

# Can suicide risk and emotional states be detected in Twitter and Instagram posts of individuals at risk?

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<b>Registration date</b> 08/06/2022	<b>Overall study status</b> Completed	<input type="checkbox"/> Protocol
<b>Last Edited</b> 08/08/2022	<b>Condition category</b> Mental and Behavioural Disorders	<input type="checkbox"/> Statistical analysis plan
		<input type="checkbox"/> Results
		<input type="checkbox"/> Individual participant data
		<input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

With over 800,000 deaths every year, suicide has become a global public health priority and affects especially the young population. Social media has already proven its potential for real-time detection of mental health disorders such as depression or post-traumatic stress disorder. Recent studies are now revealing the potential of social media in suicide prevention. These new approaches are developing real-time identification of individuals at risk, either by people or by computer language processing systems. The objective of this study is to continue these efforts for further validation, in this case, in Spanish social media.

The present study is the continuation of the Tweetcare project and aims to compare Twitter and Instagram posts of people who have a history of suicide behavior from individuals with no reported suicidal symptoms in the last year to clarify if suicide risk can be detected by social media.

### Who can participate?

Adults aged 18 years and over who are active users of Twitter and Instagram.

### What does the study involve?

The content of the publication of social media profiles will be analyzed with a computer tool developed by "machine learning" techniques. This tool allows the detection of emotions and potential risk posts from users on the social networks Twitter and Instagram through artificial intelligence. If during data computer processing, a profile is detected and classified as high risk, we will contact the participant to be informed of this fact to contact their reference health services.

### What are the possible benefits and risks of participating?

There are no known benefits to participants

There are no known risks to participants

Where is the study run from?  
University of Zaragoza (Spain)

When is the study starting and how long is it expected to run for?  
March 2021 to May 2023.

Who is funding the study?  
This project is not funded by any institution or company.

Who is the main contact?  
Bárbara Oliván-Blázquez, bolivan@unizar.es,  
Yolanda López-Del-Hoyo, yolandal@unizar.es

## Contact information

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Principal investigator

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# Additional identifiers

## Study information

### Scientific Title

Can suicidal behavior be detected by analysing the emotional content and suicide risk assessments of Twitter and Instagram posts of individuals with a history of suicidal behavior in the last year, compared with individuals reporting nonsuicidal behavior?

### Acronym

#SocialMediaCare

### Study objectives

1. Descriptive analysis of the emotional states and suicide risk in the social media posts in a population with no reported suicidal behavior and a population with reported suicidal behavior in the last year.
2. Descriptive analysis of the emotional states and suicide risk in the social media posts in a population with no reported suicidal behavior but depression or other mental pathologies and a population with reported suicidal behavior in the last year.
3. There will be differences in the emotional content of the posts in the population with no reported suicidal behavior and the population with reported suicidal behavior in the last year.
4. There will also be differences between individuals with no reported suicidal behavior but depression or other mental pathologies and the population with reported suicidal behavior in the last year.
5. There will be differences in the suicide risk assessment of the posts in the population with no reported suicidal behavior and in the population with reported suicidal behavior in the last year.
6. There will also be differences in the population with no reported suicidal behavior but depression or other mental pathologies and the population with reported suicidal behavior in the last year.

### Ethics approval required

Old ethics approval format

### Ethics approval(s)

Approved 20/04/2022, Clinical Research Ethics Committee of Aragón (Comité Ético de Investigación Clínica de Aragón, CEIC Aragón, Instituto Aragonés de Ciencias de la Salud (IACS), Centro de Investigación Biomédica de Aragón (CIBA), Avenida San Juan Bosco 13, Zaragoza 50009, Spain; +34 976 71 5836; ceica@aragon.es), CEICA number PI21-164

### Study design

Observational cross-sectional cohort study

### Primary study design

Observational

### Study type(s)

Screening

### Health condition(s) or problem(s) studied

Suicide risk

## **Interventions**

Participants will complete an online survey and agree to the extraction of information from their social media posts. Enrolment to survey end will be approximately 15 min. When their profiles are not public, there will be a second phase in which we will contact participants to ask for permission to view their content from the 12 months prior to registration. There is no follow-up. The total duration of the participation for those who need to give permission is no longer than 60 days. Emotional content and suicide risk in the online social media posts of healthy individuals, individuals with depression or other mental pathologies, and a population with reported suicidal behavior in the last year based on automatic classification and expert evaluations.

## **Intervention Type**

Other

## **Primary outcome(s)**

1. Suicide risk of individuals is measured using SBQ (Suicidal Behaviors Questionnaire) and Plutchik Suicide Risk Scale
2. Suicide risk in the content of social media posts is measured on a scale of severity of suicide risk at the time of writing the tweet (real-time risk): from 0 (no existent risk) to 4 (extreme risk), by the computerized automatic classification system and also assessed by experts

## **Key secondary outcome(s)**

1. Emotional content analysis, including 5 basic emotions: anger, sadness, joy, surprise, and fear, will be measured on a scale of 0-100, by the computerized automatic classification system and also assessed by experts.
2. Emotional valence, measured on a scale 0 to 100, by the computerized automatic classification system and also assessed by experts
3. Severity of general suicide risk, measured on a scale from 0 (no existent risk) to 4 (extreme risk), by the computerized automatic classification system and also assessed by experts.
4. Daily time spent on social media, measured on a self-reported scale.
5. Psychopathology in the last year, measured on a self-reported item.

## **Completion date**

01/05/2023

## **Eligibility**

### **Key inclusion criteria**

1. People aged 18 years or over
2. People with the ability to read and write in Spanish
3. Active users or have used Twitter and/or Instagram in the last year

### **Participant type(s)**

All

### **Healthy volunteers allowed**

No

### **Age group**

Adult

**Lower age limit**

18 years

**Sex**

All

**Key exclusion criteria**

1. People aged 17 years or under
2. People with cognitive impairment or impaired reality judgment.

**Date of first enrolment**

25/06/2022

**Date of final enrolment**

01/05/2023

**Locations****Countries of recruitment**

Spain

**Study participating centre**

AFDA Asociación de trastornos depresivos de Aragón

Calle Santa Lucía, 9

Zaragoza

Spain

50003

**Sponsor information****Organisation**

Instituto de Investigación Sanitaria Aragón

**ROR**

<https://ror.org/03njn4610>

**Funder(s)****Funder type**

University/education

**Funder Name**

Instituto de Investigación Sanitaria de Aragón

## Results and Publications

**Individual participant data (IPD) sharing plan**

Current IPD sharing statement as of 08/08/2022:

The datasets generated during and analysed during the current study will be available upon request only for replicability purposes. An anonymized dataset will be accessible after the study is completed. To request it please contact [prevencionsuicidio@unizar.es](mailto:prevencionsuicidio@unizar.es).

Previous IPD sharing statement:

It is highly probable that, because of the nature of the data, the datasets analysed during the current study will be available only upon request and only for replicability purposes.

Nevertheless, data-sharing plans for the current study are yet unknown and will be made available at a later date.

**IPD sharing plan summary**

Available on request