CLINICAL CHARACTERISTICS, MEDICAL AND NUTRITIONAL MANAGEMENT OF NON-SEVERE HOME-QUARANTINED COVID-19 PATIENTS IN PAKISTAN: A RETROSPECTIVE STUDY

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Abstract

Background/Objectives: The majority of coronavirus-infected patients were reported to have mild symptoms and home treatment of these individuals was successful without considerable mortality. The purpose of the present study was to determine the epidemiological and clinical characteristics as well as treatment approaches, nutritional status, and outcomes of home-quarantines of non-severe CoViD-19 patients.

Methods: A total of 365 CoViD-19 non-severe patients with stable medical conditions were enrolled in the study. Data regarding clinical features such as symptoms, treatment regimen, dietary supplements, and impact on lifestyle was obtained using a standard questionnaire. Patients were continuously monitored by health care providers and their oxygen saturation levels were also measured.

Results: According to results, 76% were suffering from fever as an initial symptom, followed by cough (52%), muscle weakness (93%), dizziness (88%) and 5% of patients were asymptomatic. Commonly used medications were analgesics, antipyretics, antiplatelet drugs, bronchodilators, and vitamins. The important food sources utilized by CoViD-19 patients were vegetables, fresh fruits, fresh juices, animal-source foods, unsalted nuts, legumes and whole grains. The treatment duration varies depending upon the condition and immunity of the patients with an average recovery period of 16.7 ± 5.4 days.

Conclusion: The results proved that the management of non-severe CoViD-19 patients at home with close monitoring is an encouraging step for improving the health condition of the patients, lowering the number of admitted patients in hospitals and the fatality rate.

Keywords: Home-quarantine, CoViD-19, Non-severe Patients, Immunity, Nutrition, Epidemiology

Background and Significance

Coronavirus is one of the major pathogens that primarily target the human respiratory system. Previous coronavirus outbreaks such as severe acute respiratory syndrome (SARS-CoV) and Middle East respiratory syndrome (MERS-CoV) are considered "great public health threat agents" [1]. The new strain of coronavirus was named severe acute respiratory syndrome coronavirus-2 (SARS-Cov-2) and Coronavirus Disease-2019 (CoViD-19) by the International Committee on Taxonomy of Viruses (ICTV). World Health Organization (WHO) has regarded it to be more critical than the previous ones in terms of health threats and death ratio. The most prominent symptoms of the patients infected by the SARS-CoV-2 virus are dry cough, fever, production of sputum, airway congestion, shortness of breath, hemoptysis, diarrhea, and sometimes severe headache [2]. Loss of taste (ageusia) and smell (anosmia) have also been witnessed in many CoViD-19-positive cases as initial signs of infection. A mean incubation period of about 5 days is required for the appearance of CoViD-19 symptoms and an average duration of 14 days is considered for medical observation from initial exposure. This time duration is dependent on the age and immunity of the patient [3].

Upper respiratory tract infection is the foremost symptom predominant in SARS-CoV-2 infected patients. In the upper respiratory tract, disease may be asymptomatic or may appear with mild to moderate symptoms but severe cases may result in respiratory distress syndrome, septic shock and heart failure [4]. The SARS-CoV-2 induced lung damage is characterized by pathological changes of the tissue, hyperplasia and infiltration [5]. For better management, WHO has divided patients according to disease severity into three groups, with different proportions of patients in each group: critical (6.1%), severe (13.8%), and non-severe (80%) [6]. Patients with mild or no symptoms are recommended to quarantine at home in order to decrease virus transmission and avoid congestion inthe hospitals [7].

Pakistan so far has experienced three different waves of CoViD-19. The first wave of CoViD-19 began in late May 2020, reaching its peak in mid-June and declining back in mid- July. Death ratio began rising again, in early November 2020, culminating in the outrage of the second wave of CoViD-19. This wave was low in intensity and mainly affected the southern province of Sindh, achieving the highest morbidity rate by mid-December 2020. The third wave was initiated in mid-March 2021 affecting the provinces of Punjab and Khyber Pakhtunkhwa achieving its highest peak in late April 2021. Soon after clinical trials, the vaccinations of a number of companies were approved keeping limitations of age and doses. The researchers found that fully immunized participants are 25 times less likely to test positive for CoViD-19 than those who are not vaccinated. Research findings imply that vaccinated people are well protected from getting infected at all as well as they are also unlikely to spread the virus [8].

Like other airways viral infections, specific antivirals and non-etiotropic drugs such as acetaminophen (paracetamol) are being used in the treatment of early-stage and in mild to moderate infected patients of CoViD-19 to lower their fever, pain, and inflammation [9]. Suppression of immune system is a function of corticosteroids [10], so CoViD-19 patients might be treated with corticosteroids in order to improve severe symptoms and reduce the ratio of death. Proper nutritional status and diet of the patient is of prime importance especially in the corona patients since proper nutrition may help to boost up the immunity and reduce inflammation in such cases. Indeed, the underestimation of the importance of nutrition in CoViD-19 has drastically affected the recovery rate in these patients [11]. So, the present study has highlighted the epidemiological, demographical, clinical, and laboratory characteristics as well as the relation of the immune system, nutritional and therapeutic management with the recovery ratio of home quarantined non-severe CoViD-19 patients.

Methods

The survey was carried out to observe the home-quarantined non-severe COVID-19 infected patients having positive real-time reverse transcriptase–polymerase chain reaction (RT- PCR) test results, with symptoms like fever, dyspnea, cough, gastrointestinal and musculoskeletal (myalgia, joint pain, fatigue) abnormalities, psychological conditions and anosmia. According to WHO, patients who were either asymptomatic or had mild symptoms with oxygen saturation more than 94% at room air and clear chest X-ray were included in the non-severe CoViD-19 category. The study was started after taking ethical approval (TUF/IRB/001/2021) from institutional ethical review board of The University of Faisalabad, Faisalabad.

The patients included in the survey belonged to Lahore, Faisalabad and areas in the vicinity of Lahore, Punjab. An informed written consent was taken from all the participants. All cases were included on the basis of WHO criteria. Comprehensive medical assessment of patients was done by taking detailed history through telecommunication. Data regarding all clinical features such as symptoms correlated with CoViD-19, medical history, clinical treatment, intake of food with supplements and changes in lifestyle was obtained by using standard questionnaire from enrolment day till recovery between January 2021 to May 2021. The patients were contacted on regular basis to receive information and updates. Home-quarantined patients were also asked to communicate about any unexpected abnormalities in addition to receiving feedback about their medical conditions. During whole quarantine time, patients were continuously monitored particularly in terms of oxygen saturation level and counseled by health care providers.

Inclusion and Exclusion Criteria

The inclusion criteria were set as CoViD-19 positive cases with mild symptoms and asymptomatic individuals. Patients who were critical, CoViD-19 negative, younger than 14 years or older than 75 years, pregnant or breastfeeding women, or those who were not able to cooperate with the reporting of data on regular basis were excluded from the study.

Statistical Analysis

For continuous data, the results were expressed as mean ±S.D and the Mann-Whitney U test was used for comparison. Counts and percentages are the statistics for categorical variables and chi square test was used for comparison. Statistical significance was described as a P value less than 0.05.

Results
Epidemiologic, Demographic, and Clinical Characteristics of Non-severe CoViD-19 Patients

The epidemiologic and demographic characteristics of non-severe CoViD-19-infected patients are presented in Table 1. According to SARS-CoV-2 test results, 95% of patients were positive and 5% were asymptomatic in the initial stage. Asymptomatic patients were suffering from loss of smell and taste at first. Among 365 patients, 15% acquired infection from the hospital and most of them were above 6, 52 (14%) of 365 patients were healthcare workers, and 59 (16%) patients were in contact with family members and friends. The number of patients who got an infection from gatherings (clients, cleaning staff and rush areas) was 138 (36%). All these patients with non-severe symptoms were advised by medical practitioners to observe quarantine at home after CoViD-19 positive test and received appropriate checkup and medications according to signs and symptoms of the disease.

In the total population of 385 patients, the reported comorbidities are depression (7%), hypertension (13%), diabetes (15%) and asthma (4%). Most of the patients in age group 50-60 and above 60 years were already using antidiabetics, antihypertensives, NSAIDs and antiplatelet drugs. Individuals included in the study were having at least one or more of the following symptoms: fever (76%), myalgia (93%), dizziness (88%), loss of taste (45%), loss of smell (50%), sore throat (29%), dyspnea (13%), headache (29%), cough (52%), chest tightness (51%), diarrhea (24%) or vomiting

(4%). It was also observed that 10% of individuals were suffering from moderate symptoms as their oxygen saturation level dropped below 93%. Lab investigation of zinc and vitamin-D levels of all patients and cytokines and hematology reports in 10% of patients with moderate CoViD-19 symptoms played a crucial role in the interpretation of results.

Medical Management of Home-quarantined CoViD-19 Patients

Each patient included in the study received a combination of medications depending on signs and symptoms. Commonly used medications were analgesics and antipyretics like acetaminophen, NSAIDs (96%), Ivermectin (94%), antiplatelets (56%), antibiotics (5%), bronchodilators (beta-2-agonists 48%, leukotriene receptor antagonists 24%), vitamins along with trace elements (94%), and corticosteroids only in moderately infected patients. Major food elements utilized by corona patients were vegetables, fresh fruits and juices, animal source foods, unsalted nuts and legumes, unsaturated fats, and whole grains. The average recovery period was 16.7 ± 5.4 days. Actually, the treatment duration varied depending upon the condition and immunity of the patients.

Symptomatic Treatment of Non-severe CoViD-19 Patients

According to collected data, about 90% of patients with mild symptoms (fever, myalgia, and headache) received different antipyretic and pain-relieving agents including acetaminophen, and NSAIDs during the treatment period. Among 365 patients, 95% of the age group 15-24 years, 100% of age 25-30 years, and 91-100% of 31-60 years used analgesics and antipyretics as initial therapy. Some patients received medication in combination such as acetylsalicylic acid + clopidogrel, 20% of patients took only acetylsalicylic acid, 15% were treated with indomethacin, and 40% with acetaminophen. In mild to moderately CoViD-19-infected patients, the usual antiplatelet therapy including oral antiplatelet agents (Aspirin, clopidogrel) was continued for a minimum time duration of 8 days. The results also showed that 24% of patients suffering from mild symptoms of chest tightness used leukotriene inhibitors (LTIs) and 48% were treated with beta-2-agonists either alone or in combination with LTIs. Corticosteroids were used by 8% of CoViD-19 patients with moderate symptoms and 2% of patients received oxygen therapy under the monitoring of their healthcare provider (Table 1).

The incidence of diarrhea was 24% and diarrhea along with vomit was 4%. In 24% of patients, 6 were receiving antibiotics one month before infection, and 5 received antibiotics immediately after the CoViD-19 positive test. Gastrointestinal symptoms could also result in adverse effects of antibiotics. Frequently used antibiotics were ceftriaxone, cefepime, and azithromycin. General therapy for the treatment of diarrhea in these patients was oral vancomycin and metronidazole. These cases highlighted the importance of cautious use of antibiotics for secondary bacterial infection in patients with CoViD-19.

Table 1: Demographical, Epidemiological and Clinical Characteristics of Non-severe CoViD-19 Patients

Age	15-20 y (n=19)	21-25 y (n=41)	26-30 y (n=48)	31-40 y (n=56)	41-50 y (n=70)	51-60 y (n=67)	>60 y (n=74)	Total no of patients (N=365)	P value
Gender									
Male	9 (47.3%)	26 (53.4%)	28 (58.3%)	38 (67.8%)	34 (48.5%)	25 (43.8%)	46 (62.1%)	206 (56.4%)	0.152
Female	10 (52 %)	15 (36 %)	20 (41 %)	18 (32 %)	36 (51%)	32 (56 %)	28 (38 %)	159 (43%)	0.281
SARS-COV2 Nucleic Acid Test									
Positive	18 (95 %)	38 (93 %)	46 (96 %)	53 (95 %)	66 (94 %)	53 (93 %)	71 (96 %)	348 (95 %)	0.051
Suspected positive (asymptomatic)	01	03 (12 %)	01 (6 %)	03 (10 %)	04 (10 %)	03 (15 %)	04 (9 %)	19 (5 %)	0.041
Source of Infections									
Hospital	0	2 (4 %)	3 (6 %)	7 (12 %)	10 (14 %)	14 (24 %)	22 (29 %)	58 (15%)	0.184
Health care workers	1 (5 %)	1 (2.4 %)	3 (6 %)	4 (7 %)	14 (20 %)	17 (29 %)	12 (16 %)	52 (14 %)	0.096
Family members	5 (26 %)	5 (12 %)	8 (17 %)	9 (16 %)	11 (15 %)	8 (14 %)	13 (17 %)	56 (16%)	0.402
Friends	6 (31 %)	13 (31 %)	7 (14 %)	6 (10 %)	13 (18 %)	7 (12 %)	6 (8 %)	58 (16 %)	0.316
House Maids / Cleaning Staff	2 (10 %)	6 (%)	9 (18 %)	7 (12 %)	9 (12 %)	3 (5 %)	14 (18 %)	50 (13 %)	0.518
Clients	2 (10 %)	5 (12 %)	10 (21 %)	13 (23 %)	7 (10 %)	3 (5 %)	2 (2 %)	42 (11 %)	0.097
Rushy Areas	3 (16 %)	9 (22 %)	8 (16 %)	10 (17 %)	6 (8%)	5 (8 %)	5 (6 %)	46 (12 %)	0.815
Symptoms									
Fever	12 (68%)	30 (73%)	29 (60%)	42 (75%)	55 (79%)	36 (54%)	74 (7%)	278 (76%)	0.021
Dizziness	14 (77 %)	32 (78 %)	39 (81 %)	51 (91 %)	63 (90 %)	54 (95 %)	69 (93 %)	322 (88 %)	0.062
Myalgia	17 (89 %)	36 (88 %)	44 (92 %)	48 (86 %)	67 (96 %)	57 (100 %)	72 (97 %)	341 (93 %)	0.035
Loss of Taste	6 (31 %)	17 (41%)	27 (56 %)	27 (48 %)	31 (44 %)	22 (39 %)	35 (47 %)	165 (45 %)	0.517

Loss of Smell	11 (58 %)	23 (56 %)	29 (60 %)	28 (58 %)	33 (47 %)	19 (33 %)	38 (51 %)	181 (50 %)	0.631
Chest Tightness	7 (37 %)	21 (51 %)	19 (39 %)	26 (46 %)	34 (48 %)	29 (51 %)	49 (66 %)	185 (51 %)	0.02
Sore Throat	5 (26 %)	13 (31 %)	21 (43 %)	15 (27 %)	17 (24 %)	16 (28 %)	19 (5 %)	106 (29 %)	0.016
Shortness of Breath	0	3 (7 %)	3 (6 %)	5 (9 %)	2 (3%)	4 (6%)	9 (12%)	26 (6.3 %)	0.052
Headache	2 (11 %)	7 (18 %)	11 (22 %)	18 (32 %)	21 (30 %)	19 (33 %)	27 (36 %)	105 (29 %)	0.041
Diarrhea + Vomiting	0	3 (7 %)	2 (4 %)	1 (1 %)	0	3 (5 %)	6 (8 %)	15 (4 %)	0.216
Diarrhea	8 (42 %)	14 (34 %)	9 (19%)	11 (19 %)	16 (23 %)	13 (23 %)	17 (23 %)	88 (24 %)	0.033
Cough	7 (37 %)	28 (68 %)	33 (69 %)	28 (50 %)	32 (46 %)	26 (47 %)	35 (47 %)	189 (52 %)	0.417
Comorbidities									
Depression	5 (26%)	3 (7 %)	5	2 (3 %)	4 (5 %)	6 (10 %)	2 (2 %)	36 (7 %)	0.514
Asthma	1 (5%)	2 (4 %)	1 (2 %)	1 (1 %)	2 (2 %)	3 (5 %)	6 (8 %)	16 (4 %)	0.023
Hypertension	0	2 (4 %)	4 (8 %)	7 (12 %)	9 (13 %)	12 (21 %)	15 (20 %)	49 (13 %)	0.685
Diabetes	0	1 (2 %)	3 (6 %)	3 (5 %)	14 (20 %)	18 (31 %)	17 (23 %)	56 (15 %)	0.576
Ulcer	1 (5%)	2 (4 %)	1 (2 %)	5 (8 %)	4 (5 %)	9 (16 %)	7 (9 %)	29 (7 %)	0.873
Previous Drug Use History									
Antibiotics	3 (16%)	8 (19 %)	7 (14 %)	11 (19 %)	9 (13 %)	18 (31 %)	16 (22 %)	72 (19 %)	0.061
Anticoagulants and Antiplatelets	0	4 (9 %)	3 (6 %)	6 (11 %)	11 (16 %)	13 (23 %)	21 (28 %)	58 (16 %)	0.544
NSAIDs	5 (26%)	17 (41%)	14 (2%)	21 (37%)	28 (40%)	19 (33%)	23 (31%)	127 (35%)	0.073
Antihypertensives	0	5 (12%)	15 (31%)	25 (45%)	32 (45%)	36 (63%)	42 (57%)	155 (42%)	0.034
Antidiabetics	0	4 (9%)	12 (25%)	16 (28%)	19 (27%)	26 (45%)	36 (49%)	113 (31%)	0.059

Corticosteroids	0	1 (2%)	1 (2%)	2 (3%)	2 (2%)	5 (8%)	9 (12%)	20 (5%)	0.082
Days for Onset of Symptoms and Severity of Disease									
Days	5.6 ± 2.7	5.9 ± 2.2	5.5 ± 3.7	6.8 ±3.1	7.2 ± 4.6	8.1± 3.9	8.6 ±2.7	6.8±3.7	0.067
Mild	19 (100 %)	38 (93 %)	43 (90 %)	45 (80 %)	66 (94 %)	51 (89 %)	66 (89 %)	328 (89 %)	0.063
Moderate	0	3 (7 %)	5 (10 %)	08 (14 %)	04 (6 %)	6 (11%)	11 (15 %)	37 (10 %)	0.084

Continuous variables were expressed as mean ± S.D and Counts and categorical variables were expressed as percentages. Statistical significance was considered as $P < 0.05$.

Role of Vitamins and Trace Elements

In light of our findings, vitamin-D deficient patients are more prone to CoViD-19 risk as compared to those having normal vitamin-D values. It has also been proved in our study that 58% of patients were vitamin-D deficient and most of them were younger from the age of 15 to 40 years. Intake of vitamin-D, vitamin B-12, vitamin-C, and zinc supplements over 4 weeks as recommended by most health practitioners significantly ($p < 0.05$) reduced the symptoms of loss of taste, pyrexia cough, and chest tightness. According to the present research study, laboratory findings have shown that 56% of mild SARS CoV-2 infected patients have lower zinc levels irrespective of age limit. These patients were treated with zinc supplements for up to 14 days. Patients having high or normal zinc levels had a low incidence of respiratory tract infection compared to those with low zinc levels (Table 2).

Table 2: Laboratory Data Manifestations of Non-severe CoViD-19 Patients

Age	15-20 y(n=19)	21-25 y (n=41)	26-30 y (n=48)	31-40 y (n=56)	41-50 y (n=70)	51-60 y (n=67)	>60 y (n=74)	Total (N=365)	P value
Vitamin-D Level									
< 20 ng/ml	16 (84 %)	32 (78 %)	37 (77 %)	22 (3 %)	29 (41 %)	32 (56 %)	44 (59 %)	212 (58 %)	0.015
≥ 20 ng/ml	3 (16 %)	9 (22 %)	11 (23 %)	34 (61 %)	41 (59%)	25 (44 %)	30 (41 %)	153 (41.91%)	0.184
Zinc Level									
≤ 9.2 μmol	9 (47 %)	14 (34 %)	21 (43 %)	32 (57 %)	36 (51 %)	34 (59 %)	58 (78 %)	204 (56 %)	0.517
≥ 9.2 μmol	10 (52 %)	27 (66 %)	27 (56 %)	24 (43 %)	34 (48 %)	23 (34%)	16 (22 %)	161 (44 %)	0.021
Cytokines Level									
IL-6 >1.5pg/ml	1 (5%)	2 (5%)	3 (6%)	3 (5%)	4 (6%)	5 (7%)	11 (15%)	29 (8%)	0.071
TNF- α > 8.1pg/ml	-	2 (5%)	5 (10%)	7 (12%)	5 (7%)	4 (6%)	10 (14%)	33 (9%)	0.049
Hematology									
Blood WBC count >10 *10⁹/L	1 (5%)	2 (5%)	4 (33 %)	8 (8%)	4 (6%)	6 (9%)	11 (15%)	36 (9.8%)	0.047
Neutrophil count >6.5 *10⁹/L	1 (5%)	2 (5%)	5 (10%)	7 (12%)	4 (6%)	4 (6%)	11 (15%)	34 (9.3%)	0.038
Lymphocyte count <1.5 *10⁹/L	-	3 (7%)	5 (10%)	8 (14%)	3 (4%)	4 (6%)	9 (12%)	32 (8.7%)	0.053
Platelet Count <150 *10⁹/L	1 (5%)	2 (5%)	3 (6%)	5 (9%)	5 (7%)	6 (9%)	12 (16%)	34 (9.3%)	0.096

Continuous variables were expressed as mean ± S.D and Counts and categorical variables were expressed as percentages. Statistical significance was considered as P<0.05.

Nutritional Management of Non-severe CoViD-19 Patients

Table 3 shows self-reported utilization of food by non-severe CoViD-19-infected patients. The risk of losing weight or eating less was more in older patients. The patients were advised to lower their salt intake and keep themselves hydrated. Among 365 patients, 89% utilized fresh vegetables, animal source foods were consumed by 89% of patients, and fresh fruits including oranges, apples bananas were used by 87% of patients. However, whole grains were used by only 65% of the study population.

Table 3: Duration of Recovery, Medical and Nutritional Management of Non-severe CoViD-19 Patients

Age	15-20y (n=19)	21-25 y (n=41)	26-30 y (n=48)	31-40 y (n=56)	41-50 y (n=70)	51-60 y (n=67)	>60 y (n=74)	Total no of Patients(N=365)	P Value
Duration of recovery	14.7±4.1	15.1.3± 4.6	14.5±4.1	16.5±5.9	16.8±5.7	17.7±6.3	21.9±7.1	16.7±5.4	0.021
Medication									
NSAIDs (Aspirin 75mg, Acetaminophen, Acetylsalicylic acid)	18 (95 %)	41 (100 %)	44 (92 %)	51 (91 %)	67 (96 %)	57 (100 %)	74 (100 %)	352 (96 %)	0.053
Ivermectin	17 (89 %)	39 (95 %)	45 (93 %)	54 (96 %)	65 (93 %)	55 (96 %)	70 (95 %)	345 (94 %)	0.035
Beta-2 Agonist Salbutamol oral (2mg, 4mg), inhaler (100 micrograms/ puff,8-10	8 (42 %)	22 (54 %)	26 (54 %)	27 (48 %)	31 (44 %)	23 (40 %)	38 (5 %)	175 (48 %)	0.162

puffs in COPD)									
(LTRIs) Montelukast sodium (5mg, 10mg)	2 (11 %)	8 (20 %)	12 (25 %)	16 (29 %)	17 (24 %)	14 (25 %)	19 (26 %)	88 (24 %)	0.015
Antiplatelet agents	2 (11 %)	14 (34 %)	16 (33 %)	23 (41 %)	38 (54 %)	48 (84 %)	65 (88 %)	206 (56 %)	0.052
Multivitamin VitaminD, C, B and Zn	15 (79 %)	39 (95 %)	44 (92 %)	51 (91 %)	68 (97 %)	56 (98 %)	71 (96 %)	344 (94 %)	0.023
Cortico-steroids Dexamet hasone (6mg/day) 7-10 days	0	1 (2 %)	3 (6 %)	6 (11 %)	4 (5 %)	6 (11 %)	11 (15 %)	31 (8 %)	0.084
Nutritional Management									
Vegetables (cabbage, broccoli, cauliflower, Garlic, ginger, and onions	17 (89 %)	41 (100 %)	48 (100 %)	53 (95 %)	67 (96 %)	52 (91 %)	48 (65 %)	326 (89 %)	0.051
Fresh Fruits (oranges, apples, grapefruit, bananas, apples)	14 (73 %)	32 (78 %)	44 (92 %)	49 (88 %)	61 (87 %)	48 (84 %)	71 (96 %)	319 (87 %)	0.146
Animal Source Food White meat, fish, water,	15 (79 %)	38 (93 %)	41 (85 %)	55 (98 %)	62 (86 %)	51 (89 %)	63 (85 %)	325 (89 %)	0.02

eggs									
Unsalted nuts and legumes	17 (89 %)	36 (87 %)	40 (83 %)	51 (91 %)	58 (82 %)	29 (50 %)	10 (14 %)	241 (66 %)	0.575
Unsaturated fats (Sunflower oil, corn, olive, avocado, canola and fish oil)	19 (100 %)	41 (100 %)	41 (85 %)	54 (96 %)	64 (91 %)	56 (98 %)	74 (100 %)	349 (95 %)	0.014
Whole grains (Unprocessed oats, brown rice, maize)	12 (63 %)	33 (80 %)	47 (97 %)	53 (94 %)	43 (61 %)	29 (51 %)	21 (28 %)	238 (65 %)	0.054
Fresh Juices	19 (100 %)	40 (97%)	45 (93 %)	53 (94 %)	66 (94 %)	57 (100 %)	74 (100 %)	354 (96.9 %)	0.051

Continuous variables were expressed as mean ± S.D and Counts and categorical variables were expressed as percentages. Statistical significance was considered to be as $P < 0.05$.

Discussion

According to our survey results, a huge population of 385 patients used analgesic and antipyretic agents for relief of fever and pain. These results are in line with research in which antibody and pro-inflammatory cytokine responses to SARS-CoV-2 infection were both reduced by NSAID treatment. The ability of NSAIDs to modulate the immune response to SARS-CoV has important implications against CoViD-19 pathogenesis in patients [12]. NSAIDs block the enzymes cyclooxygenase-1 (COX-1) and cyclooxygenase-2 (COX-2), which are required for the production of prostaglandins, thus play critical role in homeostasis by reducing inflammation. Another study reported that anti-inflammatory medications particularly NSAIDs, are critical for the management of outpatients with mild to moderate CoViD-19 symptoms [13].

Initial reports on antiplatelet treatment are related to better results in patients with mild to moderate symptoms and anticoagulation therapy with moderate to severe CoViD-19 symptoms [14]. As acetylsalicylic acid is an antiplatelet agent its use may also lower the risk of thromboembolism associated with CoViD-19 [15] and may improve oxygenation along with a considerable decrease in mortality [16]. According to the present study, it is depicted that early administration of antipyretics, antihistamines (famotidine, cetirizine), and antiplatelet agents in home-quarantined CoViD-19 patients can produce outstanding results in our population, irrespective of the patient's age and risk factors, thus reducing the hospital-based care and mortality rates.

In recent years, antihistamines have been identified as powerful antiviral agents since these drugs inhibit virus entry into different target cells, such as the hepatitis C virus and Ebola virus. Several H_1 receptor antagonists (cetirizine, famotidine) have established inhibitory effects on the production and expression of inflammatory cytokines and chemokines [17]. The use of antihistamines in mild to moderate CoViD-19 patients is reported to prominently reduce the expression of pro- inflammatory cytokines [18]. Brennan et al reported that the use of famotidine in outpatients with mild to moderate CoViD-19 reduced inflammation and produced symptomatic recovery [19]. However, some evidence suggests no clinical benefit for the use of famotidine in decreasing mortality among CoViD-19 patients [20].

Ivermectin was used by 94% of patients included in the survey. Ivermectin has been shown to exhibit antiviral properties against a variety of RNA viruses, including dengue, chikungunya, yellow fever, and HIV-1. In an *in-vitro* study, a 5000-fold reduction in SARS- CoV-2 viral RNA within 48 hours of ivermectin administration was observed [21]. Its primary application has been as an anti-helminthic agent. It also has antiviral properties due to its effect on nuclear transport mediated by importin/1. Ivermectin prevents viral proteins from binding to importin/1, preventing them from entering the nucleus and causing infection. Multiple clinical trials have already been conducted around the world about the successful use of ivermectin and dose-response efficacy reinforces the prophylactic effects of ivermectin against CoViD-19 [22,23].

Appearance of GIT symptoms particularly diarrhea was unpredictable. This may be due to the attachment of SARS CoV-2 with ACE-2 receptors in the gut, and side effects of certain antiviral or antibacterial drugs. Depending upon the duration-based analysis of the symptoms, patients having CoViD-19 symptoms for more than 10 days experienced severe diarrhea (2.5%), however, mild diarrhea was observed in patients having a short duration of CoViD-19 infection. Early use of antibacterial drugs in large quantities is also associated with symptoms of diarrhea. According to a study, 50% of the total 204 CoViD-19-infected patients suffered from diarrhea during treatment with antibiotics for 3-4 days [24].

Vitamin-D causes a reduction in the concentration of various inflammatory cytokines and vitamin B-12 supports a healthy gut microbiome which has an imperative role in the developmental stages as well as in the functioning of innate and adaptive immune systems. A cohort study supported the results of our study and showed that combined supplementation of vitamin-D, B-12, and magnesium reduced the oxygen requirement in CoViD-19 patients [25]. Vitamin-C has an important role in the maintenance of the structure and function of the gastric and nasal mucosa by

controlling mucus secretion and preserving inner and outer epithelium. [26].

Low circulating zinc concentration (less than 0.7 mg/L) is associated with an increase in cytokines level (IL-6, IL 8, TNF-α) in elderly subjects. Zinc has also a crucial role in acute respiratory infections as low zinc level is associated with pneumonia [27]. The results of the present study are in accordance with the research that has proved that the use of zinc supplements at a dose of ≤ 25 mg/day in CoViD patients produced excellent effects not only on inflammation associated with CoViD-19 but also on the SARS-CoV-2 agent itself [28]. Zhenget al also reported rapid recovery in CoViD-19 patients having high levels of selenium compared to those with low selenium levels [29].

The results of the present study explained that 5% of mild SARS-CoV-2 infected patients used azithromycin for 5-7 days. According to some studies, azithromycin exhibits a positive response by reducing and regulating the production of cytokines, and early treatment of patients with azithromycin reduces the risk of hospital-based care, if used within 7 days after infection. Broad- spectrum antibiotics can only be used to treat superinfection in CoViD-19 [30]. In a recent research, it was discovered that using azithromycin in conjunction with standard treatment did not reduce recovery time or hospital stay in corona patients. These results have significant consequences for antibiotic stewardship during this pandemic, as improper antibiotic usage contributes to increased antimicrobial resistance [31].

It has been noticed through research studies that high biological valued proteins such as lean meat, fish, dairy products, and eggs have all essential amino acids and can produce significant anti-inflammatory effects and modify the immune system [32]. Various lipids like docosahexaenoic acid (DHA), omega-3 fatty acids, and eicosapentaenoic acid (EPA) have the ability to inactivate the enveloped viruses and inhibit the COX enzymes, thus prominently suppressing the production of pro-inflammatory prostaglandin [33]. In contrast, polar lipids like phospholipids, glycolipids, or sphingolipids, present in fish and fish oil can block the platelet- activating factor (PAF) as well as a receptor, producing an anti-inflammatory effect which can be beneficial for CoViD-19 patients [34].

It has been revealed in many research studies that fiber intake (25-35 g per day) may reduce the levels of both gut and systemic inflammatory cytokines (CRP, TNF-α, and IL-6) [35]. In recent studies, it has been highlighted that proper nutrition and intake of appropriate nutrients have a considerable influence on CoViD-19 recovery. Our survey results showed that most of the patients used healthy food like dairy products, fresh fruits, and vegetables and increased their water intake to keep them hydrated. It is concluded from the results that early initiation of supplement therapy and nutritional intervention may reduce the symptoms and severity of CoViD-19 disease and can potentially increase the recovery ratio.

Our experience with low-risk patients at home indicates excellent results, with no reported fatality. Only 10% of patients exhibited moderate symptoms, among which 8% were treated with steroids and 2% showed the need for oxygen therapy. According to reports, if the atmosphere is conducive to safe management, up to 80% of patients with mild to moderate disease can be managed in the community itself. This approach is not only convenient for the patient but also reduces the hospital burden.

Conclusion

The present survey study has proved that regardless of the patient's age or risk factors, early care and treatment of non-severe CoViD-19 patients at home with close monitoring is an encouraging step in order to gain stability for the population. The key monitoring tool for these patients is oxygen saturation assessment. The use of proper clinical and nutrient treatment regimens for home- quarantined non-severe CoViD-19 patients in accordance with the guidelines of healthcare providers proved to be an effective strategy for improving the health condition of the patients, lowering the number of admitted patients in hospitals and the fatality rate.

Conflict of Interest

The author(s) declared no conflicts of interest with respect to the research and publication of this article.

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