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RESEARCH ARTICLE

SUPPLEMENTAL MEDICINES-NUTRITIONS USED BY HEALTH PERSONNEL IN THEIR OWN COVID-19 TREATMENT SCHEDULE

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ABSTRACT

Purpose: In this study, with a view to investigating drug use behaviors of healthcare personnel who had Covid-19 infection in the first 1 year of the pandemic, it was aimed to determine the additional drugs and nutritional supplements they used in their own treatment.
Material and Methods: This is a descriptive cross-sectional study. The data were obtained through an online survey voluntarily completed under pandemic conditions by doctors, dentists, nurses, pharmacists, and other health personnel who declared that they had Covid-19.
Results: The study consisted of 405 individuals. 98% of healthcare personnels preferred to support their treatment. The medicines and herbal products that the participants started to use by their own decisions, without the advice of the physician who examined them, and the frequency of their use were vitamin C 53.3%, vitamin D 48.1%, acetylsalicylic acid 26.7%, paracetamol 23%, zinc 26.4%, multivitamin 19%, acetylcysteine 14.8%, famotidine 14.3%, subcutaneous heparin 12.6%. As for herbal products, inhaling thyme oil was noted in 11.6%, drinking thyme oil 10.1%, consuming ginger 14.3% of the participants. Non-prescription support products were found to be beneficial in 44.4%.
Conclusion: Almost all of the participants took a supplement with the intention to support the treatment. The fact that one out of two participants declared that they benefited from over-the-counter supplements reveals that further studies are needed to support the rational use of over-the-counter products in the treatment of Covid-19.

Keywords: Covid-19, healthcare personnel, medicine, herbal products, nutritions

INTRODUCTION

The new type of Coronavirus (nCoV-2019, Covid-19) has become an important health crisis by affecting the whole world very shortly after it emerged in Wuhan, China in December 2019 (1). Covid-19 has infected more than 128 million people in 219 countries of the world and caused the death of more than 2.8 million people in one year since the declaration of Covid-19 as a global “pandemic" on March 11, 2020, (2). Significant negative effects were felt not only physically but also spiritually, socially, culturally, and economically at a devastating level, and they still continue (3).

Covid-19 is the third epidemic of the coronavirus family after SARS (Severe Acute Respiratory Syndrome) and MERS (Middle East Respiratory Syndrome). It followed the outbreaks of AIDS in 1981 in Central and South Africa, SARS in 2003 in Asia, Influenza (H1N1) in 2009, MERS originating in 2012 in the Middle East, and Ebola in 2014 in West Africa, and Zika Virus in 2016 in Brazilian//Brasil (4).

The virus directed scientists to seek solutions for the prevention and treatment of the disease from the moment it was diagnosed. The medicines that were tested and used in other viruses during previous outbreaks, but whose SARS-CoV-2 effectiveness was not yet investigated, received emergency approvals just at the beginning of the pandemic (5). Herbal and medicinal products with antiviral, immunomodulatory, and anti-inflammatory effects were evaluated in terms of their potential use, without sufficient evidence of their effectiveness on Covid-19. Countries published guidelines defining treatment protocols. At the point we have reached today, the vaccine is applied in large populations, but there is no curative treatment of Covid-19 with proven effectiveness and safety. Medications are used due to their partial contributions to morbidity, mortality, and hospitalization rates. More than 5000 drug trials have been completed or continue to be conducted as reported on Clinicaltrials.gov (6-7).

It requires a certain process to obtain the results in a scientific research. Misleading information with no evidence-based support, circulating in the field of uncertainties of this dangerous disease involves the risk of directing the individuals towards incorrect traditional methods of prevention or healing, or supplemental products. The World Health Organization (WHO) defined the spread of misinformation about Covid-19 as infodemic (8). Healthcare personnel, working under serious risk during the Covid-19 pandemic, is a more advantageous group in terms of accessing information and medicines. With a view to investigating the drug use behaviors in the first 1 year of the pandemic in a group of professional healthcare personnel, including physicians, nurses and auxiliary personnel, who had Covid-19 disease, it was aimed in this study to determine their treatment compliance and additional drugs and nutritional supplements that they used for their own treatment and reveal their scientific basis with the support of the literature.

MATERIAL AND METHODS

This is a descriptive cross-sectional study. The data were obtained through a 15-question online survey, completed voluntarily by the doctors, dentists, nurses, pharmacists, and other health personnel who declared that they had Covid-19. In order to find the necessary and sufficient sample size needed, the unknown prevalence was accepted as 50%, at 5% deviation, and 95% confidence level, and the minimum number of people was calculated as 384 by the Open Epi program. The rate of failure to access to individuals was accepted as 20% and it was aimed to reach 460 health workers. In total, 405 people of the target group were reached. Ethics committee approval of the study was obtained from Afyonkarahisar Clinical Research Ethics Committee with the decision number 2021/11 and date 08.01.2021. In addition, the permission of the Ministry of Health was also obtained prior to the study, by applying to the Scientific Research Studies Platform on COVID-19 with the form numbered 2020-12-08T13_34_59. The surveys were completed before the start of the vaccination program in Turkey.

The survey constituted of questions including sociodemographic data, symptoms, presence of any chronic disease, Reverse Transcription–Polymerase Chain Reaction (RT-PCR) results, prescribed medicines, drugs that they started to use on their own, supplementary medicine, and whether they took the medicines or supplements on time, whether they discontinued treatment, and their experiences with medications.

The data were analyzed using the SPSS 21 (Statistical Package for the Social Sciences) package program. The data obtained in the study were expressed as numbers and percentages, and the non-conformity of the data to the normal distribution was evaluated with histogram graphics and the Kolmogorov-Smirnov test. The Chi-square test was used to compare qualitative data, and $p<0.05$ value was considered statistically significant.

RESULTS

The study consisted of 405 participants, where 78.3% were female and 21.7% were male, and the mean age was 39.31 years with a standard deviation of ± 8.9, the youngest was 21 and the oldest was 63 years old. Specialist doctors constituted 33.6% of the sample, nurses 23.5%, family practitioners 14.3%, academicians 9.6%, general practitioners 5.9%, and dentists, pharmacists, and other health personnel 18.7%. A positive RT-PCR test was noted by 84.4% of the volunteers, and 6.9% declared that they had asymptomatic Covid-19. Inpatient treatment was required in 8.9% of the participants. Muscle and joint pains were reported in 63.5%, loss of smell and taste in 56.3%, nasal discharge or congestion in 44%, severe headache in 38.3%, fever in 35.1%, sore throat in 28.6%, anorexia in 28.4%, lung involvement

Table 1. Drugs prescribed for the treatment of Covid 19- age relationship

		Age Groups										Chi-Square Analysis	
		21-30		31-40		41-50		51+		Total			
		n	%	n	%	n	%	n	%	n	%	x^2	*p*
Favipiravir	Y	43	65,2	128	81,0	119	85,6	39	92,9	329	81,2		
	N	23	34,8	30	19,0	20	14,4	3	7,1	76	18,8	16,673	0,001
Hydroxychloroquine	Y	12	18,2	34	21,5	30	21,6	8	19,0	84	20,7		
	N	54	81,8	124	78,5	109	78,4	34	81,0	321	79,3	0,454	0,929
Antibiotic/Quinolone group	Y	4	6,1	20	12,7	28	20,1	11	26,2	63	15,6		
	N	62	93,9	138	87,3	111	79,9	31	73,8	342	84,4	11,383	0,01
Antibiotic/ Penicilin group	Y	2	3,0	7	4,4	5	3,6	2	4,8	16	4,0		
	N	64	97,0	151	95,6	134	96,4	40	95,2	389	96,0	*	0,927
Antibiotic/ Uncertain Group	Y	3	4,5	7	4,4	15	10,8	7	16,7	32	7,9		
	N	63	95,5	151	95,6	124	89,2	35	83,3	373	92,1	9,667	0,022
Remdesivir	Y	0	0,0	0	0,0	1	,7	1	2,4	2	,5		
	N	66	100,0	158	100,0	138	99,3	41	97,6	403	99,5	*	0,142
Lopinavir-Ritonavir	Y	0	0,0	1	,6	0	0,0	0	0,0	1	,2		
	N	66	100,0	157	99,4	139	100,0	42	100,0	404	99,8	*	1
Acetylcysteine	Y	8	12,1	29	18,4	24	17,3	7	16,7	68	16,8		
	N	58	87,9	129	81,6	115	82,7	35	83,3	337	83,2	1,33	0,722
Subcutaneous Heparin	Y	9	13,6	44	27,8	51	36,7	19	45,2	123	30,4		
	N	57	86,4	114	72,2	88	63,3	23	54,8	282	69,6	16,231	0,001
Acetylsalicylic acid	Y	2	3,0	29	18,4	35	25,2	9	21,4	75	18,5		
	N	64	97,0	129	81,6	104	74,8	33	78,6	330	81,5	14,819	0,002
Dipyridamole	Y	2	3,0	1	,6	3	2,2	1	2,4	7	1,7		
	N	64	97,0	157	99,4	136	97,8	41	97,6	398	98,3	*	0,349
Vitamin D	Y	14	21,2	41	25,9	45	32,4	12	28,6	112	27,7		
	N	52	78,8	117	74,1	94	67,6	30	71,4	293	72,3	3,164	0,367
Vitamin C	Y	11	16,7	45	28,5	50	36,0	17	40,5	123	30,4		
	N	55	83,3	113	71,5	89	64,0	25	59,5	282	69,6	10,218	0,017
Magnesium	Y	5	7,6	10	6,3	10	7,2	2	4,8	27	6,7		
	N	61	92,4	148	93,7	129	92,8	40	95,2	378	93,3	*	0,947
Zinc	Y	7	10,6	20	12,7	25	18,0	6	14,3	58	14,3		
	N	59	89,4	138	87,3	114	82,0	36	85,7	347	85,7	2,62	0,454
Famotidine	Y	2	3,0	21	13,3	27	19,4	10	23,8	60	14,8		
	N	64	97,0	137	86,7	112	80,6	32	76,2	345	85,2	12,586	0,006
Colchicine	Y	1	1,5	5	3,2	0	0,0	3	7,1	9	2,2		
	N	65	98,5	153	96,8	139	100,0	39	92,9	396	97,8	*	0,019
Corticosteroids	Y	0	0,0	6	3,8	7	5,0	11	26,2	24	5,9		
	N	66	100,0	152	96,2	132	95,0	31	73,8	381	94,1	*	0,0001
Omega-3	Y	0	0,0	2	1,3	3	2,2	0	0,0	5	1,2		
	N	66	100,0	156	98,7	136	97,8	42	100,0	400	98,8	*	0,772
Necessary drugs for chronic diseases	Y	0	0,0	13	8,2	15	10,8	9	21,4	37	9,1		
	N	66	100,0	145	91,8	124	89,2	33	78,6	368	90,9	14,897	0,002
Paracetamol	Y	29	43,9	72	45,6	51	36,7	14	33,3	166	41,0		
	N	37	56,1	86	54,4	88	63,3	28	66,7	239	59,0	3,688	0,297
Nonsteroidal anti-inflammatory drugs	Y	8	12,1	12	7,6	22	15,8	5	11,9	47	11,6		
	N	58	87,9	146	92,4	117	84,2	37	88,1	358	88,4	4,913	0,178

x^2=chi squared ;n= number; *p*=*p* value, Y= Yes, N= No, n= number

in 23%, severe cough in 19.3%, and diarrhea in 15.3% of the participants.

Also, 25.4% of the participants declared that they had a chronic disease. The rate of those who use the necessary drugs for chronic diseases is significantly higher (14.6%) among family physicians and general practitioners ($p<0.05$). Favipiravir was prescribed to 81.2% of the participants. The rate of those who use the drug "Favipiravir" is significantly higher (92.9%) in the group over 51 years old, this rate is 65.2%, with the lowest in the 21-30 age group ($p<0,05$). Besides that, 20.7% stated that they were prescribed hydroxychloroquine, 15.6% a quinolone group antibiotic, 11.9% an antibiotic from the penicillin group or any group that they did not know the name. The antibiotic prescription rate was found to be significantly higher in the group over 51 years of age ($p<0.05$). Prescription rates of subcutaneous heparin, vitamin C, acetylsalicylic acid, famotidine, colchicine, and methylprednisolone were found to be significantly higher in the older age group ($p<0.05$) (Table-1). Furthermore, 41% noted that they were prescribed paracetamol, 30.4% subcutaneous heparin, 30.4% vitamin C, 26.9% vitamin D, 18.5% acetylsalicylic acid, 16.8% acetylcysteine, 14.8% famotidine, 14.3% zinc, 11.6% other nonsteroidal anti-inflammatory drugs, 6.7% magnesium, 5.9% corticosteroid, 2.2% anakinra, 1.7% dipyridamole, 1.2% omega 3. Additionally, tocilizumab use was reported by one patient, remdesivir by two, and lopinavir-ritonavir by one. As for the relationship between occupational fields and prescribed drugs, a significant dependency is observed between the use of supplemental heparin by specialist physicians and academicians ($p<0.05$). The rate of those who use subcutaneous heparin is significantly higher (40.6%) among those who are specialist doctors and academicians.

Of the healthcare professionals with Covid-19, 98% had a positive attitude to support their treatment regime. The participants also received drugs and herbal products on their own, without any advice by the physician they consulted, including vitamin C (53.3%), vitamin D (48.1%), acetylsalicylic acid (26.7%), paracetamol (23%), zinc (26.4%), magnesium (12.6%), multivitamin (19%), acetylcysteine (14.8%), famotidine (14.3%), subcutaneous (heparin 12.6%), probiotic-prebiotic containing products (11.1%), omega 3 (6.9%) and hydroxychloroquine (1.5%). As for herbal products, they noted inhaling thyme oil (11.6%), drinking thyme oil (10.1%), consuming ginger (14.3%), products containing black elderberry (5.9%), inhaling lavender-melissa-peppermint oil (4.2%), drinking black cumin oil (3.2%). They increased consuming garlic by 16.5% and kefir by 8.1%. About 5% of them used mixed teas including herbs such as olive leaves, green tea, and linden as well as bee products such as propolis and pastes recommended by herbalists. Moreover, 0.5% received homeopathy while 2.2% received ozone therapy. Table 2 shows the drugs-herbal products and occupational groups that people started on their own for treatment support and the situations in which a significant dependency relationship was found between them.

Although 91.4% of the volunteers declared that they paid attention to taking their medication regularly, 13.3% occasionally neglected to take their medications, while 17.3% stopped using them when they started to feel better. However, 11.4% declared that they stopped using their medication due to drug-related reasons. As for non-prescription supplemental drugs, 44.4% of the participants benefited from them, 24.4% did not benefit at all, and 31.1% were not sure. Besides that, 4.9% stated that they misused their prescription drugs. The rate of saying "I agree" to the statement that I have benefited greatly from the supportive treatments I received without a prescription was significantly higher (54.9%) among those who were Family Physicians and General Practitioners ($p<0.05$). Drug-related adverse effects were not reported by 43.7%, but 34.3% experienced mild whereas 9.4% serious side effects. The relationship between occupational groups and drug experience is given in Table 3.

DISCUSSION

With the emergence of the Covid-19 outbreak, the absence of a proven standard antiviral treatment proved to be very challenging for the healthcare workers, fighting in the midst of the pandemic (9). The results of a meta-analysis published in May 2020 revealed that one out of every four healthcare staff working under pandemic conditions experienced anxiety-depression and one out of every three had insomnia (10). The World Health Organization reported that the incidence of Covid-19 infections among healthcare workers was 10% in the first 3 months of the pandemic, while it was below 5% in June 2020 and around 2.5% in September 2020 (11). According to an Italian study, 20% of healthcare staff working in Covid-19 clinics were infected in the first 2 months of the pandemic (12). Guidelines were

Table 2. Therapies you start yourself for the treatment of Covid-19

		Profession									
		Specialist Doctor + Academic Doctor		Family Physician+ General Practitioner		Nurses and other health personnel		Total		Chi-Square Analysis	
		n	%	n	%	n	%	n	%	x^2	*p*
Hydroxychloroquine	Y	2	1,1	0	0,0	4	2,7	6	1,5		
	H	173	98,9	82	100,0	144	97,3	399	98,5	*	0,313
Remdesivir	Y	1	,6	0	0,0	0	0,0	1	,2		
	H	174	99,4	82	100,0	148	100,0	404	99,8	*	1
Subcutaneous Heparin	Y	28	16,0	15	18,3	8	5,4	51	12,6	11,21	
	H	147	84,0	67	81,7	140	94,6	354	87,4	2	0,004
Acetylsalicylic acid	Y	43	24,6	26	31,7	39	26,4	108	26,7		
	H	132	75,4	56	68,3	109	73,6	297	73,3	1,466	0,481
Dipyridamole	Y	2	1,1	0	0,0	0	0,0	2	,5		
	H	173	98,9	82	100,0	148	100,0	403	99,5	*	0,682
Vitamin D	Y	84	48,0	45	54,9	66	44,6	195	48,1		
	H	91	52,0	37	45,1	82	55,4	210	51,9	2,238	0,327
Vitamin C	Y	95	54,3	49	59,8	72	48,6	216	53,3		
	H	80	45,7	33	40,2	76	51,4	189	46,7	2,728	0,256
Magnesium	Y	26	14,9	9	11,0	16	10,8	51	12,6		
	H	149	85,1	73	89,0	132	89,2	354	87,4	1,437	0,487
Zinc	Y	51	29,1	28	34,1	28	18,9	107	26,4		
	H	124	70,9	54	65,9	120	81,1	298	73,6	7,469	0,024
Famotidine	Y	24	13,7	20	24,4	14	9,5	58	14,3		
	H	151	86,3	62	75,6	134	90,5	347	85,7	9,679	0,008
Sniffing essential oils of plants such as lavender, lemon balm, peppermint oil	Y	8	4,6	3	3,7	6	4,1	17	4,2	0,128	0,938
	H	167	95,4	79	96,3	142	95,9	388	95,8		
Paracetamol	Y	40	22,9	17	20,7	36	24,3	93	23,0		
	H	135	77,1	65	79,3	112	75,7	312	77,0	0,387	0,824
Nonsteroidal anti-inflammatory drugs	Y	25	14,3	12	14,6	8	5,4	45	11,1		
	H	150	85,7	70	85,4	140	94,6	360	88,9	7,695	0,021
Acetylcysteine	Y	30	17,1	18	22,0	12	8,1	60	14,8		
	H	145	82,9	64	78,0	136	91,9	345	85,2	9,336	0,009
Colchicine	Y	1	,6	2	2,4	2	1,4	5	1,2		
	H	174	99,4	80	97,6	146	98,6	400	98,8	*	0,356
Corticosteroids	Y	3	1,7	5	6,1	1	,7	9	2,2		
	H	172	98,3	77	93,9	147	99,3	396	97,8	*	0,038
Omega-3	Y	13	7,4	9	11,0	6	4,1	28	6,9		
	H	162	92,6	73	89,0	142	95,9	377	93,1	4,055	0,132
Multivitamins	Y	32	18,3	17	20,7	28	18,9	77	19,0		
	H	143	81,7	65	79,3	120	81,1	328	81,0	0,218	0,897
İnhaling thyme oil	Y	36	20,6	19	23,2	21	14,2	76	18,8		
	H	139	79,4	63	76,8	127	85,8	329	81,2	3,452	0,178
Drink thyme oil	Y	17	9,7	11	13,4	13	8,8	41	10,1		
	H	158	90,3	71	86,6	135	91,2	364	89,9	1,3	0,522
Drinking Black Seed Oil	Y	4	2,3	4	4,9	5	3,4	13	3,2		
	H	171	97,7	78	95,1	143	96,6	392	96,8	*	0,504
Drinking Kefir	Y	10	5,7	9	11,0	14	9,5	33	8,1		
	H	165	94,3	73	89,0	134	90,5	372	91,9	2,601	0,272
Using probiotics and prebiotics	Y	16	9,1	14	17,1	15	10,1	45	11,1		
	H	159	90,9	68	82,9	133	89,9	360	88,9	3,78	0,151
Increasing garlic consumption	Y	20	11,4	13	15,9	34	23,0	67	16,5		
	H	155	88,6	69	84,1	114	77,0	338	83,5	7,776	0,02
Eating ginger	Y	15	8,6	12	14,6	31	20,9	58	14,3		
	H	160	91,4	70	85,4	117	79,1	347	85,7	8,976	0,011
Consuming Turmeric	Y	8	4,6	3	3,7	6	4,1	17	4,2		
	H	167	95,4	79	96,3	142	95,9	388	95,8	5,382	0,068
Using elderberry extract	Y	13	7,4	9	11,0	2	1,4	24	5,9	10,01	
	H	162	92,6	73	89,0	146	98,6	381	94,1	5	0,007
Ozone Therapy	Y	8	4,6	0	0,0	1	,7	9	2,2		
	H	167	95,4	82	100,0	147	99,3	396	97,8	*	0,024

x^2=chi squared ;n= number; *p*=*p* value, Y= Yes, N= No, n= number

Table 3. Occupational groups-drug experience relationship

		Profesion								Chi-Square Analysis	
		Specialist Doctor + Academic Doctor		Family Physician+ General Practitioner		Nurses and other health personnel		Total			
		n	%	n	%	n	%	n	%	x^2	*p*
I have not experienced any side effects with the drugs	I agree	84	48,0	41	50,0	52	35,1	177	43,7		
	I'm undecided	27	15,4	12	14,6	22	14,9	61	15,1		
	I do not agree	64	36,6	29	35,4	74	50,0	167	41,2	8,364	0,079
I experienced mild side effects related to medication	I agree	63	36,0	34	41,5	42	28,4	139	34,3		
	I'm undecided	23	13,1	5	6,1	20	13,5	48	11,9		
	I do not agree	89	50,9	43	52,4	86	58,1	218	53,8	6,587	0,159
I've had serious side effects with medication	I agree	17	9,7	5	6,1	16	10,8	38	9,4		
	I'm undecided	12	6,9	7	8,5	18	12,2	37	9,1		
	I do not agree	146	83,4	70	85,4	114	77,0	330	81,5	4,39	0,356
I have accidentally used drugs outside of the recommended form.	I agree	8	4,6	3	3,7	9	6,1	20	4,9		
	I'm undecided	4	2,3	1	1,2	4	2,7	9	2,2		
	I do not agree	163	93,1	78	95,1	135	91,2	376	92,8	*	0,903
I benefited greatly from the supportive treatments I received without a prescription.	I agree	62	35,4	45	54,9	73	49,3	180	44,4		
	I'm undecided	74	42,3	22	26,8	30	20,3	126	31,1		
	I do not agree	39	22,3	15	18,3	45	30,4	99	24,4	22,855	0,0001
Total		175	100,0	82	100,0	148	100,0	405	100,0		

x^2=chi squared ;n= number;*p*= *p* value

prepared in some countries, in which some treatment protocols were recommended within the framework of the national diagnostic treatment guidelines. Almost all of the healthcare professionals (98%) who participated in this study, used another drug or herbal product in addition to the recommendations presented in these guidelines.

Hydroxychloroquine was the drug that became the topic at the first step. It was the first drug approved for immediate use in the treatment of SARS-Cov-2 due to its known immunomodulatory and anti-inflammatory activity, and also because it was observed to prevent the fusion between viral and cellular membranes as well as viral replication inside the cell, during SARS-CoV-2 (13). Although it was studied in a very small sample, the mention of its effectiveness in Covid-19 made this drug the most popular drug at the beginning of the pandemic (14). Although its benefits have been controversial due to its potential risks, such as cardiac arrhythmia-inducing effects as well as inconsistencies in clinical trial results, many countries including the USA, India and Turkey included it in the treatment guidelines. A meta-analysis study compiling 15 studies conducted in 2019-2020 involving totally 10,659 patients, revealed that hydroxychloroquine can not improve clinical outcomes in Covid-19 treatment (15). The World Health Organization discontinued hydroxychloroquine/chloroquine arm of the SOLIDARITY study, carried out with a view to evaluating the effects of hydroxychloroquine, lopinavir/ritonavir, remdesivir, and interferon on 11,330 patients in 30 cities and 405 hospitals on 6 continents, due to the first results of the study published in June (on June 19, 2020), revealing the ineffectiveness of the drug (16). Hydroxychloroquine was excluded from the May 2021 update of Turkish treatment guidelines (17). In our study, one out of every 5 participants reported that they used this drug. Favipiravir usage rate was over 80%. It is noticeable that the rate of hydroxychloroquine use among healthcare professionals was considerably low. Favipiravir continues to be the used in the current treatment guidelines of many countries. Favipiravir, a

purine analogue prodrug, is a RNA-dependent RNA polymerase inhibitor approved for use in the treatment of influenza (18). A multicenter, randomized controlled, and prospective study published in November 2020 in Japan, showed that favipiravir led to a numerical reduction in viral load in RT-PCR results, of the swab samples taken on Day 6 from asymptomatic and mildly symptomatic Covid-19 patients (19). Again another study showed that favipiravir reduced viral load not only in the upper respiratory tract but also in the lungs (20). Many studies conducted with favipiravir indicated that it enhanced clinical improvement and reduced hospitalization rates (21-24). On the other hand, further randomized controlled trials are needed to determine the dose and the duration of treatment in critically ill groups, considering study designs so far including mostly the individuals with mild and moderate infections, and inadequate evidence values of some studies, as well as the limitations of the studies (25,26). Given that favipiravir was initiated in all Covid-19 positive cases, it is apparent that 18.2% of our sample did not use it. In this study, there is an increase in the rate of not using favipiravir, especially in the younger group.

The only drug approved by the FDA for treatment is Remdesivir It is an RNA polymerase inhibitor. It is recommended to be used in Covid-19 patients over 12 years of age and over 40 kg body weight and requiring hospitalization (27). It has not been licensed yet commercially available by the Ministry of Health in Turkey. Therefore, this drug was not discussed in detail in this study.

Another important finding of our study is that antibiotics containing the penicillin or quinolone group were initiated in 27.5% of our sample. Although secondary bacterial coinfection of Covid-19 is quite low, the rate of empirical antibiotic use is considerably high in Covid-19 cases. In our study, we see an increase in antibiotic use rates in the older age group. In a meta-analysis covering a period from May 2020 on and including 3338 patients, the rate of empirical antibiotic use was 71.9% although co-infection rate was determined as 3%, secondary bacterial infection as 14.3%, risk of infection in the intensive care unit as 8% (28). Every year, 700 000 people worldwide die as a result of getting infected with drug-resistant bacteria. Irrational drug use (IDU) is a serious condition that affects public health (29). In this respect, it is very important to prevent unnecessary antibiotic therapy in Covid- 19.

WHO recommends the use of steroids in severe and critical patients but not in mild cases, based on randomized controlled trials using steroids in the suppression of hyperinflammation of Covid-19 infection (30). It was determined that steroids were used at lower rates in our sample with respect to inpatients.

Famotidine is a drug that reduces gastric acid secretion. There are observational studies in the literature showing that Famotidine can reduce clinical deterioration associated with intubation or death in hospitalized Covid-19 patients (31). A randomized controlled trial is still ongoing in this topic (32). The rate of adding famotidine to their treatment was 14% in our sample group.

Although no curative agent has been found for the treatment of Covid-19 yet, symptomatic treatment has been the most common treatment approach. Today, we know that the cytokine storm is the main pattern determining the clinical picture in Covid-19 infection, through immunogenic damage on the endothelium and alveolar tissues (33). In this respect, hypotheses regarding the contribution of immunomodulatory agents to the treatment became a current issue. In particular, high-dose vitamin C (Ascorbic acid) was investigated in the treatment of Covid-19 due to its inhibitory roles on TNF alpha and IL-6 as well as its regulatory features in the proliferation of T cells, B cells and Natural Killer cells (34). There are studies in the literature showing that high-dose intravenous vitamin C can improve pulmonary functions and reduce the progression to acute respiratory distress syndrome in critically ill patients (35-37). There is no evidence that oral doses of vitamin C reduce the risk of SARS-CoV-2 infections in normal healthy populations. There is no sufficient evidence for oral administration of vitamin C, except in the elderly, people with low vitamin C levels, and high-energy exercisers (38,39). It was observed that one out of every two people participating in our study used vitamin C supplementation in their treatment.

Although studies indicate that unsaturated fatty acids, B group vitamins, minerals such as zinc, ıron, selenium and prebiotic probiotic products have promising therapeutic values on possible supportive roles in Covid-19 prophylaxis and treatment due to their antioxidant, immunomodulatory, and immune functions-improving properties, this effect is not definitive. Completion of nutritional deficiencies can be corroborated for today. High morbidity and mortality rates were noted in groups with nutritional

deficiencies. However, the concluding data suggest that Covid-19 prophylaxis or treatment should not be diet or micronutrients (40, 41). This study shows that those with Covid-19 infection added the mentioned support products to their treatment at high rates.

There are studies in the literature correlating the prognosis in Covid-19 with low levels of vitamin D in addition to the factors such as advanced age, male gender, obesity, and comorbidities (42-45). This study was not intended to investigate the results of vitamin D levels. More evidence is available in scientific studies regarding the effectiveness of vitamin D on Covid-19 in comparison to other supplementary treatments (46).

Thrombotic complications are common in Covid-19 patients. The main pathological feature of the SARS-CoV-2 virus is that it triggers the release of proinflammatory cytokines, activates the immune response, and leads to microvascular and macrovascular thrombosis and platelet aggregation via the coagulation cascade (47). The use of acetylsalicylic was questioned after some studies reported that using NSAIDs worsens the prognosis of Covid 19 (48). Acetylsalicylic acid, as an anti-inflammatory, analgesic, antiviral and antiplatelet agent, has been a highly controversial drug. Studies revealed that it can reduce mortality and thrombotic side effects when used in the right patient subgroups. However, attention should be paid in its use in children due to the risk of Reye's syndrome and bleeding (49). It was determined in our study that acetylsalicylic acid use was high.

Inhaling thyme oil, lemon balm and peppermint oil and drinking black cumin were the most preferred herbal products in the treatment of Covid-19 among the participants. Essential oils are known to penetrate the viral membrane, causing disruption in the membrane structure and inactivating its entry into the host cell. Based on the results of their study examining the effectiveness of 221 phytochemicals and volatile components on SARS-CoV-2, Wen et al. demonstrated that volatile oils had a remarkable potential in inhibiting virus binding (via the inhibition of ACE-2) and virus replication (50,51).

In a study investigating the utility of herbal products as adjuvant therapy in symptomatic treatment, it was stated that they might be safe alternatives improving patients' well-being irrespective of their potential contribution in treatment. However, it is recommended not to be used as a treatment supplement without the advice of a physician. (52, 53) There are also positive publications in the literature regarding the use of ozone therapy in combination with other treatments in SARS-CoV-2, by inactivating the virus directly and reducing viral replication. More comprehensive studies are needed to determine the effective dose and duration. It should be considered that it is contraindicated in pregnant patients as well as the patients with uncontrolled hypothyroidism. (54,55) In our study, it was determined that ozone therapy was used to provide treatment support, even in a small number of people.

According to the results of the "Economic Burden of Covid-19 Treatment" study conducted by using the real data of 1056 Covid-19 patients in Turkey, the pandemic brought an incremental cost of 3.7 billion Turkish Lira to Turkey's health bill last year between March 16 and July 31 of 2020. In the study based on the diagnosis, testing, medication, and treatment expenses, the cost per person was determined as 405 TL for an outpatient and 10.004 TL for an inpatient (56). It seems to be an obvious fact that keeping drug prescriptions at a rational level will be beneficial in terms of cost. One out of every two people participating in the study declared that they did not benefit from the supplementary products taken without a prescription during their treatment. This study data should be supported by pharmacoeconomic studies.

The mean age of the health staff in our study was 39.2 years, and one out of every 4 participants declared that they had a chronic disease requiring regular medication. Although there were people who failed to take their medications or discontinued using them when they felt better in a serious disease such as Covid-19, as examples of potentially fatal mistakes, the rates in terms of treatment compliance were found to be rather high. Approximately 11.4% of the participants stated that they stopped their medications due to drug-related reasons. During the treatment process, drug-drug interactions and drug-herbal product interactions should be revealed by pharmacovigilance studies.

In the initial times when the pandemic first appeared, WHO pointed out infodemic as another equally dangerous issue. Misinformation, likewise fear, has the potential to spread rapidly through social platforms (57). As a matter of fact, a study conducted in Turkey determined that almost all of the news circulating on the internet on 11-18 March 2020 were false (58). Healthcare workers constitute a group having the responsibility to reach the right information

resources, in spite of being under the information bombardment and in a position to sort out the infollution. In this respect, the search of health workers for the right information sources throughout the Covid-19 pandemic can be evaluated in another study.

CONCLUSION

The world went through an important test in the first year of the Covid-19 pandemic, the disease was spreading worldwide causing panic, while its pathophysiology was still unknown and no specific treatment or vaccine was not found yet. Healthcare professionals played a leading role in the war against pandemic, while this process offered the opportunity to be isolated for many segments of the society in the context of mask, distance, and hygiene. In this respect, what they have used for their own treatment in terms of prophylaxis and treatment as well as their treatment compliance attitudes in terms of their responsibility of rational drug use became the subject of this study. As a result, healthcare professionals showed high compliance with the treatments given, almost all of the participants acted to support the prescribed treatment even though they did not know whether the supplements they used were effective or not, and many of them additionally used vitamins, minerals and herbal products. The fact that almost half of the users of supplemental products declared that they did not get an effective result, indicating that the economic outputs of the process are worth investigating. The limitation of this study was that it was organized as an online survey due to pandemic conditions.

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