Original Article

Knowledge and Attitude of New Coronavirus Epidemic (COVID-19) Among Health Care Workers

Sağlıkçılar Arasında Yeni Koronavirüs Hastalığı (COVID-19) Salgınıyla Mücadele Bilgi Düzeyi, Korunma ve Tedavi Hakkındaki Görüşlerinin Değerlendirilmesi

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ABSTRACT

Objective: The recent spread of new coronavirus disease-19 (COVID-19) pandemic causing worldwide concern is a public health emergency situation. The risk of getting infected due to close contact with the infected patients as well as the concern levels of the health professionals on this issue are very high. The aim of this study is to evaluate the concern level of being infected of the health professionals, as well as their view and perception of different applications used during the treatment of the COVID-19 cases together with their whole approach during this pandemic situation.

Methods: The study was conducted through an online survey that was sent to all the health professionals of a pandemic hospital in a city in Turkey between 8-15 May 2020. This online survey was sent to all the professionals through social media platforms. The survey included both multiple-choice and true-false questions regarding COVID-19 diagnosis, clinical staging, treatment approach, concerns, knowledge, and awareness of the situation together with some social demographic characteristics of the health professionals. SPSS v20 program was used to evaluate the statistical analysis of the data collected. Data are shown through mean ± standard deviation and percentage.

Results: The study population consisted of 250 (59.9%) doctors and 169 (41.1%) assistant healthcare professionals and the average age of the participants was 33.21±6.88 years. Of 128 participants who smoked during the pandemic 76 (18.1%) wanted to quit smoking. Three hundred and ninety (93.1%) participants thought that they were in a group with high risk of being infected and that they concerned about this matter. Of the participants 109

ÖZ

Amaç: Yeni coronavirüs hastalığı (COVID-19) salgını, uluslararası endişe duyulan bir halk sağlığı acil durumudur. Bu çalışma, mevcut salgın sırasında sağlık çalışanları arasında enfekte olma endişesini, tutumlarını, tedavi ve COVID-19 ile mücadeledeki çeşitli uygulama modifikasyonları konusundaki görüş ve davranış tarzlarını değerlendirmek amacıyla yapılmıştır.

Yöntemler: Türkiye'de bir ilin pandemi hastanesindeki sağlık personeline 8-15 Mayıs 2020 tarihleri arasında bir çevrimiçi anket uygulayarak gerçekleştirilmiştir. Ankette sosyodemografik özelliklere dair sorular ile beraber COVID-19 tanı, klinik, tedavi tutumu, kaygı, bilgi ve farkındalık ile ilgili çoktan seçmeli sorular ve doğru yanlış soruları soruldu.

Bulgular: Katılımcıların 250'si (%59,9) doktor, 169'u (%41,1) yardımcı sağlık personelinden oluşuyordu, yaş ortalamaları 33,21±6,88 yıl idi. Sağlık sektöründe çalıştığı için COVİD-19 bulaşma riskinin yüksek olduğunu düşünenlerin ve kaygı duyanların sayısı ise 390 (%93,1) kişidir. Yüz dokuz (%26,01) kişinin yakınlarında COVID-19 testi pozitif çıktığı beyan edilmiştir. Altmış dört (%15,3) sağlık çalışanı polimeraz zincir reaksiyonu (PCR) testi yaptırdığını bildirmiştir ve 3 (%0,7) sağlık çalışanı da COVID-19 PCR testin pozitif çıktığını bildirilmiştir.

Sonuç: Salgın sırasında pandemi hastanesinde çalışan sağlıkçılar COVİD-19 hakkında genel olarak yeterli bilgiye sahip olduklarını ve ülkemizin salgınla mücadelede başarılı olacağına inandıklarını ortaya koymuştur.

Anahtar Sözcükler: Sağlık çalışanları COVID-19 bilgi düzeyi, hidroksiklorakin profilaksisi, COVID-19

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(26.01%) had COVID-19 positive relatives or friends. Sixty four (15.3%) participants claimed to have a polymerase chain reaction (PCR) test, and 3 (0.7%) of them reported that their COVID-19 PCR tests were positive. Eighty-four (20.04%) stated that they used hydroxychloroquine for prophylaxis.

Conclusion: The healthcare professionals working in the pandemic hospital during the pandemic stated that they generally had sufficient knowledge about COVID-19 and believed that our country would be successful with its fight against this pandemic. Moreover, our study proved the importance of knowledge levels in fighting communicable diseases.

Keywords: COVID-19 health care professionals, knowledge levels of COVID-19, hydroxychloroquine prophylaxis

Introduction

New type of coronavirus disease-19 (COVID-19) which emerged in China had negative effects on all parts of daily life (1). First patients of the epidemic presented with pneumonia without any etiology and associated with the seafood exposure epidemiologically at the end of December 2019 in the city of Wuhan which was located in the Hubei province of China. (2). The World Health Organization (WHO) declared the disease as public health epidemic and international state of emergency on 30 January 2020 when it already spread to 34 different districts of China up to that date (3).

Structurally, new type of coronavirus is an ss-RNA enveloped virus with positive polarity which is approximately 350 kbp in size (4). The droplet feature was identified as the primary cause of the spread of the virus (5).

Incubation period which was the time until the symptoms development after exposed to the virus was between 2 to 14 days with an average of 5 days (6). Upper respiratory tract infections, high fever, dry cough, difficulty in breathing, myalgia, pain in throat, nausea, vomiting and diarrhoea are some of the common symptoms of the infection (7). When the vital role of the immune system of the body is considered, the risk of elderly people and people with chronic diseases which weaken the immune system is much higher when they are infected with the virus compared with young and health people with stronger immune systems (8). COVID-19 might result in acute coronary syndrome, acute respiratory failure and mortality in severe patients (9). Even though the mortality rate associated with COVID-19 is quite low, it has the potential of spreading very quickly (10). It is strongly recommended to place the possibly infected individuals into quarantine and observe them after real time real time reverse transcriptase polymerase chain reaction (RT-PCR) samples are taken until further investigations are carried out (11). Unfortunately there is no antiviral vaccine developed at the moment. Therefore patients have to rely on supportive treatments such as vitamin A, C and D (12). Due to COVID-19's fast spreading and devastating attitude, a lot of countries have shut down education institutions, social gatherings, sports events, airports and even banks or brought flexible working hours for them to be able to control the spread of the virus. Besides, most of the individuals play their parts in the society quarantining themselves by staying inside their homes to minimize the spread of the virus. At the same time having all the hospitals functioning actively during these difficult times is vitally important and they are rarely shut down during epidemic conditions. The health care professionals are at high risk of contamination due to their close contact with the infected patients. Therefore, there is a high risk of health care professionals getting infected from their patients and potentially they can spread the virus to their friends, relatives and even to other patients. Under these circumstances, development of anxiety of getting infected from the patients in health care professionals might be considered as a natural behaviour (13).

Even though Ministry of Health has issued guidance on prevention, most of the health care professionals are scared of conducting detailed examination and treatment for the patients with COVID-19 risk. Actually, health care professionals might not be updated with the latest guidelines. Because of this, we conducted a survey based study to evaluate the current status and the perception of the health care professionals locally in our city. This study aimed to evaluate and understand the knowledge levels of the health care professionals working actively during the COVID-19 epidemic on the infection, as well as their behavior and attitude, their knowledge level on treatment process, their own methods for prophylaxis, and their overall concerns.

Methods

The study was conducted through an online survey which was sent to all the Health professionals (mostly doctors and the nurses in the COVID-19 units) of a pandemic hospital in a city in Turkey between 8-15 May 2020. For this purpose a very well designed survey was developed on https://docs.google.com/forms website. The professionals were contacted through social media and called personally to inform them about the details of the survey and their responses were recorded. The survey was completed manually by the professionals that could not be contacted through social media. The health professional involved in the diagnosis, treatment and the follow-up process of COVID-19 were included in the study. The survey included multiple choice

questions regarding COVID-19 diagnosis, clinical staging, treatment approach, knowledge and awareness of the situation together with some social demographic characteristics of the health professionals. Also, there were questions to evaluate the attitude and the concern levels of them with true-false or unsure choices.

Statistical Analysis

The SPSS v20 program was used for the statistical analysis of the data which were transferred to Microsoft Excel from the Google form format by adhering to the original states of them. Data were shown through mean ± standard deviation, number of samples and percentages.

Survey Question Form

Demographic characteristics of the participants including age, sex, marital status and occupation were recorded. The occupation and the designation of the participants were categorized. Participants were asked to answer the questions on following subjects: The symptoms of COVID-19, diagnosis and treatment, blood parameters, risk groups, routes of contamination, precaution and prevention methods, level of their knowledge on the infection, treatment and prophylaxis, as well as their concerns during this epidemic. Answers for the questions were as follows: Present- not present, yes-no, true-false- do not know, multiple choices with multiple answers, open ended answers, and agree-disagree- unsure.

Results

When looking at the demographic characteristics of the participants following findings were recorded. Two hundred and thirty two (55.4%) males and 187 (44.6%) females were included in the study (a total of 419 participants) with a mean age of 33.21±6.88 (20-57). Of them 276 had minimum one child or more. Of them 250 (59.9%) were doctors and the other 169 (41.1%) were assistant health care professionals such as nurses. When the participants were classified according to their designation; 169 (40.1%) were assistant health care professionals, 124 (29.6%) were doctors, 106 (25.3%) were academic member doctors, 10 (2.4%) were associate professor doctors and 10 (2.4%) were professor doctors.

Of the participants 67 (16%) had chronic diseases including 17 (4.05%) with asthma, 13 (3.1%) with functional thyroid disorder, 8 (1.9%) with diabetes mellitus and 8 (1.9%) with high blood pressure.

Of the participants 128 (30.5%) were smokers and they smoked an average of 23.2 packets of cigarettes per year. Of the 128 smoking participants 76 (18.1%) wanted to quit or made an attempt to quit during the COVID-19 epidemic.

Of the participants 151(36%) claimed sensitivity towards cold and flu-like sicknesses, therefore they were scared of being infected with the COVID-19 virus. Moreover 390 (93.1%) of the participants considered themselves as high risk group for the contamination of the virus because they worked in the healthcare sector.

Of the participants 282 (67.3%) selected the correct choice of "a virus with positive polarity enveloped onto RNA" for the question to evaluate the understanding of the health care professionals' knowledge of SARS-CoV-2 and the COVID-19 virus family. Almost all the participants, 418 (99.8%), selected "China" as the emerging country of the virus. Of the participants 397 (94.7%) selected the "droplet infection" choice as the primary route of transmission of COVID-19 .

Of them 227 (54.2%) selected "polymerase chain reaction" as a means of final diagnosis of the virus and 105 (25%) of them selected "Thorax computed tomography (CT) together with polymerase chain reaction" choice to the question on final diagnosis of COVID-19.

Of them 194 (46.3%) selected the "oropharyngeal sampling" and 183 (%43.7) of them selected "bronchoscopy sampling" as an answer to the question on sampling method which had the highest value for the diagnosis of the COVID-19.

Of them 241 (57.5%) gave the answer of "lymphopenia" to the question regarding the hemogram parameter of the COVID-19. The answers of the participants to the question on procalcitonin levels when there was no accompanying bacterial infection were as follows; 168 (%40.1) answered "does not change', 114 (27. 2%) "will increase", 109 (26%) "will decrease" and 28 (6.7%) did not answer at all.

Of them 149 (35.6%) gave the answer of "fever, dry cough and fatigue", whereas 62 (14.8%) of them gave the answer of "fever, dry cough and loss of sense of taste and smell" to the question on the most common clinical signs and symptoms of COVID-19.

Of them 152 (36.3%) gave the answer of "75 mL/min", whereas 141 (33.7%) gave the answer of "80 mL/min" to the question on the threshold saturation value of the patients with respiratory difficulties for the intubation procedure.

Of the doctors 208 (82.5%) answered "yes", when they were asked if they changed their approach on usage of non-steroid anti-inflammatory medicines towards paracetemol like medicines during COVID-19 epidemic.

Nineteen questions with the answers of true-false on means of transmission of the coronavirus and the anxiety towards the virus were answered with the "true" choice by almost all the participants (Table 2).

Of the participants 122 (29.1%) stated that they did not have any contact with anyone with the COVID-19 and 96 (22.9%) with contact stated that those patients were in their units where they were working.

When asked if any of the relatives and friends were diagnosed as having COVID-19, 109 (26.01%) of them stated that they had friends and relatives with COVID-19 positivity.

Of them 64 (15.3%) answered "yes" when they were asked if they either had COVID-19 PCR or fast antigen- antibody tests. Of the participants who had the tests 3 (0.7%) stated that their own COVID-19 PCR test results were positive.

Table 1. Socio-demographic characteristics of the participants

		n	%
Mean age	33.21±6.88		
Gender	Male	232	55.4
	Female	187	44.6
Occupation	Research assistant doctor	124	29.6
	Assistant profesör	106	25.3
	Associate professor	10	2.4
	Professör	10	2.4
	Assistant health personnel	167	39.9
	Pharmacist	2	0.4
Marital status	Married	280	66.8
	Single	128	30.5
	Divorced	11	2.6
Smoking	Yes	128	30.5
	No	291	69.5

Table 3 shows the answers to the most common precautions and the preventions health care professionals take against the COVID-19.

Of them 158 (37.7%) believed that using hydroxychloroquine (plequanil) might be beneficial for prophylaxis, however 151 (36%) of them believed that there was not enough evidence to support the usage of it. Of them 90 (21.5%) stated that their doctor friends recommended, 85 (20.3%)stated that they used the literature as reference, 66 (15.8%) referred to the panels conducted by the specialists and 36 (8.6%) referred to media when they were asked about the source of information on the effect of hydroxychloroquine for prophylaxis.

Of them 84 (20.04%) stated that they used hydroxychloroquine for prophylaxis to protect themselves from the COVID-19. Three of these 84 participants stated that they used hydroxychloroquine for prophylaxis in line with the Ministry of Health's high risk contact criteria due to their contact with the COVID-19 infected patients. The dosage and the frequency of hydroxychloroquine for prophylaxis are shown at Table 4.

Discussion

Our study showed that most of the health care professionals of a pandemic hospital in one of the cities of Turkey had comprehensive knowledge about the COVID-19 and that they followed the relevant algorithms with necessary literature references. Of them 94.7% were confident with their knowledge on means of transmission of the virus whereas 98.1% of them with their knowledge on the general symptoms as well as how to protect themselves from the virus. Of the participants 93.1% believed that they were in high risk group for the infection and 82.3% of them believed that our country would be successful with its fight against the infection.

Our study used a survey mainly focused on closed end questions to collect information on health care professionals' knowledge

level of COVID-19 epidemic, their behaviours and attitude towards the treatment process, their concerns together with precaution measures taken during the COVID-19 epidemic. It is proven that studies based on surveys collect the information about preferences, attitude, perceptions and the experiences of the participants. However, careful data collection and interpretation are required (14).

The common symptoms of COVID-19 include fever, dry cough and difficulty in breathing. Myalgia, developing phlegm and sore throat are the other symptoms which are less common (7). Virus is transmitted among the humans through droplets as a result of coughing. Touching at own face after touching to a contaminated area is believed to be another means of transmission of the virus (15,16). Incubation period which is the time until the symptoms develop after exposing to the virus is between 2 to 14 days with an average of 5 days (6). Standard diagnostic method is to conduct rRT-PCR tests with nasopharyngeal swab taken from the individual (17). Diagnosis of the infection can be made by evaluating the symptoms, risk factors and computerized chest tomography scans pointing to pneumonia all together (18). The answers which were similar to literature regarding most of the basic knowledge about the COVID-19 were obtained in our study and nearly all the participants gave correct answers to the questions.

Due to long incubation (up to 14 days) period of SARS-CoV-2, it is nearly impossible to determine the individual's exposure to the virus during different stages like isolation, quarantine and till the mortality stage. Because of this, very fast pace transmission of COVID-19 which impacted millions of people around the world was causing severe physiological stress and fear among the people (19). Additionally, non-availability of an approved treatment or a prophylaxis vaccine treatment increases the anxiety of being infected. Therefore, health care professionals are at high risk of being exposed to the virus during this COVID-19 epidemic and this leads to a great level of anxiety among them (20).

Primary transmission means of the COVID-19 happens through droplets (5). That is why the likelihood of heath care professionals being infected and spreading the virus further increase. Current study showed that health care professionals anxiety of getting infected through their colleagues was similar to the anxiety they had by getting infected in the society which had very fast pace of spread of the virus among the people (21). The other concern the health professionals had was transmitting the virus to their family members after they completed their work. Coronavirus may be alive on some surfaces from few hours to few days and due to long incubation period of the virus, people will not show any symptoms and health care professionals are scared of being infected from these people who are admitted to the hospital for other reasons than COVID-19 (22). During the outbreak of COVID-19 the importance of hand hygiene is emphasized repeatedly and this issue is even more important for the health care professionals. The studies show that washing the hands with soap and water or cleaning them with alcohol based disinfectants is an important precaution to control the spread of respiratory diseases including SARS (23,24). Because

Table 2. Knowledge about COVID-19 among health care workers

Questions	True	False	Unknow
Headache, fever, cough, myalgia are symptoms of COVID-19	411 (98.1%)	4 (1%)	4 (1%)
Unlike the common cold, stuffy nose, runny nose, and sneezing are less common in persons infected with the COVID-19 virus.	333 (79.5%)	54 (12.9%)	32 (7.6%)
There currently is no effective cure for COVID-2019, but early symptomatic and supportive treatment can help most patients recover from the infection	380 (90.7%)	24 (5.7%)	15 (3.5%)
COVID-19 patients can't infect the virus when they don't have a fever	6 (1.4%)	386 (92%)	27 (6.4%)
COVID-19 is transmitted through air, contact, fecal-oral routes	403 (96.2%)	8 (1.9%)	8 (1.9%)
Ordinary residents can wear general medical masks to prevent the infection by the COVID-19 virus	385 (91.9%)	24 (5.7%)	10 (2.4%)
It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus	24 (5.7%)	379 (90%)	16 (3.8%)
To prevent the infection by COVID-19, individuals should avoid going to crowded places such as train stations and avoid taking public transportations	409 (97.6%)	2 (0.5%)	8 (1.9%)
Isolation of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus	408 (97.4%)	2 (0.5%)	9 (2.1%)
People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place.	407 (97.1%)	2 (0.5%)	40 (2.4%)
COVID-19: Coronavirus disease-19			

Table 3. Precautions against virus transmission

Questions	Answers	
	n	%
I don't leave the house unless it is necessary	379	(89.8%)
I wash my hands with soap for at least 20 seconds during the day	387	(91.7%)
I wear a mask if I have to go out		%
I pay attention to social distance	385	(91.2%)
I don't stand too close to people 1 meter away from crowded environments.	383	(90.8%)

Table 4. The use of hydroxychloracine in prophylaxis

How to use hydroxychloroquine	n	%
Twice a week, one	31	7.2
One in twenty one days	25	6.0
One every day	10	2.4
Once every two weeks	6	1.4
Two days three times during my contact with patients	6	1.4
Once a week	2	0.5
I used a total of three doses	2	0.5
Once a week, two doses	1	0.2
I use it because of rheumatism	1	0.2
Total	84	20.04

of this, WHO suggests washing the hands or using alcohol based disinfectants very frequently during the health care procedures. Use of a particulate respiratory device like N-95 mask is recommended for the treatment of patients with the suspicion of COVID-19. Otherwise when the distance is less than 1 meter between the professional and the patient, at least a surgical mask should be used to treat all the patients (5). Most of the participants (93.6%) of our study believed that they had higher risk of getting infected than other people and that they were worried about this. Besides, 385 (%91.5) of the participants were observed adhering to the preventive measures. Participants were observed following the literature for the updates, adhering to social distance rules as well as paying attention to the usage of masks. The also stated that they adhered to the social distancing and hygiene rules among each other and at their homes.

The study of Ling Hu et al. (25) showed increase of COVID-19 risk with the presence of chronic diseases and smoking. In parallel to that study, 76 (18.13%) of 128 smoking participants in our study stated that they tried to quit smoking because they were worried of getting infected with COVID-19. Also 88.5% of the participants stated that elderly people, obese people and people with chronic diseases had higher possibility of having severe COVID-19.

How to provide the most effective ventilator support to the patients with COVID-19 with respiratory insufficiency is still being investigated. Apart from intubation, high flow nasal cannula and positive airway pressure methods can be used (31). These two methods provide similar benefits with intubation to the patients at critical stages of the disease, therefore there is nothing certain about in which situation intubation should be done (26). Most of the participants of our study believed that intubation should be performed if the saturation measured from the finger fell below 75 mL/min and the clinical situation of the patient permitted as well as providing non-invasive mechanical ventilation through a helmet mask with two hoses before the intubation might provide better results.

Because of the high fever symptom of COVID-19, fever-reducing therapies should be conducted and non-steroid anti-inflammatory medicines and paracetemol like medicines are considered to be the primary resources. Sridharan Gt et al. showed that the usage of ibuprofen and other non-steroid anti-inflammatory medicines increased the risk of deterioration of COVID-19 (27). Of the doctors who read this study and similar studies in the literature 82.5% stated that they chose paracetemol like medicines.

Schuetz et al. (28) determined that there was a correlation between the procalcitonin level elevation and the severity of the bacterial infections and that it was blunted during the viral infections. Most of the participants in our study gave the answer of "does not change" to the question on the procalcitonin level due to the fact that COVID-19 was a viral infection.

Although there is no definite treatment for COVID-19, hydroxychloroquine and chloroquine which are antimalarial agents with imminomodulator and antienflamatuar activities are recommended for their possible role in the treatment of COVID-19 (29). Even though there is no evidence or data to support the use of these medicines as preventive treatment, there is a lot of interest among the people who are not infected but with high risk of being infected to use these medicines as prophylaxis (30). Our study also showed that some of the health care professionals considered usage of hydroxychloroquine beneficial as prophylaxis and started taking at different doses based on their individual choices. Our study also showed that participants were aware of most of the current studies conducted as well as the experimental treatments.

Study Limitations

Some of the limitations of the study were as follows: Considering the fast impact of the health care professional on the diagnosis, treatment and the preventive measure of COVID-19, data were collected in a very short time period. The knowledge on COVID-19 treatment of the health care professionals shows differences due different studies emerging everyday on the subject. Moreover, the study was conducted only in a pandemic hospital in a city. Even though the survey was applied to almost all the doctors and to nurses working inside the COVID-19 units or having interaction with the patients, there were the presence of lack of response and small sample size. Further studies should be done with larger sample sizes and the data of the studies should be interpreted carefully. Even though survey was sent out to all the health care professionals, it was planned to be applied to the doctor based health care professionals.

Conclusion

There was not any study conducted in our country before which evaluated the knowledge level, concerns, attitude to treatment and the approach to prophylaxis to COVID-19 of the health care professionals. Even though health care professionals have high level of knowledge and application standards, they have the responsibility to keep themselves up to date with all the new information and treatment procedures of COVID-19 emerging due to it is epidemic status. Only a small number of doctors prefer to use hydroxychloroquine for prophylaxis as it only has hypothetical recommendations for its usage on COVID-19 which does not have an approved treatment method yet.

Health care professionals have a special role in the management of this crisis situation as a part of the COVID-19 epidemic. It shows that they care about the epidemic and they keep up with all the current literature information related to the epidemic. They state their sensitivity to preventive measures as they consider themselves in a high risk group to get infected with the virus. It shows that health care professionals in the pandemic hospital have sufficient level of knowledge on COVID-19 and they believe that as a country we will be successful against the fight with the COVID-19 epidemic. This study also proves the importance of knowledge level as a key factor on the management of the communicable diseases. This positive attitude and strong level of faith on the success could be related to their level of knowledge and training even though they know that they are in a high risk group for the infection and more than half of them have either direct or indirect contact with the infected patients.

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