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A Field Study on the Relationship between the Emerging Corona Virus (Covid-19) and Nutrition of some Recovered People (A Comparative Study).

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Abstract

The aim of this study was to know the role and importance of nutrition during and after recovery from COVID-19 via studying sample of Egyptians over 18 years old, this research was conducted using a structured scheme (questionnaire to get information related to health, social and nutritional status and its importance in facing the coronavirus, for all male and female participants. The participants (n=93) were mostly women (68%). Almost all the participants (66%) said that their income had been affected by the Corona virus and males were more affected than females with suffering rate of 75% and 69% respectively. Body mass index (BMI) mean for the women group was higher than the male group with the mean 32.25 and 29.05 respectively. Specifically, 47% of the participants testified to taking vitamins and supplements before and after infection. And, the kind of these vitamins and supplements were Vitamin C, zinc, iron, Vitamin D, Immune Supplements, Calcium, and others. 77% of the participants reported that their diet and consumption of food after recovering from the COVID-19 was changed. The results also showed a significant decrease in the number of cases who continued practicing physical activity**.**

Conclusions Nutrition plays an important role in the stage of infection as well as the post-recovery stage for these cases who suffered COVID-19. It was concluded that intake of nutrients by the cases such as zinc, vitamin C and D and other nutrients are needed to support immunity and to maintain weight and doing physical activity had a significant impact on the prevention or recovery or post-recovery stage.

Keywords: COVID-19 disease- nutrition - recovered people.

Introduction

The severe acute respiratory syndrome corona virus 2 (SARS-CoV-2)-caused new corona virus disease (COVID-19) pandemic has swept the globe, affecting more than 180 countries. As a result, there has been widespread economic hardship and a tremendous loss of life around the world. Unfortunately, COVID-19 problems appear to be more common among the vulnerable and immunocompromised in our society. To combat the spread of COVID-19, global public health authorities and governments have launched campaigns and issued recommendations on hand washing and hygiene rules, social distancing tactics, and, in the most extreme circumstances, "remain in place" or lockdown protocols. There are a number of important risk factors for severe COVID-19 infection. Poor nutritional status, as pre-existing noncommunicable diseases (NCDs) such as diabetes, chronic lung disease, cardiovascular disease (CVD), obesity, and other conditions that make the patient immunocompromised are examples. Systemic inflammation is a hallmark of several diseases, and it may be a common trait of various NCDs, impacting patient outcomes against COVID-19 ***(Zabetakis et al., 2020)***.

After a 5–6 day infection with COVID-19, individuals have symptoms such as fever and moderate respiratory symptoms, and the majority of those with mild disease may recover. Those patients should be cautious about their health status and follow-up after they have recovered. Other organs, including as the liver, kidney, heart, gastrointestinal GI tract, and eye, could be infected in addition to the lungs. According to a new study, SARS-CoV-2 infection targets specifically the human kidney ***(Diao et al., 2020).***

COVID-19 healed individuals may have psychological distress as well as a result of their infection, and they may be unsure about their social acceptance after recovery. As a result, it's critical to conduct follow-up investigations on COVID-19 patients who have recovered to see if they have any other disorders. The death rate of COVID-19 patients, according to the World Health Organization (WHO), is 3 to 5%, with the remaining patients recovering in the majority of cases. Patients recuperating from COVID-19 may avoid contact with others for fear of getting the virus. To address this issue, scientists and researchers should undertake an epidemiological study focused on the health state of COVID-19 patients for the benefit of society. By knowing the possible complications of their subsequent impact from recovered patients, it will be useful to ascertain future complications of the disease and will provide more information for developing vaccines and drugs for these types of epidemics in the future. More research is required on diagnostic and therapeutic approaches to developing vaccines and drugs ***(Mahalaxmi et al., 2020).***

Also, it has been observed that COVID-19 patients may be contagious even after initial recovery, so it is essential to monitor recently recovered patients judiciously as symptomatic patients, for any potential complications in the future ***(Kaavya et al., 2020; Venugopal et al., 2020).*** Follow-up of recovered patients is important to assess any change in acquired immune function, psychological factors, blood parameters, biochemical factors, and may affect organs over time ***(Chen et al., 2020).***

Respiratory droplet transmission can occur when a person is in close contact (within 1 metre) with an infected person who has respiratory symptoms (e.g., coughing or sneezing) or is talking or singing; in these circumstances, virus-containing respiratory droplets can reach the mouth, nose, or eyes of a susceptible person, resulting in infection, according to ***(Luo et al.,2020).*** Indirect contact

transmission (fomite transmission) occurs when a susceptible host comes into contact with a contaminated object or surface.Field, clinical, and immunological investigations into COVID-19 cases are critical for better understanding the disease and planning for future outbreaks and problems.

For all mentioned above the aim of this study was to know the role and importance of nutrition during and after recovery from COVID-19 via studying sample of Egyptians.

Materials and methods

The online questionnaire was completely optional. The questionnaire is anonymous, and no personal information is gathered; no informed written consent is required. Before beginning the questionnaire, participants were told about the purpose of the study and were asked for permission to use and publish the data from the study.

This study was conducted using an online questionnaire in several governorates in Egypt (Qalyubia, Gharbiya, Cairo, Beheira, Port Said, El-Menoufia and Giza) from 15/3/2021 for six months. This was a quick review of perceptions of adults aged 18 years and over (n = 93) regarding the impact of COVID-19 on those recovering from COVID-19. Survey link posted through social and private networks (WhatsApp, Messenger, and Facebook).

From both sex, Measuring the weights and heights of persons in the study, some questions were used related to the nutrition, health and social status using a special questionnaire for this purpose according to ***(Di Renzo et al., 2020)*** with some modifications to it.
To achieve the aim of work, the following plan was implemented:
Nutritional study included
Socio-economic sheet.
Anthropometric measurements (height, weight and calculate BMI according to ***(Aminianfar et al., 2021)).***
Health status sheet.
Food habits sheet
Lifestyle and Physical Activity.
Changes in your lifestyle during the Corona epidemic towards different types of foods.
Some chemical analyses.
These analyses were used to diagnose COVID-19 infection.
Statistical analysis:
The results were expressed as a percentage. Statistical analysis was performed by using computer program statistical package for social science ***(Armitage and Berry, 1987).*** All questionnaire questions were explained in details to the volunteers.

Results and discussion

In this study, we presented the impact of COVID-19 on nutrition, anxiety, physical activity, and lifestyles of those recovering from the corona. However, there are still many unknowns. Regarding the ongoing COVID-19 pandemic, thus, our data needs to be confirmed and investigated in future population studies.

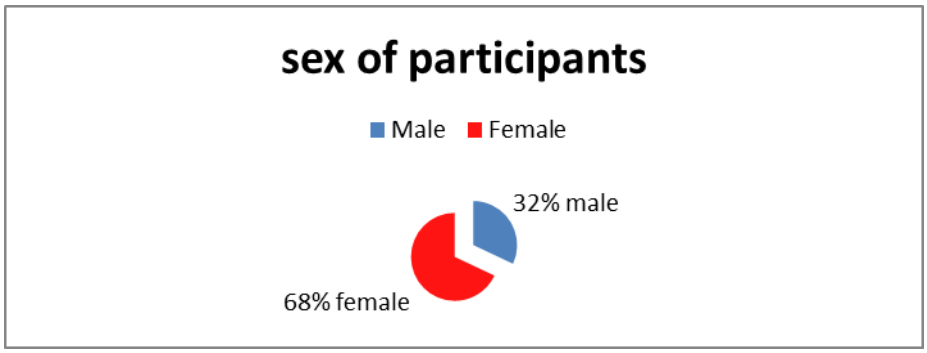

Fig (1):
sex of participants.

The collected data was analyzed and table (1) showed that more than half of the participants, 53%, decided that infection with corona does not have a specific age group for infection, and 86% of the men admitted this more than 61% of the women. And 53% admitted that it is possible to cure corona disease with yes, 43% answered according to the condition of the injured, and only 3% said we do not know. When the participants were asked about the awareness role played by the state towards the Corona epidemic, 10% were excellent, 40% were very good, and 43% did not reach the required level, 3% is too little.

Table (1):

Knowledge about infection with corona by the volunteers:

Parameters	Males	Females	Total
In your opinion, what age group is most susceptible to corona infection?			
-children	(0) 0%	(0) 0%	(0) 0%
-Young	(0) 0%	(4)6 %	(7) 7%
-Elderly	(0) 0%	(14) 22%	(25) 27%
-There is no -specific age group	(26) 86%	(34) 55%	(49) 53%
-I do not know	(4) 14%	(11) 17%	(12) 13%
Can corona disease be cured?			
-Yes	(17) 57%	(35) 56%	(49) 53%
-No	(0) 0%	(0) 0%	(0) 0%
-according to the situation	(9) 29%	(24) 39%	(41) 43%
-I do not know	(4) 14%	(4) 6%	(3) 3%
What do you think about the awareness role played by the state towards this disease (Corona)	(0) 0%	(4) 6%	(9) 10%
-excellent	(13) 43%	(25) 39%	(37) 40%
-very good	(17) 57%	(34) 56%	(44) 43%
-Not up to par	(0) 0%	(0) 0%	(3) 3%
-low			

Confidence Interval 95%=P≤0.05. Values are expressed as number and percentage (n (%))

The obtained data from table (2) and figure (1), indicated that the majority of the participants were 18 year and over, males (n=30) (32%) (30), and females (n=63) (68%). Participants had a good level of education (Bachelor's degree) at a rate of 56% for all participants, with males at 87% and females at 82%. Most of the participants were aged between 18-35 years old, and 7% were over 66 years old. As for the family size, most of the participants were families consisting of 5–6 members, with an average percentage of 44%. When comparing the participants, men and women, the family size ranged between 4 members each at a rate of 47% and 62%, respectively. The condition of the house they were living in was 68% for all participants, males (73%) and women (71%), but 32% were rented (27% of males and 29% of women were living in rented houses). As for social status, most participants were 85% married, 10% unmarried, Divorced 3% and 2% widowed. As for the level of income for men was (53%), between 4000-5900, but in general, most of the participants' income was between (2000 - 3900) in the rate of 41%, but women's ranged from (2000-3900) in the rate of 39%, compared to men's (53%). Almost all the participants (66%) said that their income had been affected by the Corona virus, and men were more affected than women at the rates of 75% and 69%, respectively. Most of the material damage was moderate to light at a rate of 47%, 50%, and 44% for all participants, male and female, respectively. Mean was 1.96.1.93 and 1.67, respectively. 93% of the participants had a family member infected with the coronavirus, 87% of whom were male and 85%, respectively.

Table (2):

social and economic status form of the participants:

Parameters	Male	Female	Total
Sex	(30)32%	(63)68%	(n=93)100%
Age			
Less than18 years old	(0)0%	(0)0%	(0)0%
18-35 years old	(16)53%	(30)46%	(39)44%
36- 45 years old	(10)33%	(25)39%	(32)34%
46-55 years	(2)7%	(3)6%	(8)8%
56-65 years	(2)7%	(2)3%	(7)7%
Over 66 years old	(0)0%	(3)6%	(7)7%
mean±SD	37.67±7.90	35.81±8.46	38.97± 8.22
Family size			
3 people	(2)7%	(9)15%	(17)20%
4 people	(14)47%	(39)62%	(34)36%
5-6 people	(14)47%	(15)23%	(42)44%
higher than 6	(0)0%	(0)0%	(0) 0%
What is the condition of the house you live in?			
ownership	(22)73%	(45)71%	(63)68%
rent	(8)27%	(18)29%	(30)32%
Social status			
Unmarried	(2)7%	(10)17%	(9)10%
married	(27)91%	(43)67%	(79)85%
Divorced	(0)0%	(10)17%	(3)3%
widow	(1)2%	(0)0%	(2)2%
Monthly income			
less than 1900	(0)0%	(4)6%	(5)5%
from 2000-3900	(6)20%	(25)39%	(38)41%
from 4000-5900	(16)53%	(21)33%	(24)26%
higher than 6000	(8)27%	(13)22%	(26)28%
Educational level			
uneducated	(0) 0%	(0) 0%	(0)0%
Primary	(1) 2%	(0) 0%	(2)2%
middle school	(0) 0%	(0) 0%	(0)0%
High School	(0) 0%	(0) 0%	(0) 0%
Middle Certification	(0) 0%	(6) 10%	(29) 30%
bachelor's degree	(26) 87%	(52) 82%	(52) 56%
Postgraduate qualification	(3) 11%	(5) 8%	(10) 12%
Have you been financially damaged during the Corona epidemic, or has your income been affected by the Corona virus?			
Yes	(23) 75%	(44) 69%	(62) 66%
No	(7) 25%	(19) 31%	(31) 34%

If yes, what was the degree of the severely which you had?			
light	(8) 29%	(28) 44%	(30) 32%
Average	(15) 50%	(28) 44%	(44) 47%
Intense	(7) 21%	(7) 11%	(12) 13%
very intense	(0) 0%	(0) 0%	(7) 8%
Has any of your family members contracted corona?			
Yes	(26) 87%	(54) 85%	(87) 93%
No	(4) 13%	(9) 15%	(6) 7%

Confidence Interval 95%=P≤0.05. Values are expressed as number and percentage (n (%))
In this study, these are more female's participants than males, participants, most of them in their middle age, had higher educational levels and lower-income levels. Resources, especially food and medicine, were limited in most areas, which led to an increase in the prices of commodities, especially food. According to ***(Matsungo and Chopera, 2020),*** the lockdown period was connected with rises in food prices and a reduction in dietary diversification. According to ***(Siche, 2020),*** the rise in food costs is a result of COVID-19's harmful influence on agriculture and food supply networks.

Data presented in table (2) illustrated that the most of the participants were in contact with people infected with corona, and this may be a major reason for their infection. These facts according to ***(Wang et al., 2020),*** the virus is derived from a broad group of viruses known as corona viruses, which are found in nature**.** The main known method of transmission for SARS-CoV-2 is by the distribution of droplets created when an infected individual sneezes or coughs, or through other mucus environments, such as saliva or nasal discharge ***(Lai et al., 2020).***

Anthropometric measurements are one way to detect malnutrition. The data in Table (3) showed that anthropometric measurements such as height, weight, and body mass index (BMI) were taken. The mean height of men was higher than that of women 170.03 and 158.20, respectively. Also, the mean value of weight for men (83.95) was higher than women (80.50) kilo gram. While the females group's BMI were higher than the males group's, with a mean of 32.25 and 29.05, respectively. These results indicated that women's groups suffer from mild obesity (first-degree obesity), while men suffer from overweight.

Table (3):
The mean and SD of Body Measurements

Parameters	Males	Females
height (cm)	170.03±9.03	158.20±5.03
Weight(kg)	83.95±19.51	80.50 ±24.36
BMI(kg/m^2)	29.05±5.94	32.25±9.24

Each value is the mean of n=30 males and n=63 female ± standard deviation. Confidence interval 95%=P≤0.05

In our study, we observed that all groups suffer from increasing weight, and this may be due to the social isolation that occurred as a result of the COVID-19 pandemic. It may lead to changes in some eating behaviors, such as increasing food intake. These findings, according to ***(Elmacıoğlu et***

al., 2021) who found that there was an increase in emotional eating and uncontrolled eating behavior among individuals during the COVID-19 pandemic and social isolation process.

The COVID-19 pandemic is killing people all over the world, and the number of infected people is growing by the day, prompting governments to impose quarantine, social separation, and isolation. All of these steps taken to preserve public health by preventing the transmission of the virus, as well as the psychological influence of this process on individuals, have sparked widespread concerns about overeating, sedentary, behavior, and vulnerability to weight gain in the majority of the population ***(Mattioli et al., 2020; Pearl, 2020).***

As body mass index (BMI) increased, the risks of hospitalization, an intensive care unit (ICU) admission, and need for invasive mechanical ventilation (IMV) increased, especially in COVID-19 patients with obesity ***(Yang et al., 2022).***

Knowing an individual's health status is a powerful tool for managing that person's health status. In an emergency situation, you can quickly give first responders vital information, such as illnesses you are being treated for, medications you are taking, and which medications you are allergic to, thus prescribing the best course of treatment for you and appropriate for your condition, especially during the period the world is going through as a result of the spread of the Corona epidemic.
Data presented in table (4) showed that 44% of participants suffer from chronic diseases before Corona virus most of them were (48%) women while men recorded 14%, were illustrated in table (4) fig (2) the kind of these chronic diseases.

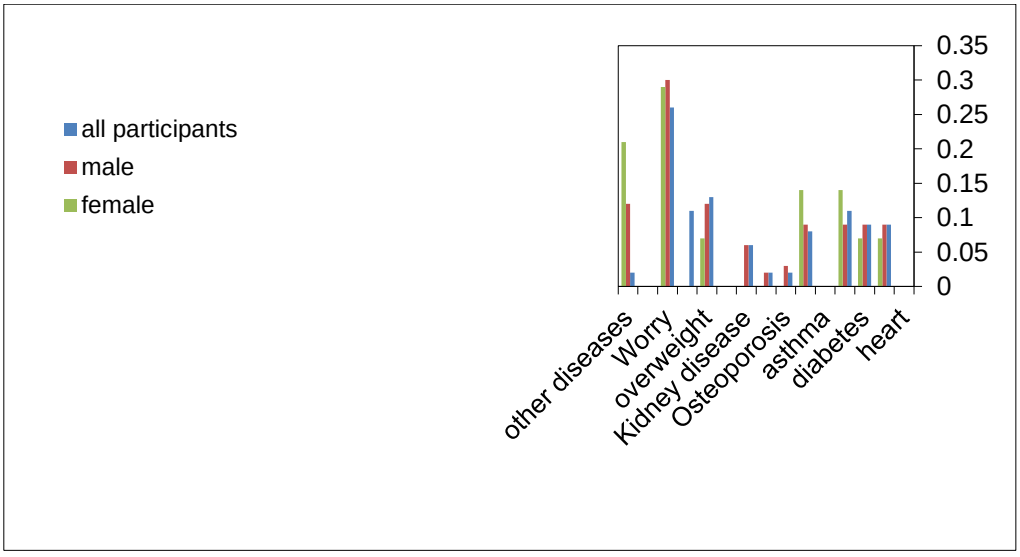

Fig (2):
The kind of chronic diseases that participants, male and female had suffered from.

The study had talked about suffering from respiratory problems before infection with corona in table (4). 18% of all participants were suffering from respiratory problems. Most of them were 22% of men and 19% of women. While 18% of all participants used to smoke cigarettes smoked, all of them were men. On the other hand, 3% of all participants were drinking hookah, and all of them were also male.

Data in table (4) showed a clear relationship between health status and COVID-19 disease. The results showed that 28% and 24% of the participants suffer from diabetes and hypertension, the percentages were 14% and 22% for males, while the percentage of females suffering from diabetes and hypertension were 11% and 14%, respectively. According to ***(Zabetakis et al., 2020)*** has been found that there are a number of important risk factors for severe COVID-19 infection. Examples include poor nutritional status, pre-existing no communicable diseases such as diabetes, chronic lung disease, cardiovascular disease, obesity and other conditions that render the patient immunocompromised. Systemic inflammation is a hallmark of many diseases and may be common feature of many non-communicable diseases, affecting patients' out come against COVID-19.

In our study, we found that more than half of the participants or those recovering from corona were suffering from one or more chronic diseases such as hypertension, diabetes, or both and chest sensitivity, as well as a high incidence of anxiety, depression, and weight gain before they contracted corona. These results agree with ***(Fernández-Niño et al., 2020)*** who discovered that relationships between COVID-19, combinations of health conditions, and age were explored. High blood pressure, respiratory illness, diabetes, cardiovascular disease, and renal disease were the most common health problems. The most common diseases were high blood pressure with diabetes, cardiovascular disease, or respiratory illness. Some multimorbidity patterns raise the risk of mortality in older people, whereas others are age-independent or lower the risk of death in older people. As is widely assumed, not all multimorbidity rises with age. Obesity, alone or in combination with other diseases, was related to a higher risk of severity among young individuals, whereas the risk of the obese was very high.

Our study had observed that diabetes, and chest sensitivity, high incidence of anxiety, depression and weight gain were the most common health problems among volunteers before infection with COVID-19. These results agree with ***(Fernández-Niño et al., 2020)*** who discovered that relationships between COVID-19, combinations of health conditions, and age were explored. High blood pressure, respiratory illness, diabetes, cardiovascular disease, and renal disease were the most common health problems.

Table (4):

Health history of recovered people.

Parameters	Males	Females	Total
Do you suffer from a chronic disease before in Corona?			
Yes	14%(4)	(30) 48%	(61) 44%
No	86%(26)	(33) 52%	(32) 56%
IF yes, Did you suffer from respiratory problems before Corona?			
Yes	22%(6)	(12) 19%	(17) 18%
No	78%(24)	(51) 81%	(76) 82%
Do you smoke?			
Yes	(7) 24%	0%(0)	(17) 18%
No	(23) 76%	100%(63)	(76) 82%
Do you drink hookah?			
Yes	(2) 5%	(0) 0%	(3) 3%
No	(28) 95%	(63) 100%	(90) 97%
Are you a diabetic?			
Yes	(4) 14%	(7) 11%	(26) 28%
No	(26) 86%	(56) 89%	(67) 72%
Are you a hypertensive patient?			
Yes	(6) 22%	(9) 14%	(22) 24%
No	(24) 78%	(54) 86%	(71) 76%

Confidence Interval 95%=P≤0.05. Values are expressed as number and percentage (n (%))

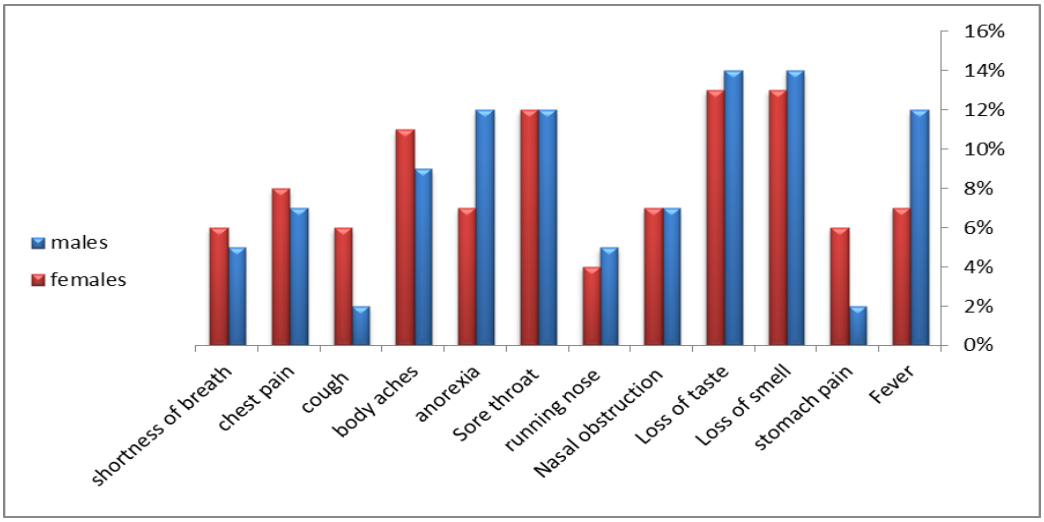

Fig (3):

symptoms for, males and females respectively.

In addition, table (5) noticed that 15% of participants reported that they had COVID-19 without symptoms, and 85% of them with symptoms. All those who had COVID-19 without symptoms were males, and all the women had COVID-19 with symptoms. Table (5) Figure (3) illustrated the types of symptoms for all participants, male and female respectively. Interestingly, we observed a decrease in the need for external breathing for all participants (18%) at a rate of 1.82, but most of them were female (14%) than male (11%), whose mean values were 1.86 and 1.89, respectively.

Some symptoms were reported in all patients, males and females but were more common in men than women, such as swallowing (47%all, 44%male, and 43% women) and rash (6% all, 5%male, and 1% women), while others were more common in women, such as diarrhea (53%all, 48%male, and 100% women), and stomachaches (53%all, 44%male, and 90% women).
Results in table (5) explained that a decrease in the number of patients without symptoms and an increase in the number of patients who showed symptoms, which were fever, stomach pain, loss of sense of smell, loss of taste, stuffy nose, runny nose, sore throat, loss of appetite, body aches, cough, chest pain, and shortness of breath.

In our research, we noticed a decrease in the number of individuals who needed external respiration or had a rash appear on them, but on the other hand, the percentage of individuals who suffered from difficulty swallowing, stomach pain, diarrhea, and a feeling of sleep had increased.***Lupia et al., (2020)*** reported that the main symptoms are fever, cough, dyspnea, headache, sore throat, and rhinorrhea. Pneumonia appears to be the most common significant infection presentation, characterised predominantly by fever, cough, dyspnea, and bilateral infiltrates on chest imaging. There are no distinct clinical features that distinguish COVID-19 from other viral respiratory infections. Other, less common symptoms have included headaches, sore throats, and rhinorrhea. In addition to respiratory symptoms, gastrointestinal problems (e.g., nausea and diarrhea) have been recorded, and in some individuals, these may constitute the presenting complaint.

The major method of transmission is by respiratory droplet transmission, but it can also be transferred by person-to-person encounters by asymptomatic carriers ***(Lupia et al., 2020; Yang et al., 2020a).***

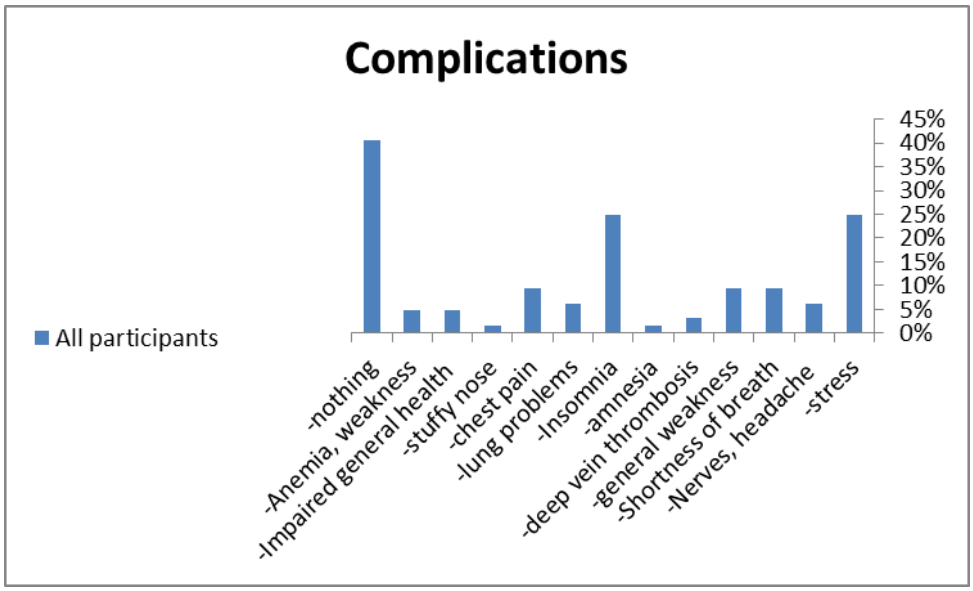

Fig (4):

The complications after corona.

Table (5):

Symptoms that had been occurred during corona.

Parameters	Males	Females	Total
Have you had COVID 19 without symptoms?			
Yes	10%(3)	(63) 100%	(14) 15%
No	90%(27)	(0) 0%	(79) 85%
If there are symptoms, what kind of symptoms?			
Fever	(3) 12%	(5) 7%	(7)7%
stomach pain	(1) 2%	(4) 6%	(7)7%
Loss of smell	(4) 14%	(8) 13%	(11)12%
Loss of taste	(4) 14%	(8) 13%	(11)12%
Nasal obstruction	(2) 7%	(4) 7%	(7)7%
running nose	(2) 5%	(2) 4%	(3)4%
Sore throat	(3) 12%	(7) 12%	(11)12%
Anorexia	(3) 12%	(4) 7%	(6)6%
body aches	(3) 9%	(7) 11%	(9)10%
cough	(1) 2%	(4) 6%	(6)6%
chest pain	(2) 7%	(6) 8%	(8)9%
shortness of breath	(2) 5%	(4) 6%	(7)7%
Did you need external breathing?			
Yes	(3) 11%	(9) 14%	(17) 18%
No	(27) 89%	(54) 86%	(76) 82%
Did you find it difficult to swallow?			
Yes	(13) 44%	(27) 43%	(44) 47%
No	(17) 56%	(36) 57%	(49) 53%
Has diarrhea occurred?			
Yes	(14) 48%	(63) 100%	(49) 53%
No	(16) 52%	(0) 0%	(44) 47%
Was there a stomachache?			
Yes	(13) 44%	(63) 100%	(49) 53%
No	(17) 56%	(0) 0%	(44) 47%
Has a rash occurred?			
Yes	(1) 5%	(1) 1%	(6) 6%
No	(29) 95%	(62) %99	(87) 94%
Did you feel sleepy?			
Yes	(26) 89%	(56) 90%	(79) 85%
No	(4) 11%	(7) 10%	(14) 15%
Are there other symptoms not mentioned previously?			
Yes	(1) 5%	(9) 15%	(18) 20%
No	(29) 95%	(54) 85%	(75) 80%

Confidence Interval 95%=P≤0.05. Values are expressed as number and percentage (n (%))

Data in table (6) indicated that 53% of participants had complications after corona. A lot of them were 57% more women than 33% of men. The complications are indicated in figure (4).

Table (6) and fig (5) showed that specifically, 47% of the respondents testified to taking vitamins and supplements before and during injury. Of those, 26% had been taking them during and after injury, 21% only during injury, 3% just before injury, and 3% hadn't taken them from all participants. Also, the kinds of these vitamins and supplements were Vitamin C, zinc, iron, Vitamin D, immune supplements, calcium, and others, which are obtained in table (6).41% of participants had medications after recovery. Most of them were women, and the type of these medications is indicated in figure (5).

Table (6):

Complications after recovery, vitamins, supplements and medications obtained by recovered people, males and females.

parameters	Males	Females	Total
Are there complications that I had after Corona?			
Yes	(10) 33%	(36) 57%	(49) 53%
No	(20) 67%	(27) 43%	(44) 47%
Do you take vitamins and supplements?			
-just before injury	11%(3)	(3) 5%	(2) 3%
-only during injury	11%(3)	(9) 14%	(19) 21%
-Before and during injury	67%(21)	(32) 52%	(44) 47%
-During and after injury	11%(3)	(16) 24%	(26) 26%
-You have not taken any ---- vitamins	0%(0)	(3) 5%	(2) 3%
What types of supplements did you take during the injury?			
Vitamin C	(8) 24%	(14) 22%	(23) 25%
zinc	(6) 21%	(14) 22%	(20) 22%
iron	(3) 9%	(3) 4%	(11) 12%
And Vitamin D	(5) 18%	(4) 9%	(13) 14%
Immune Supplements	(4) 15%	(14) 22%	(13) 14%
Calcium	(3) 9%	(11) 17%	(8) 8%
other	(1) 6%	(3) 4%	(5) 5%
Do you take any medications after recovery?			
Yes	33%(9)	38%(24)	41%(38)
No	67%(21)	62%(39)	59%(55)

Confidence Interval 95%=P≤0.05. Values are expressed as number and percentage (n (%))

In our study in table (6), we found that more than half of the participants suffered from one or more complications, especially women, and these results agree with ***(Kamal et al., 2020; Sonnweber et al., 2020)*** who elaborated on the COVID-19 issues. The cardiopulmonary system appears to be the source of the majority of post-COVID-19 problems. Myocarditis, headaches, bodily aches, dyspnea, and anxiety/depression are also common systemic post-COVID-19 effects. ***(Sonnweber et al., 2020)*** Thrombotic problems such as deep-vein thrombosis and pulmonary embolism, as well as acute kidney damage and renal failure, have been identified as probable outcomes.

These facts agree with ***(Griffin et al., 2020)*** who discovered a relationship between vitamin D deficiency and hospital patients, in addition to age and obesity. All cases improved after taking vitamin D. A variety of micronutrients, including vitamins C and D and zinc, have been demonstrated to play important roles in immune function and lowering the risk of respiratory infection. ***(Gombart et al., 2020; Calder, 2020) Louca et al., (2021)*** observed that a modest but significant association between use of omega-3 fatty acids, probiotics, vitamin D, or multivitamin supplements and a lower risk of testing positive for SARS-CoV-2. We found no clear benefits for men, nor any effect of vitamin C, zinc, or galirc.

Nutritional habits of participants are shown in Table (7):

Fifty three percent believed that are healthy compared to others (47%). Males (71%) claimed that they are healthy compared with women (43%) Also, table (7) results cleared that 83% of all participants said their size of the meal was affected by the presence of friends or family members, and only the men (100%) were affected, while 86% of women weren't.47% of all participants felt hungry, especially males (57%) compared to women (56%) respectively.67% of all participants ate outside at least once, especially males (78%) and women (71%), respectively.

In these study we reported that 80% of participants skipped a meal almost of them was male (86%) compared to women (78%), and the most meal skipped was breakfast (43%) or lunch (40%) but 61% women skipped breakfast than men(57%) other than lunch meal women(33%) and men(43%).Also,80% of participants had been taking snacks between meals, male (86%) compared to women (78%) and the reported about number of snacks was almost one times (53%) , 2 times (47%) and women was high in number of snacks times than men. Also, the favorite snacks were biscuits (37%) for all participants. Over half (53%) said that they prefer ate before go to bed specially male 57% than women56%, while 90% cleared that they prefer home made food than (10%) prefer Food preparing outside the home (fast food) and most of prefer homemade food were women83% than (71%) for men. participants indicated that they drunk (40%) Fruit juices, 17% water, 20% Soft drinks and 23% hot drinks. while 47% mentioned that drunk soft drinks such as (Pepsi - Cola) and most of them were men 57% than women 51%.40% of participants added more than 3 spoon of sugar to their drinks but 17% of participants added artificial sweetener all of them were women.
We illustrated that 53% their answer was sometimes keen to eat egg and green vegetables daily, but (57% egg,71% green vegetables) men consumption was higher than (44% egg,61% green vegetables) women.

As for eating green salads, 47% of the participants answered sometimes, 30% answered yes, and 23% answered no. While we noticed a decrease in the percentage of daily fruit intake among the participants by 37%, especially women (28% compared to men's 29%).

Interestingly, we observed that they had enough water drinking (47%) of all participants 3–6 cups of water daily, and (40%) 1-3 cups (13%). more than 7 cups, 0% of 1 cup of water daily. Men (71% 3-6 cups of water daily) had more water than women (44% 3-6 cups of water daily).

As for following diets to lose weight, it was found that 77% of all participants didn't follow any diet, but 29% of women did, compared to 14% of men. When we asked all participants how they felt about their appearance, they answered 63% normal, 30% fat and 7% too thin. For men, it was 86% normal, 14% fat and 0% too thin, while for women, it was 67% normal, 22% fat and 11% too thin.

The obtained data from table (7) indicated that those 33% of individuals who recovered from corona used to drink milk or yogurt, 33% didn't use it, and 33% sometimes used it to drink milk. We observed a decrease in (28%) women's intake of milk or yoghurt than men (29%), and that (39% of women didn't use to intake milk or yoghurt than men (14%).We found that more than half (60%) used to eat cheese; 7% only didn't eat it; and 33% sometimes used to have cheese.
Data in table (7) mentioned that the frequency of weekly consumption of fried foods for all participants, it was 17% (1-3 times a week), followed by 63% (4-6 times a week). 13% (more than 7 times a week) and 7% (not once).

The percentage of participants who kept washing their hands while eating during working hours increased (71%) and most of them were women (72%) rather than men (57%).As for keeping drinking water regularly, 40% of them answered yes, and their 17% answer was no, and their answer was 43% sometimes. Most of the conservatives who drank water regularly were women.

The obtained data in Table (7) reported that the participants were drinking coffee (47%) and tea (60%), and we noticed that 57% of the men drank coffee compared to the women (50%). While it was noted that the consumption of tea after food was higher in women (56%) than in men (43%), with regard to the quality of tea, heavy tea consumption was higher in men (57%) than in women (22%).
The data in Table (7) showed eating habits and nutritional intake to volunteers. Most of the participants believed that they live a healthy lifestyle and that the size of their meals is affected by the presence of friends and family. Most of them have a feeling of hunger and do not eat outside the house more than once, and most of them eat two meals a day. As for the abandoned meal, it is either breakfast or lunch, in addition to taking snacks between meals, and my favorite snacks are biscuits. The number of snacks is once or twice a day, and most of them prefer to eat inside the house and eat before bed, especially men.

As for drinks, most of them prefer fruit juices, especially women more than men, and soft drinks. Most of them use regular sugar to sweeten drinks and do not drink enough water, as most of them admit that their appearance is natural and they do not suffer from any increase or decrease in weight, unlike what turns out from the body mass index.

From Table (7), we have clarified the eating habits of the participants, men and women, from which it is clear that most of them follow bad eating habits, such as eating only two meals a day, these meals right before bed, and that the left meal is breakfast, despite the importance of this meal, as well as not eating enough water as well as Occasionally, the majority of their responses concerned eating basic food items such as protein, dairy products, cheese, fish, vegetables, fruits, and salad.

We believe that following the wrong eating habits has weakened their immunity, which led to their infection with corona. These results are consistent with ***Valdés-Ramos et al., 2010*** In fact, existing evidence highlights that diet has a profound effect on people's immune systems and disease susceptibility. It has been demonstrated that specific nutrients or nutrient combinations may affect the immune system through the activation of cells, modification in the production of signaling molecules, and gene expression ***(Valdés-Ramos et al., 2010).*** Furthermore, dietary ingredients are significant determinants of gut microbial composition and, consequently, can shape the characteristics of immune responses in the body ***(Wypych et al., 2017).*** Nutritional deficiencies of protein, energy, and specific micronutrients are associated with increased susceptibility to infection and depressed immune function. An adequate intake of zinc, iron, and vitamins A, E, B6, and B12 is predominantly vital for the

maintenance of immune function ***(Gleeson et al., 2004).*** As a result, avoiding nutritional deficits that have a role in immune cell triggering, interaction, differentiation, or functional expression is critical to maintaining a healthy immune system.

Table (7):

Nutritional habits and taken from food.

Parameters	Males	Females	Total
Do you live in a healthy way compared to others?			
Yes	(21) 71%	(27) 43%	(49) 53%
No	(9) 29%	(36) 57%	(44) 47%
Is the size of the meal affected by the presence of friends or family members?			
Yes	(30) 100%	(54) 86%	(77) 83%
No	(0) 0%	(9) 14%	(16) 17%
Do you always feel hungry?			
Yes	(17) 57%	(35) 56%	(43) 47%
No	(13) 43%	(28) 44%	(50) 53%
How often do you eat outside the house?			
Once	(23) 78%	(45) 71%	(62) 67%
twice	(5) 17%	(18) 29%	(25) 27%
three times	(0) 0%	(0) 0%	(3) 3%
four times	(2) 6%	(0) 0%	(3) 3%
Not once	(0) 0%	(0) 0%	(0) 0%
Do you skip any meal?			
Yes	(26) 86%	(49) 78%	(74) 80%
No	(4) 14%	(14) 22%	(19) 20%
If the answer is yes, what meal are you leaving out?			
breakfast	(17) 57%	(39) 61%	(39) 43%
lunch	(13) 43%	(20) 33%	(37) 40%
dinner	(0) 0%	(0) 0%	(3) 3%
nothing	(0) 0%	4) 6%(	(14) 14%
Do you take snacks between meals?			
Yes	(26) 86%	(49) 78%	74) 80%(
No	(4) 14%	(14) 22%	(19) 20%
If yes - how many snacks do you take during the day?			
One	(17) 57%	(35) 56%	(49) 53%
two	(13) 43%	(28) 44%	(44) 47%
three	(0) 0%	(0) 0%	(0) 0%
more	(0) 0%	(0) 0%	(0) 0%
What is your favorite type of sandwich between meals?			
Sandwiches (cheese - eggs - hamburger - others)	(13) 43%	(21) 33%	(28) 30%
chocolate	(4) 14%	(4) 6%	(3) 3%
biscuit	(9) 29%	(28) 44%	(34) 37%
fruits	14%(4)	(10) 17%	(19) 20%
Pizza	(0) 0%	(0) 0%	(0) 0%
nuts	(0) 0%	(0) 0%	(9) 10%
Do you eat late before bed?			
Yes	(17) 57%	(35) 56%	(49) 53%
No	(13) 43%	(28) 44%	(44) 47%
What type of food do you eat most often?			
-Homemade food	(21) 71%	(52) 83%	(84) 90%
-Food prepared outside the home (fast food)	(9) 29%	(11) 17%	(9) 10%
Do you follow any diet?			
Yes	(4) 14%	(18) 29%	(21) 23%
No	(26) 86%	(45) 71%	(72) 77%
How do you feel about your appearance?			
fat	(4) 14%	(14) 22%	(28) 30%
too thin	(0) 0%	(7) 11%	(7) 7%
Normal	(26) 86%	(42) 67%	(58) 63%
Do you eat cheese daily?			
Yes	(13) 43%	(38) 61%	(56) 60%
No	(0) 0%	(4) 6%	(7) 7%
Sometimes	(17) 57%	(21) 33%	(30) 33%
Do you eat eggs?			
Yes	(9) 29%	(25) 39%	(34) 37%
No	(4) 14%	(11) 17%	(9) 10%
Sometimes	(17) 57%	(27) 44%	(50) 53%

Cont. Table 7

Are you keen to eat green vegetables daily?			
Yes	(4) 14%	(14) 22%	(25) 27%
No	(4) 14%	(11) 17%	(19) 20%
Sometimes	(22) 71%	(38) 61%	(49) 53%
Are you keen to eat the salad daily?			
Yes	(4) 14%	(14) 22%	(25) 30%
No	(4) 29%	(11) 28%	(19) 23%
Sometimes	(22) 57%	(38) 50%	(49) 47%
Are you keen to eat fruit daily?			
Yes	(9) 29%	(18) 28%	(35) 37%
No	(9) 29%	(21) 33%	(25) 27%
Sometimes	(12) 43%	(24) 39%	(33) 37%
How often do you eat fried foods?			
-1-3 times a week	(9) 29%	(11) 17%	(16) 17%
-4-6 times a week	(17) 57%	(11) 17%	(58) 63%
-More than 7 times a week	(0) 0%	(37) 61%	(12) 13%
-Not once	(4) 14%	(4) 6%	(97) 7%
Are you keen to wash your hands before eating foods while working?			
Yes	(17) 57%	(45) 72%	(68) 73%
No	(0) 0%	(4) 6%	(3) 3%
Sometimes	(13) 43%	(14) 22%	(22) 23%
Which of the following drinks is usually a drink?			
Fruit juices	(9) 29%	(36) 57%	(37) 40%
Water	(0) 0%	(9) 14%	(16) 17%
Soft drinks	(4) 14%	(9) 14%	(19) 20%
Hot drinks	(17) 57%	(9) 14%	(21) 23%
Do you drink soft drinks such as (Pepsi - Cola)			
Yes	57%(17)	51%(32)	47%(44)
No	43%(13)	49%(31)	53%(49)
Do you add sugar to your drinks?			
-1 spoon	(22) 71%	(28) 44%	(16) 17%
-two	(4) 14%	(4) 6%	(12) 13%
-three	(0) 0%	(11) 17%	(16) 17%
-more than three	(4) 14%	(13) 22%	(37) 40%
-I don't add sugar at all	(0) 0%	(7) 11%	(12) 13%
Do you use any kind of artificial sweetener?			
Yes	(0) 0%	(11) 17%	(16) 17%
No	(30) 100%	(52) 83%	(77) 83%
How many glasses of water do you drink daily:			
1cup	(0) 0%	(0) 0%	(0) 0%
1-3 cups	(9) 29%	(32) 50%	(37) 40%
3-6 cups	(21) 71%	(27) 44%	(44) 47%
More than 7 cups	(0) 0%	(40) 6%	(12) 13%
Do you eat milk or yogurt daily?			
Yes	(9) 29%	(18) 28%	(31) 33%
No	(4) 14%	(24) 39%	(31) 33%
Sometimes	(17) 57%	(21) 33%	(31) 33%
Are you keen to drink water regularly?			
Yes	(13) 43%	(28) 44%	(37) 40%
No	(4) 14%	(7) 11%	(16) 17%
Sometimes	(13) 43%	(28) 44%	(40) 43%
Do you have coffee?			
Yes	(17) 57%	(32) 50%	(44) 47%
No	(13) 43%	(24) 39%	(37) 40%
Sometimes	(0) 0%	(7) 11%	(12) 13%
Do you drink tea right after food?			
Yes	(13) 43%	(35) 56%	(56) 60%
No	(17) 57%	(28) 44%	(37) 40%
What is the quality of the tea?			
light	(4) 14%	(28) 44%	(16) 17%
middle	(9) 29%	(21) 33%	(37) 40%
heavy	(17) 57%	(14) 22%	(40) 43%

Confidence Interval 95%=P≤0.05. Values are expressed as number and percentage (n (%))

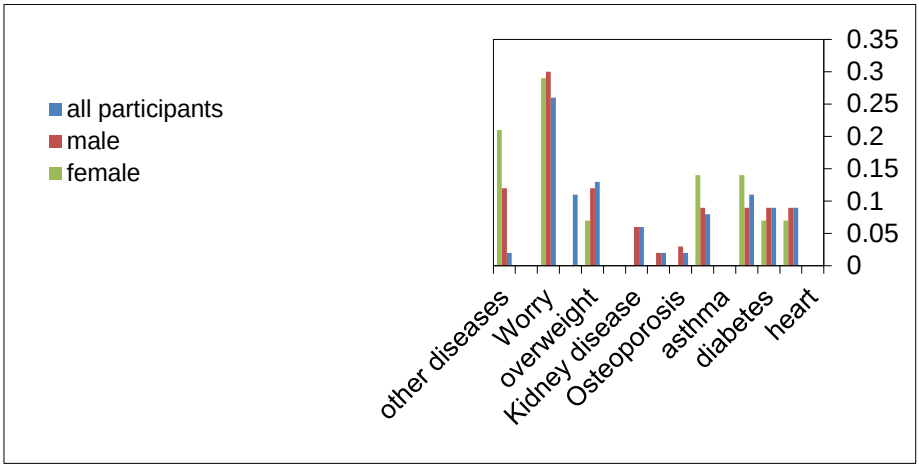

Fig (5):
Types of medications after recovery.

Table (8) presented the Lifestyle and Physical Activity of the participants:

Lifestyle is defined by what we mean by it: the way in which an individual or group of individuals (society) behaves in a habitual or daily manner in his social, psychological, health, and economic life. To live longer and better, it is essential to lead a healthy lifestyle complemented by a balanced diet. However, it is not always easy to maintain this lifestyle.

Table (8) showed that most (63%) of the participants didn't go to bed early, especially the men. On the other hand, 73% of the participants had gotten up early, and almost all of them were men (86% versus women's 67%).53% of the participants used public transport. Most of them were women. 33% used private cars. Most of them were men. Only 13% used walking. Most of them were women.73% of participants, particularly men, were influenced by food advertisements in their choice of food and beverage. Furthermore, 63% of those who watched TV said it had an effect on their eating habits, particularly for women, who ate 90% more than men. And 53% of them were affected by media personalities' influence on food behaviors, most of them were women, not men.
The results indicated that 88% of women participate in preparing and preparing food more than men. Only 29% of women are involved in preparing food at home.

The results had shown that a disturbing trend from the decrease in physical activity, as it was found that 78% of the participants do not practice any kind of sport and that 22% do exercise. In general, 90% of the participants do not do enough exercise to be healthy, especially women (89%) compared to men (86%). It was also found that 73% of the participants had not been exposed to sunlight.In addition, 77% of those who exercise regularly were unable to get enough exercise during the Corona epidemic.
Our tracked physical activity (PA) data suggested a significant drop in PA during the United Kingdom's COVID-19 lockdown**. *(McCarthy et al., 2021).***

The community lockdowns and quarantines being implemented to contain the spread of COVID-19 are encouraging physical inactivity and greater reliance on processed and canned food, which may increase the risk of metabolic diseases in the population ***(Jiménez-Pavón et al., 2020; and Narici et al., 2020).*** For example, during the COVID-19 epidemic, a survey of children and adolescents (6–17

years) in five schools in the People's Republic of China found a significant decline in physical activity and an increase in internet screen time. **(*Xiang et al., 2020).*** Studies have shown that reduced physical activity and prolonged sedentary behaviour are linked to poor physical and mental health outcomes ***(Korczak et al., 2017 and Haapala et al. 2017).*** Conversely physical activity, on the other hand, has been shown to improve a variety of health outcomes ***(Pedersen and Saltin, 2015 and Powell et al., 2011).*** Wellness activities, including good nutrition, a meditation, regular exercise, and adequate sleep play an important role in preventing COVID-19 infection and recovering from COVID-19. The disease's long-term and enduring impacts bolster the argument for health activities during the rehabilitation process ***(Mintz 2020; Parshley, 2020).***

Table (8):

Lifestyle and Physical Activity.

Parameters	Males	Females	Total
Do you go to bed early?			
Yes	(13) 43%	(28) 44%	(35) 37%
No	(17) 57%	(35) 56%	(58) 63%
Do you wake up early?			
Yes	(26) 86%	67%(42)	(68) 73%
No	(4) 14%	33%(21)	(25) 27%
What kind of transportation do you always use?			
Walking	(4) 14%	19%(12)	(12) 13%
Public Transport	(13) 43%	64%(40)	(50) 53%
private car	(13) 43%	17%(11)	(31) 33%
Do Food Advertisements Affect Your Choice of Food and Beverage?			
Yes	(17)57%	(32)51%	(68)73%
No	(13)43%	(31)49%	(25)27%
Does watching TV have an effect on eating behaviors?			(59) 63%
Yes	86%(26)	(57) 90%	(34) 37%
No	14%(4)	(6) 10%	
Do media personalities influence food behaviors?			
Yes	(17) 57%	(39) 61%	(49) 53%
No	(13) 43%	(24) 39%	(44) 47%
Do you participate in preparing or cooking food at home?			
Yes	(9) 29%	(56) 88%	(63) 67%
No	(21) 71%	(7) 12%	(30) 33%
Do you do any kind of physical activity (sports)?			
Yes	(4) 14%	(11) 18%	(21) 22%
No	(26) 86%	(52) 82%	(72) 78%
Overall, do you think you are doing enough exercise to make you healthy?			
Yes	(4) 14%	(7) 11%	(9) 10%
No	(26) 86%	(56) 89%	(84) 90%
Do you enjoy sitting in the sun in the early morning?			
Yes	(9) 29%	33%(21)	(25) 27%
No	(21) 71%	67%(42)	(68) 73%
Are you still playing your favorite sport during the Corona epidemic			
Yes	0%(0)	17%(11)	23%(21)
No	100%(30)	83%(52)	77%(72)

Confidence Interval 95%=P≤0.05. Values are expressed as number and percentage (n (%))

Changes in food habits of participants during corona epidemic:

The data in table (9) observed the changes in their lives during the Corona epidemic towards different types of foods. We found that the intake of fruits, vegetables, and meat remained the same at 37%, 47%, and 67%, respectively, for all participants. 39% and 72% of women had the same amount of fruit and meat as 29% and 71% of men, respectively, but 57% of men had the same amount of vegetables as 50% of women. On the other hand, 7% of the entire sample did not have access to fruits, and those were women.

The data in table (9) demonstrated that the amount of fish eaten per week for all (participants, men and women) was as follows 43%,29%,44%once,33%,43%,33% twice,3%,0%,0% not once, 20%,29%22% Sometimes and 0%,0%0% more than twice respectively.
There was also a decrease in the intake of dairy products for all participants, men and women 40%,29%,33% once a day, 20%,14%,17% twice a day, 7%,14% ,6% more than twice a day, 20%,0%,22% not once and 13%,43%,22% once a week respectively. Also, the mean values for all participants, men and women were 2.47, 3.14 and 2.83 respectively.

Almost all the participants (63%) said the amount of sugar used to sweeten drinks, including tea, as it is, 3% increased and 33% decreased. We observed a non-significant difference between women, men, and all participants in the amount of sugar used to sweeten drinks.
Statements best describes the food eaten in your home in the past week for participants, men and women (53%, 43%, 56%you had enough types of foods to eat- 33%, 29%, 33% you all had enough to eat, but not always the kinds of food you wanted- 7%, 14%, 6%sometimes you don't have enough to eat and 7%, 14%, 6% you often do not have enough food) respectively. Interestingly, we observed women (56%) had had enough types of foods to eat than men (43%).

In general, when asked how they feel about their current financial situation compared to what it was before, almost all answer 10%. I'm much worse off at 17%. I'm a little worse off at 0%. I'm almost the same-23%I'm a little better off at 0%. I'm much better off now, but men were better off than women.
Through Table (9), it had become clear to us that the food consumption of the various food groups did not change for most of the participants, and this may be due to either low income and high food prices, with ignorance of healthy eating habits and the loss of awareness of healthy habits that lead to malnutrition diseases, especially obesity and weak immunity, which many studies have acknowledged as one of the causes of corona infection and the delay in the healing process, and these results agreed with ***(Ghebreyesus, 2020; Khorsandi, 2020)*** who clear that since late 2019, the COVID-19 pandemic has expanded swiftly and widely over the world, posing serious threats to food security and nutrition.The spreading crisis has had an impact on food systems and has put people's access to food in jeopardy due to a variety of factors. We've seen not just a massive disruption in food supply networks as a result of the worldwide health crisis's lockdowns, but also a significant global economic downturn. These crises have led to decreased earnings and rising food costs, placing food out of reach for many people and jeopardising attempts to attain the Sustainable Development Goals (SDG) ***(Ghebreyesus, 2020; Khorsandi, 2020).***

The COVID-19 pandemic triggered a global economic recession which has resulted in a dramatic loss of income and livelihoods on a global scale ***(World Bank, 2020).*** Food security and nutrition have been severely harmed as a result of the loss of purchasing power among those who lost their jobs, particularly among those who were already poor. Those who work in the informal economy

are particularly vulnerable. In Latin America, for example, the informal sector employs more than half of the workforce. ***(FAO and CELAC, 2020).***

Table (9):
changes in food habits of participants during corona epidemic.

Parameters	males	females	Total
Change eating fruit			
dropped a little	(9) 29%	11%(7)	(16) 17%
dropped a lot	(0) 0%	0%(0)	(6) 7%
stay the same	(9) 29%	39%(24)	(35) 37%
slightly increased	(9) 29%	28%(18)	(24) 27%
increased a lot	(3) 14%	11%(7)	(6) 7%
Unavailable	(0) 0%	11%(7)	(6) 7%
Change eating vegetables			
dropped a little	(9) 29%	(10) 17%	(12) 13%
dropped a lot	(0) 0%	(0) 0%	(3) 3%
stay the same	(17) 57%	(32) 50%	(44) 47%
slightly increased	(4) 14%	(14) 22%	(22) 23%
increased a lot	(0) 0%	(7) 11%	(12) 13%
Unavailable	(0) 0%	(0) 0%	(0) 0%
Change meat quantity			
dropped a little	(4) 14%	(7) 11%	(12) 13%
dropped a lot	(0) 0%	(4) 6%	(7) 7%
stay the same	(22) 71%	(45) 72%	(32) 67%
slightly increased	(4) 14%	(7) 11%	(12) 13%
increased a lot	(0) 0%	(0) 0%	(0) 0%
Unavailable	(0) 0%	(0) 0%	(0) 0%
How often you eat fish per week?			
Once	(9) 29%	(28) 44%	43%(40)
twice	(12) 43%	(21) 33%	33%(31)
Not once	(0) 0%	(0) 0%	3%(3)
Sometimes	(9) 29%	(14) 22%	20%(19)
more than twice	(0) 0%	(0) 0%	0%(0)
How often you drink milk?			
once a day	29%(9)	33%(20)	40%(37)
Twice a day	14%(4)	17%(11)	20%(19)
More than twice a day	14%(4)	6%(4)	7%(7)
Not once	0%(0)	22%(14)	20%(19)
once a week	43%(13	22%(14)	13%(11)
The amount of sugar used to sweeten drinks, including tea			
became less	(9) 29%	(18) 28%	(31) 33%
increased	(0) 0%	(0) 0%	(3) 3%
as it is	(21) 71%	(45) 72%	(59) 63%

Which of the following statements best describes the food eaten in your home in the past week?			
You had enough types of foods to eat			
You all had enough to eat, but not always the kinds of food you wanted			
Sometimes you don't have enough to eat	(13) 43%	(34) 56%	(49) 53%
	(9) 29%	(21) 33%	(22) 33%
You often do not have enough food	(4) 14%	(4) 6%	(11) 7%
	(4) 14%	(4) 6%	(11) 7%
In general, how do you feel about your current financial situation compared to what it was before?			
I'm much worse off	(4) 14%	(7) 11%	(9) 10%
I'm a little worse off	(4) 14%	(14) 22%	(16) 17%
I'm almost the same	(18) 57%	(31) 50%	(46) 50%
I'm a little better off	(4) 14%	(11) 17%	(22) 23%
I'm much better off	(0) 0%	(0) 0%	(0) 0%

Confidence Interval 95%=P≤0.05. Values are expressed as number and percentage (n (%))

More than the equivalent of 400 million full-time jobs were lost in the second quarter of 2020, according to the International Labour Organization (ILO), with a number of governments adopting lockdown measures***. (ILO, 2020).*** Developing countries have been particularly hard hit, as they were already in recession by late 2019. ***(UNCTAD, 2020).*** In 2020, global growth is anticipated to plummet, with forecasts ranging from 5% to 8% ***(IMF, 2020; OECD, 2020).*** Global remittances a major source of finance in developing countries is expected to drop by around 20 percent ***(World Bank, 2020).*** According to World Bank estimates, an additional 71 to 100 million people are likely to fall into extreme poverty as a direct consequence of the pandemic by the end of 2020 ***(World Bank, 2020).*** According to the World Food Programme, the crisis would cause an extra 130 million people to be hungry, virtually double the current figure of 135 million ***(Khorsandi, 2020).*** Extreme hunger hotspots have already started to appear. As the UN reports, some 45 million people have become acutely food insecure between February and June 2020, mainly located in Asia and Sub-Saharan Africa ***(UN, 2020).*** Food producers' and food system employees' livelihoods have been further harmed when food consumption has decreased owing to diminishing incomes: Food systems are expected to lose 451 million jobs, or 35% of their total formal employment, according to estimates ***(Torero, 2020)*** Similarly, the United Nations believes that the epidemic has put approximately a third of the world's food system's livelihoods in danger ***(UN, 2020).***

Laboratory analyses for the participants (males and females), for some chemical analyses that were used to diagnose corona.

Data in table (10) observed that significant decrease in haemoglobin g/dl in all groups (All patient, males and females which mean±SD was 11.41±1.77, 12.37±1.68 and 10.44±1.22 respectively on the other hand, results indicated significant increases P≤0.05 in ferritin, D-Dimer, WBC, LDH, GPT, GOT, ESR^{st} and ESR^{nd} in all groups (All patient, males and females and these findings had agreed with ***(Lippi et al., 2020; Lagier et al., 2020)*** who discovered that the white blood cell count in COVID-19 individuals can fluctuate. Leukopenia, leukocytosis, and lymphopenia have all been reported, while lymphopenia appears to be the most prevalent. Lactate dehydrogenase and ferritin levels are frequently increased, and elevated aminotransferase levels have been seen as well. Many patients with pneumonia have normal serum procalcitonin levels when they are admitted; however, those who require ICU care are more likely to have increased levels. Death has been linked to higher D-dimer levels and more severe lymphopenia. Additional laboratory tests, such as the complete blood count (CBC) and biochemistry, are usually nonspecific. Frequently, the leukocyte count is normal or low. There could be lymphopenia; a lymphocyte count of less than 1.000 has been linked to serious illness. In most cases, the thrombocyte count is normal or slightly low. CRP and ESR levels are usually elevated, although procalcitonin levels are usually normal. A high procalcitonin level could indicate a bacterial illness. The levels of ALT/AST, prothrombin time, creatinine, D-dimer, CPK, LDH, myohemoglobin, and ferritin may be raised, and these elevated levels may be linked to severe disease. ***(Zhou et al., 2020; Shen et al., 2020; . Huang et al., 2020).*** D-dimer levels that are higher and lymphopenia that is more severe have been associated to death. ***(Chen et al., 2020a).***

Table (10):
Laboratory analyses for the participants (males and females), for some chemical analyses that were used to diagnose corona.

Parameters	Males(n=30)	Females(n=40)	Total	Reference ranges
Ferritin(ng/mL)	171.45±119.44	134.88±157.96	166.70±142.96	(13-150)
D-Dimer(ug/ml)	1.03±1.29	1.07±1.33	1.05±1.30	(Up to 0.50)
HB(g/dL)	12.37±1.68	10.44±1.22	11.41±1.77	Men (13-18) Women(12-15.5)
HCT %	42.48±10.29	38.40±6.39	40.44±9.01	(35-45)
MCV(fL/cell)	80.62±7.24	76.63±28.81	78.63±21.10	(80-100)
MCH(pg/cell)	27.02±2.57	26.32±3.89	26.67±3.34	(27-34)
MCHC(g/dL)	32.43±2.67	30.85±5.41	31.64±4.34	(32-37.9)
RBC(10 12/L)	5.08±0.5±9	4.72±0.57	4.90±0.58	(3.8-5.1)
WBC(10 9 /L)	8.93±3.52	9.27±3.67	9.10±3.61	(4.5-10)
PCV%	39.43±33.91	26.67±20.43	33.05±28.75	Men (40-50) Women (37-47)
LDH(U/L)	310.50±152.05	291.40±103.32	300.95±130.36	Up to 250
Neutrophils%	55.80±13.65	58.12±18.32	56.96±16.20	(35-80)
Lymphocytes%	38.16±11.91	33.30±13.85	35.73±13.15	(18-44)
Monocytes%	7.49±2.60	8.95±6.98	8.22±5.32	(0-10)
Eosinophils%	2.46±1.63	1.49±1.29	1.97±1.55	(0-3)
Basophiles%	0.35±0.35	0.24±0.34	0.30±0.35	(0-1)
GPT (U/L)	63.00±28.11	54.27±33.84	57.29±26.64	(0-33)
GOT(U/L)	56.47±18.65	38.5±13.62	46.25±35.24	(0-32)
ESR^{st} (mm in 1 hour)	54.67±33.24	25.75±60.26	38.14±41.24	Less than12
ESR^{nd}	108.35±111.00	44.25±24.71	71.85±61.41	Less than12

Values denote arithmetic means ± Standard error of the mean P≤0.05. (Reference ranges to ***Villatoro and To, 2018).***

Conclusions

In this research, most of the participants were middle-income and low-income people, which had an impact on the choice of food quality. Most of the participants also suffered from being overweight, especially women, which may be due to conditions of closure and social isolation, or as a result of feeling stress and anxiety, as well as a decrease in physical activity and bad habits of food and other unhealthy things such as not eating three meals a day, sleeping late, drifting behind food advertisements and eating at night, All of these things had their impact on malnutrition diseases and weak immune system, which makes individuals more vulnerable than others to disease and delayed recovery, especially the corona epidemic. Therefore, we recommend conducting more studies on the subject, while recommending the need to spread healthy food culture and healthy habits through various means of communication within the community.

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دراسة ميدانية عن العلاقة بين فيروس كورونا المستجد (كوفيد-19) والتغذية عند بعض المتعافين (دراسة مقارنة)

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قسم الاغذية الخاصة و التغذية - معهد بحوث تكنولوجيا الأغذية – مركز البحوث الزراعية - جيزة - مصر

الملخص العربي

كان الهدف من هذه الدراسة هو معرفة دور وأهمية التغذية أثناء وبعد التعافي من مرض كوفيد -19 من خلال دراسة عينة من المصريين الذين تزيد أعمارهم عن 18 عامًا ، وقد تم إجراء هذا البحث باستخدام مخطط منظم (استبيان) للحصول على المعلومات المتعلقة بالصحة و الوضع الاجتماعي والغذائي وأهميته في مواجهة فيروس كورونا لجميع المشاركين من الذكور والإناث. كان المشاركون (ن = 93) معظمهم من النساء (68٪). قال جميع المشاركين تقريبًا (66٪) أن دخلهم تأثر بفيروس كورونا وأن الذكور كانوا أكثر تضررًا من الإناث بنسبة 75٪ و 69٪ على التوالي. كان متوسط مؤشر كتلة الجسم (BMI) لمجموعة النساء أعلى من مجموعة الذكور بمتوسط 32.25 و 29.05 على التوالي. على وجه التحديد ، شهد 47٪ من المشاركين تناول الفيتامينات والمكملات قبل الإصابة وبعدها. ومن هذه الفيتامينات والمكملات فيتامين سي والزنك والحديد وفيتامين د والمكملات المناعية والكالسيوم وغيرها. أفاد 77 ٪ من المشاركين أنه تم تغيير نظامهم الغذائي واستهلاكهم للطعام بعد التعافي من COVID-19. كما أظهرت النتائج انخفاضاً معنوياً في عدد الحالات التي استمرت في ممارسة النشاط البدني.

الخلاصة : تلعب التغذية دورًا مهمًا في مرحلة الإصابة وكذلك مرحلة ما بعد الشفاء لهذه الحالات المصابة بـ -COVID 19. ونستنتج أن تناول العناصر الغذائية من قبل الحالات مثل الزنك وفيتامين ج ود والمغذيات الأخرى ضرورية لدعم المناعة والحفاظ على الوزن وممارسة النشاط البدني كان له تأثير كبير على الوقاية أو التعافي أو مرحلة ما بعد الشفاء.

الكلمات المفتاحية : كوفيد19- التغذية - الاشخاص المتعافين.