



# **Knowledge, Attitude and Awareness about Eating, Sleeping, Weight, Diet and Other Lifestyle Changes during COVID Pandemic**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. Author JI literature search, data collection, analysis, manuscript drafting. Author RGD data verification, manuscript drafting. All authors read and approved the final manuscript.*

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## **ABSTRACT**

**Background and Aim:** COVID pandemic lockdown has been constantly associated with psychological changes which have resulted in an increase in stress level and other diseases. So the main aim of this study is to create knowledge about the lifestyle, sleeping and other changes happening during pandemic situations.

**Materials and Methods:** A cross sectional survey was conducted among the dental population with a sample size of 100 to 150. The survey was done in an online questionnaire pattern through Google forms and circulated. The statistics were done using SPSS software, chi square test was used to check the association and P value of 0.05 was said to be statistically significant.

**Results:** 36.63% responded to intake of vegetables as slight increases and 36.63% responded to significant increase of fruits and vegetables. There were many positive as well as negative changes

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were observed like increase in screen time and low physical activity were considered to be negative and positive changes like decrease in smoking and drinking alcohol. COVID-19 marginally improved the eating behavior, yet one-third of participants gained weight as physical activity declined significantly coupled with an increase in screen and sitting time. Mental health was also adversely affected. Intake of a balanced diet was significantly increased in females than males. Nearly 42% of them significantly increased their sleeping hours.

**Conclusion:** The increase of COVID virus all over the world at a faster rate may distract people from attention over lifestyle, physical and mental health. The mental issues may result in severe consequences. People must be aware that a healthy lifestyle change may cause severe health issues. A detailed understanding of these factors can help to develop interventions to mitigate the negative lifestyle behaviors that have manifested during COVID-19.

*Keywords: Eating habit; sleeping; behaviour; diet changes; pandemic; innovative technique.*

## 1. INTRODUCTION

COVID-19 is a disease caused by a new strain of coronavirus. 'CO' stands for corona, 'VI' for virus, and 'D' for disease [1]. Formerly, this disease was referred to as '2019 novel coronavirus' or '2019-nCoV.' Many health experts believe that the new strain of coronavirus likely originated in bats or pangolins. The first transmission to humans was in Wuhan, China.

Healthy lifestyle is not just the absence of disease or illness; it is a state of complete physical, mental and social well-being [2]. This means eating a balanced diet, getting regular exercise, avoiding tobacco and drugs and getting plenty of rest. Healthy lifestyle means living a disease free life or living a lower chance of developing a [3-12]. Healthy lifestyle is the way of living a lower risk of developing a disease or living a disease free life [13]. This COVID pandemic lockdown has constantly been associated with psychological changes which have resulted in an increase of stress level. During COVID lockdown there was a huge change in behavior due to isolation at home [14]. As a result of the outbreak in COVID pandemic have resulted in social distancing, wearing mask, sanitizing, dietary, physical activity, sleep hours, sleep cycle, mental stress have greatly vibrated during COVID pandemic [15].

The changes in dietary view such as overeating intake of fast foods, junk and more sweets during stressful conditions have been observed. Major impact of COVID pandemic was on mental stress due to isolation at home [1]. A healthy lifestyle is to reduce the cause of diseases or low chance of mortality and maintain a healthy lifestyle [16]. There is much research done on this topic like lifestyle, behavior, they observed that there was a change in physical activity and increment of

screen time too. Also quarantine increased stress and anxiety in one fourth of the participants [17-19]. This research undertaken to ensure the importance of a healthy lifestyle also about the negative results caused by change in lifestyle. Also the increased usage of the internet and social media caused a change in lifestyle and affected social life.

## 2. MATERIALS AND METHODS

This is a cross sectional study and quantitative method. The questionnaire was distributed in online Google forms to the Dental population. The total participants involved in this study are from the age of 13 to 18 years. Simple random sampling is used to minimize the sampling bias. The participants were explained about the purpose of the study in detail. The questions were carefully read and the participants marked the corresponding answers. Survey participants were randomly selected to minimize sampling bias. Avoided irrelevant questions and restricted them to particular populations and age groups. This survey was conducted in February 2021.

The pros for this survey were online setting platforms and random selection of the population and the cons were the same homogeneous study population was selected and in questionnaire error options may be present. Simple random sampling was the method used in the survey. The list of dependent variables was knowledge, awareness and gender.

SPSS was the statistical software used for this survey. Descriptive analysis was the type of analysis being used. The internal validity was that the confidentiality was maintained and the personal information cannot be shared. Only responses were recorded. Chi square test was

used to check the association and P value of less than 0.05 was said to be statistically significant.

### 3. RESULTS AND DISCUSSION

The results were statistically viewed and analyzed. During pandemic lockdown and quarantine lockdown stress level was increased as well as people got bored and their lifestyle changed like having snacks or junk foods between meals.

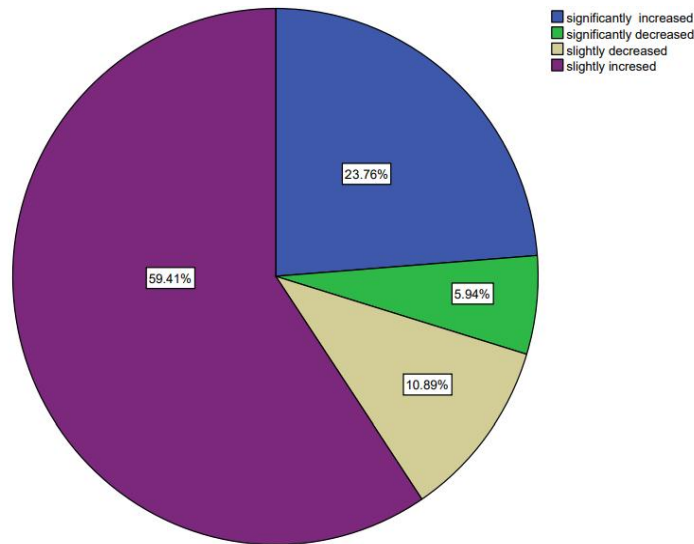
59.41% responded to a slight increase of having snacks between meals, 23.76% responded to a significant increase of intake of snacks between meals, 5.94% reacted to a slight decrease in having snacks (Fig. 1) which was similar to our study [2]. Equal number of male and female responded to slight increase of having snacks between meals. 36.63% responded to intake of vegetables as slight increases and 36.63% responded to significant increase of fruits and vegetables. 10.89% of population reacted to significant decrease which can be as a result of change in lifestyle. Majority of the participants responded to a significant increase in intake of sweets and chocolates. This may be a negative factor, eating more sugar may result in dental caries [15]. 31.68% of the population responded to significant increase of balanced diet intake while 24.75% responded to slight increase, equal number of participants responded to slight decrease and significantly decreased. 34% of the respondents reacted to slight increase in intake of junk food while significant decrease which is a negative impact of COVID pandemic (Fig. 2). 42% reacted to significant increase of sleeping hours, 26% reacted to slight increase. Equal number of participants responded to slight decreases and significantly decreased was 26% (Fig. 3). 35.5% reacted to significant increases in intake of nutritional food during the pandemic. 31.31% reacted to slight increase, 10% reacted to significant decrease of intake of nutritional food during pandemic which may increase the chance of having COVID by decreased immunity. 35.45% of the participants responded to good sleep quality while 27.72% reacted to no good sleep [20-26]. Most of the respondents are 40% rated to slight increase of stress and 19% of the population reacted to significant increase of stress which is a known factor due to lockdown. 35% of the population reached a slight increase, 31% of the respondents reacted to significant increase in participation in cooking, 38.61% of the respondents reacted to significant increase in

screen time which was similar to our study [1]. 40% of the participants reacted to a slight increase of weight during pandemic. 36% Of the population responded to significant increase of screen time and slightly increased among 34.65% which is a general factor due to staying inside home due to lockdown resulting in decreased physical activity, the weight increase was also observed in a similar study but their findings is that unhealthy food intake in pandemic resulted in weight increase [27].

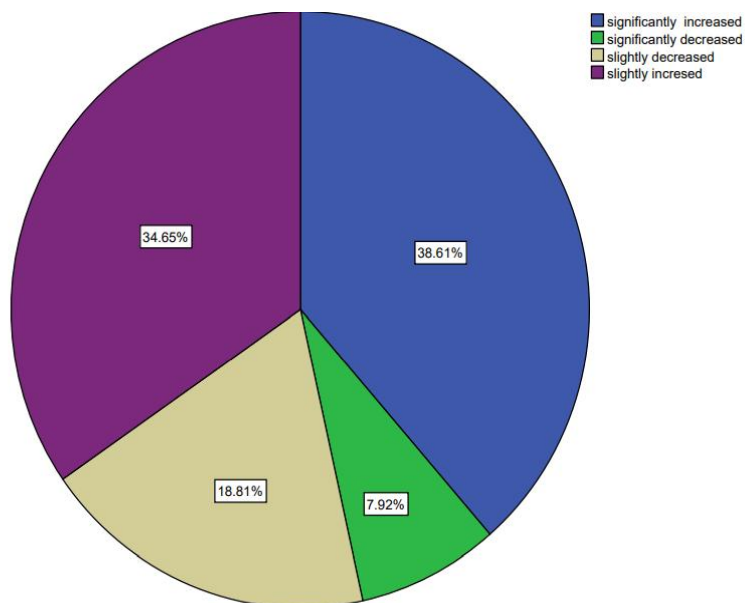
Females were more significantly increased in consumption of junk food than males. Pearson chi square test showed p value was 1.15 ( $>0.05$ ), which is statistically insignificant (Fig. 4). Equal number of male and females responded to significant increase of fruits and vegetables during the pandemic, also more females responded to significant increase in consumption of sweets. Same result was recorded in the intake of snacks between meals. There was more intake of junk food seen in females than males. Stress and anxiety was more increased in females than males. More females responded to an increase of anxiety and stress (Fig. 5). There were many good as well as bad changes like increase in sleeping hours, decreased smoking were considered as positive changes where negatives changes like increased screen time which was recorded among one third of the participants. There was a significant increase in screen time in males than females [8-12]. More females responded to significant increases in a balanced diet than males. The impact of increased screen time may cause visual pollution. Some researchers found increased intake of immune boosting herbs and avoiding healthy food. Almost one third of the participants have resulted in increase in weight as well as decreased physical activity [28]. More females responded to the increase in intake of junk foods. Hours of sleep were significantly increased in males. Similar research was also done in the UAE on diet and lifestyle change. According to the findings of their study, almost half of adults in the UAE experienced one or two of the aforementioned detrimental lifestyle changes during the lockdown, with 9% experiencing more than three. Females were more likely to report harmful lifestyle changes, as were those who lived in an apartment and were overweight or obese [29-31,20-25]. Furthermore, nearly half of the participants in the survey were enraged and had a negative attitude which was similar to this study such as increase in weight due to low physical activity [32,33].

The sampling size was limited to the south Indian population. The limitations of this survey in the fact that a cross-sectional survey was done among a restricted population and this is an

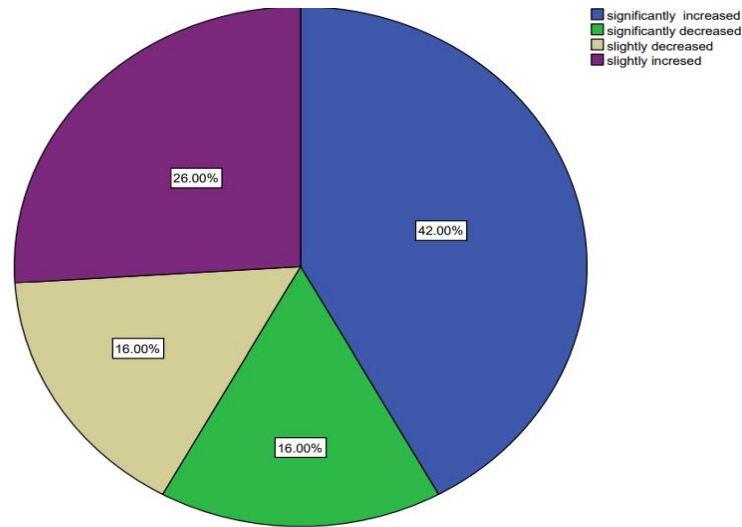
online survey not an in house or personal interview where a respondent's bias can be expected.



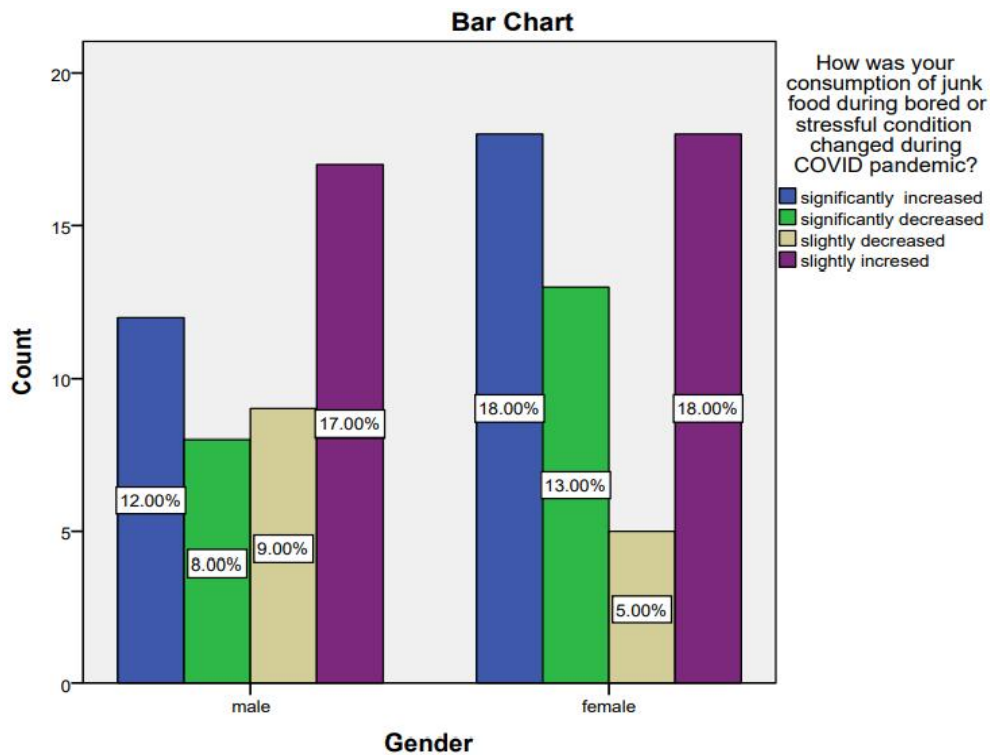
**Fig. 1. Pie chart representing percentage distribution of having snacks between meals. 59.41% people responded to a slight increase (purple), 23.76% responded to a significant increase of intake (blue), 5.94% reacted to a slight decrease in having snacks (green), 10.89% were slightly increased (sandal)**



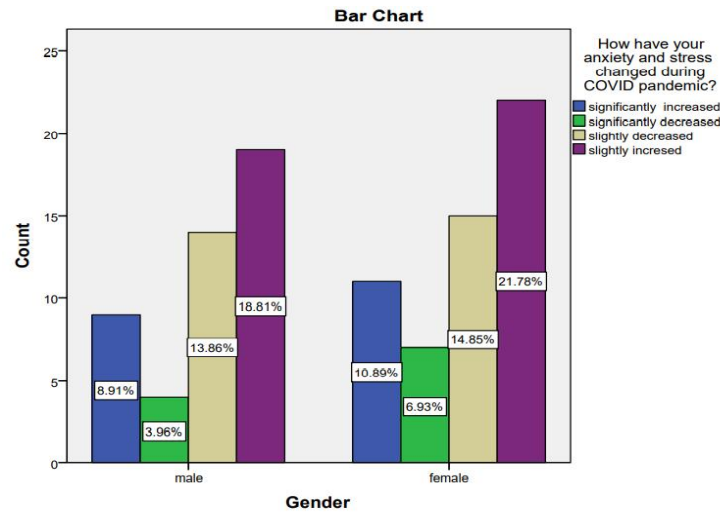
**Fig. 2. Pie chart representing percentage distribution of intake of junk foods. 34% of the respondents reacted to slight increase (purple), 38.61% reacted to significant increase of junk foods (blue), 18.81% responded to slight decrease in intake of junk food (sandal) which is a negative impact of covid pandemic and 7.92% (green) responded to significantly decreased**



**Fig. 3.** Pie chart representing percentage of sleeping hours 42% (blue) reacted to significant increase of sleeping hours, 26% (purple) reacted to slight increase, equal number of participants responded to slight decreases (sand) and significantly decreased (green) which was 16%



**Fig. 4.** The bar showing association between gender and consumption of junk food during bored or stressful conditions. X axis represents the gender and Y axis represents the number of responses. The blue color denotes significantly increased, green color denotes significantly decreased, sandal color denotes slightly decreased and purple denotes slightly increased. Females were more significantly increased in consumption of junk food than females. Pearson chi square test showed p value was 1.15 (>0.05), which is statistically insignificant



**Fig. 5.** The bar showing association between gender and stress, anxiety. X axis represents the gender and Y axis represents the number of responses. The blue color denotes significantly increased, green color denotes significantly decreased, sandal color denotes slightly decreased and purple denotes slightly increased. Females were more significantly increased in stress than males. Pearson chi square test showed p value was 3.77 (>0.05), which is statistically insignificant

#### 4. CONCLUSION

The increase of COVID virus all over the world at a faster rate may distract people from attention over lifestyle, physical and mental health. The mental issues may result in severe consequences. People must be aware that a healthy lifestyle change may cause severe health issues. A detailed understanding of these factors can help to develop interventions to mitigate the negative lifestyle behaviors that have manifested during COVID-19.

#### CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

#### ETHICAL APPROVAL

It is not applicable.

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#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

#### REFERENCES

- Balanzá-Martínez V, Kapczinski F, de Azevedo Cardoso T, Atienza-Carbonell B, Rosa AR, Mota JC, et al. The assessment of lifestyle changes during the COVID-19 pandemic using a multidimensional scale. *Rev Psiquiatr Salud Ment.* 2021;14(1):16–26.
- Wysocki M, Wałędziak M, Proczko-Stepaniak M, Pędziwiatr M, Szeliga J, Major P. Lifestyle changes in patients with morbid obesity and type 2 diabetes mellitus during the COVID-19 pandemic [Internet]. *Diabetes & Metabolism.* 2020; 101171. Available:<http://dx.doi.org/10.1016/j.diabet.2020.06.002>
- Egbuna C, Mishra AP, Goyal MR. Preparation of Phytopharmaceuticals for the Management of Disorders: The Development of Nutraceuticals and Traditional Medicine. Academic Press; 2020;574.

4. Kamath SM, Manjunath Kamath S, Jaison D, Rao SK, Sridhar K, Kasthuri N, et al. In vitro augmentation of chondrogenesis by Epigallocatechin gallate in primary Human chondrocytes - Sustained release model for cartilage regeneration [Internet]. Vol. 60, Journal of Drug Delivery Science and Technology. 2020;101992. Available:<http://dx.doi.org/10.1016/j.jddst.2020.101992>
5. Barabadi H, Mojab F, Vahidi H, Marashi B, Talank N, Hosseini O, et al. Green synthesis, characterization, antibacterial and biofilm inhibitory activity of silver nanoparticles compared to commercial silver nanoparticles [Internet]. Vol. 129, Inorganic Chemistry Communications. 2021;108647. Available:<http://dx.doi.org/10.1016/j.inoche.2021.108647>
6. Bharath B, Perinbam K, Devanesan S, AlSalhi MS, Saravanan M. Evaluation of the anticancer potential of Hexadecanoic acid from brown algae *Turbinaria ornata* on HT-29 colon cancer cells [Internet]. Vol. 1235, Journal of Molecular Structure. 2021;130229. Available:<http://dx.doi.org/10.1016/j.molstruc.2021.130229>
7. Gowhari Shabgah A, Ezzatifar F, Aravindhan S, Olegovna Zekiy A, Ahmadi M, Gheibihayat SM, et al. Shedding more light on the role of Midkine in hepatocellular carcinoma: New perspectives on diagnosis and therapy. IUBMB Life. 2021;73(4):659–69.
8. Sridharan G, Ramani P, Patankar S, Vijayaraghavan R. Evaluation of salivary metabolomics in oral leukoplakia and oral squamous cell carcinoma. J Oral Pathol Med. 2019;48(4):299–306.
9. RH, Hannah R, Ramani P, Ramanathan A, Jancy MR, Gheena S, et al. CYP2 C9 polymorphism among patients with oral squamous cell carcinoma and its role in altering the metabolism of benzo[a]pyrene [Internet]. Vol. 130, Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology. 2020;306–12. Available:<http://dx.doi.org/10.1016/j.oooo.2020.06.021>
10. JPC, Pradeep CJ, Marimuthu T, Krithika C, Devadoss P, Kumar SM. Prevalence and measurement of anterior loop of the mandibular canal using CBCT: A cross sectional study [Internet]. Vol. 20, Clinical Implant Dentistry and Related Research. 2018;531–4. Available:<http://dx.doi.org/10.1111/cid.12609>
11. Wahab PUA, Abdul Wahab PU, Madhulaxmi M, Senthilnathan P, Muthusekhar MR, Vohra Y, et al. Scalpel Versus Diathermy in Wound Healing After Mucosal Incisions: A Split-Mouth Study [Internet]. Vol. 76, Journal of Oral and Maxillofacial Surgery. 2018;1160–4. Available:<http://dx.doi.org/10.1016/j.joms.2017.12.020>
12. Mudigonda SK, Murugan S, Velavan K, Thulasiraman S, Krishna Kumar Raja VB. Non-suturing microvascular anastomosis in maxillofacial reconstruction- a comparative study. Journal of Cranio-Maxillofacial Surgery. 2020;48(6):599–606.
13. Beato AF, da Costa LP, Nogueira R. The role of self-compassion, affect, and coping in negative emotional symptoms during coronavirus quarantine. Int J Environ Res Public Health [Internet]. 2021;18(4). Available:<http://dx.doi.org/10.3390/ijerph18042017>
14. Kumari A, Ranjan P, Vikram NK, Kaur D, Sahu A, Dwivedi SN, et al. A short questionnaire to assess changes in lifestyle-related behaviour during COVID 19 pandemic [Internet]. Vol. 14, Diabetes & Metabolic Syndrome: Clinical Research & Reviews. 2020;1697–701. Available:<http://dx.doi.org/10.1016/j.dsx.2020.08.020>
15. Parikh S, Desai M, Parikh R. The Coronavirus: What you Need to Know about the Global Pandemic. Penguin Random House India Private Limited; 2020. 224 p.
16. Agarwal P, Kaushik A, Sarkar S, Rao D, Mukherjee N, Bharat V, et al. Global Survey-based Assessment of Lifestyle Changes During the COVID-19 Pandemic [Internet]. Available:<http://dx.doi.org/10.21203/rs.3.rs-144874/v1>
17. Wang C. To Cope with a New Coronavirus Pandemic: How Life May Be Changed Forever [Internet]. Vol. 19, Chinese Journal of International Law. 2020;221–8. Available:<http://dx.doi.org/10.1093/chinesejil/jmaa020>
18. Poskute AS, Nzesi A, Geliebter A. Changes in food intake during the COVID-19 Pandemic in New York City. Appetite. 2021;105191.

19. Nadikattu RR. Role of information science during COVID -19 [Internet]. COVID-19 Pandemic update 2020. 2020;148–56. Available:<http://dx.doi.org/10.26524/royal.37.13>
20. Rajakumari R, Volova T, Oluwafemi OS, Rajesh Kumar S, Thomas S, Kalarikkal N. Grape seed extract-soluplus dispersion and its antioxidant activity. *Drug Dev Ind Pharm.* 2020;46(8):1219–29.
21. Clarizia G, Bernardo P. Diverse Applications of Organic-Inorganic Nano-composites: Emerging Research and Opportunities: Emerging Research and Opportunities. *IGI Global.* 2019;237.
22. Prakash AKS, Devaraj E. Cytotoxic potentials of *S. cumini* methanolic seed kernel extract in human hepatoma HepG2 cells [Internet]. Vol. 34, *Environmental Toxicology.* 2019;1313–9. Available:<http://dx.doi.org/10.1002/tox.22832>
23. Tahmasebi S, Qasim MT, Krivenkova MV, Zekiy AO, Thangavelu L, Aravindhan S, et al. The effects of oxygen-ozone therapy on regulatory T-cell responses in multiple sclerosis patients. *Cell Biol Int.* 2021;45(7): 1498–509.
24. Wadhwa R, Paudel KR, Chin LH, Hon CM, Madheswaran T, Gupta G, et al. Anti-inflammatory and anticancer activities of Naringenin-loaded liquid crystalline nanoparticles in vitro. *J Food Biochem.* 2021;45(1):e13572.
25. Vivekanandhan K, Shanmugam P, Barabadi H, Arumugam V, Raj DDRD, Sivasubramanian M, et al. Emerging Therapeutic Approaches to Combat COVID-19: Present Status and Future Perspectives [Internet]. Vol. 8, *Frontiers in Molecular Biosciences;* 2021. Available:<http://dx.doi.org/10.3389/fmolb.2021.604447>
26. Ezhilarasan D. Critical role of estrogen in the progression of chronic liver diseases. *Hepatobiliary Pancreat Dis Int.* 2020;19(5): 429–34.
27. Mason TB, Barrington-Trimis J, Leventhal AM. Eating to Cope With the COVID-19 Pandemic and Body Weight Change in Young Adults. *J Adolesc Health.* 2021; 68(2):277–83.
28. RG, Gayatri R, Sethu G. Establishing norms for nasal spirometry [Internet]. Vol. 8, *National Journal of Physiology, Pharmacy and Pharmacology.* 2018;1188. Available:<http://dx.doi.org/10.5455/njppp.2018.8.0414226042018>
29. Saraswathi I, Saikarthik J, Senthil Kumar K, Madhan Srinivasan K, Ardhanaari M, Gunapriya R. Impact of COVID-19 outbreak on the mental health status of undergraduate medical students in a COVID-19 treating medical college: a prospective longitudinal study. *Peer J.* 2020;8:e10164.
30. Santhakumar P, Roy A, Mohanraj KG, Jayaraman S, Durairaj R. Ethanolic Extract of *Capparis decidua* Fruit Ameliorates Methotrexate-Induced Hepatotoxicity by Activating Nrf2/HO-1 and PPAR $\gamma$  Mediated Pathways. *Ind J Pharm Educ.* 2021; 55(1s):s265–74.
31. Nambi G, Kamal W, Es S, Joshi S, Trivedi P. Spinal manipulation plus laser therapy versus laser therapy alone in the treatment of chronic non-specific low back pain: a randomized controlled study. *Eur J Phys Rehabil Med.* 2018;54(6):880–9.
32. Radwan H, Al Kitbi M, Hasan H, Al Hilali M, Abbas N, Hamadeh R, et al. Diet and Lifestyle Changes During COVID-19 Lockdown in the United Arab Emirates: Results of a Cross-Sectional Study. 2020 Sep 16 [cited 2021 Jun 9] Available:<https://www.researchsquare.com/article/rs-76807/v1.pdf>
33. RGD, Gayatri DR, Sethu G. Evaluation of adenoids by oronasal and nasal spirometry [Internet]. Vol. 11, *Asian Journal of Pharmaceutical and Clinical Research.* 2018;272. Available:<http://dx.doi.org/10.22159/ajpcr.2018.v11i10.27365>

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