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Healthy Nutrition for Corona Virus Patients with Chronic Diseases: A Nutritional Interview in Tobruk, Libya

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Abstract:

This study is to know the association between chronic diseases and infection by corona virus in adults with chronic diseases and to explain healthy nutrition for solving COVID-19 outbreak crisis in Tobruk city. 240 cases (130 females and 110 males) aged (30-80) years were collected from Al-Hayat Center, Tobruk, Libya. All corona virus patients were diagnosed with chronic diseases including hypertension, diabetes mellitus, cardiovascular and kidney diseases. The nutritional questionnaire study was performed from 1 April to 30 November 2020. The questions were presented to the patient's closely relatives due to the inability to communicate with them because of their serious health conditions. 7.1 % of patients were less than 30 years old whereas, 23.2% were older than 70 years old. This provides a suggestion that chronic diseases increase susceptibility to the corona virus. Also corona infection increases with age. Among 240 cases, 36 (15%) patients infected with corona virus were died. About 19 (8%) were males and 17 (7%) were females. There was no significant statistically difference (P = 0.355) between died males and females from corona infection. Among interviewed corona virus patients, there were patients diagnosed with hypertension (51%) and diabetes mellitus (36%) followed by cardiovascular diseases (9%) and kidney diseases (4%). There was no significant statistically difference (P = 0.319) between patients and their chronic sickness. Men are less interested in healthy nutrition than women and all men smoke. All patients drink at least 1 liter of water daily and did not make exercises and sleep irregularly.

Keywords: Corona Virus, Tobruk, Libya, Nutritional Questionnaire Study, Chronic Diseases.

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Introduction

Hearty nutrition is very vital before, through and after infection with corona virus. Although no diet or dietary, supplements can stop COVID-19 infection. However, maintaining healthy nutrition is significant for sustaining a strong immune system against corona infection [1]. Corona virus or "COVID-19" considers a new viral serious acute respiratory condition since December 2019 [2, 3] and had reported as an infection stands for the main deadly disease on the world after H1N1 flu in 1918 [3, 4]. COVID-19 quickly became a threat to global public health. Additional understanding of SARS-CoV-2 virus's epidemiology and risks awareness of the community may lessen the impact and extend of COVID-19. The disease moves from mild upper respiratory symptoms to serious viral pneumonia linked by loss of taste and smell and respiratory distress [3, 5]. The virus infects all ages; but old people have got severe symptoms, especially patients previously diagnosed with chronic diseases [6]. The risks associated with corona virus and mortality includes old age, cardiovascular illness, diabetes mellitus, hypertension, chronic lung and kidney diseases [7]. For example, hypertension should be set

in consideration for individuals infected by Covid-19 [8]. Numerous researches have documented that chronic respiratory and cardiovascular diseases are connected with worse symptoms following infection [9]. These chronic diseases represent risk factors for people infected with COVID-19 and have been the main foundation of loss especially in the old individuals in developed countries [10]. Recognition all risk factors associated with COVID-19 patients will affect the continued existence of individuals with chronic diseases [11]. The main issue can enlarge the corona disease's risk is the bad diet. Therefore, healthy foods help encouraging human health, maintaining the immune system and keeping the corona virus infection as little as possible. Well nourishment diet is consumed for growth of tissues. As a result, having a quantity of fruits, vegetables, fibers and antioxidants may remain a healthy body and diminish infection with COVID-19. Theses food constitutes assist corona virus patients diagnosed with chronic diseases acquire the true diet to fight the infection. Also, fruits and vegetables contain great quantity of vitamins, minerals and antioxidants, which supply a healthy weight and may reduce the risk of infection, particularly in the start of the infection [12, 13]. The human respiratory system also offers natural protection, such as the mucous membrane and cilia in the lining of the airways, which impede corona virus from sticking to cell surfaces and make easy their expulsion by coughing, but smoking, chronic diseases and old age reduce those capabilities. As for the acquired immune system, it is constantly evolving and adapting (acquired) to each time it is exposed to pathogens that may invade the body at intervals and under successive conditions [9, 12, 13]. Besides, frequent significant trainings together are essential to protect from corona virus infection in elderly with chronic diseases such as doing exercises, having a high-quality diet program, avoid smoking (especially after meal), keeping away from alcohol use and not skipping breakfast, control weight for obese people are recommended [12]. This study is to identify the relationship between chronic diseases and infection by corona virus in adults with chronic diseases and to give details about healthy nutrition for solving the COVID-19 outbreak crisis in Tobruk, 1ibya.

Material and Methods

A Nutritional Questionnaire Study

Data of 240 adult cases (130 females and 110 males) were obtained from Al-Hayat Center, Tobruk, Libya. Among 130 females, there were 2 pregnant women. All the cases were diagnosed with chronic diseases and infected with corona virus. The 240 patients aged from 30 to 80 years and had chronic history of diseases including hypertension, diabetes mellitus, cardiovascular diseases and kidney diseases. The nutritional questionnaire study was performed on relatives of 240 patients from 1 April to 30 November 2020. The questions were presented to the patient's closely relatives due to the inability to communicate with them because of their serious health conditions during the study period. This nutritional survey study assists the researchers to find out clarifications and healthy nutrition to solve the COVID-19 outbreak crisis in Tobruk city. The time of interview was 15 minutes. Each patient's relative individually interviewed. All corona virus patients with chronic diseases were notified about the research plan. No patient refused our aim for this study. Participant's confidentiality and secrecy were insured by using codes instead of names for any personal identifier of the participants. Participants were asked to report their dietary habits and living regular routine through one year prior to getting hurt corona virus infection. Data was collected on a form (questionnaire) during the interview. The questionnaire was directed to relatives of patients with severe symptoms of corona virus. They were asked to detail the nutritional habits of patients before getting hurt COVID-19. Also, the questions were focused on chronic disease history and life style factors including eating fast foods or meals from restaurants, eating fruits and vegetables, drinking valuable amount of water, as well as types of foods mostly consumed.

Ethical Considerations

This study protocol was approved by the ethics committee of the Scientific Research Center in Tobruk University. All patients diagnosed with COVID-19 virus were informed about the research and gave their verbal consent to fill the questioner form.

Statistical Data Analysis

Descriptive statistics were performed using SPSS Statistics Software Program (version 20, Inc., Chicago, Illinois, USA). The Pearson Chi-Square test was used to assess the significance of the association between patients being diagnosed with chronic diseases and infected with corona virus. In all tests, $\alpha < 0.05$ was regarded statistically significant. All confidence intervals (CIs) were calculated at the 95% level of statistical significance. The adjusted odds ratio (AOR) was used to determine the magnitude of the independent variables *P*-value <0.05 was considered statistically significant. Graphs and percentage formulas of patients diagnosed with chronic diseases and infected with corona virus were calculated using Microsoft office excel 2020 program.

Results and Discussion

Nutritional Review versus Age and Gender

Approximately, relatives of 240 cases (130 females and 110 males aged from 30 to 80 years) were subjected in this study for a nutritional questionnaire study during seven months from 1 April to 30 November 2020 in Tobruk, Libya. The questions were presented to the patient's closely relatives by reason of the inability to speak with patients whose have severe corona symptoms. Participants were asked about their age and previous history of chronic diseases. The results showed that all corona virus cases included in this study were diagnosed with chronic diseases. Approximately, 7.1% of patients were less than 30 years old, whereas 23.2% were older than 70 years old Table (1). There was statistical significant outcome with age using Pearson Chi-Square test (P = 0.002). A previous study implied that corona virus cases diagnosed with chronic diseases aged ≥60 years required extensive disease courses compared with those aged <60 years. [14] This gives an indication that chronic diseases increase susceptibility to the corona virus. The older they are, the more infected they are with the corona virus. An earlier study evaluated the effect of age on overcome the symptoms of COVID-19. Thus young patients are more resistance to the ferocity of corona symptoms than older patients who have other chronic diseases [15].

Table 1: The Age Groups of Interviewed Corona Virus Patients Diagnosed with Chronic Diseases in Tobruk, Libya from 1 April to 30 November (n =240).

Age Group	Frequency	Percentage %
20 - 29 years	17	7.1
30 - 39 years	28	11.7
40 - 49 years	35	14.6
50 - 59 years	51	21.3
60- 69 years	53	22.1
70 - 80 years	56	23.2
Total	**240**	**100.0**

Along with 240 interviewed corona virus patients diagnosed with chronic diseses, there were approximately 130 females (54%) and 110 males (46%) Table (2). Women diagnosed with chronic diseases are almost 8.3 % more likely than men to infect with corona virus. There was no a statistically significant association between males and females for getting infection with COVID-19 (P= 0.298). This indicates that corona virus can affect both gender, but women are more likely to develop disease's risks than men.

Table 2: Gender of Interviewed Corona Virus Patients Diagnosed with Chronic Diseases in Tobruk, Libya from 1 April to 30 November (n =240).

Gender		Percentage %
Males	110	45.9
Females	130	54.1
Total	240	100.0

Nutritional-Based Interview and Chronic Diseases History

The present questionnaire study was achieved on about 240 interviewed patients diagnosed with corona virus and having a history of chronic diseases especially, hypertension (51%) and diabetes mellitus (36%) followed by cardiovascular diseases (9%). Moreover, 4% of patients have history with kidney diseases Table (3). This is consistent with a prior scientific study reported that the most common chronic disease among patients infected

with COVID-19 was hypertension 47.2% followed by diabetes mellitus (32.8%) and heart disease (27.5%) [14, 16]. There was no significant statistically difference (P = 0.319) between patients and their chronic sickness. A prior scientific work indicated that hypertension be supposed to put in consideration for human beings infected with corona virus [8]. Also, other studies illustrated that chronic cardiovascular diseases are connected with worse symptoms for corana virus patients [9].

Table 3: Distribution of Patients Diagnosed with COVID-19 According to their Chronic Diseases.

Chronic Diseases	Frequency	Percentage %
Hypertension	123	51
Diabetes Mellitus	87	36
Cardiovascular Diseases	21	9
Kidney Diseases	9	4
Total	**240**	**100.00**

Along with 240 interviewed corona virus patients with chronic diseases, 39 men (16.3 %) were eating loads of red meat, fast foods and fried potatoes. While 16 men (6.7%) rarely eating red meats, fast foods and fried potatoes, but they mostly eat chicken and fish. In comparison, 25 women (10.4%) were eating loads of red meat, fast foods and fried potatoes. Whereas 29 women (12.1%) not often eating red meats, fast foods and fried potatoes, but they generally consume chicken and fish. Moreover, there is an apparent involvement between living way, dietary customs and chronic diseases. The permanent utilize of red meats (particularly fast foods) such as beef and lamb, processed meats and saturated fats may negatively affect human health and elevate the risk of chronic diseases [10]. Investigators in the past explained that diet may influence positively on health of all corona virus patients [12]. High-fibers rich foods including whole grains, raw vegetables and fruits, foods containing proteins such as milk, fish, sea foods, tree nuts and selenium and zinc rich foods may enhance antioxidants and anti-inflammation production to positively recover from COVID-19 [12, 20]. As well, results show that 37 men (15.4%) were rarely consumed fruits and vegetables whilst, 18 (7.5%) men were mostly consumed fruits and vegetables. In contrast, 29 women (12.1%) were rarely consumed fruits and vegetables whilst, 47 (19.5 %) women were mostly consumed fruits and vegetables Figure (1). This indicates that men are less interested in healthy nutrition than women.

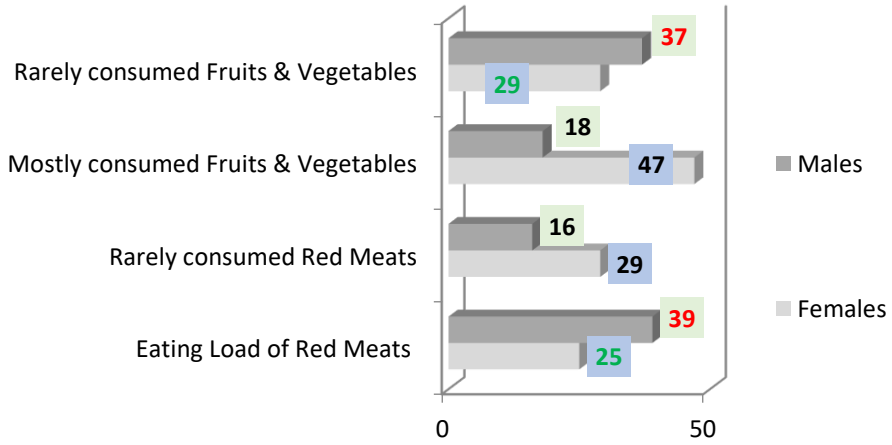

Figure 1: Nutritional Habits of Corona Virus Patients with Chronic Diseases (n=240).

Further, this study demonstrated that all patients were probable to drink at least 1 liter of water per day. To improve health, people infected with corona virus should swallow a lot of liquids and drink 1 to 2 liters of water every day and consume warm soups and various raw fresh vegetables and fruits without peel such as carrots, tomatoes, citrus fruits, apples, grapes and strawberries. [13] Also, this study finds that all interviewed males smoke. A past work reported that most Libyan men were cigarette smokers [17]. Also, all the interviewed patients did not make exercises and sleep irregularly.

Mortality of Interviewed Corona Virus Patients with Chronic Diseases

Corona virus leads to airborne sickness and considers as the largest pandemic in the world after H1N1 flu [11]. Among interviewed 240 corona virus cases with previous history of chronic diseases, around 36 (15%) patients were died Figure (2). While the others 204 (85%) have recovered from infection with COVID-19. Of 36 died patients, about 19 (8%) were males and 17 (7%) were females. In addition, amongst 204 cases recovered from corona infection, there were 141 (69%) males and 63 (31%) females. A previous study implied that corona virus patients with chronic disease history were mostly connected in-hospital mortality, particularly patients aged 70 years or over for males or 80 years and over for females [18]. There was no significant statistically difference (P = 0.355) between died males and females from corona infection. This point to that COVID-19 poses a threat to life of both males and females. Previously, a scientific work detailed that COVID-19 considered as the major foundation of death, especially elderly in developed nations [10]. However, one of the important observations found by this study is that mortality increases in the elderly whose ages range from 60 and over. Chi- Square Test exhibits a significant statically difference (P = 0.001) between young and elderly in overcoming the corona virus. Many researchers stated that elderly patients may die after infection [15]. Another study implied that older patients had lower levels of lymphocytes than younger patients. Lymphocytes are generally raised in reply to viral infections, but are abnormally diminished in severe acute respiratory syndrome (SARS) and COVID-19 [14, 19].

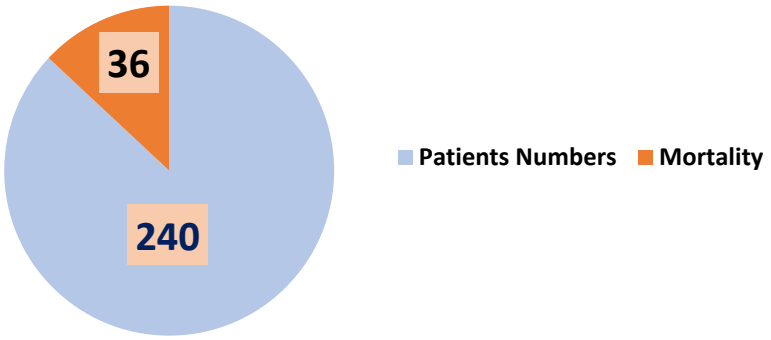

Figure 2: Total Numbers of Patients with Chronic Diseases and Infected with COVID-19 and Mortality.

Conclusion

Extra realizing the epidemiology and threat of the corona virus on public health is important to lessen the force and extend of COVID-19. It would be suitable to clearly evaluate COVID-19 patients, mainly for the chronic diseases. Chronic diseases such as hypertension, diabetes mellitus, cardiovascular and kidney diseases increase susceptibility to the corona virus. The older patients were mostly infected with corona virus. Therefore, specific attention should be paid to elderly corona virus patients more than 60 years old and above who have chronic diseases. Healthy nutrition is considerable for improving a strong immune system against corona infection. Men are less interested in healthy nutrition than women and all men smoke. All patients like to drink at least 1 liter of water per day and they did not make exercises and sleep irregularly.

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