. Chandwani KD, Ryan JL, Peppone LJ, Janelins MM, Sprod LK, Devine K, et al. Cancer-Related Stress and Complementary and Alternative Medicine: A Review [Internet]. Vol. 2012, *Evidence-Based Complementary and Alternative Medicine*. 2012. p. 1–15. Available from: <http://dx.doi.org/10.1155/2012/979213>