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Recalling the COVID-19 lockdown: Insights from patients with epilepsy

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Purpose: The purpose of our study was to explore health changes among people with epilepsy (PWE) during a national COVID-19 lockdown in the context of patients’ clinical characteristics and their experience of receiving epilepsy-related medical services.

Methods: A questionnaire was distributed for adult PWE both online and at a tertiary epilepsy center after the end of a national lockdown in Lithuania. PWE were asked to evaluate their health status during the lockdown and estimate changes in their seizure patterns. Additional questions concerned the accessibility and quality of epilepsy-related consultations.

Results: The study sample consisted of 143 PWE (59 [41.3%] male, mean age 35.1 ± 13.4 years), 94 (65.7%) completed the survey in person, 49 (34.3%) – online. A deterioration in reported physical and mental health during lockdown was observed ($Z = -4.604, p < 0.0001$ and $Z = -4.253, p < 0.0001$, respectively) and 22 (15.4%) PWE reported seizure exacerbation. In an ordinal logistic regression model (analysis of data from all participants), baseline seizure frequency ($b = 0.413, p = 0.031$), reported physical health before lockdown ($b = -0.462, p = 0.031$) and the ease of proper antiepileptic drug (AED) use during the imposed restrictions ($b = -0.535, p = 0.006$) were statistically significant variables associated with changes in seizure frequency. The latter were not affected by modifications in AED use ($U = 1127.0, p = 0.307$) irrespective of the data collection method.

With teleconsultations being predominant during the lockdown, an overall decline in the quality of epilepsy-related consultations was observed ($Z = -2.895, p = 0.004$). Among all participants, 46 (32.2%) lost an epilepsy-related consultation or medical service because of the lockdown. This loss was found to be associated with seizure exacerbation ($U = 1622.5, p = 0.046$).

Conclusion: Our study indicates that a national COVID-19 lockdown may have led to worse seizure control and health status in some PWE. Easy access to AEDs and their appropriate use may be especially useful to prevent seizure exacerbation during strict COVID-19 restrictions. The quality and accessibility of remote epilepsy-related consultations was suboptimal and may require further improvement during disruption of in-person services.

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experiences of PWE regarding medical care for epilepsy. To assess this, we aimed to determine the changes in seizure frequency and physical and mental health during the lockdown, identify factors that could contribute to these changes, and explore the impact on PWE's overall health status. The study was conducted during the Lithuanian national three-month-long lockdown, from March 16, 2020, to June 16, 2020. Our research involved a questionnaire survey of PWE, which included a statement for anonymous data collection. The data were analyzed using IBM SPSS v23.0, and the statistical tests employed were Mann–Whitney U and \( \chi^2 \) tests for between-group comparisons and the Wilcoxon Signed Ranks test for estimates of change in reported health and consultation quality. The survey was published online in two closed social networks, and it referred to the official national lockdown comprised of strict infection control measures. The data were collected from July 3, 2020, and included anonymous data to a dedicated electronic file. Exclusion criteria were applied to ensure the quality of the data. Overall, this study aimed to assess the impact of the COVID-19 pandemic on PWE's health, particularly in the areas of seizure frequency, physical health, and mental health.
Table 1
Patient characteristics and survey results concerning reported health changes, stress and anxiety. AED – antiepileptic drug, GAD-7 – Generalized Anxiety Disorder scale-7, Md – median, SD – standard deviation, * – p < 0.05, ** – p < 0.001.

| Questionnaire item                                      | Results (n, % if not indicated otherwise) | Results online, n = 49 (n, % if not indicated otherwise) | Results from the tertiary center, n = 94 (n, % if not indicated otherwise) | p value |
|--------------------------------------------------------|-------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------|---------|
| Gender (M/F)                                           | 59 (41.3)/ 84 (58.7)                      | 12 (24.5)/ 37(75.5)                                     | 47 (50.0)/ 47 (50.0)                                                    | 0.003*  |
| Age (mean, SD)                                         | 35.1 (13.4)                               | 32.3 (8.3)                                             | 36.5 (15.2)                                                             | 0.392   |
| Years with epilepsy (Md, range)                        | 14 (0–59)                                 | 17 (1–59)                                              | 12 (0–44)                                                               | 0.114   |
| Epilepsy type                                          |                                          |                                                        |                                                                          | 0.185   |
| Focal                                                  | 52 (36.4)                                 | 16 (32.7)                                              | 36 (38.3)                                                               |         |
| Generalized ("whole-body" seizures)                    | 51 (35.7)                                 | 18 (36.7)                                              | 33 (35.1)                                                               |         |
| Generalized (absence or myoclonic seizures)            | 8 (5.6)                                   | 5 (10.2)                                               | 3 (3.2)                                                                 |         |
| Other                                                  | 12 (8.4)                                  | 6 (12.2)                                               | 6 (6.4)                                                                 |         |
| Unknown to the respondent                               | 20 (14.0)                                 | 4 (8.2)                                                | 16 (17.0)                                                               |         |
| Number of different AEDs                               |                                          |                                                        |                                                                          | 0.372   |
| 0                                                      | 4 (2.8)                                   | 0 (0.0)                                                | 4 (4.3)                                                                 |         |
| 1                                                      | 56 (39.2)                                 | 21 (42.9)                                              | 35 (37.2)                                                               |         |
| 2                                                      | 50 (35.0)                                 | 20 (40.8)                                              | 30 (31.9)                                                               |         |
| 3                                                      | 19 (13.3)                                 | 4 (8.2)                                                | 15 (16.0)                                                               |         |
| 4 or more                                              | 14 (9.8)                                  | 4 (8.2)                                                | 10 (10.6)                                                               |         |
| Change in patterns of AED use one month before or during lockdown | 24 (16.8)                                 | 13 (26.5)                                              | 11 (11.7)                                                               | 0.024*  |
| Frequency of seizures                                  |                                          |                                                        |                                                                          | 0.137   |
| Several a day                                          | 7 (4.9)                                   | 3 (6.1)                                                | 4 (4.3)                                                                 |         |
| Several a week                                         | 17 (11.9)                                 | 4 (8.2)                                                | 13 (13.8)                                                               |         |
| Several a month                                        | 44 (30.8)                                 | 22 (44.9)                                              | 22 (23.4)                                                               |         |
| Several a year                                         | 18 (12.6)                                 | 6 (12.2)                                               | 12 (12.8)                                                               |         |
| Less than a year                                       | 52 (36.4)                                 | 14 (28.6)                                              | 38 (40.4)                                                               |         |
| Missing                                                | 5 (3.5)                                   | 0 (0.0)                                                | 5 (5.3)                                                                 |         |
| Change in seizure frequency during lockdown: 1 – significant reduction, 7 – significant increase (Md, range) | 4 (1–7)                                   | 4 (1–6)                                                | 4 (1–7)                                                                 | 0.083   |
| Reported physical health (Likert scale 1 to 7)         |                                          |                                                        |                                                                          |         |
| Before lockdown (Md, range)                            | 5 (1–7)                                   | 5 (1–7)                                                | 5 (1–7)                                                                 | 0.972   |
| During lockdown (Md, range)                            | 5 (1–7)                                   | 4 (1–7)                                                | 5 (1–7)                                                                 | 0.199   |
| Change (Z statistic, significance)                      | –4.604, p < 0.0001                        | –3.122, p = 0.002                                      | –3.501, p < 0.0001                                                      |         |
| Reported mental health (Likert scale 1 to 7)           |                                          |                                                        |                                                                          |         |
| Before lockdown (Md, range)                            | 6 (1–7)                                   | 5 (1–7)                                                | 6 (1–7)                                                                 | 0.164   |
| During lockdown (Md, range)                            | 5 (1–7)                                   | 4 (1–7)                                                | 5 (1–7)                                                                 | 0.015*  |
| Change (Z statistic, significance)                      | –4.253, p < 0.0001                        | –2.940, p = 0.003                                      | –3.158, p = 0.002                                                      |         |
| Symptoms more present during lockdown than usually     |                                          |                                                        |                                                                          |         |
| Fatigue                                                | 63 (44.1)                                 | 28 (57.1)                                              | 35 (37.2)                                                               | 0.023*  |
| Apathy                                                 | 47 (32.9)                                 | 21 (42.9)                                              | 26 (27.7)                                                               | 0.066   |
| Sadness                                                | 48 (33.6)                                 | 18 (36.7)                                              | 30 (31.9)                                                               | 0.562   |
| Disturbed sleep                                        | 47 (32.9)                                 | 20 (40.8)                                              | 27 (28.7)                                                               | 0.144   |
| Disturbed appetite                                     | 31 (21.7)                                 | 17 (34.7)                                              | 14 (14.9)                                                               | 0.006*  |
| Reported stress during lockdown (Likert scale 1 to 7)  | 3 (1–7)                                   | 4 (1–7)                                                | 2 (1–7)                                                                 | <0.0001** |
| Major causes of stress during lockdown                 |                                          |                                                        |                                                                          |         |
| The risk of becoming ill with COVID-19                 | 46 (32.2)                                 | 14 (28.6)                                              | 32 (34.0)                                                               | 0.506   |
| The risk of not receiving appropriate healthcare for COVID-19 | 39 (27.3)                                 | 17 (34.7)                                              | 22 (23.4)                                                               | 0.150   |
| The risk of not receiving appropriate healthcare for epilepsy | 63 (44.1)                                 | 30 (61.2)                                              | 33 (35.1)                                                               | 0.003*  |
| Social consequences of the pandemic (e.g., loss of communication, socializing) | 55 (38.5)                                 | 27 (55.1)                                              | 28 (29.8)                                                               | 0.003*  |
| Economic impact of the pandemic (e.g., lost job, decrease in income, worse outlook for future employment) | 58 (40.6)                                 | 23 (46.9)                                              | 35 (37.2)                                                               | 0.262   |
| Informational and societal issues (e.g., information overload, frequent news updates) | 39 (27.3)                                 | 19 (38.8)                                              | 20 (21.3)                                                               | 0.026*  |
| Inability to work from home                            | 17 (11.9)                                 | 9 (18.4)                                               | 8 (8.5)                                                                 | 0.084   |
| Inability to keep social distancing measures, lack of PPE | 8 (5.6)                                   | 6 (12.2)                                               | 2 (2.1)                                                                 | 0.020*  |
| GAD-7 score (Md, range)                                | 5 (0–21)                                  | 7 (0–21)                                               | 3 (0–21)                                                               | <0.0001** |

PWE who affirmed changes in their use of AEDs one month before or during lockdown had greater stress and GAD-7 scores (Mann–Whitney U = 940.0, p = 0.008 and Mann–Whitney U = 822.5, p = 0.013, accordingly). Besides, they more often reported disordered sleep (p = 0.004). Such findings were not evident in the subgroup of online respondents (Mann–Whitney U = 192.500, p = 0.341 Mann–Whitney U = 203.500, p = 0.489 for stress and GAD-7 scores, respectively, p = 0.265 for sleep disturbances). However, changes in seizure frequency did not depend on modified AED use (Mann–Whitney U = 1127.0, p = 0.307 for all respondents) irrespective of the respondent subgroup (Mann–Whitney U = 344.5, p = 0.607 for in-person respondents, Mann–Whitney U = 181.5, p = 0.194 for online respondents).

3.2. Access to healthcare and its relationship with reported health variables

Survey results about healthcare use during lockdown are presented in Table 4. A third of participants in our survey (n = 46, 32.2%) indicated that some form of planned epilepsy-related medical consultation or service had not been provided because of the lockdown. Worse availability of medical services was reported by
29 PWE (44.6% of those who provided a score). While the need for greater efforts to obtain a prescription for AEDs was noted by 21 PWE (18.6% of those who provided a score), 22 (19.5%) indicated that this task was easier than before when lockdown. When evaluated by survey participants, a decrease in consultation quality during lockdown was observable (Md = 6 before lockdown, Md = 4 during lockdown, Z = −2.895, p = 0.004). The latter phenomenon as well as issues pertaining to access to healthcare, ease of acquiring a prescription or appropriately using AEDs did not depend on the data collection method (i.e., online or in person).

PWE who reported a loss of healthcare services had higher anxiety levels (as scored by the GAD-7, Mann–Whitney U = 1473.0, p = 0.016), but not stress scores (Mann–Whitney U = 1894.5, p = 0.165). These individuals also rated their physical and mental health as being worse during lockdown (Mann–Whitney U = 1573.5, p = 0.005, Mann–Whitney U = 1555.0, p = 0.004, respectively) in contrast to PWE who had received healthcare services or did not need them. Such a difference between the groups was absent for reported health scores before lockdown (Mann–Whitney U = 1972.5, p = 0.294 for physical health, Mann–Whitney U = 1830.5, p = 0.109 for mental health). Respondents with unfulfilled healthcare needs were more likely to present with exacerbated seizures (Mann–Whitney U = 1622.5, p = 0.046), fatigue (p = 0.039) and disturbed sleep (p = 0.007). They also expressed a greater need for remote consultations after the pandemic (Mann–Whitney U = 1471.5, p = 0.005). Subgroup analysis revealed that online respondents who had lost medical services were also more likely to indicate need for telehealth (Mann–Whitney U = 199.5, p = 0.046). PWE who filled the questionnaire in person and could not access healthcare during lockdown indicated worse physical health (Mann–Whitney U = 597.0, p = 0.039) and sleep disturbances (p = 0.008) during this period. However, other findings related to inaccessible services were not reproducible on the subgroup level.

4. Discussion

4.1. General findings

It is of note that the design of our survey was different from investigations during other national lockdowns as it relied on retrospective information provided by the respondents. In this way, (1) all respondents had an identical period of reference for any changes in health status to occur, (2) the survey was administered in person as well as online as routine outpatient healthcare services had already been restored and (3) situational influences (e.g., on-going stress, recent bad experience with access to healthcare) of the lockdown itself were partly evaded.

Our study reports a statistically significant reduction in reported physical and mental health during a national COVID-19 lockdown. Increased fatigue was the most frequently selected symptom in our survey, while one in three respondents felt apathy, sadness more often than usually or experienced sleep disturbances. Physical symptoms have been found to be more expressed during COVID-19 lockdown in other studies as well [17,18]. Among
The rate of seizure increase was similar to results from Italy (18%), but higher than reported in China (9%) and Spain (10%) [7,8,12]. This increase may be multifactorial and depend on SARS-CoV-2 infections among PWE, their feeling of stress and disrupted access to healthcare [19]. While patients were not questioned about being infected with SARS-CoV-2, it is known from the authors' personal experience that none of the patients treated at the tertiary center had COVID-19 during the lockdown period. Further considering that there was no statistically significant difference in seizure change between online and in-person respondents, it is unlikely that the observable seizure exacerbation was caused by COVID-19 directly.

Overall, stress and anxiety levels in our sample of PWE were relatively low. Major stressors included not receiving care for epilepsy, confronting social and economic consequences of the pandemic. Such results could be determined by relatively well-managed infection rates in Lithuania and a limited risk of becoming infected: the first peak of individuals that were simultaneously positive for SARS-CoV-2 reached 1048 in April 20, 2020 (representing around 0.037% of the country’s population) and less than 1800 total cases had been recorded by the end of the lockdown [16]. That is, the lockdown itself rather than the risk of COVID-19 might be more important to determine stress in PWE in regions with relatively handled epidemiological situations [20].

4.2. Seizure worsening

Findings concerning the exacerbation of seizures mostly replicated results of similar survey-based studies [7,8,12,13]. Clinical characteristics that were present before the pandemic (e.g., baseline seizure frequency), difficulties in proper use of AEDs and sleep disturbances during the lockdown are found to be important determinants of whether patients have a risk of increase in seizures. In our study, reported stress, anxiety and mental health status during the pandemic were correlated with seizure exacerbation, but did not reach statistical significance in the regression model. Further, we could not state that a greater number of AEDs used or changes in the AED treatment plan are linked to an increase in seizure episodes during lockdown. These findings could be explained by differences in methodology – while we asked PWE to estimate the change in seizure episodes and the ease of proper AED use on a Likert scale, some studies relied on binary (Yes/No) categories [7,8]. Despite the differences concerning AED use, our study further indicates that patients with clinical profiles of more severe forms of epilepsy (i.e., high baseline seizure frequency, worse reported physical health before the pandemic) may be at greater risk of seizure worsening. Continuous supply of AEDs and timely prescriptions might therefore be the most essential factors in minimizing seizure occurrence during a COVID-19 lockdown [9]. While “change in AED regimen” or “non-compliance” were found to be associated with increase in seizures elsewhere, we had decided to distinguish coordinated changes in AED regimen from difficulties of properly using AEDs [7,12]. This discrimination revealed that modifying the patient’s treatment plan might not increase the risk of seizure exacerbation. Nonetheless, altered AED use patterns were associated with worse mental health, increase in anxiety and stress. That might be manifestations of psychiatric side effects of newly prescribed or up-titrated AEDs. For instance, symptoms like anxiety and irritability have been associated with levetiracetam and tiagabine [21]. While changing patterns of AED use could be components of emerging depressive or sleep disorders as some are included in psychometric scales [7,12].

Table 4

Survey results regarding healthcare use during lockdown. § – answers provided by respondents only if applicable, † – variable that had a missing value rate of more than 10%, AED – antiepileptic drug, GP – general practitioner, Md – median, * – p < 0.05.

| Questionnaire item | Results from online respondents, n = 49 (n, % or Md, range) | Results from the tertiary center visitors, n = 94 (n, % or Md, range) | p value |
|--------------------|----------------------------------------------------------|---------------------------------------------------------------|--------|
| **Score of medical consultation quality concerning epilepsy (Likert scale 1 to 7)** | | | |
| Before lockdown | 6 (1–7) | 7 (1–7) | 0.030* |
| During lockdown § | 4.5 (1–7) | 4 (1–7) | 0.016* |
| Change (Z statistic, significance) § | –2.895, p = 0.004 | –2.553, p = 0.011 | –1.667, p = 0.095 |
| **Type of healthcare services used (epilepsy-related) †** | | | |
| Neurologist/epileptologist consultation (in person) | 18 (12.6) | 11 (11.7) | 0.658 |
| GP consultation (in person) | 20 (14.0) | 9 (18.4) | 0.725 |
| Neurologist/epileptologist consultation (by phone) | 27 (18.9) | 15 (16.0) | 0.216 |
| GP consultation (by phone) | 54 (37.8) | 30 (31.9) | 0.046* |
| Neurologist/epileptologist consultation (online) | 2 (1.4) | 1 (1.1) | 1.000 |
| Emergency services | 12 (8.4) | 4 (4.3) | 0.023* |
| In-patient services (hospitalization) | 5 (3.5) | 2 (2.1) | 0.339 |
| Mental health services (remotely) | 5 (3.5) | 1 (1.1) | 0.047* |
| **During the consultation I was informed:** § | | | |
| How the AEDs I use can influence my outcome if I was treated for COVID-19 | 9 (6.3) | 9 (9.6) | 0.028* |
| About the need to contact relatives several times a day | 9 (6.3) | 7 (7.4) | 0.719 |
| That emergency services should be called in case of a prolonged seizure, regardless of lockdown | 19 (13.3) | 12 (12.8) | 0.799 |
| About the need to seek help from a mental health specialist in case of strong negative emotions | 7 (4.9) | 5 (5.3) | 1.000 |
| **Availability of healthcare services (1 – much worse than before lockdown, 7 – much better than before lockdown) †** | | | |
| 7 – much better than before lockdown | 4 (1–6) | 4 (1–6) | 0.784 |
| 6 – much better than before lockdown | 4 (1–7) | 4 (1–7) | 0.691 |
| 5 – much better than before lockdown | 4 (1–7) | 4 (1–7) | 0.288 |
| 4 – much better than before lockdown | 4 (1–7) | 22 (44.9) | 0.019* |
| 3 – much better than before lockdown | 24 (25.5) | | |
| **Erase of consultation or service concerning epilepsy because of lockdown** | | | |
| Need for routine remote consultations (in a post-pandemic world) | 4 (1–7) | 5 (1–7) | 0.102 |
use during COVID-19 lockdowns is not recommended, we believe this topic requires further research [5].

4.3. The impact of disrupted healthcare services

The loss of medical services was significantly related not only to changes in seizure frequency, but also to anxiety and worse mental health evaluation during the lockdown. The reasons for this finding can only be speculated. One explanation could be that the limited capacity of in-person consultations led to specialists prioritizing services for patients at risk of seizure exacerbation or severe AED side-effects [4]. This way, the loss of some services (e.g., case review, AED down-titration, change in AED due to milder side-effects) among other patients could translate into worsening of the reported mental and physical state. Further, consultations for epilepsy are also important for reassurance, lifestyle advice (e.g., information concerning regular sleep patterns) and guidance in cases of existing mental health issues [5]. Loss of such components can lead to the observable anxiety and deterioration of the subjectively perceived health status. Even if provided, the quality of consultations for epilepsy (most were effectuated remotely) was less adequate than before the pandemic. Besides, PWE in our survey rarely received information about the need for daily communication with close relatives, emergency care in case of a prolonged seizure episode or reaching out to mental health specialists when feeling severe emotional symptoms. Such aspects point to a suboptimal quality of epilepsy services during a nationwide lockdown. While the emerging pandemic required rapid implementation of telehealth and novel solutions for safe in-person visits, current actions should be directed towards making medical services for epilepsy at least as accessible as before the spread of SARS-CoV-2 [10,22,23]. Substitutes for in-person visits should be evaluated not only by acknowledging their capabilities of mitigating seizure exacerbation, but also by assessing the potential to provide complex care, which includes reassurance and professional lifestyle advice [5,24].

4.4. Study limitations

Our survey-based study is limited by a lack of narrative opinions from the PWE involved, non-inclusion of objective clinical data from medical records and recall bias because of retrospective questioning. Further, we could not ensure that only PWE (or their caregivers) will complete the survey. However, this risk was judged minimal as the groups are closed from outsiders and are used only for discussions surrounding life with epilepsy. The combination of the online and in-person methods of survey administration was required to gather data from a larger number of respondents during a period of relaxed state restrictions and mitigated spread of SARS-CoV-2. Because of existing differences between the groups, pooled data should be interpreted with caution. Further, our results can be influenced by the fact that the spread of SARS-CoV-2 was relatively well managed in our country and no questions related to being diagnosed with COVID-19 or receiving epilepsy care while being positive for SARS-CoV-2 had been included.

5. Conclusions

Our study presented a retrospective point-of-view when estimating the impact of a COVID-19 lockdown on PWE. Even after a period of nationwide restrictions, we could state that it had significant impact on the physical and mental state of some PWE. The predetermined severity of epilepsy may be important in defining the risk of seizure exacerbations and seeking to improve appropriate AED use might be one of the first priorities to mitigate this risk. While the frequently reported loss of epilepsy-related medical services may also put the patients at risk of seizure exacerbation, it may have additional impact on the patient’s overall physical and mental status. It seems essential to restore the pre-pandemic quality of consultations with specialists aiming to both prevent seizure exacerbation (e.g., by ensuring timely AED prescription) and provide professional lifestyle guidance and reassurance for the patients.

Declaration of competing interest

The authors report no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.yebeh.2020.107573.

References

[1] Zheng J. SARS-CoV-2: An emerging coronavirus that causes a global threat. Int J Biol Sci 2020;16:1678–85. https://doi.org/10.7195/ijb.2020.5093.
[2] Kuroda N. Epilepsy and COVID-19: associations and important considerations. Epilepsy Behav 2020;108:. https://doi.org/10.1016/j.yebeh.2020.107122.
[3] Biallas F, Granata T, Azimianoglu A, Rocamora R, of ERN EpICARE M, Member of ERN EpICARE S. Did the COVID-19 pandemic silence the needs of people with epilepsy? Epilepsy Disord 2020;22:1–4. https://doi.org/10.1016/j.epid.2020.1175.
[4] Kuroda N. Decision making on telemedicine for patients with epilepsy during the coronavirus disease 2019 (COVID-19) crisis. Front Neurol 2020;11:722. https://doi.org/10.3389/fneur.2020.00722.
[5] French JA, Brodie MJ, Caraballo R, Devinsky O, Ding D, Jehi L, et al. Keeping people with epilepsy safe during the COVID-19 pandemic. Neurology 2020;94:1032–7. https://doi.org/10.1212/2020.NML.0000000000006539. NLM (Medline).
[6] Bhaskar S, Bradley S, Israel-Corn S, Menon B, Chhatu VK, Thomas P, et al. Chronic neurology in COVID-19 era: clinical considerations and recommendations from the REPROGRAM consortium. Front Neurol 2020;11:664. https://doi.org/10.3389/fneur.2020.00664.
[7] Alkhotani A, Siddiqui MI, Almuntashri F, Baofueman R. The effect of COVID-19 pandemic on seizure control and self-reported stress on patient with epilepsy. Epilepsy Behav 2020;111:. https://doi.org/10.1016/j.yebeh.2020.107323.
[8] Assenza G, Lanzone J, Brigo F, Coppola A, Di Gennaro G, Di Lazaro V, et al. Epilepsy care in the time of COVID-19 pandemic in Italy: risk factors for seizure worsening. Front Neurol 2020;11:737. https://doi.org/10.3389/fneur.2020.00737.
[9] Asadi-Pooya AA, Farazdagi M, Bazrafshan M. Impacts of the COVID-19 pandemic on Iranian patients with epilepsy. Acta Neurol Scand 2020. https://doi.org/10.1111/ane.13310.
[10] Miller WR, Von Gaudecker J, Tanner A, Buelow JM. Epilepsy self-management during a pandemic: experiences of people with epilepsy. Epilepsy Behav 2020;111:. https://doi.org/10.1016/j.yebeh.2020.107238.
[11] Hao X, Zhou D, Li Z, Zeng G, Hao N, Li E, et al. Severe psychological distress among patients with epilepsy during the COVID-19 outbreak in southwest China. Epilepsia 2020;61:1166–73. https://doi.org/10.1111/epid.16544.
[12] Huang S, Wu C, Jia Y, Li G, Zhu Z, Lu K, et al. COVID-19 outbreak: The impact of stress on seizures in patients with epilepsy. Epilepsia 2020. https://doi.org/10.1111/epid.16335.
[13] Fonseca E, Quintana M, Lallana S, Restrepo JL, Abraira L, Santamarina E, et al. Epilepsy in time of COVID-19. A survey-based study. Acta Neurol Scand 2020. https://doi.org/10.1111/ane.13335.
[14] Likert R. A technique for the measurement of attitudes. Arch Psychol 1921;22:55.
[15] Spitzer RL, Kroenke K, Williams JBW, Lowe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med 2006;166:1092–7. https://doi.org/10.1001/archinte.166.10.1092.
[16] The official source of information by the Government of the Republic of Lithuania on the pandemic situation in Lithuania. n.d. http://koronastop.lrv.lt/en/#information.

[17] Shevlin M, Nolan E, Owczarek M, McBride O, Murphy J, Gibson Miller J, et al. COVID-19-related anxiety predicts somatic symptoms in the UK population. Br J Health Psychol 2020. https://doi.org/10.1111/bjhp.12410.

[18] Ran L, Wang W, Ai M, Kong Y, Chen J, Kuang L. Psychological resilience, depression, anxiety, and somatization symptoms in response to COVID-19: a study of the general population in China at the peak of its epidemic. Soc Sci Med 2020;262. https://doi.org/10.1016/j.socscimed.2020.113261.

[19] Vohora D, Jain S, Tripathi M, Potschka H. COVID-19 and seizures: is there a link? Epilepsia 2020. https://doi.org/10.1111/epi.16656.

[20] Kuroda N. Mental health considerations for patients with epilepsy during COVID-19 crisis. Epilepsy Behav 2020;111:. https://doi.org/10.1016/j.yebeh.2020.107198.

[21] Chen B, Choi H, Hirsch LJ, Katz A, Legge A, Buchsbaum R, et al. Psychiatric and behavioral side effects of antiepileptic drugs in adults with epilepsy. Epilepsy Behav 2017;76:24–31. https://doi.org/10.1016/j.yebeh.2017.08.039.

[22] Brigo F, Bonavita S, Leocani L, Tedeschi G, Lavorgna L. Telemedicine and the challenge of epilepsy management at the time of COVID-19 pandemic. Epilepsy Behav 2020;110:. https://doi.org/10.1016/j.yebeh.2020.107164.

[23] von Wrede R, Moskau-Hartmann S, Baumgartner T, Helmaertder C, Surges R. Counseling of people with epilepsy via telemedicine: experiences at a German tertiary epilepsy center during the COVID-19 pandemic. Epilepsy Behav 2020;112:. https://doi.org/10.1016/j.yebeh.2020.107298.

[24] Kuroda N. What should we ask patients with epilepsy on telemedicine during the COVID-19 crisis? A checklist for clinicians. Epilepsy Behav 2020;111:. https://doi.org/10.1016/j.yebeh.2020.107184.