



www.mecsj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

Family Nutrition Programs and their Relationship to Immunity against Covid-19 Disease

EYAD AZIZ KHALED

Medicine

FAMILY MEDICINE

Wael Mustafa Al khalifa

Medicine

family medicine

(family medicine consultant)

(Damascus university)



www.mecsaj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

Abstract

According to research, regular family dinners are related with better eating and a lower risk of obesity; nevertheless, overeating, excessive snacking, and screens may threaten to outweigh the favorable impacts. As the country tries to adjust to a new normal, public health efforts should prioritize a return to healthy eating patterns.

The COVID-19 pandemic, with periodic lockdown restrictions and school closures, has affected family life. Home, work, and school environments have collide and merge to form a new normal for many families. This integration extends to family nutrition programs and their impact on immunity against diseases, especially Covid 19 disease. The research aims aimed to clarify family nutrition programs and their relationship to immunity against Covid-19 disease. In this research, the descriptive method is used, as it is the optimal method for research, given the topics that will be covered by the researcher.

The methodology was a narrative literature review of the available literature on family nutrition programs and its relationship to immunity against diseases, especially the emerging corona disease. Through previous studies, it was found that the nutritional programs followed by family members contributed mainly to maintaining the healthy growth of children and strengthening the immunity of family members from diseases and viruses, potentially deadly or sometimes.

In addition, it was found that COVID-19 patients suffer mainly from malnutrition and a deficiency in vitamin C, D, B12, selenium, iron, omega-



www.mecsj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

3, medium and long-chain fatty acids, which have a significant role in the cells of the body's immune system. Further investigations are needed to show the full role and effects of nutrition in both prevention and treatment of patients with COVID-19.

Keywords: (Family nutrition programs, nutrition, vitamins, immunity, Covid-19)

1. Introduction

Hippocrates remarked almost 2,500 years ago, "Let food be thy medicine and medicine be thy nourishment." Both nutrient consumption and disease occurrence usually have an impact on nutritional status, especially in developing countries where everyone is fighting for food. Inadequate nutrition combined with infectious illnesses might result in severe malnutrition (Martin Cole, 2020).

Currently, the COVID-19 pandemic is the most serious threat to the world, thus scientists and researchers are striving to develop a specialized vaccination for this virus, but to no avail thus far. Even if they discovered the immunization approach, there is a good chance that additional antimicrobial-resistant illnesses will proliferate in society. As a result, nutritional health is critical for maintaining a strong immune system against the infection (Amber J. Hammons, 2021).

Food is important for personal health, as well as for the environment, considering that present food production and consumption practices have significant environmental implications. Disasters, on the other hand, like



www.mecsaj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

as the COVID-19 epidemic, can disrupt our food chain and alter our relationship with food. Furthermore, partial or total lockdown measures implemented at the regional and national levels, such as the closure of schools, universities, workplaces, non-essential shops and restaurants, banned events, and travel and mobility restrictions, are likely to have changed how people accessed food, where they ate, and how their food was prepared (Giacalone, 2020).

Lifestyle, age, health status, gender, and medications all have an impact on an individual's nutritional status. Individuals' nutritional condition was employed as a metric of resilience to instability during the COVID-19 pandemic. The immune system is influenced by optimal nutrition and dietary nutrient intake via gene expression, cell activation, and signaling molecule alteration (José Andrés, 2021).

As a result, the available research suggests that the only long-term strategy to survive in the current circumstances is to enhance the immune system. An appropriate diet of zinc, iron, and vitamins A, B12, B6, C, and E is required for immune function maintenance. COVID-19 has imposed a new set of problems for the individual to keep a healthy diet in the current circumstances. Self-isolation, lockdown, and social distancing are crucial techniques to flatten the disease curve, but they have serious consequences for an individual's life (José Andrés, 2021).

During the COVID-19 pandemic, families reported higher levels of stress than before the pandemic, and eating habits included increased consumption of fast food during the first three months. Similarly, other studies using survey research during the first two months of the epidemic



www.mecsj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

discovered changes in eating habits (for example, increased processed foods, snack foods, and fresh foods at home). As well, changes in parental feeding practices (for example, increased restriction, monitoring, and pressure to eat the food) (Amber J. Hammons, 2021). Accordingly, this research aims to investigate the family nutrition programs and their relationship to immunity against Covid-19.

1.1 Research Problem & Questions

As the COVID-19 pandemic continues, the possible long-term repercussions on children's health remain unknown. Early research on school-aged children suggest that the COVID19 epidemic may have led to bad eating habits, decreased physical activity, and increased screen time, all of which can lead to unhealthy weight gain. To counteract the potential long-term impacts of the COVID-19 pandemic on children and families' access to adequate, health-supportive food, health and nutrition interventions may become increasingly important (Vicente Javier Clemente-Suárez, 2021).

It was also discovered that researchers would not undertaken any more investigation into family nutrition programs and their association to Covid-19 virus protection. As a result, the current study contributes to the understanding of the importance of family nutrition programs and their relationship to immunity against Covid-19 (Amber J. Hammons, 2021).

Faseeha Aman (2020) asserted that the COVID-19 pandemic has pushing families to reorganize their lives. Normal patterns have crumbled because of cyclical lockdown limitations, school closures, distant work, and the



www.mecsj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

shutdown of family-oriented activities. Children and adults are spending more time at home and eating foods and meals that might otherwise be consumed in various locations.

There is widespread agreement on the importance of parents in shaping their children's eating habits, particularly through the availability of specific types of food that may be affected during a pandemic. The COVID-19 epidemic will almost certainly serve as a catalyst for changes in the family food environment (Martin Cole, 2020).

According to Faseeha Aman (2020), a solid and healthy family nutrition programs can help to ensure a strong immune system that can withstand any pathogen onslaught. A certain amount of a specific nutrient saturates cells and prevents nutritional insufficiency. People who eat a well-balanced diet appear to be safer, with stronger immune systems and a lower prevalence of chronic diseases and infections. Based on this, the main goal of this article is to instill healthy dietary habits that aid in the maintenance of persons' physical and mental health, and this inquiry will be conducted by answering the research's key question, which is:

What is the family nutrition programs and their relationship to immunity against Covid-19?

A number of sub-questions emerge from the main question, the most important of which are:



www.mecsj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

1. What kind of food have families allocated to strengthen the immunity of their children against the Corona virus?
2. What is the amount of food set by the parents in order to protect the family from the Corona virus?
3. What are the strategies that support the family's immune system by following a proper diet?

1.2 Research Aim & Objectives

The primary aim of the research is to investigate the family nutrition programs and their relationship to immunity against Covid-19 disease.

The main objectives that the research seeks to cover are:

- To determine the kind of food have families allocated to strengthen the immunity of their children against the Coronavirus.
- To determine the amount of food set by the parents in order to protect the family from the Corona virus.
- To investigate the strategies that support the family's immune system by following a proper diet.

1.3 Research Key-terms

This research has two key terms that are important to be clarified:

Family nutrition programs: are healthy diets that help maintain, develop and improve the general health of family members (Stephens, 2021).

Immunity: It is the resistance of diseases from exposure to infection and its pathogens (Calder, 2020).



www.mecsj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

1.4 Research Significance

As families try to cope with the situation, family functioning may shift. Because of the unique nature of a worldwide pandemic, little study has been conducted on how families are managing this new family context. This exploratory study looks at how families responded during the COVID-19 pandemic, specifically in terms of the family food environment and family meals (Stephens, 2021).

This study is important in theory because it has the potential to direct family health activities aimed at helping families adjust to the new normal. In practice, the research may benefit families, students of medical, and nutrition specialties by raising their awareness of the importance of developing nutrition programs to increase immunity against diseases, especially the emerging corona virus, in addition to enriching their information through their resort to research on websites and libraries.

In addition, the current research is unique in that it is according to the researcher's knowledge, being the only research that combines the research variables (independent variable: family nutrition programs, dependent variable: the relationship of family nutrition programs with immunity against Corona virus). Thus, the current research contributes to filling the gap of deficiency in previous research and studies related to the topic of research.



www.mecsaj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

2. Research Methodology

Through the independent and dependent variables of the research, the researcher found that the most appropriate methodology in this research is the "descriptive approach". The descriptive approach will be used in this research by referring to a set of narrative literature and previous studies that discussed the variables of the current research related to family nutrition programs and their relationship to immunity against diseases, especially the emerging corona disease.

3. Literature Review

This part includes theoretical information related to the topic of the current research, which is "Family Nutrition Programs and their Relationship to Immunity against Covid-19", as this part of the research discusses the dependent and independent study variables. Accordingly, this part was divide into three parts, the first is "family nutrition programs", and the second is "the relationship of family nutrition programs with immunity against Covid 19". The last and third one is "Strategies to take to support the immune system through good nutrition".

3.1 Family Nutrition Programs

Families are an important site to affect young children's nutritional and health practices and to reach out to families with nutritional information. Vitamins and healthy food are crucial for family members' healthy growth and mental and physical development, thus parents are interested in supplying them. These programs are also important in illness prevention



www.mecsaj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

by strengthening the immune system, thus a balanced diet contains enough of vitamins and minerals (S. Scapaticci, 2022).

Based on UNESCO (2020) advices, it is essential that families determine a good and healthy diet for their members, as it contains healthy nutrition programs that can improve their immune system in order to combat COVID-19 or any other diseases. That is, if the family focuses on eating fruit daily (guava, apple, banana, strawberry, cantaloupe, watermelon, grapefruit, pineapple, papaya, orange, Longman fruit, black currant, and pommel) with a portion size of 2 cups (4 servings). Eat fresh vegetables (green cabbage, garlic, ginger, turnip, lime, cilantro (dried), broccoli, green chili) 2.5 cups of vegetables (5 servings) and legumes (beans and lentils). Eat whole grains and nuts, 180 grams of grains (unprocessed corn, oats, wheat, millet, brown rice or roots such as yam, potatoes, taro or cassava).

When using dried or canned fruits and vegetables, choose varieties that are free of added sugar or salt. Besides, use nuts such as almonds, coconut and pistachios. In addition, red meat can be eaten once or twice a week, and poultry 2–3 times a week. Use foods from animal sources (such as fish, fish, eggs, and milk), 160 grams of meat and beans (UNESCO, 2020).

According to WHO (2020), as for snacks, the family should choose fresh fruits and raw vegetables instead of foods rich in sugar, salt or fat, and avoid eating irregular snacks. It is also preferable for the family to reduce salt intake to five grams per day. Consume unsaturated fats (found in avocado, fish, nuts, soybeans, olive, canola, corn and sunflower oils) instead of saturated fats (found in butter, fatty meats, coconut, palm oils, cheese, margarine, and cream).



www.mecsaj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

It is also recommended to drink 8-10 glasses of water every day. It helps transport nutrients in the blood, get rid of waste, and regulate body temperature. Avoid all sparkling, carbonated and concentrated juices, and all drinks that contain sugar. In addition to maintaining a healthy lifestyle of exercise, meditation and regular, sleep. Adequate sleep helps support immune function (UNESCO, 2020).

According to previous studies such as (Barbara Burlingame, 2020; José Andrés, 2021; M. Mrityunjaya, 2020), a proper diet efficiently helps ensure that the body is in the strongest possible shape to fight the virus. Family nutritional programs also ensure that family members have a strong immune system that can withstand any pathological viral attack, because a particular amount of certain nutrients is saturated in the cells and avoids any form of nutritional shortage. According to research, people who eat a well-balanced diet are healthier, have stronger immune systems, and have fewer chronic diseases and infections.

3.2 The Relationship of Family Nutrition Programs with Immunity against Covid-19

The COVID-19 epidemic has pushed families to reconfigure their everyday lives, since occasional lockdown limitations, school closures, remote work, and the closure of family-oriented entertainment have disrupted the typical pattern. Children and adults are spending more time at home consuming food and meals that might otherwise be consumed in different locations (WHO, 2020).



www.mecsaj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

There is widespread agreement that parents have an important role in developing their children's eating habits, particularly through the provision of certain foods, accessibility, engagement, and modeling, all of which may be compromised during a pandemic. The COVID-19 pandemic is anticipated to be a driving force behind changes in the dietary environment of the family (Permani C. Weerasekara, 2020).

Mealtime habits, for example, might help families maintain a sense of normalcy. Family mealtimes may be protective, giving a method for families to feel connected, united, and secure during stressful times. According to a recent meta-analysis, family mealtime frequency is associated with improved family functioning, which includes problem solving, communication, and emotions of family togetherness. Furthermore, family meals serve as a focal point for family members to gather and promote good eating habits (Amber J. Hammons, 2021). The frequency of shared family mealtimes has been linked to a variety of advantages, including healthy eating, particularly fruits and vegetables, and overall diet quality (Vicente Javier Clemente-Suárez, 2021).

Mealtime structural variables, such as eating together as a family, gadget use, and food kinds consumed, have a direct influence on children's eating behaviors. The family food environment is vulnerable to changes in healthful behaviors during times of stress. Structured meals with favorable interpersonal dynamics have been linked to better levels of vegetable consumption and lower BMIs, whereas poor communication, low interpersonal involvement, and negativity have been linked to less healthy eating habits (Martin Cole, 2020).



www.mecsaj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

For many families, the epidemic has meant spending an abnormally large amount of time together, in close quarters, within the home. According to current research, families' experienced higher levels of stress during the COVID-19 pandemic compared to before the pandemic and eating habits included increased consumption of junk food during the first three months. Similarly, other surveys conducted during the first few months of the pandemic discovered changes in eating habits (e.g., increased processed foods, snack foods, and fresh foods in the home), as well as changes in parent feeding practices, such as increases in restriction, monitoring, and pressure to eat (Stephens, 2021).

The association between diet and the immune system is well established, which is why its involvement in COVID 19 is given so much emphasis. In this way, while there does not appear to be a cure for COVID-19, healthy eating pattern appear to increase immune system functioning and contribute to a lower likelihood of COVID-19 infection and better recovery in individuals who have been infected. This is especially crucial given the pandemic's health-care overload, emphasizing the need of nutrition in healthy public health and the population's immunological response (Faseeha Aman, 2020).

Nutritional interventions that reduce inflammation and the risk of chronic disease, in particular, can lower the risk of severe disease and death from COVID-19. Furthermore, associated vitamins A and B (folic acid, vitamins B6 and B12), vitamin D, vitamin C, and minerals such as Se, Fe, Cu, and Zn are necessary for healthy immunological function. As a result, it is fair to suppose that a lack of these micronutrients, as well as a suboptimal



www.mecsaj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

nutritional state, can aid in the spread of COVID-19 by lowering resistance to infection and re-infection (Nishida, 2020).

Vitamin D is without a doubt the most researched micronutrient in relation to COVID-19 since the vitamin D receptor is expressed in nearly all types of immune system cells (for example, B and T lymphocytes, dendritic cells, macrophages, and monocytes). As a result, proper immune system activity will be dependent on the correct bioavailability of vitamin D from these cells (Stephens, 2021).

Although vitamin D insufficiency has not been linked to an increased risk of COVID-19 infection, there is a link between vitamin D deficit and illness severity. As a result, the most severe patients of COVID-19 had 64% greater vitamin D insufficiency than moderate instances. Inadequate vitamin D levels, on the other hand, increase the likelihood of hospitalization and mortality by COVID-19 (S. Scapatucci, 2022).

On the other hand, while there is enough evidence to suggest that other micronutrients have an effect on the immune system, there has been minimal research linking them to the risk and/or severity of COVID-19. The statistics presented, however, show that, while the hospitalized patient is not frequently low in vitamins B1 and B12 or zinc, and the vast majority can show at least one nutrient shortfall (Amber J. Hammons, 2021).

Vitamin C is another micronutrient with an antioxidant effect that has an impact on respiratory tract infections, which is one of the most significant pathologies in COVID-19 patients. Furthermore, vitamin C demonstrated additional significant effects in immune function, such as the control of



www.mecsjs.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

hundreds of genes in immune cells (Vicente Javier Clemente-Suárez, 2021).

In particular, more than 40% of COVID-19 patients admitted to the hospital had a selenium insufficiency, 6 percent had a vitamin B6 deficiency, and 4 percent had a folate shortage. These findings imply that, in addition to vitamin D deficiency, selenium deficiency may reduce immunological defense against COVID-19 and lead to disease development (UNESCO, 2020). Furthermore, selenium plays a role in the development, proliferation, and correct function of numerous innate immune system cells. Furthermore, selenium is important in the adaptive response, assisting in the formation and development of antibodies. More detailed and large-scale research, however, are required to corroborate these findings.

Every day, the relationship between nutrition and COVID-19 disease becomes clearer. Deficiency states of specific nutrients are a prognostic factor of the disease, despite the fact that they are not crucial in the spread of COVID-19. Deficient levels of vitamin C, D, and selenium, as well as poor iron and vitamin B12 consumption, have been demonstrated to increase the likelihood of hospitalization and mortality from COVID-19. On the other hand, despite getting customized nutrition during their stay, the majority of patients who have had a hospital stay of more than five days have presented with malnutrition/cachexia upon discharge (Calder, 2020).

The immune system is always active, which necessitates an elevated metabolic rate, which necessitates energy sources, biosynthesis substrates, and regulatory chemical. The food eventually provides these energy



www.mecsaj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

source, substrates, and regulatory chemicals. As a result, an appropriate intake of a variety of nutrients is required to support the immune system's optimal function (Abdessalam Ould Ahmed, 2020).

3.3 Strategies to Take to Support the Immune System through Good Nutrition

To maintain immunological function, a variety of vitamins (A, B6, B12, and folic acid, C, D, and E) and trace elements (zinc, copper, selenium, and iron) are required. Other fundamental family nutrition plans include vitamins, amino acids, and fatty acids are beneficial in this regard. Understanding the role of these nutrients in immunity and assuring the host's ability to deal with pathogen exposure stems from deficits (Calder, 2020).

As a result, it is obvious that overt critical nutrient deficits decrease immune function and increase susceptibility to infections, and that these two effects can be avoided or reversed by addressing the deficiency (s). Depending on the vitamin, the level of shortage, and preparation, this may be accomplished through diet or, in certain situations, supplementation or some other kind of therapeutic intervention (Stephens, 2021).

It is not entirely clear to what extent immune function will be compromised in those individuals who are deficient in essential nutrients. However, it appears likely that individuals who eat less than optimal amounts of a range of essential nutrients are more likely to display suboptimal or normal immune responses; this likely contributes to the variance in immunological



www.mecsjs.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

findings seen in the general population (Vicente Javier Clemente-Suárez, 2021).

It appears prudent to ingest enough levels of important nutrients in order to maintain the best potential immune response should an individual develop an infection, albeit in most cases these amounts are not expressly indicated. According to studies, the healthiest diet to strengthen the immune system is one that includes a wide variety of vegetables, fruits, berries, nuts, seeds, grains, and legumes, as well as some meat, eggs, dairy, and oily fish (WHO, 2020).

This nutrition programs conform to current dietary guidelines and is congruent with those deemed healthful in general. A nutrition programs like this will exclude a lot of manufactured and "junk" foods, as well as excessive levels of saturated fat and sugar. A randomized controlled trial of more than 5 servings of fruits and vegetables per day versus 2 servings per day in the elderly (65-85 years old) found that the group consuming more fruits and vegetables had a better response to pneumococcal vaccination, though the response was not statistically significant. There was no difference in tetanus vaccination between the two groups (Nishida, 2020).

Furthermore, human investigations show that the consumption of specific micronutrients required to support the immune system adequately is likely to be higher than the intake easily achieved by diet alone. This is true for vitamins C, D, and E, as well as zinc and selenium. Immune-targeting supplements may play a role in ensuring adequate intake of essential nutrients, which are required to maintain the immune system completely.



www.mecsaj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

In addition to the "direct" effects of diet on the immune system, numerous plant foods, fiber, and fermented foods have a role in the creation and maintenance of healthy gut micro biota, which supports the immune system (Mohammed Iddir, 2020).

4. Conclusion & Recommendations

The immune system defends the host against disease-causing germs (bacteria, viruses, fungi, and parasites). To deal with such a wide variety of dangers, the human immune system has evolved to incorporate a plethora of specialized cell types, linked chemicals, and functional responses. The immune system is always active and monitoring, but its activity is increased if the person becomes infected.

A higher metabolic rate, which necessitates the consumption of energy sources, biosynthesis substrates, and regulatory molecules, all of which are taken from the diet, accompany this increased activity. It has been proven via research and empirical studies of deficient people that a number of vitamins (A, B6, B12, and folic acid, C, D, and E) and trace elements (zinc, copper, selenium, and iron) play important roles in boosting the human immune system and reducing infection risk.

Other necessary nutrients, such as vitamins, trace minerals, amino acids, and fatty acids, play a role in this as well. All of the minerals listed above help to promote antibacterial and antiviral defenses, although zinc and selenium appear to be especially important for the latter. Individuals should



www.mecsj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

consume enough levels of critical nutrients to maintain their immune system and assist them in dealing with viruses if they become ill.

Family nutritious programs that have diversity of plant and animal foods and adheres to current healthy eating guidelines will be the most beneficial to the immune system. Human experiments, however, reveal that the intake of key micronutrients (vitamins C, D, and E, zinc, and selenium) required to optimally support the immune system exceeds what can be easily obtained by diet alone, in which case supplementation may be explored.

Previous research has linked regular family meals and family nutrition programs to healthy eating and a lower incidence of viral illnesses. As a result, the researcher suggests that healthy diets be followed because they will be the focus of public health and disease prevention when the country begins to shift to the new normal. Future study should concentrate on minimizing the possible long-term physical health consequences of overeating and sedentary behavior during the epidemic. As well, developing sustainability healthy habits that may be applied to similar times in the future.



www.mecsj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185



www.mecsj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

References

- Abdessalam Ould Ahmed, e. (2020). Accompanying brief to this UN joint statement on nutrition in the context of COVID-19. (*FAO*), 1-18.
- Amber J. Hammons, R. R. (2021). Family Food Environment during the COVID-19 Pandemic:. *MDPI*, 8 (354), 1-12.
- Barbara Burlingame, e. (2020). *Impacts of COVID-19 on food security and nutrition: developing effective policy responses to address the hunger and malnutrition pandemic* . Italy: HLPE Steering Committee .
- Calder, P. C. (2020). Nutrition, immunity and COVID-19. *BMJ Nutrition, Prevention, and Health*, 3, 1-19.
- Faseeha Aman, S. M. (2020). How Nutrition can help to fight against COVID-19 Pandemic. *Pakistan Journal of Medical Sciences*, 36(1), 1-30.
- Giacalone, D. (2020). Changes in Food Consumption During the COVID-19 Pandemic: Analysis of Consumer Survey Data From the First Lockdown Period in Denmark, Germany, and Slovenia. *frontiers*, 1, 1-20.
- José Andrés, e. (2021). Improving Food and Nutrition Security During COVID-19, the Economic Recovery, and Beyond. Bipartisna policy center.



www.mecsj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

- M. Mrityunjaya, e. (2020). Immune-Boosting, Antioxidant and Anti-inflammatory Food Supplements Targeting Pathogenesis of COVID-19. *journal Frontiers, 11*, 1-12.
- Martin Cole, B. L. (2020). *Impacts of COVID-19 on food security and nutrition: developing effective policy responses to address the hunger and malnutrition pandemic* . Rome, Italy : Committee on World Food Security.
- Mohammed Iddir, e. (2020). Strengthening the Immune System and Reducing Inflammation and Oxidative Stress through Diet and Nutrition: Considerations during the COVID-19 Crisis. *Nutrients, 12*(6), 1-25.
- Nishida, C. (2020). *Healthy diets, the double burden of malnutrition and COVID-19*. Switzerland: WHO.
- Permani C. Weerasekara, e. (2020). Food and Nutrition-Related Knowledge, Attitudes, and Practices among Reproductive-age Women in Marginalized Areas in Sri Lanka. *International Journal of Environmental Research and Public Health, 17*(3985), 1-21.
- S. Scapaticci, C. R. (2022). The impact of the COVID-19 pandemic on lifestyle behaviors in children and adolescents: an international overview. *Italian Journal of Pediatrics, 48*(22), 1-17.
- Stephens, L. (2021). Connecting Families to Food Resources amid the COVID-19 Pandemic: A Cross-Sectional Survey of Early Care and Education Providers in Two U.S. States. *MDPI, 13*(3137), 1-12.



www.mecsj.com

Multi-Knowledge Electronic Comprehensive Journal For
Education And Science Publications (MECSJ)

Issues (53) 2022

ISSN: 2616-9185

UNESCO. (2020). *Health & nutrition during home learning*. Education sector .

Vicente Javier Clemente-Suárez, e. (2021). Nutrition in the Actual COVID-19 Pandemic. A Narrative Review. *MDPI*, 13(1924), 1-20.

WHO. (2020). COVID-19 and the Risks to the Nutritional outcomes of Children and Women in Eastern and Southern Africa . 1-4.