

The prediction of suicidal ideation as a function of daily mood and anxiety scores collected using mHealth technology in patients undergoing treatment for depression

Parit Patel, Grace Chan, Bing Wang, Jayesh Kamath

Submitted to: Iproceedings
on: May 09, 2022

Disclaimer: © The authors. All rights reserved. This is a privileged document currently under peer-review/community review. Authors have provided JMIR Publications with an exclusive license to publish this preprint on its website for review purposes only. While the final peer-reviewed paper may be licensed under a CC BY license on publication, at this stage authors and publisher expressly prohibit redistribution of this draft paper other than for review purposes.

Table of Contents

Preprint
JMIR Publications

The prediction of suicidal ideation as a function of daily mood and anxiety scores collected using mHealth technology in patients undergoing treatment for depression

Parit Patel¹ MBChB, MPH; Grace Chan^{1*} PhD; Bing Wang^{2*} PhD; Jayesh Kamath^{3*} MD, PhD

¹Department of Psychiatry University of Connecticut Farmington US

²Department of Computer Science and Engineering University of Connecticut Storrs US

³Department of Psychiatry Farmington US

*these authors contributed equally

Corresponding Author:

Parit Patel MBChB, MPH
Department of Psychiatry
University of Connecticut
263 Farmington Avenue
Farmington
US

Abstract

Background: Suicides and suicidal attempts are one of the most common causes of death in the USA. The rates of suicide have increased by 33% in the period 1999-2019. Clinically, a previous history of suicide is the main the risk factor, as well as the presence of comorbid conditions like depression and anxiety. Accurate and real-time prediction of suicidal thoughts may lead to improved management of patients with depression. Prediction of suicidality is difficult due to its day to day variability in relation to mood and anxiety symptoms. This can be overcome with the advent of mobile health (mHealth) technology that can capture granular data scores at a higher frequency than conventional therapeutic visitations.

Objective: To predict suicidal ideation using self-reported mood, anxiety and baseline demographic variables in those undergoing treatment for depression.

Methods: This study will utilize data from the 'DepWatch' study, a mHealth study that uses the DepWatch app developed by our research group. The objective of this longitudinal study is to develop a mHealth-based, personalized diagnostic prediction system for patients undergoing treatment for depression. Patients are followed over 12 weeks using electronic assessments conducted via the DepWatch app installed on their smart phones. The electronic assessments include the Quick Inventory of Depression Symptomatology-self report (QIDS-SR) conducted on a weekly basis and weekly medication adherence and medication safety and tolerability questionnaires. The assessments include brief mood and anxiety assessments conducted on a daily basis. Logistic regression analyses and analyses of the demographic and clinical characteristic collected at baseline is being conducted to predict the development of suicidal thoughts. The key explanatory variables are the daily mood and anxiety levels. The outcome variable is suicidal ideation (SI) as determined by the self-reported subject response to question 12 on the QIDS-SR scale.

Results: A total of 34 subjects are in the Interim Analysis Set. The median age is 26 years and 85.3% are female. 64.7% of participants are White. 38.2% either have a college degree or graduate education. 23.5% are unemployed, 41.1% full-time employed. 52.9% earn less than \$50,000 annually and 61% have never smoked. Univariate analysis shows statistical significance of gender, race, aggregate anxiety, and employment status at 0.1 significance level. In the multivariate model only gender and employment status are significant at 0.05. Race is marginally insignificant ($p=0.068$).

Conclusions: Suicidality and completed suicides is a significant public health problem, especially in patients with depression. The mHealth technology and statistical modelling that captures daily variability in anxiety leading up to SI can help predict suicidality.

(JMIR Preprints 09/05/2022:39371)

DOI: <https://doi.org/10.2196/preprints.39371>

Preprint Settings

1) Would you like to publish your submitted manuscript as preprint?

Please make my preprint PDF available to anyone at any time (recommended).

Please make my preprint PDF available only to logged-in users; I understand that my title and abstract will remain visible to all users.

Only make the preprint title and abstract visible.

✓ **No, I do not wish to publish my submitted manuscript as a preprint.**

2) If accepted for publication in a JMIR journal, would you like the PDF to be visible to the public?

✓ **Yes, please make my accepted manuscript PDF available to anyone at any time (Recommended).**

Yes, but please make my accepted manuscript PDF available only to logged-in users; I understand that the title and abstract will remain visible to all users.

Yes, but only make the title and abstract visible (see Important note, above). I understand that if I later pay to participate in <http://www.jmir.org/preprint/39371>