

Onelinos

Clinical and Technical Overview

Clinical description

The cognitive behavioral therapy for insomnia (CBT-I) treatment requires the patient to perform daily tasks, the most important of which is keeping a sleep diary twice a day, in the morning and evening. Traditionally, patients have completed these tasks using a paper workbook. Both patients and therapists have long expressed their desire to digitize the CBT-I workbook. Oneiros™ responds to this clinical need by offering a digital version of the current paper-based CBT-I workbooks.

The Oneiros application has an intuitive interface that allows users to accomplish all necessary tasks for CBT-I treatment, such as sleep diary entries and other homework, quickly and easily. The included calculators generate key therapy-related information such as sleep-wake cycle, sleep efficiency, and other key statistics in a visually clear and easy-to-read style. This significantly decreases the workload for both patients and therapists, thus enhancing compliance and treatment outcomes.

Another important feature of Oneiros is the therapist's "Dashboard," which allows the therapist to provide patients with homework, information, questionnaires, and diary markings; create their own exercises or instructions; track task completion; and securely exchange critical therapy-related information.

In addition to promoting ease of use and treatment compliance, Oneiros ensures treatment consistency and enables standardized care even when the therapist has limited expertise with CBT-I treatment. In research settings, Oneiros provides a unique opportunity to conduct highly controlled intervention studies by allowing for the precise definition of standardized treatments, right down to individual components.

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Technical description

Oneiros consists of a backend that runs on Google's Firebase cloud platform and a mobile application installed on the user's device and built with React Native. The backend makes use of the Firebase Firestore database, and Firebase Cloud Functions, which is a serverless application framework. The application uses Firebase Authentication for user identification and Firebase's security capabilities to enhance user safety.

The Oneiros app is available on the Apple and Google app stores. The Dashboard is a web application created with React and hosted on the Firebase Hosting platform. All data stored and processed outside of the user's own device (smartphone) is kept entirely anonymous.

Oneiros is currently a stand-alone service; however, connections and the ability to use devices such as smartwatches and biometric data sensors may be introduced in the future.

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Data Privacy

The patient logs anonymized sleep data into the Oneiros sleep diary. We do not collect personal or demographic information in the sleep diary, so no personal register is created. The patient accesses their data by entering their phone number, which is saved in the database as a strong cryptographic hash that cannot be reversed.

Data Security

The data is stored in Google's cloud in the EU zone. Access to the patient's data in the sleep diary is only available through methods agreed upon with the patient, such as text message or other secure methods. All data transmission is encrypted with the HTTPS protocol.

Data Ownership

The patient owns the data they enter into the app and store in the cloud. At the clinic's request, the patient can share their data via text messages or other agreed-upon secure methods.

Regulation

CBT-I therapy and the corresponding sleep diary approach are currently used in healthcare in a paper format. Oneiros digitalizes the process without altering the treatment. Oneiros is not a medical device, and therefore cannot be CE-marked. Oneiros enhances the process, makes work easier for both the patient and the therapist, and lowers the possibility of errors.

Oneiros receives data from the patient and performs calculations that the patient and clinician currently do manually, visualizes data in graphs, and transfers data between the two parties.

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