

Physicians' opinions on the necessity of COVID-19 vaccination in patients with epilepsy

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ABSTRACT

Objective. The aim of the current study was to investigate the opinions of neurologists and psychiatrists in Iran on the necessity of COVID-19 vaccination in patients with epilepsy (PWE). These data can help policy makers understand the concerns of these healthcare professionals.

Methods. This was a survey study. On September 1st, 2020 we sent a questionnaire (using Google-forms) to all neurologists and psychiatrists in Iran via WhatsApp. The survey included three general questions (age, sex, and discipline) and six COVID-specific questions.

Results. In total, 202 physicians participated in this study (116 neurologists and 86 psychiatrists). Of the participants, 27% believed that PWE are at increased risk of contracting COVID-19. The majority (74%) of the participants would confidently recommend COVID-19 vaccine to their patients. However, only 49% of the physicians would recommend such a vaccine to all patients; others would consider it in special populations only. The overwhelming majority (91%) of the participants would recommend COVID-19 vaccine only when a reliable vaccine becomes available. Many physicians would trust a vaccine that is approved by the World Health Organization (WHO) (46%) or a vaccine that is approved by the Food and Drug Administration (FDA-USA) (34%).

Significance. Physicians have concerns on the issue of the necessity of COVID-19 vaccine in PWE. The most important concern is the reliability of a vaccine and in this regard, two health agencies, the WHO and the FDA, are the most trusted organizations to approve a vaccine against COVID-19.

Key words: coronavirus, COVID, epilepsy, seizure, vaccine

Since late 2019, the world has been experiencing a fatal pandemic of a coronavirus disease (COVID-19) that is caused by SARS-CoV2 [1]. This virus primarily targets the human respiratory system [2]. However, a severe illness characterized by pneumonia, acute respiratory distress syndrome, acute cardiac injury, multi-organ failure, and death may occur [1]. Risk factors for a more severe disease have been identified as older age,

diabetes mellitus, hypertension, chronic respiratory conditions, and severe heart disease, among others [1, 2]. People with epilepsy (PWE) may have any of these conditions as comorbidities [3].

One study suggested that the cumulative incidence of COVID-19 in PWE was higher compared with the population without epilepsy and that the total case fatality rate was also higher in PWE compared to that in patients without

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epilepsy [4]. However, their results were based on a small number of PWE and should be interpreted with caution. Furthermore, another study refuted these observations [5]. Therefore, the evidence on the susceptibility of PWE contracting COVID-19 and its severity, should it occur, is scarce and contradictory [6-8].

COVID-19 is a serious and fatal disease that currently has no effective treatment. Therefore, everybody in the world is enthusiastically awaiting a breakthrough for a vaccine development as soon as possible. Researchers worldwide are working around the clock to develop a vaccine against SARS-CoV2 and regulatory agencies and governments have fast-tracked this vaccine development process [9]. The enthusiasm for having a vaccine against COVID-19, as soon as possible, is understandable. However, there are risks that may come with a fast-tracked vaccine (safety-wise and efficacy-wise). Therefore, some people may legitimately be concerned about the safety and efficacy of such a fast-tracked vaccine [10].

On the other hand, despite being recognized as one of the most successful public health measures in preventing known vaccine-preventable diseases, vaccination is perceived as unsafe and unnecessary by a growing number of people in the world (vaccine hesitancy). Anti-vaccination movements have been implicated in decreasing vaccine acceptance rates and in increasing the risk of vaccine-preventable disease outbreaks and epidemics [11]. Studies of social networks show that opposition to vaccines is small, but far-reaching and growing; these anti-vaccine movements might undermine efforts to end the COVID-19 pandemic through mass immunizations [12].

Healthcare professionals have a key role in transferring the right information to people and in increasing their confidence in vaccines [13]. Therefore, it is helpful and necessary to have a good knowledge of the opinions of the physicians who are the main source of information for PWE and others, on the issue of the necessity of COVID-19 vaccine for these patients. The aim of the current study was to investigate the opinions of neurologists and psychiatrists in Iran on the necessity of COVID-19 vaccine in PWE. These data can help policy makers understand the concerns of these healthcare professionals.

Methods

This was a survey study. PWE are often seen and managed by neurologists in Iran, however, since many PWE also have psychiatric problems, it is not uncommon for PWE to be also managed by psychiatrists. Therefore, we included these two disciplines in the current study. On September 1st, 2020 we sent a questionnaire

(using Google-forms) to all neurologists and psychiatrists in Iran via WhatsApp. A reminder was sent three, five, and seven days later. The survey included three general questions (for age, sex, and discipline) and six COVID-specific questions: 1) Do you think that PWE are at increased risk of contracting COVID-19? 2) Would you recommend the COVID-19 vaccine to your PWE? 3) If you recommend the COVID-19 vaccine, to which PWE will you make such a recommendation? 4) If you recommend the COVID-19 vaccine, which statement best describes your recommendation? (a. I would recommend the COVID-19 vaccine as soon as any vaccine becomes available; b. I would recommend the COVID-19 vaccine only when a reliable vaccine becomes available); 5) Which COVID-19 vaccine do you trust the most? 6) Have you or any family member (parents, siblings, children, or spouse) contracted COVID-19? (table 1).

We performed univariate analyses using the Pearson Chi square and Fisher's exact tests. A *p* value (2-sided) less than 0.05 was considered as significant. Tehran University of Medical Sciences Review Board approved this study. The data is confidential and will not be shared.

Results

In total, 202 physicians participated in this study (116 neurologists and 86 psychiatrists). There are about 1,100 neurologists and 1,000 psychiatrists in Iran. Of the participants, 104 were female and 96 were male (two were missing). The mean age of the participants (\pm standard deviation) was 44 (\pm 9) years.

Of the participants, 27% believed that PWE are at increased risk of contracting COVID-19. The majority (74%) of the participants would confidently recommend COVID-19 vaccine to their PWE. However, only 49% of the physicians would recommend such a vaccine to all patients; others would consider it in special patient populations only. The overwhelming majority (91%) of the participants would recommend the COVID-19 vaccine only when a reliable vaccine becomes available. Many physicians would trust a vaccine that is approved by the World Health Organization (WHO) (46%) or a vaccine that is approved by the Food and Drug Administration (FDA-USA) (34%). Finally, 41% of the participants answered "Yes" to the question: Have you or any family member (parents, siblings, children, or spouse) contracted COVID-19?

Table 1 shows the responses to the survey according to the discipline of the participants. Thirty percent of the neurologists and 23% of psychiatrists believed that PWE are at increased risk of contracting COVID-19 (*p* = 0.02). In addition, 56% of the neurologists and

▼ **Table 1.** Physicians' opinions on the necessity of COVID-19 vaccination in PWE.

	Neurologists <i>n</i> = 116	Psychiatrists <i>n</i> = 86	<i>p</i> value	Total <i>n</i> = 202
Do you think that PWE are at increased risk of contracting COVID-19? (No, Not sure, Yes)	55, 26, 35	31, 35, 20	0.02	86, 61, 55
Would you recommend COVID-19 vaccine to your PWE? (No, Not sure, Yes)	7, 19, 90	6, 21, 59	0.33	13, 40, 149
If you recommend the COVID-19 vaccine, to which PWE will you make such a recommendation? (All patients, special groups of patients*)	65, 51	34, 52	0.02	99, 103
If you recommend the COVID-19 vaccine, which statement best describes your recommendation? (a, b**)	7, 109	11, 75	0.13	18, 184
Which COVID-19 vaccine do you trust the most? (a, b, c, d, e, f***)	52, 42, 3, 0, 4, 15	40, 27, 2, 0, 4, 13	0.94	92, 69, 5, 0, 8, 28
Have you or any family member (parents, siblings, children, or spouse) contracted COVID-19?	54	28	0.05	82

*Special groups: just adult patients; just children; just elderly and those with other comorbidities; only in well-controlled patients with no recent seizures (in the past six months); only in patients with uncontrolled seizure.

**a) I would recommend the COVID-19 vaccine as soon as any vaccine becomes available.; b) I would recommend the COVID-19 vaccine only when a reliable vaccine becomes available.

***a) a vaccine that is approved by the World Health Organization (WHO); b) a vaccine that is approved by the Food and Drug Administration (FDA-USA); c) a vaccine that is approved by the European Medicines Agency (EMA-Europe); d) a vaccine that is approved by the National Medical Products Administration (China); e) a vaccine that is approved by the Ministry of Health and Medical Education (Iran); f) a vaccine with more scientific evidence and publications.

40% of the psychiatrists would recommend COVID-19 vaccine to all their patients ($p = 0.02$). There were no other significant differences between the groups (table 1). Finally, being infected with COVID-19 (physicians or their family members) did not have an impact on their recommendation of COVID-19 vaccination (60 out of 82 [73%] with infection and 89 out of 120 [74%] without infection would recommend the vaccine; $p = 0.87$).

Discussion

This survey showed that the majority (74%) of the physicians (neurologists and psychiatrists) would recommend a COVID-19 vaccine to their PWE, however, they have concerns and considerations and hold different opinions.

Are PWE at increased risk of contracting COVID-19?

This opinion was shared by more neurologists than psychiatrists, however, in both groups, only a minority

of physicians thought that PWE are at increased risk of contracting COVID-19. One cross-sectional study of 21 PWE with COVID-19 out of 1,537 patients showed that the cumulative incidence of COVID-19 in PWE was higher compared with that of the population without epilepsy (1.2% vs. 0.5%) [4]. In addition, the total case fatality rate was higher in PWE compared to that in patients without epilepsy (23.8% vs. 3.6%; $p < 0.001$) [4]. However, these results were obtained based on a small number of PWE (21 patients) and should be interpreted with caution. Furthermore, in another study, among 5,700 PWE, only 14 people tested positive for SARS-CoV2, without obvious impact on their epilepsy [5]. This important issue should be clarified for the scientific community by designing future studies in order to help provide the best advice for PWE and society. However, logically, PWE are at risk of contracting COVID-19 at least as much as other individuals.

Should COVID-19 vaccination be recommended to PWE?

COVID-19 is a serious and fatal disease. A mass vaccination of all people to prevent COVID-19 infection

is probably the best hope for ending this pandemic. However, mass immunization programs are only successful when there are high rates of acceptance and coverage among all people [14]. Logically, PWE are not exempt from infection and should all be recommended to receive the COVID-19 vaccine to prevent the infection.

On the other hand, as misinformation about COVID-19 spreads across media outlets, it is important for public health officials and policy makers to begin planning for effective messaging and policies before a vaccine is introduced [14]. In a recent study, one of the strongest correlates of vaccine acceptability among the public was whether participants thought their healthcare provider would recommend that they receive the vaccine against COVID-19 [15]. Healthcare provider recommendation is a key determinant of vaccination behaviour [16]. However, missed opportunities for healthcare providers recommending vaccines to people are still common [17]. In the current study, we observed that 6% of the physicians would not recommend a vaccine against COVID-19 to PWE and 20% of them were not sure if they would. When a COVID-19 vaccine becomes available, healthcare provider recommendations will be critical to promoting vaccine acceptance among PWE and the public. Therefore, public health officials and policy makers should try to deliver the appropriate evidence-based information to healthcare providers and inform them of the significant role they have to combat this pandemic through vaccination. In this regard, it seems necessary that all PWE (as for the public) should receive the vaccine against COVID-19 and there is no need to prioritize or exclude this population. However, the issue of safety of the vaccine in some subpopulations of PWE (e.g., those with uncontrolled seizures, those on immunosuppressant drugs [e.g., steroids], etc.) should be studied and clarified.

What are the concerns of healthcare providers about a COVID-19 vaccine?

The development of multiple COVID-19 vaccines has been progressing at an unprecedented speed. However, there are risks that may come with a fast-tracked vaccine (safety-wise and efficacy-wise). In this study, we observed that the reliability of a vaccine is more important for healthcare providers than the speed with which it becomes available. In this regard, two health agencies were considered as the most trusted organizations to approve and endorse a vaccine against COVID-19: the WHO and the FDA. Therefore, the responsibility of these two organizations is significant and they should do their best to convince the scientific community and the public of the effectiveness and safety of a vaccine when it becomes available.

Based on analysis of the ethical aspects, accelerated randomized controlled trials are probably the best approach to speeding up vaccine development during a pandemic, and these are more likely than other approaches to enhance social value without compromising ethics or science [18]. Building confidence for a COVID-19 vaccine is essential because the herd immunity threshold for SARS-CoV2 is estimated to be between 55% and 82% [19]. The scientific community has the main role in building such confidence, and healthcare providers have the key role in delivering the appropriate message to the public.

Do different disciplines differ regarding opinions on the necessity for COVID-19 vaccination in PWE?

While neurology and psychiatry are very interconnected and close disciplines, we observed that a significantly higher number of neurologists would recommend the COVID-19 vaccine to all their patients compared to psychiatrists. This difference might even be higher for other disciplines (e.g., internal medicine, gynaecology, etc.), and this should be investigated in future studies. This is important because it might be necessary for public health officials and policy makers to try to understand the opinions of different healthcare providers and various disciplines in order to provide them with the best targeted and tailored information, to convince them of the necessity of COVID-19 vaccine for the public, including PWE.

Conclusion

This study has some limitations. For example, wording of the survey questions and other questions that were not addressed in the survey may have influenced the results. In addition, the study population represented only 10% of the total target population. Future studies should include more participants from various disciplines (e.g., primary care physicians, nurses, etc.), with careful design of questionnaires. Furthermore, future studies should investigate the opinions of other stakeholders (e.g., influential authorities, religious leaders, etc.).

However, we conclude that neurologists and psychiatrists have concerns and considerations on the issue of the necessity of COVID-19 vaccination in PWE. The most important concern is the reliability of a vaccine and in this regard, two health agencies, the WHO and the FDA, are the most trusted organizations to approve and endorse a vaccine against COVID-19. ■

Supplementary material.

Summary slides accompanying the manuscript are available at www.epilepticdisorders.com.

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TEST YOURSELF

- (1) Are PWE at increased risk of contracting COVID-19?
- (2) Should COVID-19 vaccination be recommended to PWE?
- (3) What are the concerns of healthcare providers about a COVID-19 vaccine?

Note: Reading the manuscript provides an answer to all questions. Correct answers may be accessed on the website, www.epilepticdisorders.com, under the section "The EpiCentre".