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Health-Seeking Behavior and Recovery Time of COVID-19 Patients Recovered by Taking Treatments at Home: Bangladesh Perspective

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Abstract

Introduction: Primary care treatment and home care received considerable importance for the management of COVID-19. This study aimed to assess the health-seeking behaviors and identify the factors related to the early recovery time of COVID-19 patients who recovered by taking treatment at home.

Methods: An online-based, cross-sectional survey was conducted; patients' sociodemographic, clinical, pharmacological, and non-pharmacological treatment-taking behaviors were assessed. Basic frequency distribution and binary logistic regression were applied in data analysis.

Results: Out of 241 COVID-19 patients, majority are adopted various non-pharmacological approaches [e.g., drinking hot drinks (85.9%), inhaling steam/gargling warm water (75.1%), consuming vegetables and fruits (67.6%) daily] and pharmacological interventions. Paracetamol (97.1%) consumption followed by antihistamines (79.6%) and antibiotics (61.4%) were the frequent pharmacological medication taken by COVID-19 patients. Females, older and urban people were more inclined to adopt the non-pharmacological interventions than their counterpart. Inferential statistics suggested that sociodemographic characteristics and pre-existing diseases were associated with recovery time. Patients living in urban areas had higher chances of recovering early from COVID-19 than rural (OR: 3.26, 95% CI: 1.19-8.95). Respondents without pre-existing diabetes (OR: 2.76, 95% CI: 1.00-7.57) significantly recovered early from COVID-19 infection.

Conclusion: Our study assessed health-seeking behavior and recovery time of patient's who cured from COVID-19 by taking treatments at home. The study concludes that along with pharmacological medication, home health care seeking can recover patients early from the COVID-19 infection.

Keywords: COVID-19; Home health-seeking; Pharmacological and Non-pharmacological interventions; Recovery measures; Bangladesh

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Abbreviations

SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus-2; COVID-19: Coronavirus Disease-2019; WHO: World Health Organization; CVD: Cardiovascular Diseases; PE: Physical Exercise

Introduction

Since December 2019, the world has been confined to an obstinate threat named Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2). This virus has spread worldwide and caused a devastating coronavirus pandemic, later announced as Coronavirus Disease-2019 (COVID-19) by the World Health Organization (WHO) [1]. Almost all the countries worldwide are facing its ramification [2].

Bangladesh has also been facing this seemingly inexorable COVID-19 outbreak [2]. The "Second wave" has struck the country severely from the end of March 2021 and broken all the records of confirmed cases. Although the infection is still exist, there was a lack of COVID-19 testing equipment and dedicated hospital beds in the country [3]. The number of general beds was minimized to 9,807 beds from 10,474 beds as of March 28th, 2021 [4,5].

Centralized policy and inequality in health care facilities compelled the patients to take care at home and there was no specialized hospital in most divisions. About 34% of the total COVID-19 dedicated general beds were in Dhaka city and 2,542 beds out of 3,329 beds were occupied [5]. Therefore, despite the intention of going to hospitals, many infected individuals could not get to the hospital facilities and developed a preference for taking medications at home. When the survey commenced, only 13,356 COVID-19 patients out of 88,993 patients were taking treatment at hospitals, whereas more than 80% of patients were taking treatment at home [6]. Studies demonstrated pervasive mistrust of the Bangladeshi people on the health system and healthcare providers during the COVID-19 pandemic [7,8]. This distrust had made people reluctant to seek medical treatment at the hospital. Moreover, this unprecedented pandemic massively disrupted the economy and raised poverty to 40.9% from 20.5% in 2020 which made it difficult for many people to afford hospital treatments [9].

Various pharmacological and non-pharmacological approaches have been taken into consideration for treating COVID-19 patients. Among non-pharmacological interventions, a healthy diet with nutritional value is considered very important. Fresh and unprocessed foods including fruits and vegetables that contain sufficient amounts of vitamins, minerals and proteins were highly recommended [10]. Warm water and steam inhalation may be beneficial for respiratory symptoms. Hot drinks especially tea and gargling with warm water were found useful in reducing sore throat and cough [11]. Various vitamins such as A, C, D, and minerals have been used for strengthening the immune system to fight against SARS-CoV-2 [12]. Although direct evidence of reducing the viral load by these non-pharmacological approaches has yet to be confirmed, these gain significant attention as primary treatments and a form of home management. Most of the pre-existing drugs were used as pharmacological treatment and to treat symptoms associated with the disease. For example, paracetamol was used as antipyretics and analgesics, while antihistamines were used for respiratory symptoms including cough, sore throat and runny nose [13]. Antibiotics have been used extensively for the treatment of COVID-19 patients since many respiratory bacterial infections were associated with the disease. Several antiviral drugs (e.g., Favipiravir, remdesivir) and antiparasitic drugs (e.g., ivermectin) have been utilized as promising therapeutic options. Additionally, numerous drugs were being investigated for their potential activities against SARS-CoV-2 [14].

Many epidemiologists and infectious disease experts have warned that this novel disease will not go away soon and advised people to adapt to this [15]. Hence, it is important to know what types of interventions were taken and which medicines were consumed by the COVID-19 patients at home. Moreover, the preponderance of the patients had mild to moderate symptoms. They recovered at home without special care and treatments. Due to the unavailability of any effective option and promising vaccine, infected individuals who did not require hospitalization were recommended to strengthen their immunity and follow home remedies. We, consequently, aimed to assess the health-seeking behaviors and identify the factors related to the early recovery time of COVID-19 patients who recovered by taking treatment at home.

Methods

Ethical Considerations

Ethical Review Committee of the Public Health Foundation, Bangladesh (Reference number: PHFBD/ERC/03/2021) approved this study. All participants were provided with an informed consent form that concisely described the purpose, aims and procedures of the research. Confidentiality of the information was strictly maintained.

Study design and participants

This cross-sectional, mobile and online population-based survey was carried out from October 15th, 2020 to January 05th, 2021 among the patients diagnosed with COVID-19, who recovered without any hospital treatment by adopting home-based interventions and medications. Eight enumerators were chosen to ensure participants from all administrative divisions (Barishal, Chattogram, Dhaka, Khulna, Mymensingh, Rajshahi, Rangpur, and Sylhet). The criteria for including participants were being willing to participate, being a Bangladeshi resident, having access to the internet, and being recovered by taking treatment at home. The exclusion criteria were incomplete form and participants recovered in hospitals. A total of 271 potential respondents provided consent, but 241 who completed the entire survey, were included finally with a response rate of nearly 89%.

Data collection instrument

A semi-structured questionnaire was designed using the Google Form. The questionnaire was in both Bangla and English that are the two most commonly used languages in Bangladesh. The final questionnaire had four sections; six questions regarding the sociodemographic characteristics and seven questions to identify the clinical features of the patients, such as COVID-19 symptoms and existing comorbidities. The clinical symptoms were selected as per the Centers for Disease Control and Prevention (CDC) guidelines [16]. The third section consisted of five questions to identify the non-pharmacological interventions and remedies taken by the subjects. The interventions were selected based on national guidelines on clinical management of COVID-19 and WHO COVID-19 recommendations [10,17,18]. The final section consists of questions regarding the types of medication such as paracetamol, antibiotic and antiviral drugs consumed by the respondents to cure or relieve the symptoms. The medicines were selected based on the COVID-19 treatment options recommended in the national guidelines, CDC guidelines, and the drugs that were reported to be potential therapeutic options [18-20]. With some brand name examples, a brief Bangla explanation was attached to questions regarding medications for a better understanding. The questionnaire was tested on a sample of five people to identify any ambiguous and difficult questions. The

questions thus identified were either reformulated or eliminated. Two experts reviewed the initial draft of the questionnaire for validation. Independent variables were: Sociodemographic characteristics and dependent variables were pharmacological and non-pharmacological interventions.

Data collection procedures

The Google Form was shared on online platforms like Facebook, Messenger, and WhatsApp. The form was also shared in various Facebook groups dedicated to COVID-19 related information. Most participants who shared their experience of COVID-19 on social media were contacted personally through messenger or phone calls for data collection. The respondents were encouraged to share the form with eligible participants. Many respondents and all the illiterate respondents included in the study were contacted *via.* the network of the researchers through mobile phones and their family members assisted them in responding to the questionnaire. Consent was obtained before starting the survey, and confidentiality was maintained.

Statistical analysis

Descriptive analysis was performed to present frequency and percentages. Previous studies showed that clinical recovery time for mild patients is approximately two weeks and for severe or critical patients is 3 to 6 weeks [21,22]. We measured the recovery period from the time of being tested positive to recovery because the respondents were not sure of the onset of their symptoms. The recovery time was categorized into early recovery (those who recovered within two weeks and coded 1), and late recovery (those who recovered after two weeks and coded 0). The binary logistic regression model was applied to determine the most relevant factors that might significantly influence COVID-19 recovery time. The Pearson Chi-square test was carried out primarily and seven out of the thirty-four variables are selected at a 10% significance level. In the second stage, a binary logistic regression model was performed and the most significant variables with their adjusted odds ratio were extracted at a 5% significance level [23]. The classification table was used to evaluate the predictive accuracy of the final model. The Hosmer and Lemeshow Goodness-of-Fit (GOF) test was also applied to provide a statement of the overall fit of the final model. All the data management and statistical analysis were performed using Microsoft Excel 2016 and SPSS (IBM SPSS version 25.0) software.

Results

Sociodemographic and clinical characteristics of participants

Among the 241 participants, 64.3% were males and 35.7% were females. Most of the respondents were youth and younger adults aged between 0 and 30 years (42.3%), followed by the middle-aged population of 31 to 60 years. Representatives from all divisions participated in the survey; most of them were from the Khulna division. People belonging to the urban area responded more than the rural ones. The highest percentage of the subjects had tertiary education (57.3%), whereas 6.2% had no formal education. Participants were classified into three categories based on per capita daily income (ADB 2010) [24]. The 'low-income' group was people earning <5088 BDT per month, the 'middle-income' group was people earning 5088-50880 BDT per month, and people earning above 50880 BDT per month were categorized as the 'high-income' group ($1 equivalent to 84.80 BDT, Accessed February 23rd, 2021).

Table 1: Sociodemographic characteristics of respondents (N=241).

Variables	Frequency (%)
Gender	
Male	155 (64.3)
Female	86 (35.7)
Age	
0-30	126 (52.3)
31-60	100 (41.5)
More than 60	15 (6.2)
Division	
Barishal	31 (12.9)
Chattogram	26 (10.8)
Dhaka	35 (14.5)
Khulna	42 (17.4)
Mymensingh	29 (12.0)
Rajshahi	29 (12.0)
Rangpur	24 (10.0)
Sylhet	25 (10.4)
Types of Residence	
Rural	83 (34.4)
Urban	158 (65.6)
Level of Education	
No education	15 (6.2)
Up to Primary	18 (7.5)
Up to Secondary	37 (15.4)
Up to Higher Secondary	33 (13.7)
Above Higher Secondary	138 (57.3)
Income Status	
Low-income	7 (2.9)
Middle-income	197 (81.7)
High-income	37 (15.4)

The majority of the participants belonged to the middle-income group (81.7%). The detailed socio-demographic features have been described in Table 1.

The majority of the people infected by the SARS-CoV-2 virus had mild to moderate symptoms. Multiple response analyses found that the most prevalent symptoms of the respondents were fever (92.5%), cough (78.4%), and sore throat (62.7%). An olfactory dysfunction (anosmia) or taste disturbance (dysgeusia) was also a cardinal feature. The main presenting gastrointestinal manifestation was diarrhea. Among subjects, over six percent reported having any severe symptoms such as dyspnea and hypoxia. Moreover, a markedly high proportion of the population had headaches and muscle or body aches (Figure 1). Among the participants, 23 percent had pre-existing respiratory complications where asthma and allergic rhinitis were predominant (15.3% each), followed by pneumonia and bronchitis. Hypertension (17.3%), diabetes (13.8%) and cardiovascular diseases (6.7%) were the most prevalent pre-existing chronic comorbidities. Additionally, participants also had underlying metabolic disorders, liver and kidney diseases, among others.

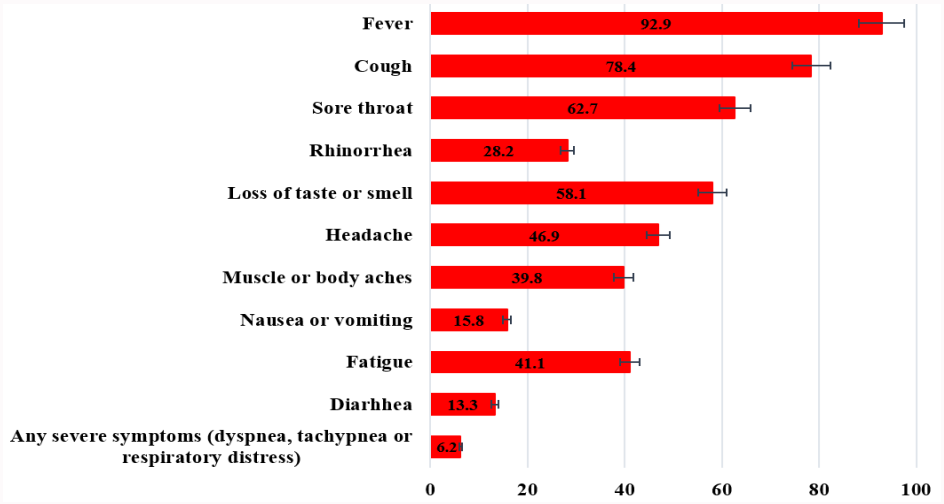

Figure 1: Symptoms of COVID-19 among respondents.

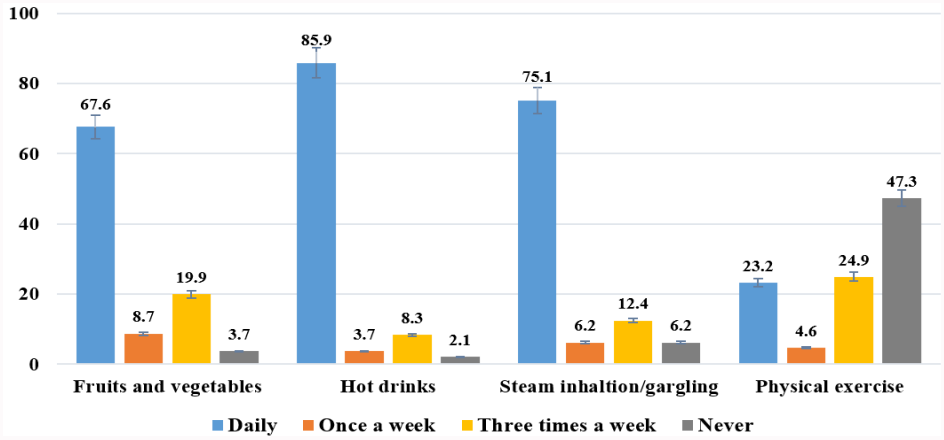

Figure 2: Non-pharmacological interventions (N=241).

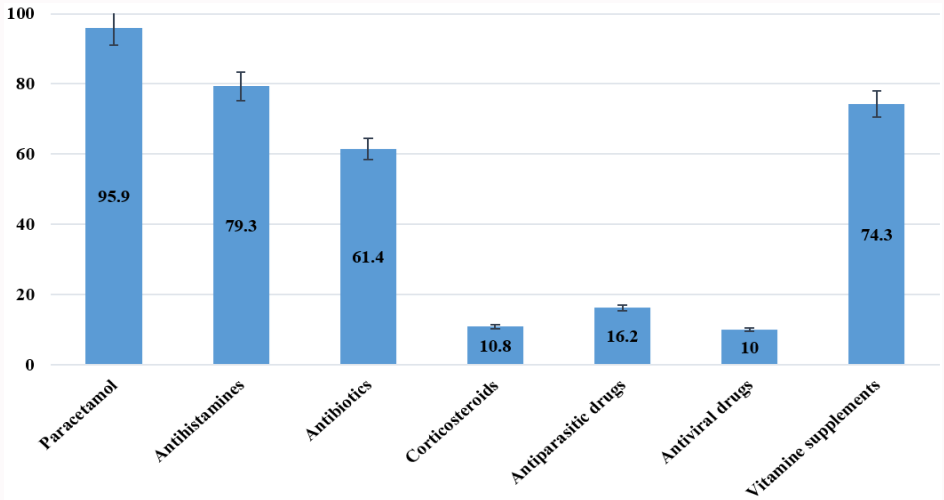

Figure 3: Pharmacological interventions adopted by respondents.

Non-pharmacological intervention

Non-pharmacological interventions including various home remedies and practices followed by the COVID-19 patients at home were measured. The majority of the participants reported taking some forms of approaches such as drinking any hot drink (such as tea) (85.9%), inhaling steam or gargling warm water (75.1%), and eating vegetables and fruits (67.6%) daily, as these are readily available and inexpensive measures. Only 23 percent of respondents reported the

Table 2: Sociodemographic distributions of respondents who adopted non-pharmacological interventions daily.

Variables N=241	Fruits and Vegetables N= 163	Hot Drinks N= 207	Steam Inhalation/Gargling N=181	Physical Exercise N= 56
	N (%)	N (%)	N (%)	N (%)
Gender				
Male (155)	103 (66.5)	135 (87.1)	114 (73.5)	32 (20.6)
Female (86)	60 (69.8)	72 (83.7)	67 (77.9)	24 (27.9)
Age (Years)				
0-30 (126)	90 (71.4)	117 (92.9)	92 (73.0)	33 (26.2)
31-60 (100)	62 (62.0)	76 (76.0)	76 (76.0)	22 (22.0)
More than 60 (15)	11 (73.3)	14 (93.3)	13 (86.7)	1 (6.7)
Types of Residence				
Rural (83)	50 (60.2)	71 (85.5)	57 (68.7)	15 (18.1)
Urban (158)	113 (71.5)	136 (86.1)	124 (78.5)	41 (25.9)
Level of Education				
No education (15)	4 (26.7)	10 (66.7)	10 (66.7)	1 (6.7)
Primary (18)	11 (61.1)	15 (83.3)	15 (83.3)	2 (11.1)
Secondary (37)	23 (62.2)	31 (83.8)	32 (86.5)	7 (18.9)
Higher Secondary (33)	24 (72.7)	31 (93.9)	24 (72.7)	12 (36.4)
Tertiary (138)	101 (73.2)	120 (87.0)	100 (72.5)	34 (24.6)

Table 3: Socio-demographic characteristics of respondents taking various pharmacological interventions.

Variables	Paracetamol N= 231	Antihistamines N= 191	Antibiotics N= 148	Antiparasitic drugs N= 39	Antiviral drugs N= 24	Corticosteroids N= 26	Vitamin Supplements N= 179
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Gender							
Male (155)	149 (96.1)	121 (78.1)	100 (64.5)	22 (14.2)	18 (11.6)	18 (11.6)	120 (77.4)
Female (86)	82 (95.3)	70 (81.4)	48 (55.8)	17 (19.8)	6 (7.0)	8 (9.3)	59 (68.6)
Age							
0-30 (126)	122 (96.8)	103 (81.7)	75 (59.5)	13 (10.3)	7 (5.6)	11 (8.7)	92 (73.0)
31-60 (100)	94 (94.0)	76 (76.0)	63 (63.0)	22 (22.0)	14 (14.0)	11 (11.0)	74 (74.0)
More than 60 (15)	15 (100)	12 (80.0)	10 (66.7)	4 (26.7)	3 (20.0)	4 (26.7)	13 (86.7)
Types of Residence							
Rural (83)	78 (94.0)	66 (79.5)	48 (57.8)	15 (18.1)	8 (9.6)	8 (9.6)	61 (73.5)
Urban (158)	153 (96.8)	125 (79.1)	100 (63.3)	24 (15.2)	16 (10.1)	18 (11.4)	118 (74.7)
Level of Education							
No education (15)	13 (86.7)	13 (86.7)	12 (80.0)	4 (26.7)	5 (33.3)	3 (20.0)	12 (80.0)
Primary (18)	17 (94.4)	16 (88.9)	10 (55.6)	4 (22.2)	2 (11.1)	3 (16.7)	12 (66.7)
Secondary (37)	36 (97.3)	30 (81.1)	21 (56.8)	10 (27.0)	6 (16.2)	2 (5.4)	22 (59.5)
Higher Secondary (33)	33 (100.0)	24 (72.7)	21 (63.6)	5 (15.2)	2 (6.1)	5 (15.2)	26 (78.8)
Tertiary (138)	132 (95.7)	108 (78.3)	84 (60.9)	16 (11.6)	9 (6.5)	13 (9.4)	107 (77.5)
Income Status							
Low-income (7)	6 (85.7)	6 (85.7)	4 (57.1)	2 (28.6)	0	1 (14.3)	5 (71.4)
Middle-income (197)	191 (97.0)	156 (79.2)	122 (61.9)	32 (16.2)	23 (11.7)	18 (9.1)	146 (74.1)
High-income (37)	34 (91.9)	29 (78.4)	22 (59.5)	5 (13.5)	1 (2.7)	7 (18.9)	28 (75.7)

practice of daily Physical Exercise (PE), whereas over 47 percent did not engage in any kind of PE. The adopted non-pharmacological approaches by the respondents are summarized in Figure 2.

Sociodemographic distributions of respondents demonstrated that females were more tend to follow the non-pharmacological interventions regularly than males. Moreover, a higher proportion of older respondents adopted the approaches daily, albeit they did not engage in PE regularly. In addition to these, participants living in urban areas were found adopting the non-pharmacological interventions more than the rural participants. In the case of education level, respondents with no or little education were less inclined to adopt the approaches daily (Table 2).

Table 4: Pearson Chi-Square test of association between recovery time and various variables.

Variables	Early Recovery (0-14 days) N (%)	Late Recovery (more than 14 days) N (%)	P-value
Division			
Barishal	12 (5.0)	19 (7.9)	0.09*
Chattogram	16 (6.6)	10 (4.1)	
Dhaka	12 (5.0)	23 (9.5)	
Khulna	25 (10.4)	17 (7.1)	
Mymensingh	16 (6.6)	13 (5.4)	
Rajshahi	17 (7.1)	12 (5.0)	
Rangpur	8 (3.3)	16 (6.6)	
Sylhet	14 (5.8)	11 (4.6)	
Types of Residence			
Rural	32 (13.3)	51 (21.2)	0.01**
Urban	88 (36.5)	70 (29.0)	
Level of Education			
No education	7 (2.9)	8 (3.3)	0.00**
Primary	3 (1.2)	15(6.2)	
Secondary	10 (4.1)	27 (11.2)	
Higher secondary	16 (6.6)	17 (7.1)	
Tertiary	84 (34.9)	54 (22.4)	
Daily Consumption of Fruits and Vegetables			
Yes	88 (54.0)	75 (46.0)	0.06*
No	32 (41.0)	46 (59.0)	
Vitamin Supplements			
Yes	95 (39.4)	84 (34.9)	0.08*
No	9 (25.4)	37 (35.4)	
Diabetes			
Yes	9 (3.7)	22 (9.1)	0.01**
No	111 (46.1)	99 (41.1)	
Cardiovascular Diseases			
Yes	4 (1.7)	11 (4.6)	0.06*
No	110 (45.6)	116 (48.1)	

Note: Only significant variables were presented in this table. Here *means significant at 10% and **means significant at 5%

Pharmacological interventions

Medications used for treating COVID-19 have been considered pharmacological approaches. Among the respondents, more than 97% have reported consuming at least one drug. Most of the subjects consumed paracetamol, also known as acetaminophen followed by antihistamines. More than 60 percent of the infected patients consumed antibiotics. A significant proportion also reported taking antiparasitic drugs mostly ivermectin (12.9%), while a few patients took antiviral drugs including favipiravir (5.4%), oseltamivir (2.9%), and remdesivir (1.7%). Additionally, nearly 11 percent took corticosteroids. Another finding is that a people consuming vitamin supplement was more prevalent than people who did not (Figure 3).

As shown in Table 3, medication consumption was higher in males and respondents aged over 60. Specifically, elevated consumption of corticosteroids was observed in elderly people. Higher medicine consumption was also observed in urban people and people with no education, while a discrepancy was noticed in medication use among various income groups.

Table 5: Factors associated with early recovery time from COVID-19.

Variables	Odds ratio	P-value	95% Confidence Interval	
			Lower	Upper
Types of Residence				
Rural	1.00[a]			
Urban	3.26	0.02	1.19	8.95
Level of Education				
No education	1.00[a]			
Primary	0.11	0.02	0.02	0.69
Secondary	0.24	0.05	0.06	0.98
Higher secondary	0.45	0.27	0.11	1.86
Tertiary (above higher secondary)	0.98	0.97	0.28	3.4
Diabetes				
Yes	1.00[a]			
No	2.76	0.05	1	7.57

Note: 1.00[a] indicates the reference category

Factors influenced on the recovery time of COVID-19

Pearson Chi-square test was carried out to determine factors that were significantly associated with COVID-19 recovery time. From the study, it has been found that there is a significant association between the recovery time of COVID-19 (presence of no symptom) and geographical distribution ($p<0.1$), types of residence, and an education level ($p<0.05$). Significant differences were found among the recovery time of subjects from different educational qualifications. No significant differences were found between the recovery time of subjects adopting non-pharmacological interventions and subjects without adopting non-pharmacological interventions except for eating vegetables and fruits daily ($p<0.1$). Moreover, medicine consumption had no significant impact on recovery time from COVID-19. A significant difference was found between subjects taking vitamin supplements and subjects without supplements ($p<0.1$). Additionally, there was a significant association between the recovery time and the presence of diabetes ($p<0.05$) and CVD ($p<0.1$). Patients with underlying diabetes or CVD had a late recovery from the disease (Table 4).

The logistic regression model revealed that types of residence, education level and underlying diabetes were the significant factors associated with COVID-19 recovery time (Table 5). More specifically, patients living in urban areas recovered more early from COVID-19 than rural patients (OR: 3.26, 95% CI: 1.19-8.95). Subjects with tertiary education had more early recovery from COVID-19 but respondents with primary and secondary education levels had a late recovery than patients without education. Finally, patients without previous diabetes had a 2.76 times higher chance of recovering early than those with diabetes (OR: 2.76, 95% CI: 1.00-7.57). From the classification table, it was observed that almost 72.5 percent of respondents were correctly predicted by this model.

Discussion

Our study found that the majority of the respondents adopted non-pharmacological interventions such as inhaling steam/gargling warm water, drinking hot drinks and consuming vegetables and fruits daily. Paracetamol, antihistamines and antibiotics were the highest consumed medicines while a large percentage consumed

vitamin supplements for home treatment. Binary logistic regression found that socio-demographic characteristics such as living in rural areas, having no education were significantly associated with lower recovery time while participants with diabetes had a higher chance of recovering late.

Although most participants reported adopting the non-pharmacological interventions daily, we found no association between most of the followed non-pharmacological interventions or practices and recovery time. A preponderance of the population adopted these non-pharmacological approaches, albeit no specific studies recommended their effect on recovery time. Instead, these treatments were mainly suggested to relieve symptoms associated with COVID-19. For example, gargling saltwater or steam inhalation was used for soothing sore throat and cleaning mucus in the throat, albeit previous investigations rejected the claim these can prevent COVID-19 [25,26]. Health experts and organizations have been recommending consuming vegetables and fruits with proper nutrition to boost immunity [10]. A significant association was observed between daily consumption of vegetables and fruits and recovery time among our subjects, where subjects who consumed vegetables and fruits daily recovered early ($p<0.1$). A previous study found that intake of vegetables and fruits were associated with lower COVID-19 infection and mortality rate. Developed countries with higher vegetable and fruit consumption had lower death rates, whereas both infection and death rates from COVID-19 were lower in developing countries where people consumed a higher number of vegetables and fruits [27]. Only a small percentage of our study participants reported practicing daily PE, while the WHO has recommended regular exercise for a certain period. According to them, PE can reduce the risk of obesity, diabetes, and other chronic diseases which are the risk factors for COVID-19 [17,28]. Demographic distributions found that females, respondents aged more than 60 and urban people had a higher tendency to adopt the non-pharmacological interventions daily while less educated people were less inclined. Previous studies showed that knowledge and preventive behaviors against COVID-19 were significantly associated with females, higher educated and urban people. Therefore, these studies support the higher inclination of females and urban people to non-pharmacological approaches [29,30].

There was no strongly recommended therapeutic option for COVID-19, albeit some drugs showed promising results [31]. Fever was the predominant symptom of our study participants, whereas muscle/body pain, and headaches were also present among many. This might contribute to the elevated consumption of paracetamol among the respondents. The national COVID-19 management guidelines of Bangladesh also prescribed paracetamol and antihistamines to treat mild to moderate patients [18]. Antihistamines especially fexofenadine, (a second-generation antihistamine) consumption were higher among subjects. Since many allergic and respiratory symptoms have similarities with COVID-19, these have been prescribed to treat the patients. The percentage of such symptoms as cough, sore throat and rhinorrhea was higher among the study participants. Several studies suggested that antihistamines are effective for primary care of the disease and prevent the disease from being severe in older patients [32,33]. Furthermore, the rate of antibiotic consumption was considerably high among the participants. COVID-19 weakens innate as well as adaptive immunity. Hence, many antibiotics have gained an utmost priority as a therapeutic option because of their efficacy against respiratory infection even for severe and critical patients [33-35]. The respondents also took antiparasitic drugs, mainly ivermectin. Clinical trials conducted in different countries including Bangladesh showed that ivermectin with and without the combination of other drugs can improve symptoms and reduce mortality [35,36]. One study found that a significant number of the Bangladeshi population used ivermectin to relieve COVID-19 symptoms and prophylaxis [37]. Favipiravir and oseltamivir were the most used antiviral medications among our subjects while a small percentage reported taking remdesivir. Remdesivir and favipiravir have questionable effectiveness. Favipiravir is an approved drug for treating influenza and has been found associated with SARS-CoV-2 clearance if treated early [31]. Favipiravir has been found effective for mild and moderate patients, albeit clinical trials are going on for more clinical evidence in favor of the drug [31,38]. In addition to these, consumption of vitamin supplements was higher among the survey participants. We found an association between vitamin supplement consumption and recovery time ($p<0.1$). Nevertheless, many vitamins have gained considerable importance for their pharmacological properties [12]. Medication consumption was higher in males, elderly, urban people and participants with no or little education, albeit these drugs are clinically unproven or may possess little benefits. It may be due to their tendency to recover from the disease early. Moreover, various news concerning the efficacy of some unproven drugs against SARS-CoV-2 was circulated in the media [39,40]. Previous studies showed that many of these drugs were used as preventive measures. People rushed for these drugs and many consumed them even before getting infected due to fear of this novel disease [37,41].

Binary logistic regression found that the patients from urban areas recovered early than the rural patients which conform to the findings of some previous studies [29,42]. People living in urban areas were more technologically advanced and knowledgeable about the disease and followed the hygiene practices more often than the rural people. This might be the possible reason for their early recovery. Additionally, the highest early recovery was observed in respondents having tertiary level education, but subjects with no education had an earlier recovery than those with primary or secondary education. The reason behind this discrepancy is, possibly, that people with no education had done their COVID-19 test late. They may go for a test after observing multiple symptoms, and we only reported the recovery time from the day they tested positive. Moreover, they were associated with the highest medicine consumption. Our study found an association between recovery and underlying diabetes and CVD, where underlying diabetes was more significantly associated with delayed recovery. A meta-analysis conducted by Bolin Wang et al. [43] delineated that kidney, liver diseases or even malignancies were not associated with elevated risk but diseases like hypertension, diabetes and cardiovascular diseases were considerably associated with a higher risk in COVID-19 patients. However, it is yet to be confirmed which comorbidities can lead to poor prognosis since our study participants were not hospitalized and our research team did not collect the exact medication itinerary.

Though the SARS-CoV-2 infection is no longer a novel term, its pathology and genetic makeup are not clearly understood because of its continuous mutations. Moreover, one of the serious concerns is that the genome of SARS-CoV-2 has evolved and mutated in numerous countries, including Bangladesh. The disease has become a 'new normal,' and health experts and epidemiologists have suggested adapting to this and recommended the patients to take treatment at home if hospitalization is not necessary. Hence, primary care

treatment and management were considered of utmost importance since the onset of the disease and this study may be helpful to know the commonly used interventions and medicine by COVID-19 patients as home care. Many countries are facing difficulty providing treatment facilities for all the patients. These countries have depended more on readily available and traditional treatments such as home remedies and over-the-counter drugs. Additionally, the non-pharmacological interventions are cheap, readily available, and safer to use and have been a part of home management for various diseases. Therefore, mild and moderate patients who would mostly recover without special treatment may adopt these approaches to suppress the disease from being severe. Developing countries and least developed countries need to emphasize more on prevention and primary care. Our study demonstrated that home care got enormous concern to reduce the hospital burden, albeit these could not significantly reduce the recovery time. On the other hand, people should bear in mind that these pharmacological and non-pharmacological interventions were only recommended for mild and moderate patients and as primary care treatments. Therefore, people should not follow these approaches without proper suggestions or prescriptions from health care experts. Nevertheless, laboratory experiments are needed on how the adopted pharmacological and no-pharmacological interventions impact recovery time. Also, long-term follow-up studies of the patients are needed.

Strengths and Limitations

The strength of this study includes being the first study of Bangladesh assessing the home healthcare-seeking behaviors and recovery measures of the COVID-19 patients who recovered by taking treatment at home. This research has limitations also. Firstly, causal relationships could not be established for being a cross-sectional study design. Secondly, the small sample size may reduce the establishment of rigorous statistical significance. Finally, it was an online-based survey where only people with internet access participated in the study.

Conclusion

The COVID-19 pandemic is indeed one of the greatest disasters in the history of humankind. Hence, primary care treatment received considerable importance in resource-limited countries like Bangladesh which is hardly capable of tackling the disease properly. As a unique initiative, this study found that the majority of respondents adopted non-pharmacological interventions more often, whereas over-the-counter drug consumption was noticeable. These interventions will help as a form of home management strategies to reduce the disease severity at an early stage and may mostly be helpful for mild and moderate patients especially in developing countries where treatment facilities are scarce. The government and policy-makers should make sure that patients, who do not require hospitalization, adopt and follow the home practices so the healthcare burden will be reduced.

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