**Nutritional – Ethical efforts in COVID-19 crisis: A brief review on the occupational career of nutrition experts upon nutritional consulting demands and activities in Qom city, Iran.**

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**Abstract:**

COVID-19 as a viral infection has been a critical health disaster all around the world. The health, economic, political and social complications of this disease are enormously extended so that World Health Organization (WHO) has announced global critical condition due to this epidemic. It has affected many aspects of mankind’s life and the nations are trying to stop this crisis. The presence of comorbid factors in COVID-19 patients such as diabetes, cardiac diseases, and immunity defect tends the infected patients to higher rates of COVID-19 related mortality and therefor nutritional status is considered as an important factor in prevention and treatment of this disease. Beside it, the ethical efforts of nutrition experts have been notably elevated during this crisis. Hence, we objected to perform a mini-review upon the nutritional-ethical efforts taken place within COVID-19 disaster during February 10th up to April 20th of 2020 in Qom city, Iran.

**Keywords:** Nutrition; ethics; COVID-19; Qom; health system.

**T**he first introduction of novel coronavirus (COVID-19 or primarily named as nCoV-19) was taken place in Wuhan, China, on 31 December 2019. Common signs and histories of the patients were an unidentified form of viral pneumonia with shared history of visiting the Huanan seafood market (1). The sequencing analysis of isolated virus placed it alongside other Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) (1). The virus spread internationally within 1 month of the first identification, and can be transmitted via close human to human contact (2). By the February 1st of 2020, The World Health Organization (WHO) declared COVID-19 a Public Health Emergency of International Concern. The lack of transparency of the Chinese health ministry is considered as one of the main causes to the global spread of virus because the Chinese government did not send an update to WHO by the end of March 2020 while owning 792 cases and 31 deaths (3). Formerly, SARS and MERS were emergences caused by coronavirus family (4, 5). The first identification of COVID-19 infection in Iran was related to Qom province. Rapid prevalence of such a hazardous infection can impact on different aspects of society life including hygiene, economy, politic, culture, ethics and nutrition.

The tendency of patients who required critical care to have comorbid conditions (commonly diabetes and cardiac disease), highlighted the underlying importance of nutrition status in case of managing COVID-19 (6). Also, the inevitable role of nutrition in the establishment of immunity in the people (particularly by improving gut microbiota composition due to dietary fiber consumption) emphasizes the beneficial duty of healthy nutrition in such condition (7). Of course it should be stated that the improvement of body immunity by proper nutritional habits cannot occur suddenly nor in the disease curing period, but it is a time consuming process for whole-life duration.

In fact, nutrition plays a “killing two birds with one stone” role in case of COVID-19 infection, because it can fend off both contagious (COVID-19) and non-contagious diseases (diabetes mellitus, cardiac diseases, and etc.) contemporaneously (8).

The objectives of our study were to provide an overview of the nutritional-ethical efforts of nutrition experts and also society members within this crisis in Qom city.

1. **COVID-19 epidemic – impact on nutrition, food and agriculture and the questions to be answered**
   1. Question 1: Will COVID-19 impact our food security?
   2. Question 2: Whose food security and livelihoods are most at risk due to the epidemic?
   3. Question 3: How will this epidemic influence the situation of food production and agricultural supply chains?
   4. Question 4: Will this epidemic alter food demands? If yes, then How?
   5. Question 5: How will the school feeding and school supplementation programs be affected by the epidemic due to the school closures?
   6. Question 6: Will nutritional and medical high-risk individuals (including pregnant women, metabolic and cancer patients, stunted children and etc.) visit their nutritional and consulting demands?
   7. Question 7: What is the logical solution for nutritional supporting the low-income families affected by unemployment due to COVID-19 epidemic?

There are many other questions and problems which current crisis has brought with it and health system of each nation is trying to answer or cover them.

1. **Nutrition experts in health system**

Nutrition experts are of the most important and vital branches of health systems to be in charge in case of such conditions. Regarding to this, the efforts of nutrition experts can be categorized in three main fields as: 1) Activities in governmental fields, 2) Activities in personal nutrition consulting offices, 3) Collaborations with NGOs, benefactors and public charities.

* 1. **The main nutritional activities in governmental fields**

1. *Phone consultancy of patients and their families:* It could be stated that the majority of nutrition consultants’ work continued as normal and no main difference was noticed to their services during the crisis. The nutrition experts helped other health care experts for the active monitoring of COVID-19 suspect cases beside their professional duty as a nutrition consultant for these cases and their families.
2. *Monitoring and visiting government guidelines:* The nutritional team monitored the governmental guidelines closely in order to be involved in COVID-19 nutritional finding’s update and use them in their consulting.
3. *Limitation of community engagement activities:* Regarding to the importance of quarantine in the control of COVID-19 spread, the nutritional team members canceled all of their public consulting classes and meetings and made changes in their strategy to be in contact with the visitors.
4. *Emotional and mental support of suffering patients and their families:* The active follow up of COVID-19 suffering patients and also their families was performed everyday by the nutritionists employed in governmental health centers.
5. *Medical-nutritional management of patients hospitalized in the hospitals:* Similar to any other condition, nutrition experts who work in hospitals, tried to manage the nutritional status of COVID-19 patients in order to visit their basal nutritional demands and accelerate their curing process.
6. *Collaborating with other medical fields such as traditional and complementary medicine experts:* One of the pioneer activities of nutrition experts was to collaborate with other fields’ experts for instance traditional and complementary medicine experts to design a native food and dietary regimen for COVID-19 patients before, during, and after illness active period.
7. *The innovative activities proper for the native culture:* Regarding to the fact that bread is one of the main foods of Iran nation, going outside for buying daily demands of bread consists of a major cause for quarantine breaking. Hence, the Community Nutrition Improvement Office of Qom University of Medical Sciences started an innovative and creative activity by gathering the information (ingredients, recipes, baking protocol and etc.) about the native and local breads and delivered it to the public health centers in order to instruct the society people to bake their needed breads at home and limit the exposure of potent risks at the crowded environment of bakeries. A similar approach was done in order to design a digital protocol list to cook home-made and traditional foods. These types of foods could meet nutrients variety demands and also are healthier due to the lower content of fat, salt and sugar in comparison to commercial foods.
8. *Radio and TV coverage of nutrition education programs:* Several video clips were prepared to be broadcasted in public and social media such as radio and TV. These video clips included nutritional facts about the protecting from COVID-19 infection. Also, some of the experts were invited to the TV programs to answer the society’s questions about nutritional problems related to COVID-19.
9. *The targeted hygiene and nutritional education toward the members of collective locations:* Collective locations such as nursing homes are considered as the high-risk places to the prevalence of infection; hence, several targeted educational programs were planned for the members who are resident in such places.
10. *Fulfilling the educational demands of different cultural and ethnical groups of the society:* The variation of the cultures and particularly mother languages of society members made the nutritional experts to broadcast educational programs in different languages beside the national language. In this case, several voice clips were prepared in Azerbaijan Turkish language to be dispread among the people.
11. *Follow up of supplement intake for the students:* The students whom were enrolled in the supplementation program of the schools, were followed up to continue their supplementation intake.
    1. **The main nutritional activities in personal nutritional consulting offices**
12. *The closure of nutrition offices:* in order to limit the public exposure and lower the prevalence rate of COVID-19 spread, nutrition consultants who worked in personal offices, obeyed the closure rule despite a great financial loss.
13. *The online consulting for the visitors instead of presence in the offices:* Almost all of the non-governmental nutritionists began to offer their consulting and dietary regiments online and at cyberspace. Many nutritional groups and channels were established by these experts and went on their services in this form. Unfortunately there were some opportunists who misused such a condition and started to misguide the people using the fake names of nutritionists.
    1. **The main nutritional activities in relationship with NGOs, benefactors and public charities**
14. *Attracting donors and benefactors:* The compulsive and obligate unemployment of some people especially workers could affect their lives and threaten their nutritional safety status. In this case the nutritional society tried to attract donors and benefactors to provide some NGO helps to support such families. Plenty of food packages containing basic nutritional demands were prepared by the people mass and organized to be delivered to the real needy families.
15. *Supporting health system staffs by nutritional packages:* Health system staffs are considered as the main and first individuals who protect the society from hazardous prevalence of COVID-19 and also cure and rehabilitate the patients, so their own health and safety is very important. Hence, some benefactors aimed to help and thank these staffs by supporting nutritional packages (containing fruit, drinking water and nuts) to help them during their occupational performance.
16. *Voluntary and public benefit activities:* There were groups of people who tried to help the health systems and participate in different related activities such as COVID-19-positive cases, distribution of supportive supportive food packages among families in need. These volunteer forces did these actions with no financial gain and only based on their feelings and beliefs of altruism.

All of the mentioned activities were organized and performed in a relatively short time and naturally they could have some problems and limitations due to the expansion of crisis. The importance of nutritional supports particularly in such disasters can be more revealed and re-emphasizes us the vital role of health and standard nutrition in the management of such conditions. The improvement of body immunity is not a momentary action and we should fulfill the body demands during an almost long period. Helping us to gain the normal nutritional status and having a good life style is the occupational target of nutrition experts which is a time consuming process.

1. **Conclusions**

It is a challenging time for the world, and we as nutritionists have additional moral responsibility of protecting our patients and colleagues and health activists. it is of paramount importance to the next months to enforce and strictly maintain these infection control measures using written protocols and careful monitoring of patients. The level of commitment and the amount of individual effort is worthy of respect and deserve appreciation. The efforts in the way of prohibiting the dissemination of this infection are like little grains of sand that together will help in creating a solid and durable barrier against this deadly virus.

1. **Author contributions**

AH and AM collected the data. MMH organized the data and wrote the manuscript. All of the authors read the final format of manuscript and verified it. MMH did the final revision.

1. **Conflict of Interest**

The authors are governmentally related to the Community Nutrition Improvement Office, Deputy of Health at Qom University of Medical Sciences.

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