

SLEEP ASSESSMENT USING A POPULAR WEARABLE DEVICE

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Introduction

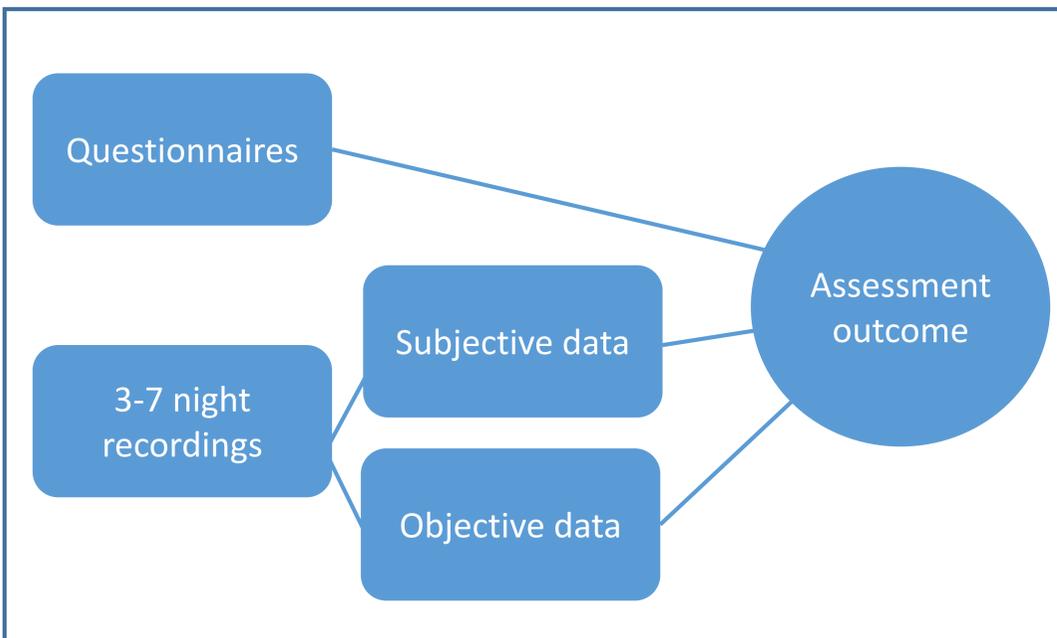
The ubiquity of accelerometer sensing wearable devices allows for new efficient and convenient ways for sleep monitoring and professional help for sleep disorders. Using our novel mobile app, SleepRate, and a sleep monitoring algorithm, we aimed to assess the sleep of Apple Watch users.

Methods

Over a period of 6 weeks, 142 users (46% females, 41.1±12.6 years old, BMI of 29.1±7.4, mean±sd) monitored their sleep using an Apple Watch and completed a sleep assessment. Night sleep was analyzed by our accelerometer-based validated algorithm:

- ✓ Agreement: 95.6%
- ✓ Cohen's Kappa coefficient: 0.76
- ✓ Compared to Actiwatch Spectrum, Respironics

The data were logged, measured and presented using a mobile app. The parameters include total sleep time, sleep efficiency, sleep latency, wake after sleep onset and more.



Results

A total of 652 nights was recorded with an average of 4.6±1.4 nights per user. 78 users (55% of the users) were assessed as suffering from symptoms of Insomnia, 27 (19%) from symptoms of Insomnia as well as symptoms of a shifted circadian clock, 21 (15%) with symptoms of insufficient sleep and 5 (3%) with symptoms of a shifted circadian clock. The remaining 11 (8%) users were assessed as normal sleepers with poor sleep related habits.

Discussion

By using our app, users could report perceived sleep parameters as well as record objective parameters. The ability to analyze accelerometer data from Apple Watch with a validated algorithm, allows us to reach diverse populations and assess different sleep-related difficulties and symptoms. Hence, Apple Watch along with SleepRate can be used by sleep therapists as an assessment and therapy tool.

