

Awareness of Healthy Eating and Implementation of Immune Boosting Superfoods in the Diet during COVID 19

V. Durga Nandini*

ABSTRACT

Background: Coronaviruses are a large family of viruses which may cause illness in animals or humans. In humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome and Severe Acute Respiratory Syndrome. The most recently discovered coronavirus causes coronavirus disease COVID-19. Healthy patterns of eating optimize the function of the immune system and improve immunometabolism. Nutrition has a positive impact on COVID-19 as it may be a way to support people at higher risk for the disease, that is, older people and people with pre-existing conditions (non-communicable diseases). **Objective:** The objective of the study was to study the awareness and implementation of immune boosting super foods during the pandemic. **Methods:** A cross-sectional study was conducted in Hyderabad for 2 months and 174 participants were selected to volunteer study. All the participants were asked to fill the questionnaire designed to collect the data about dietary information, food frequency table, and anthropometric measurements. **Conclusion:** The questionnaire comprised "Immune boosting tips to prevent coronavirus infection" at the end to educate the participants on the same.

Keywords: Coronavirus, Immunity, Medical conditions, Super foods
Asian Pac. J. Health Sci., (2021); DOI: 10.21276/apjhs.2021.8.3.26

INTRODUCTION

The emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; previously provisionally named 2019 novel coronavirus or 2019-nCoV) disease (COVID-19) in China at the end of 2019 has caused a large global outbreak and is a major public health issue. As of 11 February 2020, data from the World Health Organization (WHO) have shown that more than 43 000 confirmed cases have been identified in 28 countries/regions, with >99% of cases being detected in China. On January 30, 2020, the WHO declared COVID-19 as the sixth public health emergency of international concern. SARS-CoV-2 is closely related to two bat-derived SARS-like coronaviruses, bat-SL-CoVZC45, and bat-SL-CoVZXC21. It is spread by human-to-human transmission through droplets or direct contact, and infection has been estimated to have mean incubation period of 6.4 days and a basic reproduction number of 2.24–3.58.

Extreme precautionary measures, such as curfew, shutting of borders, and quarantining of individuals suspected to be infected, have been instituted with immediate effect; however, due to individuals that are asymptomatic, uncontrolled human-to-human transmission has resulted in exponential infection rate and numerous loss of lives even with this lockdown measures.^[1]

Symptoms of COVID-19 include fever, cough, respiratory symptoms, shortness of breath, breathing difficulties, fatigue, and a sore throat. A minority group of people will present with more severe symptoms and will need to be hospitalized, most often with pneumonia, and in some instances, the illness can include acute respiratory distress syndrome, sepsis, and septic shock.^[2,3]

Older people (65+ years), diabetes (Types 1 and 2), lung pneumonia, pre-diabetes, Lung disease, cardiovascular disease, chronic obstructive pulmonary disease, cerebrovascular disease, Hypertension, bronchitis, emphysema, lung cancer, CYSTIC FIBROSIS, and asthma contracts COVID19.^[4]

Head – Department of Clinical Nutrition, Kasturba Gandhi and PG College for Women, Marredpally, Secunderabad, Telangana, India

Corresponding Author: V. Durga Nandini, Head – Department of Clinical Nutrition, Kasturba Gandhi and PG College for Women, Marredpally, Secunderabad, Telangana, India. E-mail: Nandiniaug13@gmail.com.

How to cite this article: Nandini VD. Awareness of Healthy Eating and Implementation of Immune Boosting Superfoods in the Diet during COVID 19. *Asian Pac. J. Health Sci.*, 2021;8(3):150-154.

Source of support: Nil

Conflicts of interest: None.

Received: 16/04/21 **Revised:** 17/05/21 **Accepted:** 14/06/21

Drugs that Suppress Immune System

Morphine and other Opioids, corticosteroids, causes nutritional deficiencies with regard to Vitamin A, Vitamin B's, Amino Acids, Zinc, Iron, Calcium, Chromium, Magnesium, and Potassium. Nonsteroidal anti-inflammatory drugs have the ability to weaken the immune system – this can have serious consequences for various populations such as children, the elderly, and immune-compromised individuals.^[5]

Effect of a Poor Diet

An unhealthy diet is one of the major risk factors for a range of chronic diseases such as cardiovascular disease, diabetes, and obesity. A poor diet will lead to nutrient deficiency and this will likely lead to chronic disease.

Recent literature has shown that a poor or bad diet causes more deaths globally than either smoking or hypertension. Poor nutrition drives chronic health conditions! Eating habits that have stronger links to higher death rates include diets high in sodium and low in whole grains, fruit, vegetables, nuts, and seeds (GBD 2017 Diet Collaborators). Good protein intake is necessary for older people to support healing, skin integrity, immunity, and recovery from illness.^[6] The recommended protein reference nutrient intake is 0.8 g protein/kg body-weight in healthy adults of all ages.^[7]

Who: Nutrition Advice during the Covid19 Outbreak

Good nutrition and hydration are important. A well-balanced diet keeps you healthy, strengthens the immune system and reduces the risk of chronic disease and infectious disease. It is recommended that a diet with a variety of fresh food and unprocessed foods is followed daily, to provide the body with the necessary vitamins, minerals, dietary fiber, protein, and antioxidants. Include fruits, vegetables, legumes, nuts, and whole grains and foods from animal sources (e.g. meat and fish). Drink enough water every day. Eat moderate amounts of fat and oil. Eat unsaturated fats rather than saturated fats. Choose meat that is low in fat. Avoid processed meats as it is high in salt and fat. Avoid industrially produced trans-fat – fast food, fried food, etc.

MATERIALS AND METHODS

Study Area, Study Design, and Sample Size

A community based cross-sectional study was carried out among 174 adults living in Secunderabad area. An E-questionnaire was framed through Google forms and was forwarded to the target population. The data collected were then converted to tables and charts.

The questionnaire consisted of "Immune boosting tips to prevent coronavirus infection" at the end. This is to educate the person on what is right to consume. The tips given were – Avoid consumption of raw meats, raw vegetables. It includes Plenty of Vitamin C Rich foods which has anti-oxidant properties such as amla, colored peppers, citrus fruits, guava, and broccoli. Increase the consumption of ginger, garlic, turmeric, pepper, tulsi, and cloves which have anti-biotic and anti-septic properties. Cut down foods laden with sugar and fats as sugar destroys the body's ability to fight infections. The subjects also were given a tip of staying fit by regular physical activity.

RESULTS AND CONCLUSION

Figure 1, the subjects were distributed as per their age. Of the 174 subjects, 87% were between 18 and 30 years of age, 11% were between 30 and 40 years and 2% were between 40 and 50 years of age, and only one person (0.6%) was over 50 years.

CONCLUSION

A group of molecules that should be fighting the virus are diminished with age and chronic health problems.^[8,9] The COVID-19 pandemic has shown a markedly low proportion of cases among children.^[10]

Figure 2 shows resembles gender and food preference of the subjects. As per the data collected, 92% were females and the remaining 8% were males. About 62.6% were non-vegetarians and 37.4% were vegetarians.

Given that the COVID-19 crisis affects men and women in different ways, measures to resolve it must take gender into account. The majority of those on the front lines of the pandemic are women, because women make up 70% of all health and social-services staff globally.

People who are taking a lot of fruits and vegetables as part of their natural diet have better innate immunity, and they may be able to fight the infection much better. Figure 3, the subjects were classified into the ones who smoke and consume alcohol and

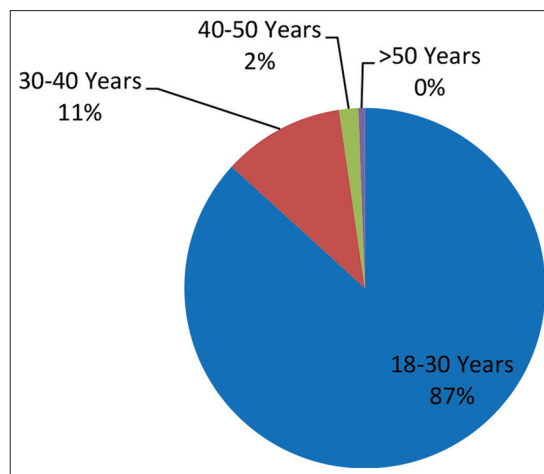


Figure 1: Distribution of subjects based on age

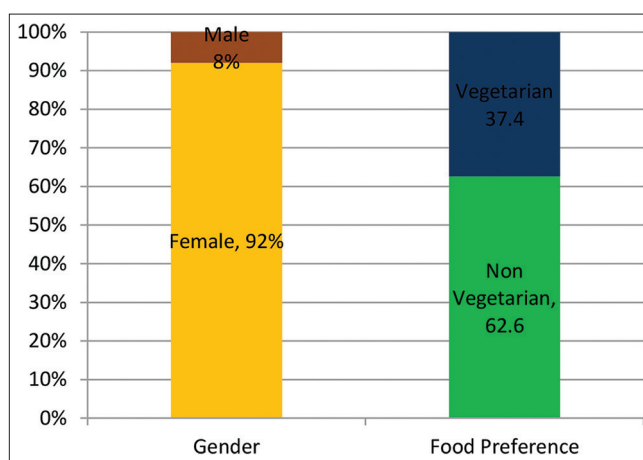


Figure 2: Gender and food preference

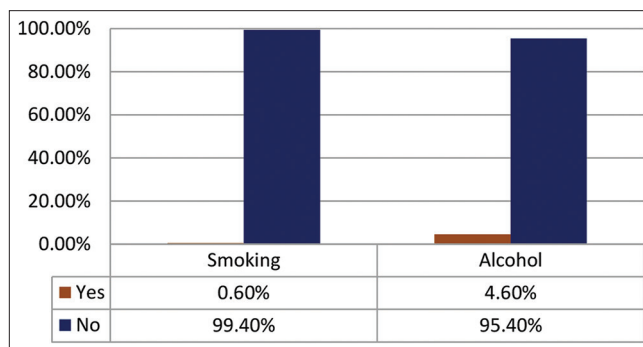


Figure 3: Based on consumption of alcohol and smoking

they who do not. Only 0.6% smoke and the remaining 99.4% do not have the habit of smoking. About 95.4% of the subjects do not consume alcohol and 4.6% consumes alcohol occasionally.

Alcohol consumption and illicit drug addiction cost around 1.5% of the global burden of disease and it can be as high as 5% in some nations.^[11] Smoking has been found to be an adverse prognostic indicator of COVID-19.^[12] The specific risk factor related to COVID-19 is increased expression of type-2 angiotensin converting enzyme among smokers.^[13,14]

Figure 4, the subjects were distinguished based on their medical condition. Out of 174, only one person has a kidney disorder, two are suffering from Arthritis, 12 has Thyroid disorder, 11 has PCOS, two has got a respiratory disease, and 148 people are free from all of these medical conditions.

Acute COVID-19 infection and onset of seasonal allergic rhinitis share a few similarities in their phenotype, but also differences. Whereas COVID-19 commonly presents as a flu-like illness with fever and persistent cough as its main symptoms, there is evidence of milder disease, especially in younger people.^[15]

Figure 6, the subjects were divided based on the knowledge of the spread of the virus through food. According to the data collected, 26 people say that virus transmits through food, 62 say that it does not transmit through food and the remaining 86 are not sure.

Food was not a transmission route in the previous outbreaks (Middle East Respiratory Syndrome and SARS-CoV) (EFSA Coronavirus),^[16] while it is known that the acidic conditions

of the stomach (pH < 3.5) inactivate SARS-CoV coronavirus.^[17] Coronavirus may reach fresh food products (e.g. vegetables, fruits, or bakery) or food packaging through an infected person who is sneezing or coughing directly on them. Transmission appears to be possible if the virus is transferred shortly afterward through the hands or the food itself to the mucous membranes of the mouth, throat, or eyes.^[18]

Figure 7, the subjects were asked about their frequency of consumption of immune boosting foods such as Amla, guava, oranges, garlic, ginger, leafy vegetables, and lemon. Ginger and garlic are regularly consumed by more than 90% of the subjects since they are the basic ingredients for most of the food preparations by Indians. 141 and 138 people of 174 consume ginger and garlic every day, ten eat oranges, six eat guava, 27 consume leafy vegetables, and 74 include Lemon every day in their diets.

61 people consume leafy vegetables, lemon is a part of the diet of 50 people, eight consume amla, 24 eat guava, 12 garlic, and 11 ginger at least once a week.

35, 48, 44, 2, 3, 7, and 10 consume amla, guava, oranges, garlic, ginger, leafy vegetables, and lemon once a month, respectively.

122, 78, 60, 10, 6, 8, and 10 include amla, guava, oranges, garlic, ginger, leafy vegetables, lemon occasionally in their diet.

During the COVID-19 pandemic, the nutritional status of individuals has been used as a measure of resilience toward destabilization. An adequate intake of zinc, iron, and Vitamins A, B 12, B6, C, and E is essential for the maintenance of immune function. In the current scenario, COVID-19 has imposed a new set of challenges for the individual to maintain a healthy diet.^[19]

Figure 8 signifies the frequency of consumption of unhealthy foods. Sugar is a part of the diet of most of the subject's every day. About 138 subjects take sugar every day, 8 eat it once a week, 4 consume it once a month, and 19 consume it occasionally.

As per the data obtained, Pastries are consumed by the subjects rarely. Only seven consume it once a week, 57 have it once a month and 103 occasionally.

4,16, 38, and 105 like to have fruit juices in tetra packs daily, once a week, once a month and occasionally.

53 people eat biscuits every day, 55 once a week, 24 once a month, and 21 occasionally.

With so many people falling ill from the coronavirus, unhealthy diets are contributing to pre-existing conditions that put them more at risk. Understand that what you eat will play a role in your mood and energy level. Remind yourself of what is healthy every time you pick up chocolates or fried food. Focus on proteins, fiber, fruits, and vegetables. Nutritious food keeps you feeling full for longer.^[20]

Figure 9, more than half of the subjects, that is, 58% are engaged in physical activity and 43% do not do any kind of physical activity.

Exercise at home using various safe, simple, and easily implementable exercises is well suited to avoid the airborne coronavirus and maintain fitness levels. Examples of home exercises include walking in the house and to the store as necessary, lifting, and carrying groceries, alternating leg lunges, stair climbing, stand-to-sit, and sit-to-stand using a chair and from the floor, chair squats, and sit-ups and pushups.^[21] Exercise has been shown to have clear health benefits for healthy individuals and for patients with various diseases.^[22]

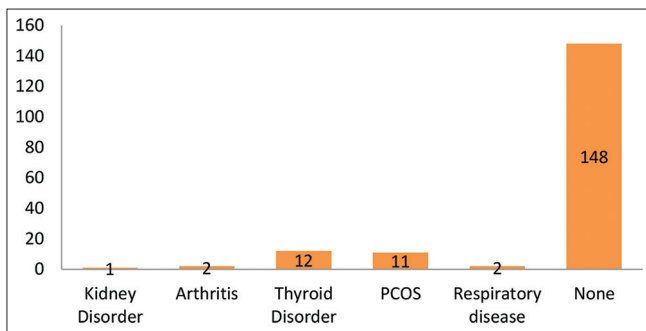


Figure 4: Medical condition

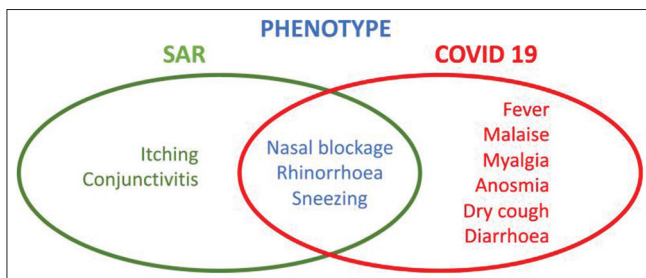


Figure 5: Symptoms associated with COVID 19

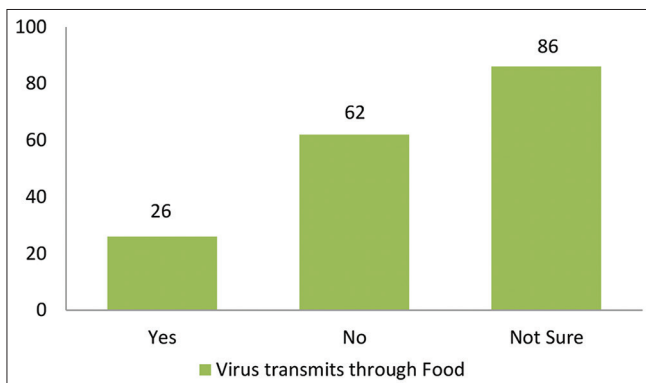


Figure 6: Awareness of the transmission and attack of the virus

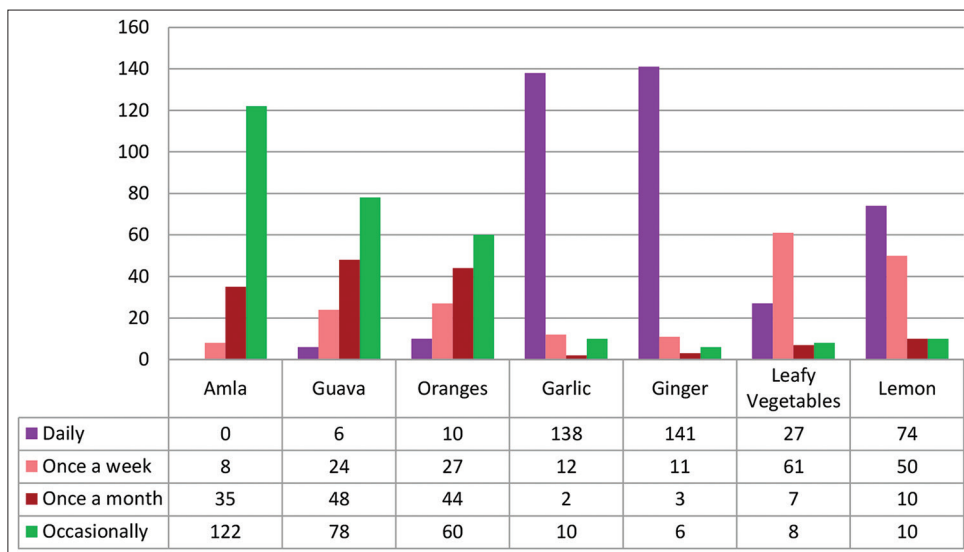


Figure 7: Frequency of consumption of immune boosting foods

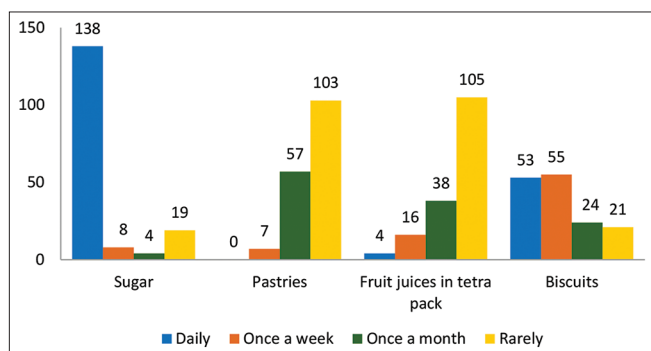


Figure 8: Frequency of consumption of unhealthy foods

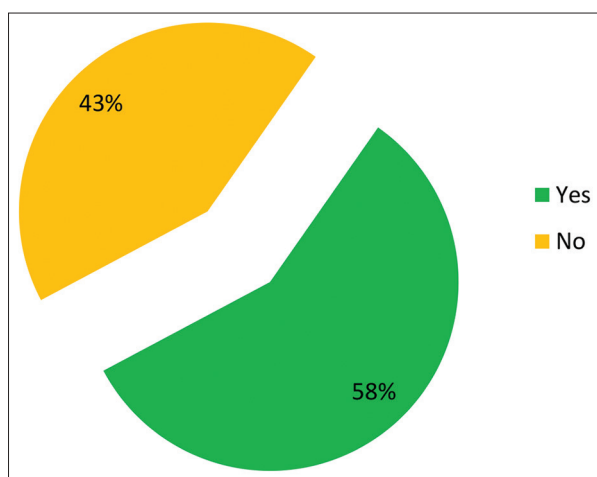


Figure 9: Physical Activity

DISCUSSION

It can be concluded from the data collected that few of the subjects are unaware of healthy foods to consume during the pandemic. They were educated, taught about healthy immune boosting super foods. The tips were given to prevent them from the attack of the virus.

Foods like ginger, garlic, pepper, lemon, citrus fruits, warm water and honey, turmeric should be included in the diet very often. Vegetables and fruits should be thoroughly washed before cooking or consumption. Non vegetarian foods should be well cooked. Drink plenty of water to keep yourself hydrated. Keep moving i.e., Physical Activity is important.

REFERENCES

1. Al-Qahtani AA. Department of Infection and Immunity. Riyadh, Saudi Arabia: Research Centre, King Faisal Specialist Hospital and Research Centre; 2020.
2. World Health Organisation. Clinical Management of Severe Acute Respiratory Infection when Novel Coronavirus (2019-nCoV) Infection is Suspected. World Health Organisation; 2020. Available from: <https://www.who.int/publications/i/item/WHO-2019-nCoV-clinical-2021-1>.
3. World Health Organisation. Nutrition. Nutrition Advice for Adults during the COVID-19 Outbreak. Geneva: World Health Organisation; 2020. Available from: <https://applications.emro.who.int/docs/NUT-adults-COVID19-eng.pdf>.
4. Wang B, Li R, Lu Z, Huang Y. Does comorbidity increase the risk of patients with COVID-19: Evidence from meta-analysis. *Aging (Albany NY)* 2020;12:6049-57.
5. Bancos S, Bernard MP, Topham DJ, Phipps RP. Ibuprofen and other widely used non-steroidal anti-inflammatory drugs inhibit antibody production in human cells. *Cell Immunol* 2009;258:18-28.
6. Chernoff R. Protein and older adults. *J Am Coll Nutr* 2004;23 Suppl 6:627S-30S.
7. Deutz NE, Bauer JM, Barazzoni R, Biolo G, Boirie Y, Bosy-Westphal A, et al. Protein intake and exercise for optimal muscle function with aging: Recommendations from the ESPEN Expert Group. *Clin Nutr* 2014;33:929-36.
8. Baugreet S, Hamill RM, Kerry JP, McCarthy SN. Mitigating nutrition and health deficiencies in older adults: A role for food innovation? *J Food Sci* 2017;82:848-55.
9. Dong Y, Mo X, Hu Y, Qi X, Jiang F, Jiang Z, et al. Epidemiological characteristics of 2,143 pediatric patients with 2019 coronavirus disease in China. *Pediatrics* 2020;145:e20200702.
10. Sun K, Chen J, Viboud C. Early epidemiological analysis of the coronavirus disease 2019 outbreak based on crowdsourced data: A population-level observational study. *Lancet Digit Health* 2020;2:e201-8.

11. GBD 2017 Diet Collaborators. Health effects of dietary risks in 195 countries, 1990-2017: A systematic analysis for the Global burden of disease study 2017. *Lancet* 2019;393:1958-72.
12. Vardavas CI, Nikitara K. COVID-19 and smoking: A systematic review of the evidence. *Tob Induc Dis* 2020;18:20.
13. Olds JL, Kabbani N. Is nicotine exposure linked to cardiopulmonary vulnerability to COVID-19 in the general population? *FEBS J* 2020;287:3651-5.
14. Leung JM, Yang CX, Tam A, Shaipanich T, Hackett TL, Singhera GK. ACE-2 expression in the small airway epithelia of smokers and COPD patients: Implications for COVID-19. *Eur Respir J* 2020;55:2000688.
15. Carol H, Yan Faraji F, Prajapti DP, Boone CE, DeConde AS. Association of Chemosensory Dysfunction and Covid-19 in Patients Presenting with Influenza-like Symptoms. *International Forum of Allergy and Rhinology*; 2020.
16. EFSA Coronavirus: No Evidence that Food is a Source or Transmission Route; 2020. Available from: [https://www.usnews.com/news/health-news/articles/2021-02-18/](https://www.usnews.com/news/health-news/articles/2021-02-18/no-evidence-coronavirus-spreads-through-food-or-food-packaging-fda)
17. Darnell ME, Subbarao K, Feinstone SM, Taylor DR. Inactivation of the coronavirus that induces severe acute respiratory syndrome, SARS-CoV. *J Virol Methods* 2004;121:85-91.
18. BfR Can the New Type of Coronavirus be Transmitted via Food and Objects? *BfR*; 2020. Available from: <https://www.bfr.bund.de/cm/349/can-the-new-type-of-coronavirus-be-transmitted-via-food-and-objects.pdf>.
19. Yousafzai AK, Rasheed MA, Bhutta ZA. Annual research review: Improved nutrition--pathway to resilience. *J Child Psychol Psychiatry* 2013;54:367-77.
20. Nabipour S, Ayu Said M, Hussain Habil M. Burden and nutritional deficiencies in opiate addiction systematic review article. *Iran J Public Health* 2014;43:1022-32.
21. Guo Y, Qiu P, Liu T. Tai Ji Quan: An overview of its history, health benefits, and cultural value. *J Sport Health Sci* 2014;3:3-8.
22. Luan X, Tian X, Zhang H, Huang R, Li N, Chen P. Exercise as a prescription for patients with various diseases. *J Sport Health Sci* 2019;8:422-441.