Challenges of the Vegetable Production and Distribution Industry during the COVID-19 Pandemic

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Abstract

Background: Recently, there are many concerns about the health consequences of COVID-19 as well as the global food supply. For this reason, assessing the impact of pandemic effects on the vegetable chain is critical to set policies to ensure an adequate supply of vegetables.

Methods: In this study, major centers of processing and distribution of vegetables in various areas of Tehran have been studied. In the first phase, the status of the hygienic behavior of 192 staff of these centers in the COVID-19 pandemic, and in the second phase, the challenges of these centers were assessed. Data were collected through completing questionnaires, observation, and interviews with staff and statistically analyzed using SPSS. The relationship between independent (demographic characteristics) and dependent (behavior) variables were analyzed using multivariate logistic regression analysis.

Results: In the first quantitative phase, up to 51% of the respondents had a good hygienic behavior towards various aspects of the preventive measures. The behavioral mean scores were significantly related to educational level (p <0.05). Findings of the qualitative phase revealed that the outbreak of COVID-19, quarantine, and social distance measures to prevent transmission of the COVID-19 virus have not disrupted the vegetable supply chain, but it was observed that vegetable distributors and manufacturers have suffered the most from declining sales and after that, due to price volatility during the epidemic which is mostly due to lock-down.

Conclusion: In general, the current economic situation may seriously impair the livelihoods of disadvantaged groups. Although most staff at vegetable centers follow the safety measures of using masks, these results show that this part of the population that is in continuous contact with different persons have not taken COVID-19 disease seriously.

Keywords: safety; vegetables production and distribution; COVID-19; sanitation; policy

Introduction

Good nourishing is critical to keep up a healthy immune system versus a disease [1]. Both supplement intake and occurrence of the ailment typically, influence the dietary status of individuals [2]. Insufficient diets and infectious disease can prompt severe malnutrition. Certain factors, e.g., lifestyle, sex, age, health status, and prescriptions influence the nourishing status of a person. Optimal nourishment strengthens the immune system through cell actuation, gene expression, and signaling molecule alteration. Furthermore, different dietary patterns are determinants of gut microbial structure and consequently form the immune responses [3]. Thusly, the current conditions of the COVID19 pandemic suggest that the main reasonable approach is to improve the immune system. In the current scenario, a new set of challenges forces the person to maintain a healthy diet [1]. Therefore, it is necessary to consume certain types of foods that can improve the immune system to combat Coronavirus 2019 (COVID-19), like fresh vegetables, fruits, whole grains and, meat [4].

One of the most important concerns of consumers is the food hazards caused by COVID-19, the possibility of contamination of food or food packaging with the virus (5, 6). Foodborne transmission of COVID-19 should be considered. Studies on different viruses have shown their endurance on the surfaces of food items or surfaces in contact with contaminated food [7, 8]. This threat ought to likewise be considered for...
COVID-19. As of now, EU Commission has been emphasized that the utilization of contaminated packaging by the staff may build the hazard for the buyers such as a so-called epidemic [9].

Food production is viewed as a fundamental service part and, in principle, could not be stopped due to COVID-19 lockdown [10]. The COVID-19 pandemic has compromised production chains and has put nations on alert for providing potential food supply emergencies in the world [11]. Around the world, food production and utilization are increasingly enhanced by more consideration. Therefore, there is an expanding worry due to production limitations, concerns are growing to meet the global demand for food [12]. The COVID-19 outbreak is starting to upset food value chains, affecting households' livelihoods and diets. These impacts are probably going to hit farmers and consumers, however, they are not yet surely known [13].

COVID-19 is bringing remarkable health and economic emergencies. It is important how the COVID-19 pandemic affect the vegetable sales and production industry, the challenges faced by food producers, and what may be considered an opportunity post-pandemic [14]. Demand for ready to eat food from foodservice markets has increased significantly, and factories have moved to more food processing and preparation in Iran. However, sales have declined due to public fears that restaurants are affected and restricted religious ceremonies, celebrations, and parties. Undoubtedly, COVID-19 is not only a public health issue but also a food issue [14].

While some activities are required to combat the spread of the illness, they are probably having significant impacts on vegetable producers and distributors. Therefore, in this study, behavioral changes due to COVID-19 have been investigated in the distribution, supply, and commercialization/sale of vegetables in Iran. Also, the challenges confronting the vegetable chain is discussed in the midst of the COVID-19 pandemic.

Methods

Study Design and Population

This is a cross-sectional, mixed-method study on workers, quality managers, and factory production managers (>18 years old) in the vegetable industry. Centers of vegetables processing and distribution in Tehran were selected randomly (53 greengroceries and fresh vegetable markets, 41 ready-to-cook vegetable shops, and 3 ready-to-cook vegetable factories). Questionnaires were developed based on the implementation of Interim Guidance for Businesses and Employers Responding to Coronavirus Disease 2019 (COVID-19), May 2020.

Data collection

Quantitative data has been gathered by completing a questionnaire through face-to-face interviews and qualitative one during in-depth interviews from July to August 2020. Firstly, the questionnaire was completed through face to face interview with 192 staff of the centers of processing and distribution of vegetables. The study instrument established closed-ended questions and the respondents were given enough time to read, understand, and answer all the questions. The questionnaire was divided into two parts: the first questionnaire including gender, age, educational level, marital status, job, and medical conditions. The second part of the questionnaire consists of:

Questions about the symptoms of COVID-19, tests for COVID-19, symptoms presented in last two weeks, and type of hand sanitizer. This section of the questionnaire was assessed using a format of yes/no questions.

Eight 5-point Likert scale questions about behaviors related to COVID-19, in which the score of 1 to 5 was given from always to very rarely. A mean score of >30 was defined as a good practice and a score of <20 demonstrated a low practice and mean scores between 20 and 30 were defined a medium practice. The score range was between 8 (minimum) and 40 (maximum).

The qualitative phase was done by referring to the companies and centers of processing and distribution of vegetables. To determine the challenges of the vegetable industry, data were collected, mainly collected through a survey of several companies and centers of processing and distribution of vegetables [15], along with analysis of observations. Data obtained during visits while interviews were conducted with staff to provide an overview of existing challenges. First, data were obtained from interviews and observations to address the challenges of the companies and centers of processing and distribution of vegetables. Second, after the visits, the information from the interviews was supplemented with observations. The data was collected based on a survey of employees that ended with a visit to the company [16].

Validation and pilot study

The questionnaire was developed based on the CDC and WHO guidelines and reports on COVID-19 [17,18]. However, it had been adjusted and altered by a formerly distributed tool for evaluation of behavior toward the prevention of the pandemic. Before using the questionnaire, a pilot study was performed to evaluate its validity and reliability [9,19]. At first, three experts from Shahid Beheshti University of Medical Sciences were asked to assess the questions. Then, the final version was obtained after eliminating the disagreement among the researchers.

Ethical issues

The investigation was affirmed by the Ethics Committee of the National Nutrition and Food Technology Research Institute (NNFTRI), Shahid Beheshti University of Medical Sciences, Tehran, Iran (IR.SBMU.nnftri.Rec.1399.031). The anonymity of all respondents is guaranteed and all of them provided informed consent.

Data Analysis

Microsoft Excel 2016 was utilized to summarize and code demographic characteristics and responses to questionnaires. The collected data were analyzed using SPSS software (version 26.0). Data were reported as frequencies (n), proportions (%), and means ±standard deviations for variables. Chi-squared was performed to assess the relationship between variables and the relationship between independent (demographic characteristics) and dependent (behavior) variables were analyzed using multivariate logistic regression analysis. The p-value less than 0.05 was considered statistically significant.

Results

A total of 192 respondents who work in the green groceries and fresh vegetable markets (54.64%), ready-to-cook vegetable shop (42.27%), and
ready-to-cook vegetable factories (3.09%) of Tehran participated in this study. Characteristics of respondents are presented in Table 1. The majority of respondents were married (66.7%) and under diploma/diploma (78.1%). The survey included 37 (19.3%) women and 155 (80.7%) men in the age range of 18 to 73 years. Data showed that 3 (1.6%) of them were production managers, 15 (7.8%) were quality control managers, 174 (90.6%) were production line workers. Most of the respondents did not suffer from underlying diseases) and the frequency of cancer and cardiovascular disease was zero.

About 15% of the respondents claimed to be not aware of COVID-19 symptoms because of their illiteracy and lack of perceptions of the disease. Most respondents (96.9%) claimed to have displayed no symptoms of the disease in the past two weeks. The majority of respondents (82.3%) stated they had not a COVID-19 test and only 2 of them had formerly been infected with COVID-19 which had been treated. More than 40% of the respondents were using alcohol-based solutions for continuous disinfection of their hands. Due to the increase in the price of disinfectants during the outbreak of this disease, the type of disinfectant is directly related to the income of persons (Table 1).

### Table 1: Characteristics of participants in centers of processing and distribution of vegetables (n = 192)

| Variables | Always | Frequently | Occasionally | Rarely | Very Rarely | Total |
|-----------|--------|------------|--------------|--------|-------------|-------|
| Q1: How often do you wash your hands often with soap and water at least 20 seconds or hand sanitizer that contains at least 60% alcohol? | 41(21.4) | 75(39.1) | 34(17.7) | 28(14.6) | 14(7.3) | 192(100) |
| Q2: How often do you avoid touching your eyes, nose, and mouth with unwashed hands? | 51(26.6) | 76(39.6) | 43(22.4) | 15(7.8) | 7(3.6) | 192(100) |
| Q3: How often do you always cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow and do not spit? | 89(46.4) | 59(30.7) | 27(14.1) | 14(7.3) | 3(1.6) | 192(100) |
| Q4: During illness, if someone gets sick, do you put them in a separate room and ask that person to leave as soon as possible? | 89(46.4) | 71(37.0) | 17(8.9) | 11(5.7) | 4(2.1) | 192(100) |
| Q5: Do you avoid getting too close to people to maintain social distance until COVID-19 is out of control? | 56(29.2) | 57(29.7) | 35(18.2) | 27(14.1) | 17(8.9) | 192(100) |
| Q6: How often do you cover your mouth and nose with a mask when around others | 101(52.6) | 36(18.8) | 17(8.9) | 15(7.8) | 23(12) | 192(100) |
| Q7: How often do you stay at least 6 feet (about 2 arms’ length) from other people? | 49(25.5) | 47(24.5) | 44(22.9) | 34(17.7) | 18(9.4) | 192(100) |
| Q8: How often do you clean and disinfect frequently touched surfaces daily? | 29(15.1) | 45(23.4) | 77(40.1) | 31(16.1) | 10(5.2) | 192(100) |

The responses of the subjects towards behavioral questions about measures to prevent the spread of COVID-19 disease are shown in (Table 2).

### Table 2: Behavioral group

| Variables | Behavioral group | Total |
|-----------|-----------------|-------|
| Centers*  | Low | Medium | Good |       |
| Greengrocers | 12(18.5) | 29(44.6) | 24(36.9) | 65(100) |
| Fresh vegetable markets | 2(5.9) | 17(50) | 15(44.1) | 34(100) |
| Ready-to-cook vegetable shops | 2(4) | 18(36) | 30(60) | 50(100) |
| Ready-to-cook vegetable factories | 1(2.3) | 12(27.9) | 30(69.8) | 43(100) |
| Gender*   |       |       |       |       |
| Female | 1(2.7) | 9(24.3) | 27(73) | 37(100) |
| Male | 16(10.3) | 67(43.2) | 72(46.5) | 155(100) |
Most of the respondents had a positive behavior towards various aspects of preventive measures. Up to 21% were always washing their hands with soap and water for at least 20 seconds or hand sanitizer that contains at least 60% alcohol and 52% of the respondents always wore a mask. Workers in the greengrocers and fresh vegetable markets wore gloves from the beginning to the end of the work shifts but these gloves were rarely switched during work shifts and looked very dirty. Unfortunately, about 40% of the respondents occasionally clean and frequently disinfect the touched surfaces at the finish of the work shift every day. Generally, more than half of the respondents had good hygienic practices. Group, gender, educational level, and nationality were significantly associated with good practices \((p < 0.05)\) (Table 3). Behavioral questions of 3, 5, 6, and 8 were significantly associated with the gender of the respondents because women followed the health tips better than men \((p<0.05)\) (data have not been shown).

### Table 2: Relation between demographic characteristics of participants and their behavioral scores about COVID-19 in centers of processing and distribution of vegetables \((n=192)\)

| Educational level* | Illiterate | Under diploma/diploma | BSc and above | Total |
|--------------------|------------|------------------------|---------------|-------|
|                    | 4(30.8)    | 7(53.8)                | 2(15.4)       | 13(100) |
| Nationality*       |            |                        |               |       |
| Iranian            | 14(7.9)    | 68(38.2)               | 96(53.9)      | 178(100) |
| Afghan             | 3(21.4)    | 8(57.1)                | 3(21.4)       | 14(100)  |
| Total              | 17(8.9)    | 76(39.6)               | 99(51.6)      | 192(100) |

*Statistically significant at \(P < 0.05\).

Behavioral scores mean were divided into two levels. A mean score of >30 was completed as a good behavior and a score of <30 demonstrated a low behavior. The score range was between 8 (minimum) and 40 (maximum).

- **Variables**
  - **Centers**
    - Greengrocers (ref)
    - Fresh vegetable markets
      - OR (95% CI): 1.150 (0.466-2.835) \(P = 0.762\)
    - Ready-to-cook vegetable shops *
      - OR (95% CI): 2.341 (1.045-5.244) \(P = 0.039\)
    - Ready-to-cook vegetable factories
      - OR (95% CI): 3.309 (0.889-12.314) \(P = 0.074\)
  - **Gender**
    - Female (ref)
      - OR (95% CI): 0.687 (0.204-2.315) \(P = 0.544\)
    - Male
  - **Marital**
    - Single (ref)
      - OR (95% CI): 0.880 (0.380-2.038) \(P = 0.765\)
    - Married
  - **Nationality**
    - Iranian (ref)
      - OR (95% CI): 0.445 (0.105-1.888) \(P = 0.272\)
    - Afghan
  - **Job**
    - Production manager (ref)
      - OR (95% CI): 0.100
    - Production quality control manager *
      - OR (95% CI): 10.450 (1.928-56.637) \(P = 0.007\)
    - Production line worker
      - OR (95% CI): 1.754 (0.765-4.022) \(P = 0.185\)
  - **Age**
    - 18-25 years (ref)
      - OR (95% CI): 0.760
    - 25-35 years
      - OR (95% CI): 1.220 (0.464-3.207) \(P = 0.687\)
    - 35-45 years
      - OR (95% CI): 1.719 (0.603-4.905) \(P = 0.311\)
    - ≥ 45
      - OR (95% CI): 1.396 (0.419-4.652) \(P = 0.587\)
  - **Educational level**
    - Illiterate (ref)
      - OR (95% CI): 0.057
    - Under diploma/diploma
      - OR (95% CI): 15.385 (1.615-146.566) \(P = 0.017\)
    - BSc and above*
      - OR (95% CI): 3.295 (0.648-16.751) \(P = 0.151\)

*Statistically significant by Logistic regression analysis at \(P <0.05\).*
In Table 4, regression analysis revealed that the staff behavior about COVID-19 in ready-to-cook vegetable shops staff (OR = 2.34, 95% CI = 1.04–5.24, p = 0.04) and production quality control managers (OR = 10.45, 95% CI = 1.928–56.64, p = 0.007) is more likely better than others.

**The challenges of the vegetable markets and processor**

Respondents in the qualitative phase were employed part-time or full-time in the vegetable production process. All respondents claimed that vegetable sales have dropped significantly compared to last year. Since the outbreak of COVID-19, quarantine and social distance measures to prevent transmission of the COVID-19 virus have not disrupted the vegetable supply chain, but it was observed that vegetable distributors and manufacturers have suffered the most from declining sales and after that, due to price volatility during the epidemic which is mostly due to lockdown.

Based on interviews and observations in vegetable trading centers in all areas of Tehran, it seems that the following factors have reduced the sale of vegetables:

- People do not go to restaurants, cafes, etc. because of fear of getting infected with COVID-19.
- Some traders — especially older and wealthier ones — have implemented precautionary measures to prevent exposure to the virus that might have reduced the activity of their vegetable trade. Also, harvesting and transportation to the market are decreased because of the decrease in the demand of buyers and retailers and the expansion of retail costs of vegetables.
- The high cost of masks and disinfectants (which were initially extremely expensive and rare) was another challenge.
- Export is decreased due to closed borders.
- Import is decreased due to border closures and in addition, some countries have stockpiled some essential items and reduced their exports.
- Price is volatile.
- The sale is decreased due to the closure of many parts of the service sector, hotel and restaurant sector, tourism sector, etc. and on the other hand, the ban on holding parties and gatherings has led to fewer purchases.
- Due to unemployment and the inability of many households to buy, the trade and use of vegetables have decreased.

**Discussion**

The results of the present study on the behavior of employees of vegetable processing and distribution centers towards COVID-19 disease showed that half of the respondents had good hygienic practices but 39.6% had medium practices and 8.9% low practices. On the other hand, 39.6% of respondents had a medium practice and 8.9% of respondents had a low practice. Among the respondents, the mean behavior score was higher among those with more education working in ready-to-cook and ready-to-eat factories and shops.

**The staff behavior**

The food system is among one of the first sections affected by epidemic disease in the community. Most respondents in the present study did not have a virus test, but those with cold symptoms did undergo it. Although limited screening has been done, because of the insufficient income of these individuals, it is suggested that some tests and screening should be done routinely. It is noteworthy that about 80% of these sick persons possess only mild symptoms that these asymptomatic patients can act as “carriers” and also act as a reservoir for re-infection. For this reason, respondents were requested for their information on the symptoms of COVID-19, and the majority of respondents stated they were aware. The problem is more severe in patients with underlying diseases like cardiovascular disease and immunosuppression [20, 21].

There is unmistakable worry about food industry employees, who ought to be tested for COVID-19 to take out the potential risk of food contamination. In food handling and processing sections, including where food is just marginally prepared, tainted specialists may pollute food items. Furthermore, person-to-person transmission in sections where employees are in close contact with each other is another risk [9]. For this reason, the survey focused on people who were in direct contact with vegetables, i.e. workers. These persons possessed a remarkably elementary level of education, and many of them did imperfectly acknowledge the importance of the subject. So there is a significant relationship between social distance and education.

More than half of the respondents showed a generally good view toward measures taken to prevent disease transmission. They stated that they washed their hands frequently and restricted personal contact. Due to the mandatory wearing of the mask in Iran, respondents mostly used masks. Zhong et al., have reported that almost all respondents in their research wore face masks when coming out during the pandemic (22). As of late, the CDC suggested putting mask face covers for general society, particularly in crowded and enclosed areas (23). In general, because the fresh vegetable markets were so crowded, it was practically very difficult to observe social distance and in ready-to-cook vegetable shops and ready-to-cook vegetable factories, hygiene protocols were much better observed, but in greengrocers and fresh vegetable markets, which were much busier places, the protocols were much less observed.

The handling of food packages must be done after extensive hand washing or disinfecting to minimize any hazard from touching food exposed to COVID-19 disease [24]. In addition, the FDA proposed that disinfecting and cleaning of surfaces is a favored safeguard for food restaurants contrasted with ecological testing for COVID-19 [25]. Another necessary precaution to prevent the spread of the disease is to use an alcohol hand sanitizer. However, disinfectant information question data indicates that 41.7% of respondents use alcoholic solutions with different percentages of alcohol. However, frequently touched surface disinfection (>60%) and the use of a suitable hand sanitizer (>30%) do not provide a level of safety. These results could be used to impact vegetable sales, which during the virus spread note a marked decline in vegetable sales, and as a result of the rising cost of disinfectants, many centers could not afford to buy the appropriate disinfectants.

In addition to washing, disinfecting, and packing vegetables, it is suggested to exploiting a beam due to the COVID-19's sensitivity to UV. Routine
screening of workers is also very important and due to their insufficient income, help, and support from the government is needed. During the production, transportation, and supply of fresh vegetables, the necessary precautions should be taken and as far as possible, the vegetables should not be manipulated or kept to minimum conditions.

**The challenges of the vegetable markets and processor**

Scientists are finding the consequences of the COVID-19 crisis for humanity, the economy, and, consequently, food systems. Food researchers face many fundamental challenges, like ensuring food safety and food security (26). At least confronted with a situation of uncertainty and amidst a pandemic that threatens both the health and life of millions of people around the globe, it is challenging to measure the real impact of COVID-19 on Iran's vegetable industry. This study examined the challenges faced by the vegetable processing system during the COVID-19. As the performance of many protocols introduced by the Ministry of Health and Medical Education (2020) to prevent the further spread of COVID-19, the workers and employees of the centers followed them. It is possible to analyze the issues with a practical overview that these protocols are carefully observed among people who adhered to a limited view in terms of knowledge and health awareness during this period. These protocols will continue in the post-COVID-19 era, and in this regards, it has improved the level of awareness of people. At the beginning of the pandemic, the interest stun for food manufacturing originates from a sharp increment in the retail market and a marked decrease in foodservice interest for processed food. Numerous food processors flexibly send their completed food items to retailers, mass food fixing providers, and foodservice foundations. Public measures to address the health crisis can have both positive (retail) and negative (food service) effects on demand for processed foods.

Reducing exports of processed food due to the closing of the border is another challenge. Numerous nations have forced travel limitations, shut borders, and shut factories, disturbing worldwide exchange, and supply chains (27). The export market in Iran, in addition to the COVID-19 issue, is equally affected by sanctions. In the face of demand slumps from restaurant closures and slowdowns in exporting, because of border measures by some countries, many food processing companies will inevitably switch supply efforts from food service to retail channels. Vegetable exchange and utilization are decreased. There is less exchanging action in the vegetable discount market since the beginning of the COVID-19 emergency (28-30).

Assessment of vegetable chains in Ethiopia indicated an increase in farm losses, along with a lack of inputs and work, marked down maker costs for vegetables, however retail costs so far unaltered; and both vegetable exchange and utilization decreased (13). An investigation on retail costs in India found that these had expanded and afterward balanced out in India on a national level, yet this fluctuated by the specific kind of vegetable (31). Another study in India have also reported issues with discovering harvest work, transport to market, marked down interest by purchasers and retailers, and expanded retail costs for vegetables in various states (32). In a survey of different crop farmers in India, vegetable farmers have mentioned that their main challenge was waste and reduced consumption of nutrient-dense foods (33).

The COVID-19 pandemic has had and will keep on having impacts on vegetable processors. In this business, development in the retail market for processed food, a decrease in foodservice interest for processed foods, and reduced export and import activity have occurred. The overall impact of the disease on the economic activities of food processing and its gross domestic product depends on the magnitude and persistence of the consequences of COVID-19 on the economic activities of food processors, and initiatives and investors are committed to managing disruptions. Another challenge of these centers during the COVID-19 pandemic is the high price of masks and disinfectant that they have to provide for their employees daily. Because people were terrified of the outbreak and governments had taken the initiative to lock in, people began to buy daily necessities unusually, which is the principal explanation behind raising the cost of the basic wares.

For vegetable supply and distribution centers, the impacts of COVID-19 represent not the equivalent for all types of vegetables and varied for an assortment of elements including international exchange, seasonality, and simplicity of preparation, fresh and processed products.

One of the fundamental challenges in the vegetable industry obtains the potential effects of the epidemic on the livelihood of workers in vegetable processing and packaging centers or factories. This challenge was later transferred to the possible effects of the outbreak among workers on the farm or in the packaging and processing plants. The effects of COVID-19 on vegetable industry workers in 2020 have increased public awareness of the working and living conditions of these workers. Other challenges are related to more potential disruptions downstream of the supply chain. Notable among these challenges is the additional costs paid by food distributors and food retailers to guarantee the safety of employees and buyers, what's more, which this will mean for the design of these industries. These additional costs, combined with the significant presence of online food sales, can be particularly difficult for smaller food retailers that lack the resources needed to compete in these changing conditions.

**Conclusion**

With the spread of the COVID-19 in Iran, the end of this epidemic is not clear. Under these circumstances, recovery from illness is a major concern rather than examining the economic impact. In general, the current economic situation may seriously impair the livelihoods of disadvantaged groups. Lack of access to basic health care, health awareness, and social safety net are always problems for this group and increase the epidemic exponentially. It has been found that employees of vegetable processing and distribution centers have enough knowledge and information about COVID-19. But they did not take precautions so seriously that they may be tired due to the prolongation of the pandemic period. Although most employees of vegetable centers follow the safety measures of wearing a mask (due to the mandatory wearing of mask in Iran), there is an urgent need for hand disinfection, hand washing time, use of appropriate disinfection in the touched surface, observance of social distance. Therefore, this study is a worrying sign that the disease will spread in the future because these results show that this main part of society that is in constant contact with different persons, not taken COVID-19 disease seriously because of reasons like fatigue from the current situation.
Conflicts of interest:

The authors have no conflict of interest that might be perceived as affecting the objectivity of this publication.

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Ethical considerations: Ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Author Contribution

Concept and design: AR, SE, and FE, acquisition, statistical analysis and interpretation of data: AR, FMN, YS, drafting of the manuscript: FE, YS and AR, critical revision of the manuscript: FMN and FE, supervision: SE and FE.

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