



## Original article

## Mental illness discussion variations on X: Topic modelling and sentiment analysis



Javier Domingo-Espiñeira<sup>a</sup>, Andrea Varaona-Santos<sup>b,\*</sup>, Francisco J. Lara Abelenda<sup>c</sup>,  
 María Montero<sup>b</sup>, Emilio Fernandez-Egea<sup>d,e</sup>, Leticia I Muñoz-Manchado<sup>f,g</sup>, Miguel A. Ortega<sup>h,i</sup>,  
 Melchor Álvarez-Mon<sup>b,h,i,j</sup>, Miguel Ángel Álvarez-Mon<sup>b,i,k,l</sup>

<sup>a</sup> Facultad de Ciencias Económicas y Empresariales, Universidad a Distancia de Madrid -UDIMA, Ctra. de la Coruña, km 38.500 -Vía de Servicio, 15 - 28400, Collado Villalba, Madrid, Spain

<sup>b</sup> Department of Medicine and Medical Specialities, Faculty of Medicine and Health Sciences, University of Alcalá, Alcalá de Henares, Spain

<sup>c</sup> Department of Signal Theory and Communications, Telematics, and Computing Systems, Rey Juan Carlos University, Fuenlabrada, Spain

<sup>d</sup> Department of Psychiatry, University of Cambridge, United Kingdom

<sup>e</sup> Cambridge Psychosis Centre, Cambridgeshire and Peterborough NHS Foundation Trust, Cambridge, United Kingdom

<sup>f</sup> Unidad de Gestión Clínica de Salud Mental, Área de Gestión Sanitaria Norte de Cádiz, Hospital Universitario de Jerez de la Frontera, Cádiz, España

<sup>g</sup> Severe Mental Disorder Research Group, Department of Neuroscience, University of Cádiz, Instituto de Investigación e Innovación Biomédica de Cádiz (INIBICA), Cádiz, Spain

<sup>h</sup> Department of Medicine and Medical Specialities, Networking Research Center for Liver and Digestive Diseases (CIBEREHD), University of Alcalá, 28801, Alcalá de Henares, Spain

<sup>i</sup> Ramón y Cajal Institute of Sanitary Research (IRYCIS), 28034, Madrid, Spain

<sup>j</sup> Immune System Diseases-Rheumatology and Internal Medicine Service, University Hospital Prince of Asturias, 28806, Alcalá de Henares, Spain

<sup>k</sup> Department of Psychiatry and Mental Health, Hospital Universitario Infanta Leonor, Madrid, Spain

<sup>l</sup> CIBERSAM-ISCIH (Biomedical Research Networking Centre in Mental Health), Madrid, Spain

## ARTICLE INFO

## Keywords:

Mental illness  
 Mental disorder  
 Mental health discourse  
 Social media  
 Analysis

## ABSTRACT

**Background and objectives:** Social Media Listening has become essential for understanding societal attitudes about mental health. However, there is a lack of studies focusing on Spanish-language discussions and long-term analyses. This study aims to investigate the evolution of Spanish and English public discourse on nine psychiatric disorders over 15 years on X, identifying frequently addressed topics and associated emotions.

**Methods:** We collected and analyzed tweets in English and Spanish from 2007 to 2022, referring to nine psychiatric disorders (autism, ADHD, schizophrenia, bipolar disorder, depressive episode, anxiety, addictions, insomnia, and suicide). Advanced topic modeling and sentiment analysis were applied.

**Results:** The study revealed differences in tweet volumes across disorders and languages. Anxiety was the most prevalent term in both Spanish and English tweets. Spanish discussions emphasized insomnia and suicide attempts, while English tweets highlighted autism and schizophrenia. Tweets about bipolar disorder, depressive episode, and addictions were consistently low in both languages. Over time, Spanish tweets on insomnia, anxiety, and suicide attempts increased, while English tweets on autism, anxiety, suicide attempts, and schizophrenia spiked in 2018 and 2019. Topic modeling indicated that Spanish tweets focused on personal experiences with mental disorders and their impact on life, primarily associated with anger, fear, sadness, and joy. English tweets centered on social awareness and advocacy, eliciting fear, followed by treatment and prevention, associated with fear and sadness.

**Conclusions:** Despite fewer discussions on X about severe mental disorders like bipolar disorder, schizophrenia, and addictions, X serves as a supportive environment for mental health discourse. Spanish-speaking users share personal experiences, fostering self-expression, while English users promote social awareness and advocacy. This highlights X's role in normalizing mental health conversations, reducing stigma, and increasing support.

\* Corresponding author.

E-mail addresses: [varaonaandrea@gmail.com](mailto:varaonaandrea@gmail.com) (A. Varaona-Santos), [ef280@cam.ac.uk](mailto:ef280@cam.ac.uk) (E. Fernandez-Egea), [leticia.munoz.sspa@juntadeandalucia.es](mailto:leticia.munoz.sspa@juntadeandalucia.es) (L.I. Muñoz-Manchado).

<https://doi.org/10.1016/j.ejpsy.2025.100300>

Received 13 August 2024; Accepted 23 February 2025

Available online 21 March 2025

0213-6163/© 2025 Sociedad Española de Psiquiatría y Salud Mental. Published by Elsevier España, S.L.U. All rights are reserved, including those for text and data mining, AI training, and similar technologies.