Knowledge and attitudes towards COVID-19 among emergency medical service workers

INTRODUCTION

COVID-19 initially manifested as a cluster of pneumonia cases of unknown etiology in Wuhan, Hubei Province of China on 31 December 2019. The causative agent was identified as a novel coronavirus that had not been previously seen in humans. The World Health Organization (WHO) determined a new name for the epidemic disease caused by this virus – coronavirus disease 2019 (COVID-19) and on January 30th, declared the coronavirus outbreak a Public Health Emergency of International Concern.

As a consequence, although emergency workers have sufficient basic knowledge about COVID-19, there is a need for postgraduate training in many subjects.

SUMMARY

OBJECTIVE: Good knowledge of the coronavirus disease 2019 (COVID-19) among healthcare workers is essential for keeping health systems active and controlling the outbreak. We aimed to investigate the knowledge and attitudes of Emergency Medical Service (EMS) employees who fight COVID-19 at the forefront.

METHODS: A total of 400 EMS workers (doctors, nurses, emergency medical technicians, paramedics, and ambulance drivers) were included in this study. Knowledge, attitude, and preventive behaviors for COVID-19 were evaluated using an online questionnaire.

RESULTS: A total of 275 EMS workers participated in the study with a response rate of 68.8%. The respondents reported that their highest common sources of knowledge about COVID-19 were social media and television (n=240, 88%). Overall, > 96% of the participants had adequate knowledge about the transmission routes of COVID-19. Among the respondents, 36% of them were unaware of the correct hand washing or scrubbing technique. In addition, 78% of the participants had poor knowledge about floor and surface disinfection. The majority of the participants exhibited inaccurate attitudes toward the use of personal preventive equipment. More than half of EMS workers (52%) agreed that a surgical mask is not enough during the procedures that do not generate aerosol. Moreover, a significant proportion of the participants (66%) perceived that a N95 mask is required.

CONCLUSIONS: As a consequence, although emergency workers have sufficient basic knowledge about COVID-19, there is a need for postgraduate training in many subjects.

KEYWORDS: coronavirus disease 2019, emergency medical service, knowledge and attitudes, questionnaire
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Questionnaire

The study questionnaire was administered 2 weeks after the start of the COVID-19 outbreak, between 1-15 April in Turkey. The survey questions were designed based on the recommendations of the World Health Organization (WHO) and modified from previously published research articles. The survey consisted of two sections with 51 question items. The first section of the questionnaire included 46 questions to determine their knowledge about the diagnosis and management of COVID-19, personal protection measures, risk perception, and attitude of EMS workers. Knowledge and attitude were assessed by asking two Multiple Choice Questions (MCQ), and the remaining 44 questions were assessed through five Likert-type scales use statements. The response scales use anchors such as 1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Disagree.

Statistical analysis

Statistical analysis was performed using SPSS for Windows version 23.0 (SPSS Inc., Chicago, Ill., USA). Continuous variables are expressed as mean ± SD or median and interquartile ranges (IQR) according to whether they exhibited a Gaussian distribution. Categorical variables are expressed as proportions and/or percentages. The χ² test was performed to determine the associations between the categorical variables.

RESULTS

This survey was sent to 400 EMS workers. Responses were received from 275 (68.8%) participants, including emergency medical technicians (n=108; 39.3%), paramedics (n=138; 50.2%), doctors (n=8; 2.9%), and ambulance drivers (n=21; 7.6%). The demographic characteristics of the participants are summarized in Table 1.

The main source of COVID-19 information was social media (n=120, 43.6%) and television (n=120, 43.6%), followed by training seminars (n=21, 7.6%), medical books and journals (n=8, 2.9%), and newspapers (n=6, 2.2%).

In this study, we aimed to investigate the knowledge and attitudes of EMS workers about COVID-19.
TABLE 1. DEMOGRAPHIC CHARACTERISTICS OF EMS WORKERS.

| Variables | Emergency medical technician N = 108 (%) | Paramedics N = 138 (%) | Doctors N = 8 (%) | Ambulance drivers N = 21 (%) |
|-----------|------------------------------------------|------------------------|-----------------|--------------------------|
| Age       |                                          |                        |                 |                          |
| ≤29 years | 89 (88.4%)                               | 36 (26.1%)             | 6 (75%)         | 10 (47.6%)               |
| 30-39 years | 18 (16.7%)                           | 101 (73.2%)            | 2 (25%)         | 10 (47.6%)               |
| 40-49 years | 1 (0.9%)                                | 1 (0.7%)               | -               | 1 (4.8%)                 |
| Gender    |                                          |                        |                 |                          |
| Male      | 39 (36.1%)                               | 43 (31.2%)             | 6 (75%)         | 19 (90.5%)               |
| Female    | 69 (63.9%)                               | 95 (68.8%)             | 2 (25%)         | 2 (9.5%)                 |
| Experience|                                          |                        |                 |                          |
| 1-5 years | 60 (55.6%)                               | 1 (0.7%)               | 7 (87.5%)       | 16 (76.2%)               |
| 6-10 years | 31 (28.7%)                             | 46 (33.3%)             | 1 (12.5%)       | 4 (19%)                  |
| 10-15 years | 12 (11.1%)                           | 70 (50.7%)             | -               | 1 (4.8%)                 |
| 16-20 years | 5 (4.6%)                                | 21 (15.3%)             | -               | -                        |

TABLE 2. KNOWLEDGE ABOUT COVID-19 AMONG EMS WORKERS.

| Questions                                                                 | Strongly Disagree/Disagree | Neutral | Strongly Agree/Agree |
|---------------------------------------------------------------------------|----------------------------|---------|----------------------|
| 1. COVID-19 can be fatal?                                                | 36 (13.1%)                 | 41 (14.9%) | 198 (72.0%)          |
| 2. Molecular tests can be used for the diagnosis of COVID-19             | 21 (7.6%)                  | 72 (26.2%) | 182 (66.2%)          |
| 3. Hands should be washed with soap and water for 20 seconds to prevent the spread of infection | 99 (36.0%)                 | 5 (1.8%)  | 171 (62.2%)          |
| 4. The first-line therapy for COVID-19 is antibiotics                    | 120 (%43.6)                | 88 (%32.0) | 67 (24.4%)           |
| 5. A COVID-19 vaccine has started to be administered                     | 213 (77.5%)                | 46 (16.7%) | 16 (%5.8)            |
| 6. COVID-19 is resistant to sanitizers containing at least 70% alcohol   | 137 (49.8%)                | 77 (28.0%) | 61 (22.2%)           |
| 7. The estimated Incubation period for COVID-19 is about 2-14 days       | 4 (1.4%)                   | 12 (4.4%)  | 259 (94.2%)          |
| 8. COVID-19 is more severe in those with underlying diseases (hypertension, diabetes, cancer...) | 6 (2.2%)                   | 4 (1.5%)   | 265 (96.3%)          |
| 9. Most patients infected with COVID-19 develop severe acute respiratory illness | 3 (1.1%)                   | 10 (3.6%)  | 262 (95.3%)          |
| 10. Contact isolation measures should be taken by healthcare professionals while caring for patients with COVID-19 | 2 (0.7%)                   | 6 (2.2%)   | 267 (97.1%)          |
| 11. Droplet isolation measures should be taken by healthcare professionals while caring for patients with COVID-19 | 2 (0.7%)                   | 7 (2.5%)   | 266 (96.8%)          |
| 12. Airborne isolation measures should be taken by healthcare professionals while caring for patients with COVID-19 | 1 (0.4%)                   | 9 (3.3%)   | 265 (96.3%)          |
| 13. A surgical mask is sufficient during operations that do not cause aerosolization in contact with COVID-19 infected patients | 144 (52.4%)                | 55 (20.0%)  | 76 (27.6%)           |
| 14. N95 masks are required during operations that do not cause aerosolization in contact with COVID-19 infected patients | 41 (14.9%)                 | 50 (18.2%) | 184 (66.9%)          |
| 15. A patient infected with COVID-19 should wear a surgical mask         | 83 (30.2%)                 | 54 (19.6%) | 138 (50.2%)          |
| 16. A patient infected with COVID-19 should wear a N95 mask              | 95 (34.5%)                 | 50 (18.2%) | 130 (47.3%)          |

than those with a bachelor’s degree (p<0.001). Their knowledge also differed significantly according to work experience. Participants with less than 10 years of experience had much more wrong answers than the ones with more than 10 years of experience (p:<0.001).

In the section on the attitude of healthcare workers, there were 16 items. Table 3 summarized the attitude and preventive behaviors of EMS workers toward COVID-19.

DISCUSSION

Healthcare professionals who are fully aware and knowledgeable about COVID-19 are essential for keeping health systems active and controlling the outbreak. It is very important to know EMS’s knowledge of and attitudes toward the pandemic since they fight COVID-19 at the forefront and the risk of health personnel getting infected is high when necessary precautions are not taken. On the 29th of April, the Republic of Turkey Ministry of Health declared that 7,428 health
workers had been infected with COVID-19. This number corresponds to 6.5% of the total COVID-19 cases in Turkey. In this study, various topics such as level of knowledge about COVID-19, personal protection measures, risk perception, and attitude of EMS workers were explored. To the best of our knowledge, this is the first study assessing these topics in EMS workers on COVID-19 infection.

This survey was sent to 400 EMS workers and 275 (response rate 69%) participants answered the questionnaire. This rate is lower than similar surveys that have been conducted before. The low participation might be attributed to the overload of stressful work of the EMS staff.

In our study, social media and television were the main sources of participant’s knowledge (88%). This result is compatible with previous studies. A study by Prescott K. showed that the role of social media in providing information about COVID-19 was rather low in England (19%). This low rate might be due to the fact that the study was conducted at a time when the cases in the UK were just emerging.

In our study, the reason why social media is the main tool as a source of information may be that it is more accessible and practical than other online resources such as scientific journals and books. Moreover, the ‘principle of least effort’ might direct people to social media as a source of knowledge. On the other hand, the spread of fake science via social media has been demonstrated, considering that “The social media panic moved faster than the COVID-19 outbreak.”

Previous studies demonstrated that at least 40% of information shared on social media is fake, of which 20% is “dangerously” fake. As a result of such issues, the WHO had to take some actions to guarantee that this virus would not spark a critical social media info-demic.” which is triggered by wrong information.

One of the most important topics that EMS workers should know is hand hygiene and antisepsis. Ensuring hand hygiene all the time is regarded as the most effective preventive measure against infection. In this study, 36% of the responders were unaware of the correct hand washing or rubbing technique. In addition, we found that 78% of the participants had poor knowledge about floor and surface disinfection. There was also a significant variation in correct replies among participants with different educational levels. Responders who were high school graduates answered questions correctly with higher percentages than those with a bachelor’s degree, probably because they are less well aware of the topic (p<0.001). Their knowledge also differed significantly according to work experience. Participants having less than 10 years of experience had much more wrong answers than the ones with more than 10 years of experience (p<0.001). Based on these results, we concluded that...
the knowledge gap among EMS workers about hand hygiene and surface disinfection should be eliminated in the case of a next potential pandemic. Thus, standardized postgraduate education programs with a module focused on infection prevention, such as hand hygiene, or evidence-based strategies for the prevention of a specific type of infection are crucial.

Contact and droplet precautions should be always applied by healthcare workers caring for patients with COVID-19. Furthermore, airborne precautions should be implemented for aerosol-generating procedures. National COVID-19 guidelines for infection prevention and control suggest that wearing a surgical mask is efficient during the transport of suspected COVID-19 patients to the referral health care facility. However, EMS workers who are providing direct care to COVID-19 patients in settings where aerosol-generating procedures are frequently in place should wear N95, FFP2, or FFP3 masks.

Despite national guideline suggestions, most of the respondents who participated in our study chose to raise the level of prevention measures despite the national guideline suggestions. 52% of the EMS workers agreed that a surgical mask is not enough during the procedures that do not generate aerosol. Moreover, a significant proportion of the participants perceived that a N95 mask is required (66%). However, a recent study demonstrated that 85% of healthcare workers in Iran believed that a surgical mask is effective for the prevention of COVID-19 on the procedures that do not generate aerosols. The difference of findings between the two studies may be related to several fake news on the disease. Although there is no scientific evidence, some television programs in our country have argued that such suggestions will help to protect from this disease. Although there is no scientific evidence, these suggestions might have affected our participants and caused information chaos about this disease. Although there is no scientific evidence, these suggestions might have affected our participants and caused information chaos about this disease.

In order to defend themselves from COVID-19, a significant proportion of participants agreed that gargling with salty water (56%), drinking bounty soup (64%), and eating a honey and propolis mixture (88%) can be protective. Since the beginning of this pandemic, some television programs in our country have argued that such suggestions will help to protect from this disease. Although there is no scientific evidence, these suggestions might have affected our participants and caused information chaos about this disease.

Although the national guidelines do not suggest antiviral prophylaxis against COVID-19, 57% of the participants agreed that using prophylactic antiviral drugs were required for the prevention of COVID-19. We perceived that the news telling that these protective drugs are effective on this virus has caused medical personnel to take such drugs thinking of preserving their lives. One-third of the participants thought that they do not have enough knowledge about such protective treatments. In addition, 40% of the participants declared that they have suffered a shortage of protective equipment when caring for COVID-19 patients. Based on
these data, it can be concluded that EMS workers need more often and more practical professional training.

Some limitations should be noted when interpreting our findings. The small sample size is the main strength of the study. The relatively low response rate from EMS staff, sample clustering, and the cross-sectional design of the study are regarded as limitations.

CONCLUSION

As a consequence, although emergency workers have sufficient basic knowledge about COVID-19, there is a need for postgraduate training in many subjects. Professional organizations and non-governmental organizations should cooperate in this regard.

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