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p582 - Feasibility study for using consumer-grade EEG headsets to improve the life of patients with absence epilepsy

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Purpose: Consumer-grade EEG headsets could potentially improve the quality of life of people with absence epilepsy, by notifying them and the people around them of the occurrence of an absence seizure. Even though absence seizures or 'petits mals' lead to less morbidity and acute danger than tonic-clonic seizures or 'grands mals', they still have a significant impact on the quality of life of patients. Especially, they can hamper social interaction and cause difficulty in learning.

Method: We have developed a cloud platform and app allowing patients to locally collect data from a consumer-grade EEG headset. The app securely forwards the EEG data to the cloud platform, and lets the user manually record seizures and add annotations. 9 children with epilepsy and their families were selected to use the app in day-to-day life. We have monitored usage, EEG quality and user feedback.

Results: After a study period of on average 6.9 weeks per patient, we have collected 175h of EEG data, 47 seizures (as reported by the patients/families) and 82 other annotations. Of the 9 patients, 1 patient dropped out due to aversion of wearing any device on its head. Overall, acceptance of the EEG headset and app is high, and patients seem willing to use the technology in day-to-day life.

Conclusion: Consumer-grade EEG headsets form a promising tool for day-to-day use for epilepsy patients. Overall, they seem well accepted and tolerated. Future research should investigate potential use-cases such as the detection, notification and logging of absence seizures, eg at home or in a classroom situation. We expect that with increased use-cases, the adoption and recording hours per day will further increase as well.