Pharmacological Treatment Of Vascular Depression: Use Of Mobile Devices In Medication Selection And Real-Time Patient Monitoring

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Introduction

Multifactorial illnesses such as vascular depression can be best managed by data-driven approaches relying on large datasets (“Big Data”) of pharmacogenomics, clinical and pharmacological information (Grossglauser & Saner, 2014). However, implementation of data-driven methods in clinical practice requires computing devices for effective data processing and presentation. Mobile applications (“apps”) empowered by the cloud technology have recently emerged as a nearly ubiquitous alternative to desktop and laptop computers. Out of 1 million published mobile apps, over 13,000 are used by nearly 50% medical professionals (Buijink et al, 2013). Yet, mobile app use for pharmacogenomics in a clinical setting is limited at best. Furthermore, mobile tools for real-time monitoring of depression have not been available to date.

Objectives

We created mobile apps intended to 1) use pharmacogenomics data in antidepressant selection 2) monitor depression symptoms and medication side effects, and 3) monitor patient’s quality of life in real-time.

Methods

We used cloud-based platforms, such as GoogleSheets, to organize clinically relevant information and render it into mobile apps. Three types of information was used: pharmacogenomics (Baskys 2015), geographic ancestry-based population genetics (HapMap, 1000genomes) and validated questionnaires to measure depression symptoms, medication side effects and quality of life (WHO-5, Zung Depression).

Results

Three mobile apps developed include antidepressant selection, real-time mental status monitoring and medication side effect data collection and monitoring tools.

Conclusions
Mobile apps may be a useful tool to present and process large amounts of medical and pharmacogenomics data enabling physicians to make data-driven clinical decisions and potentially improve treatment outcomes.