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Study on the Aftermath of Natural Ways to Cure COVID-19 in Bangladesh

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ABSTRACT: COVID-19, caused by SARS-CoV-2, expanded worldwide because of its easier transmission process, which emerged as respiratory infections, multi-organ disorders, and asymptomatic effects. Though several vaccines have been invented to prevent the virus affection, still lots of people are affecting from mild to severe Covid. In this study, we mainly focus on the natural ways that helped the patients to cure COVID-19 in the recent post-covid scenario. Our goal is to find the effectiveness of protein-rich foods and physical activities that may reduce the risks and boost immunity to fight off SARS-CoV-2. This study was conducted in Bangladesh and data was collected from 208 cured people through face-to-face interviews, phone calls, and social media. It was found that protein-rich foods such as sea fish, river fishes, pigeon meat, lemon, ceevit, and physical activities such as walking, jogging, and pushing up were associated with a lower recovery period. Males has the higher recovery period after being cured than females.

KEYWORDS: COVID-19, Immunity, Lifestyle, Nutrition, Protein-rich foods.

INTRODUCTION

SARS-COV-2, the contributing agent of COVID-19, has modified the scenario of the whole world. Previously individuals perpetually go outside for his or her work throughout traditional time, now doing home office in a controlled space. Though coronavirus was first discovered in Wuhan city of China in December 2019, later it's been spread all other locations over the globe. As it was an infectious virus and there was no applicable medication to cure COVID-19, immune-boosting by natural ways was the sole ways to cure COVID-19 infection. Micronutrients like proteins, vitamins, and minerals played very important roles in spicing up the system. Physical distancing and hygiene practices could also play a very important role in forestalling COVID-19. However, foods containing nutrients, physical activities, and mental relaxation could boost the system to fight against SARS-CoV-2. Zinc could be a basic substance used in deoxyribonucleic acid Synthesis and cell [1]. It's conjointly engaged with the rule of thumb of innate and adaptive immune responses, cell signal, and production of immune cells [2]. Zn reduces the incidence of acute metastasis infections by thirty-fifth. Zn conjointly shortens the period of flu-like symptoms yet improves the speed of recovery [3]. Deficiency disease shows up-regulation of TNF-α, IFN-γ, and induction of programmed cell death in respiratory organ animal tissue cells [4] and conjointly up-regulates the Janus enzyme (JAK)-STAT signaling in lungs beneath septic conditions [5]. Protein-rich foods like meat and ocean fish contain Zn [6]. Magnesium is additionally a vital mineral that plays an important role in our immunity. It helps to form our body by creating natural killer cells and lymphocytes stronger. It's conjointly vital in varied cellular functions and a key supply of adenosine triphosphate. Black beans, chocolate, and whole-grain are wealthy in metal [7]. Vitamin C is the most promising nutrient for upping immunity of all ages of individuals, especially people having common non-communicable diseases (NCDs) like diabetics and hypertension. These patients with NCDs have high oxidative stress and vitamin C aids the body as a pro-oxidant of immune cells, anti-oxidant for respiratory organ animal tissue cells [8]. While individuals having NCDs were more vulnerable to COVID-19 [9], working of vitamin C as an inhibitor scavenges ROS and prevented lipid peroxidation, and macromolecule alkylation, and therefore protects cells from aerophilous stress-induced cellular harm [10]. Ceevit and lemon contain vitamin C. Vitamin D plays an important role in each in immunomodulatory, inhibitor, and antiviral responses [11]. Viosterol conjointly

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decreases the expression levels of the pro-inflammatory kind one cytokines like IL-12, IL-16, IL-8, TNF-α, IFN-γ whereas, increasing kind two cytokines like IL-4, IL-5, IL-10, and restrictive T cells [12]. Viosterol will increase the amount of inhibitor NRF-2 and facilitates balanced mitochondrial functions, prevents aerophilous stress-related macromolecule reaction, lipid peroxidation, and deoxyribonucleic acid harm [11]. Viosterol improves cellular natural immunity partly by causation one, 25-dihdroxyvitamin D into antimicrobial peptides, like human cathelicidin, LL-37, and defenses [13]. Meat, milk, and oil contain vitamin D. Stress negatively alters the system responses among the bodies [14]. Sleep, a large influence on the system, offers the body a chance to heal and rest, particularly in crucial sicknesses [15]. What is more, sleep was thought of as very vital by the doctors within the recovery of their patients throughout the Spanish respiratory illness Pandemic [16]. Physical exercise helps raise the number of white blood cells and antibodies that rebuff infections [17]. Exercise is particularly vital once a crucial health problem to enhance muscle mass, strength, and resiliency. Exercise can even facilitate the hindrance of blood clots that are an indication for a few people that contractile COVID-19. This study was centered on the assessment of food habits, lifestyles of COVID-19 patients when they were infected, and the way those factors influenced their immunity to get over the illness.

METHOD

Study design and settlings

The study was conducted in Bangladesh. We have collected data from 208 COVID-19 cured persons through face-to-face interviews, phone calls, and social media (e.g.: Messenger, Facebook, and WhatsApp).

Study procedures

Firstly, we tried to find COVID-19 infected patients and observed their resistance power. Finally, when they became cured, we asked their opinion of being cured through a questionnaire survey. We want to establish how a person gets cured of COVID-19 with the help of different influencing factors such as gender, lifestyle, and protein-rich food. In the recent years, the COVID-19 has become a serious issue around the globe including Bangladesh. Infected people took several foods for getting nutrient products as well as do some healthy activities to get cured for this disease. Following the objectives, the data collection procedure begins which involves questionnaire preparation, conceptual literature review, interviews & consultation with the supervisors. Food intakes are measured in grams due to its more appropriateness [18]. The primary data has been collected from 208 individuals. Among them 59.6% are male & 40.4% are female. The participants' ages range from 19 years to 70 years, which means the information was collected from all ages of people. Data and information were collected from students, doctors, nurses, cleaners, businessmen, etc. Mainly face to face interviews were conducted to collect information. We also used social media, phone calls for our questionnaire survey purpose. The whole process was performed to evaluate the influencing factors in the recovery of COVID-19 where we gave special priorities to gender, lifestyle, and protein-rich food which are commonly used as the best remedy for defeating COVID-19.

Statistical analysis

In the study, each information was coded, and analyzed by using two statistical software packages named Microsoft Excel 2019, and IBM SPSS Statistics version 25. Microsoft Excel was used to accomplish the coding, the editing, data cleaning, and sorting. Excel file was introduced in SPSS (Statistical Package for the Social Sciences) software. All variables were included in the software. Descriptive statistics such as means, standard deviations, frequencies, percentages, etc., and some first-order analyses such as Fisher's exact tests, Chi-square tests, etc. were accomplished using SPSS software.

Ethics

All procedures of the current study were carried out according to the principle for human investigations. The study was accomplished according to the ethical guidelines of the Institutional Research Ethics Committee. Formal ethical approval was permitted by the Ethical Clearance Committee, the ethical review board of the Pharmacy department of Gono Bishwabidyalay, Savar, Dhaka, Bangladesh. All participants were informed about the study purpose as well as the procedure of the study. Confidentiality of information was also provided. We have taken the consents from the participants during the interview periods, and they eagerly consented to be a part of the study. All data were collected anonymously and analyzed using the coding system.

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RESULTS

This study provides the eating habits and lifestyle of COVID-19 cured patients when they were infected with SARS-Cov-2. This study also determines how protein, vitamins and other micronutrients rich foods as well as lifestyles were associated with their recovery from COVID-19. The final samples consisted a total of 208 participants with their mean age 37.5 years (SD=10.8) and their age ranged from 19 to 70 years. Majority were male (59.6%), were married (67.8%), had bachelor level of education (55.8%), were service holders (34.6%), had their monthly family income 15,000-30,000 BDT (41.8%), and most came from nuclear families (84.1%) (Table 1). The BMI of participants reflected that a sizable majority were underweight (14.4%) and overweight (35.1%). A substantial majority did not engage in physical exercise (28.8%), and 22.6% experienced sleep disturbance during their affection period. Likewise, 31.3% reported that they took sleeping pills before sleep. A sizable minority were active smokers (11.5%) along with 4.8% smoked irregularly. The majority reported they screened three times COVID-19 test (44.2%), and 64.4% participants' family members got infected with COVID-19. The mean recovery days from COVID-19 were 19.1 (SD=3.3) ranging from 14-27 days. The proportion of underweight was higher among female vs. male (21.4% vs. 9.7%, $p<0.001$); conversely, the proportion of overweight was higher among male vs. female (46.8% vs. 17.9%, $p<0.001$) (Table 2). Additionally, the proportions of smoking and sleep disturbance were higher among males, and females, respectively. The mean recovery periods from COVID-19 were lower among females vs. males (18.5±3.3 vs. 19.6±3.4, $p=0.019$). In addition, the mean recovery periods from COVID-19 varied based on participants' food patterns. It is lower among participants those who consumed ceevit, lemon, sea fishes, river fishes, pigeon and meat. To note, ceevit and sea fishes were significantly associated with lower recovery periods from COVID-19. Surprisingly, the mean recovery periods from COVID-19 were lower among participants those who were engaged in walking, push-up and jogging, but these were not statistically significant.

DISCUSSION

In this study, it was found that several patients had nearly similar food habits and manner. Among all variables, a supermolecule made food like sea fish was considerably related to the fast recovery period. Besides, other supermolecules and nutriment-made foods were related to a slower recovery period. A study urged that people who have remained active throughout their lives have less pronounced immunosenescence characteristics, which can be an attainable protecting issue against the event of complications caused by COVID-19 [19]. During this study, physically active participants got recovery from COVID-19 faster than patients who were not physically active (Table 3). In another study, senior people who maintained continuous physical activity have levels of TCD4 + and TCD8 + lymphocytes just like younger people, additionally to not having harmful defects within the accomplishment of lymphocytes throughout the infectious method [20]. Walking, jogging, and pushups were conjointly related to lower recovery amount. According to the study with 116 senior volunteers, through physical activity, there's a decrease within the current levels of IL-6, yet as a rise within the expression of IL-10 inactive people [21]. This study incontestable that smoking and sleeping disturbance were higher among males than feminine. As a result, the mean amount of recovery among males was over the feminine. In patients with T2DM and new coronavirus infection, smart glycemic management has been related to a higher prognosis in COVID-19 [22]. Higher levels of nocturnal plasma IL-6 may be a higher predictor of longer sleep latency time than depression standing [23]. Doubtless, diet and food supplements show huge promise for preventing and treating COVID-19. However, sturdy clinical analysis information is needed to support any such claim. Ceevit contains water-soluble vitamins that showed a big end to lower recovery amount. Patients who took ceevit had a lower recovery amount than patients who did not take ceevit (Table 3). From a physiological purpose of reading, the water-soluble vitamin is concerned in several processes acting conjointly as a potent inhibitor [24] and regenerates alternative antioxidants inside the body, together with tocopherol [9]. Moreover, evidence counsels that ergosterol supplementation could decrease the chance of catching respiratory disorder, and COVID-19 infections [25]. From this study, it was found that patients who took vegetables and supermolecule made foods had lower recovery amount than those that did not consume such foods.

Zinc is one of the foremost promising micronutrients to spice up immunity. Sea fish and watercourse fish contain Zn and different minerals. From this study, it was found that patients who consumed sea fish, watercourse fish, and pigeon meat after they were infected with COVID-19, had faster recovery than those who failed to consume such protein-rich or mineral-containing foods. However, sea fishes were considerably related to lower recovery amounts (Table 3). Metal2+ cations particularly together with Zn ionophore pyrithione were shown to inhibit SARS-coronavirus polymer enzyme (RNA dependent polymer enzyme, RdRp) activity

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by suppressing its replication [26]. A study was incontestable that metal exposure (100µM) was shown to cut back recombinant human ACE-2 activity in rat lungs [27]. A case series of 4 COVID-19 patients treated with high-dose Zn conjointly showed each clinical symptomatic enhancements [28]. The food behavior of patients was nearly similar. Because the proportion of energy derived from meat and vegetable oils multiplied considerably whereas that from cereals, vegetables, fruits, milk, and farm merchandise showed a downtrend [29]. Clinical information demonstrates that patients dying from COVID-19 squares the measure, principally elder folks with a complication from different diseases, and deficiency disease drawback because of aging [29]. From our study, it was conjointly found that mid-aged folks were recovered faster than those of different ages. Vitamin C could act as a promising nutrient for preventing infection and enhancing immunity. This study indicated that ceevit (rich in aliment C) showed a vital association with a lower recovery period (Table 3). Lemon also contains vitamin C but was insignificantly associated with the lower recovery period. Endovenous or oral administration of high-dose antioxidants has been reported to be safe and protects against infection while not major adverse events. Additionally, high-dose antioxidant supplementation by IV administration shortened the medical aid unit (ICU) keep by 7.8% and considerably reduced morbidity [30]. Nutritional standing affects immune equilibrium whereas deficiency disease can impair reaction to pathogens. Vitamins and trace parts square measure crucial to keep up the operation of the system. Vitamin A supplementation has been shown to cut back morbidity and mortality of pneumonia, diarrhea, malaria, and HIV infection [31]. Antiophthalmic factor supplementation conjointly enhances reaction once vaccination for influenza and flu [32]. Vitamin B2 might decrease the titer of the MERS virus in human plasma [33]. Additionally, vitamin B deficiency is thought to weaken host reaction [34]. The antioxidant is an associate inhibitor and its deficiency impairs body substance, and cellular immunity [35]. Previous analysis on the respiratory disorder coronavirus (SARS-CoV) pandemic in 2003, reportable that a combination of low concentrations of Zn and pyrithione inhibited coronavirus replication [36]. Evidence has shown directly that morbidity is higher in COVID-19 patients with D deficiency and therefore, the morbidity is lower in Nordic countries (Norway, Sweden, Iceland, Finland, Greenland, and Denmark) [37]. A retrospective empirical study, reviewing the medical records of COVID-19 and suggesting that D insufficiency could play a job within the progress of COVID-19 sickness [38]. Macromolecule-made foods like meat and fish contain vitamins D and minerals that facilitate spice up immunity against any pathogens. Patients who took such food had a lower recovery amount during this study. Vitamin C, B, and different micronutrients conjointly enhance our immunity to fight against SARS-CoV-2. In an associate earlier study by some scientists, supplementation with antioxidants throughout associate ultramarathon failed to influence aerobic stress and immune abnormalities induced by physical activity [39]. Likewise, a preprint retrospective study of twenty COVID-19 patients showed a link between D insufficiency and severe COVID-19. The participants with D unskillfulness were additional doubtless to own coagulopathy and suppressed immune operate [38]. In another study patients with a deficiency were additional doubtless to want medical aid admission in 134 inpatients [40]. Researchers have counseled drinking much water, at the side of overwhelming foods made in minerals like metal and Zn, and vitamins C, D, and E, additionally to a higher life vogue which will boost immunity to assist fight infection [41]. From this study and former studies, it's clear that natural approach together with food's ingredients, physical activity could facilitate someone to recover quickly by strengthening immunity. And vegetables, fruits, and macromolecule made foods should be value-added in regular diet.

CONCLUSION

Nutritional support remains the basis of the treatment and no specific food or supplement still can prevent COVID-19 affection. Therefore, optimal intake of protein-rich foods, mainly those playing crucial roles in immune systems such as ceevit, lemon, sea fishes, river fishes, pigeon, and meat, etc. should be assured for combating COVID-19 in future years. In this study, we found different protein-rich foods, and way of living that has a significant impact on COVID-19 patients. Findings from this study showed that the mean recovery periods from COVID-19 were varied in participants' food patterns and lower among participants those who consumed ceevit, lemon, sea fishes, river fishes, pigeon, and meat. Among them, ceevit and sea fishes were significantly associated with lower recovery periods from COVID-19. In sum, it is critical to consider the impact of protein-rich foods and lifestyle habits, such as physical exercise, smoking, consumption of unhealthy diets, on the susceptibility to COVID-19 and recovery. Therefore, we recommend that individuals should refrain from smoking and should consume protein-rich foods, antioxidants, and engage in physical exercise to boost immune function.

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Conflict of interest
The authors express that they have no conflict of interest in the publication of this study.
Data availability statement
All data are fully available without any limitation upon reasonable request.
Informed consent
Each participant agreed spontaneously in the interview period.

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Table 1: Distribution of examined variables.

Variables	Categories	n	(%)
Gender	Male	124	(59.6)
	Female	84	(40.4)
Age	18-25 years	29	(13.9)
	26-40 years	115	(55.3)
	>40 years	64	(30.8)
Marital status	Unmarried	67	(32.2)
	Married	141	(67.8)
Education	Intermediate or bellow	62	(29.8)
	Bachelor	116	(55.8)
	Above bachelor	30	(14.4)
Occupation	Student	44	(21.2)
	Service holder	72	(34.6)
	Businessman	22	(10.6)
	Health worker	42	(20.2)
	Others	28	(13.5)
Monthly income	<15,000 BDT	61	(29.3)
	15,000-30,000 BDT	87	(41.8)
	>30,000 BDT	60	(28.8)
Family type	Nuclear	175	(84.1)
	Joint	33	(15.9)
BMI	Underweight	30	(14.4)
	Normal	105	(50.5)
	Overweight	73	(35.1)
Physical exercise	Yes	121	(58.2)
	No	60	(28.8)
	Sometime	27	(13.0)
Sleep disturbance	Yes	47	(22.6)
	No	161	(77.4)

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Taking sleeping pills before sleep	Yes	65	(31.3)
	No	108	(51.9)
	Sometime	35	(16.8)
Smoking status	Yes	24	(11.5)
	No	174	(83.7)
	Sometime	10	(4.8)
Times of COVID-19 test	2	76	(36.5)
	3	92	(44.2)
	4	30	(14.4)
	5	10	(4.8)
Infection of other family members	Yes	134	(64.4)
	No	74	(35.6)
Days of recovery from COVID-19	(Mean±SD)	(19.1±3.3)	

Table 2: Group difference analysis by gender

Variables	**Male**		**Female**		χ^2	**df**	***p*-value**
	n	**(%)**	***n***	**(%)**			
BMI							
Underweight	12	(9.7)	18	(21.4)	19.65	2	<0.001
Normal	54	(43.5)	51	(60.7)			
Overweight	58	(46.8)	15	(17.9)			
Smoking status							
Yes	24	(19.4)	0	(0.0)	33.33*	2	<0.001
No	90	(72.6)	84	(100.0)			
Sometime	10	(8.1)	0	(0.0)			
Physical exercise							
Yes	77	(62.1)	44	(52.4)	4.54	2	0.103
No	29	(23.4)	31	(36.9)			
Sometime	18	(14.5)	9	(10.7)			
Sleep disturbance							
Yes	15	(12.1)	32	(38.1)	19.35	1	<0.001
No	109	(87.9)	52	(61.9)			
Taking sleeping pills before sleep							
Yes	40	(32.3)	25	(29.8)	0.53	2	0.768
No	65	(52.4)	43	(51.2)			
Sometime	19	(15.3)	16	(19.0)			
Times of COVID-19 test							
2	46	(37.1)	30	(35.7)	0.60*	3	0.920
3	53	(42.7)	39	(46.4)			
4	18	(14.5)	12	(14.3)			
5	7	(5.6)	3	(3.6)			
Infection of other family members							
Yes	77	(62.1)	57	(67.9)	0.73	1	0.395
No	47	(37.9)	27	(32.1)			
	Mean	***(SD)***	***Mean***	***(SD)***	***t***	**df**	***p*-value**
Days of recovery from COVID-19	19.57	(3.4)	18.46	(3.3)	5.61	1	0.019

* Fisher's exact test

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Table 3: Descriptive analysis of each food item and association with recovery periods from COVID-19

Variables	Total N=207		Days of recovery from COVID-19			
	n	(%)	Mean	(SD)	*t*	*p*-value
Ceevit						
Yes	63	(30.3)	17.7	(2.9)	16.49	<0.001
No	145	(69.7)	19.7	(3.4)		
Lemon						
Yes	192	(92.3)	19.1	(3.4)	0.02	0.877
No	16	(7.7)	19.2	(3.4)		
Sea fishes						
Yes	59	(28.4)	18.3	(3.9)	4.83	0.029
No	149	(71.6)	19.4	(3.1)		
River fishes						
Yes	185	(88.9)	19.1	(3.4)	0.54	0.464
No	23	(11.1)	19.6	(3.2)		
Pigeon						
Yes	45	(21.6)	18.3	(2.9)	3.44	0.065
No	163	(78.4)	19.3	(3.4)		
Walking						
Yes	97	(46.6)	18.9	(3.2)	0.77	0.382
No	111	(53.4)	19.3	(3.5)		
Push-up						
Yes	14	(6.7)	18.2	(2.9)	1.11	0.293
No	194	(93.3)	19.2	(3.4)		
Jogging						
Yes	22	(10.6)	18.9	(3.4)	0.10	0.750
No	186	(89.4)	19.2	(3.3)		

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