



## Original Article

## Assessment of Dietary Practices among Post Covid-19 Patients

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## ABSTRACT

Nutritional guidelines for post covid-19 nutrition in both male and female for different age group, in relation to their lifestyle and attitude on covid-19. **Objective:** To learn about the nutritional behaviors of people who got infected with covid-19. To assess the nutritional intake of people after recovery with covid-19. To assess the relationship of good nutrition and fast recovery Post covid-19. **Methods:** A cross sectional study was carried out through an online survey on WhatsApp. 100 participants; both male and female were selected through non-probability convenient technique. Participants were assessed through questionnaire. Individuals above 18 years who have been recovered from COVID-19 were the part of this study. **Results:** Out of 100 participants, 33 had increased appetite, 23 had suppressed appetite and 44 had healthy appetite. 49% participants had infusion of healthy fats, 45 participants were not taking any supplements during their recovery, 62 participants were dehydrated. Fruits and vegetables consumption among participants on daily basis was 39% and their dairy and dairy products consumption was 75%. **Conclusions:** Appropriate and healthy eating habits have been found to be advantageous in recovering from COVID-19 and in individuals who have recovered from COVID-19.

## INTRODUCTION

Despite of outliving Covid-19, survivors are still living with the aftermath of this virulent disease. To have defeated the virus is just the beginning of an uncharted recovery path. The covid-19 pandemic exists distinctive challenges and threats to patients and healthcare systems worldwide [1]. The post-Covid symptoms that follow the acute phase of Covid-19 infection rely on the lengthening and severity of this communicable disease. The Post-Acute Sequela of Covid-19 (PASC) clarifies the syndrome of persistent symptoms, commonly for more than four weeks after recovery from acute Covid-19 [2]. Patients especially who are considered to be moderately or severely immunocompromised (weakened immune system) are considered to have worse outcomes due to the morbidity of

the disease which results in higher mortality [3]. On account of this pandemic, the most significant challenges are centered on reducing inflammation by vaccines and drugs but not so much by nutrition. There is a lot of underestimations of nutrition in Post Covid-19 patients which is why we aim to analyze the importance of nutrition that can benefit patients as Post-Covid Nutrition [4]. The risk of post Covid symptoms existence of more than five signs in acute covid-19 is more likely in women, elderly individuals, and patients with diabetes [5]. Signs can last in the patient's recovery phase; fever being the shortest lasting symptom; smell and tastes changes were the longest-lasting symptom in post-covid-19 individuals [6]. With fever and loss of taste and smell, cough is also a

persisting manifestation for months after post-Covid [7]. The nutritional management for the critical patients who experienced Covid and stayed in the Intensive care unit is enteral nutrition to encourage gastric emptying and initiate peripheral nutrition [8]. Factors such as lack of enteral feeds, hypoxia, and prolonged Intensive Care Unit (ICU) stay exposure can impact the microbiome of patients, which is why nutritional intervention is highly recommended as an integral treatment plan to improve and enhance clinical outcomes in the zone of critically ill population [9]. The European Society of Clinical Nutrition and Metabolism states that for the covid-19 patients, their energy caloric needs are 27-30 kcal/kg/day of body weight and protein ranging from 1-1.3 g/kg in agreement with nutritional and disease status. Patients without respiratory defects are given a 30:70 ratios of fats and carbs [10]. A nutritionist should consider comorbidities, and drug-nutrient interaction for each patient because all of these can consequence the patient's development. By personalized nutritional support, we can reduce the severity of symptoms and promote an immune response in higher-risk patients as per post-Covid nutrition [11].

**METHODS**

A cross sectional study was carried out through an online survey on WhatsApp. 100 participants; both male and female were selected through non-probability convenient technique. Participants were assessed through questionnaire. The study was completed in a tenure of 4 months. Spss version 20.0 was used for data analysis. In exclusion criteria for the study included population under the age of 18, population that has not contracted COVID-19 and non-complaint individuals. For in inclusion criteria, population above the age of 18 who have been diagnosed with COVID-19 and have recovered successfully were taken.

**RESULTS**

Our results are based on 100 participated who took part in our study. Out of 100 participants, 5 participants were below 20 years of age, 70 participants were between 20-29 years of age, 10 participants were between 30-39 years of age, 7 participants were between 40-49 and 50-59 each. Whereas only 1 participant was between 60-69 years of age.

SR NO.	Age.						Total
	<20	20-29	30-39	40-49	50-59	60-69	
1.	5	70	10	7	7	1	100

**Table 1:** Ages of all the participants

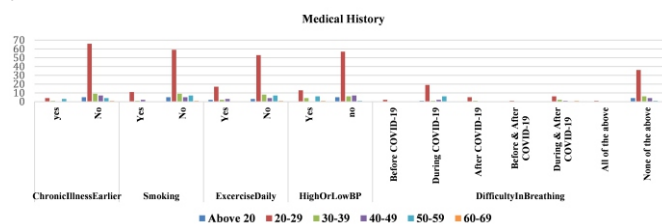
Out of 100, 6 participants were underweight, 57 had normal BMI, 28 were overweight and 9 were obese. 51 participants were females and 49 were male. 68% were single, 31% were married and 1% was widowed. 90 participants were from urban areas whereas only 10 participants were from rural

areas. According to the Socio-economic status, 4 out of 100 were from lower middle class. 72 people belonged to middle class and 24 came from upper class.

<b>BMI (kg/m2)</b>	Underweight	6%
	Normal	57%
	Overweight	28%
	Obese	9%
<b>Gender</b>	Male	49%
	Female	51%
<b>Marital status</b>	Married	31%
	Unmarried	68%
	Widowed	1%
<b>Residential location</b>	Urban	90%
	Rural	10%
<b>Socio-economic status</b>	Low	4%
	Middle	72%
	High	24%

**Table 2:** Demographical Distribution of the participants

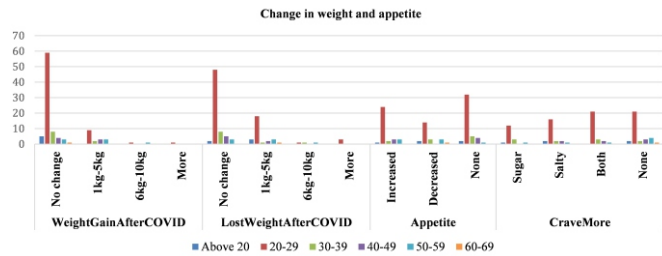
Figure 1 represents 4 participants were suffering from chronic illness, 66 were healthy from the age group of 20-29, 11 participants from age group of 20-29 were smokers. Most participants were inactive, only a few participants from age group of 20-29 were doing exercise daily. Very few participants had high blood pressure while majority had normal blood pressure. 2 participants from age group of 20-29 years experienced difficulty in breathing before contracting to Covid-19, 19 during Covid-19, 5 after Covid-19, 1 before and after Covid-19 both, 6 during and after Covid-19, 1 during all the phases and 33 people didn't have any breathing difficulties during any phase. 1 person between the age of 30-39 years had breathing difficulty during Covid-19, 1 after Covid-19, 2 during and after Covid-19 whereas 66 hadn't any breathing difficulty during any phase.



**Figure 1:** Medical history

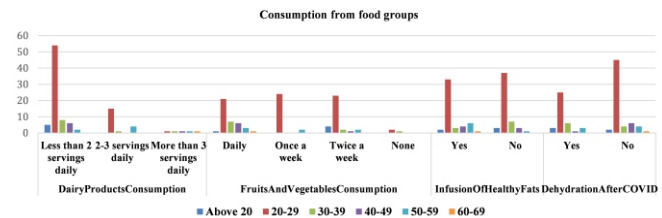
Figure 2 represents changes in weight and appetite among participants. 59% participants had not gained weight after covid-19. 9% had gained weight between 1-5kg and 1% had gained weight between 6-10kg after Covid-19. 48% participants had no changes with weight loss after Covid-19. 18% from age group 20-29, had lost weight between 1-5kg after Covid-19. The highest number of participants answering yes to increased appetite were 24, similarly 14 answered yes to decreased appetite and 32 answered none

from the age group 20-29. When asked about cravings 12 people answered yes to sugary foods, 16 answered salty foods, 21 answered both and 21 answered no coming from age group 20-29, from the age group of 30-39, 3 participants said that they crave more for sugary foods, 2 said salty, 3 said both while 2 said none.



**Figure 2:** Change in weight and appetite

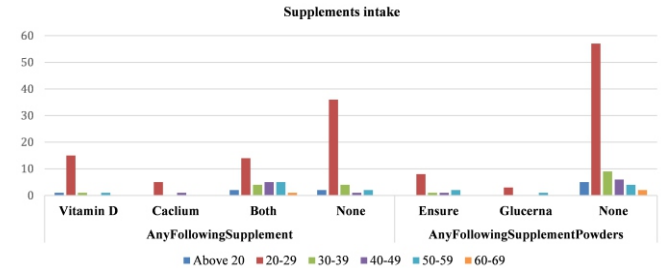
Figure 3 represents consumption of participants from food groups. Between the ages of 20-29 years consumed less than 2 servings of dairy products while the participants aging 30 to 39 years took 2-3 servings of dairy daily and those aged between 50 to 69 years consumed more than 3 servings of dairy products daily. When asked about consumption of fruits and vegetables majority of participants answered daily, 24 answered once a week, 23 answered twice a week and 2 answered none. Least consumption of healthy fats was seen in age group 60-69 with 1 person answering daily. 33 from the age group of 20-29 years had infusion of healthy fats and 37 from same age group didn't responded about having infusion of healthy fats. Similarly, from the age group of 30-39 years, 3 had infusion of healthy fats while 7 didn't. When asked about being dehydrated the participants answered the following in age group above 20, 3 answered yes and 2 answered no respectively. In 20-29 age group 25 answered yes and 45 answered no. In 30-39 group 6 answered yes and 4 answered no. In 40-49 group 1 answered yes and 6 answered no. in age group 50-59 3 answered yes and 4 answered no. Lastly in age group 60-69 1 person answered no.



**Figure 3:** Consumption from food groups

Figure 4 represents supplement intake of the participants. Most consumption of vitamin D and calcium was seen in age group 20-29 as 15 answered vitamin D, 5 answered calcium and 14 answered both. Also 36 people from age group 20-29 answered none to this question. Least consumption of supplements was seen in age group 60-69. In age group

above 20 there was no supplement intake. In group 20-29, 8 people answered ensure, 3 said Glucerna. Similarly, from age group 30-49, 2 people answered ensure. In age group 50-59, 2 people answered ensure and 1 said Glucerna. And from all age groups total of 83 people had no intake of any supplement powders.



**Figure 4:** Supplements intake

## DISCUSSION

For post Covid-19 food systems, lots of things need to be put into thought such as the preparedness, healthy and sustainable system thinking, system-based research with recognition to right of food on a global scale considering the vulnerable groups as well [12]. The study which we conducted had 49 males and 51 females, out of which 81 had a recovery time while the rest had more than 2 weeks. Rabail, et al., and her colleagues conducted a study with 52 males and 28 females respectively with an average recovery period of 2 weeks [13]. Our survey showed the results that 57 people had normal BMI 28 overweight and 9 obese, similar study was conducted by Bouadama, et al., concluding that obese were at high risk of loss of muscle mass causing malnutrition [14]. The study shows that people of age group 20-29 experienced suppressed appetite and 19 participants experienced shortness of breath. A similar study conducted by Weirdsma, et al., showed that 58% participants had suppressed appetite and 43% experienced dyspnea [15]. The study revealed that 28% had 1-5kg weight loss whereas 3% had 6-10kg weight loss. A similar study by Dan Levy showed >5% or >10% decrease in weight which was gradually gained after 6 months [16]. In our study out of a total 100 contenders 51 people took Vitamin D, 38 people took Calcium and 45 did not take any micronutrient supplement during Covid-19 and the majority was from age group 20-29 and minority were from age group 60-69. Evmorfia Pechlivanidou et al., conducted a study regarding the intake of micronutrients especially vitamin D and calcium as they were the most researched micronutrients, as well as those with the most promising positive effects on Covid-19 patients [17]. We asked our 100 participants whether they had an intake of fruits and vegetables as it is necessary to have adequate portions of both for a nutritionally balanced diet for fast recovery from Covid-19, the participants responded that

39% had Daily Fruits and vegetables consumption. 26% had once a week fruits and vegetables consumption. 32% had twice a week fruits and vegetables consumption. 3% had none fruits and vegetables majority coming from age group 20-29. Hayder M. Al-kuraishy et al., conducted a study about Ursolic corrosive (UA) that may be a pen acyclic terpenoid ordinarily found within the natural fruit peels and stem bark as secondary metabolites. UA has antiviral, antibacterial, and ant parasitic properties. Since of the most noteworthy antiviral and anti-inflammatory properties of UA, so it might be a conceivable restorative home-grown medication in Covid-19 treatment [18]. We asked participants about their intake of dietary supplements out of 100 contestants a total of 12 contestants consumed ensure, 4 consumed Glucerna, 82 did not had any intake of dietary supplements and 2 contestants consumed other dietary supplements. VP Chavda et al., conducted a similar study in which he stated that dietary supplement including the functional amino acids can be found in animal sources and are preferred to exist aid against the covid-19 infection and management [19]. A similar study conducted by Fiorenzo Mosatelli et al., (2021) concluded that dietary supplements and other such strategies are helpful in prevention maintaining and recovery from COVID-19 [20].

## CONCLUSIONS

Nutrition on the other hand proved to be an effective treatment in post COVID-19 phases. Nutritional requirements for different age groups and people recovering from COVID-19 are different. Vitamin supplements proved to be effective during the recovery phase from this virus. Foods from all the food groups provide all the required nutrients to human body which helps increase immunity to fight against various diseases. Adequate nutrient intake helped people during their recovery phase and improved their immunity against the virus. However, nutrition has been proved a valuable and vital assistance in fighting against this pandemic.

## Conflicts of Interest

The authors declare no conflict of interest.

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