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Emotional Distress During COVID-19 by Mental Health Conditions and Economic Vulnerability: Retrospective Analysis of Survey-Linked Twitter Data With a Semisupervised Machine Learning Algorithm

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Research to Practice

Brief #: 2

Emotional Distress During COVID-19 by Mental Health Conditions and Economic Vulnerability: Retrospective Analysis of Survey-Linked Twitter Data With a Semisupervised Machine Learning Algorithm

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This article uses survey-linked Twitter data from Japanese users from the year 2020 to trace changes in mental health conditions across the first year of the COVID-19 pandemic. With their consent, the authors retrieved the past tweets of the survey participants. An algorithm called latent semantic scaling (LSS) quantified emotional distress levels for those surveyed by estimating the polarity of words as well as emojis used in their tweets. It did so by assigning a numerical score based on the similarities between the language and emojis in the tweets and a set of "seed words" that signaled different emotional states. These were then mapped across specific events in 2020, including the abrupt closure of schools in March and the declaration of a state of emergency in April. 2019 was used as a baseline year.

KEY FINDINGS

- Emotional distress levels in response to the COVID-19 pandemic varied across demographic categories such as gender, socio-economic status, and employment level.
- Government measures designed to combat COVID-19 had a greater negative impact on mental health than the spread of the disease itself.

The Demographics of Mental Health During COVID-19

The authors found that the effect of the COVID-19 pandemic on mental health varied across demographic groups. Women saw their emotional distress levels increase more than men when schools closed in early March, though the state of emergency seemed to affect both women and men fairly equally. Those with secure employment had less emotional distress during the state of emergency than those whose jobs were insecure or the unemployed. The largest disparities were seen along the socioeconomic dimension. Low-income individuals saw their emotional distress soar and stay high for several months after lockdown was first imposed, whereas higher-income individuals only had a modest increase that did not persist. This analysis reveals that populations already suffering some form of disadvantage were more negatively impacted by the pandemic than more-advantaged groups.

Factors Impacting Mental Health During COVID-19

The authors found that emotional distress levels rose when the government enacted policies aimed at stopping the spread of COVID-19, such as closing schools or imposing travel restrictions. Conversely, there was no correlation between emotional distress levels and the actual number of positive COVID-19 cases. Coupled with the demographic findings, this insight underscores the need for policy designers to anticipate the mental health repercussions of government responses to public health emergencies. Their study also highlights a potential to continuously monitor the psychological health of social media users using survey-linked data as a complement to administrative and large-scale survey data during public health emergencies.

For more information, please see Ueda M., Watanabe, K., & Sueki, H. (2023). Emotional Distress During COVID-19 by Mental Health Conditions and Economic Vulnerability: Retrospective Analysis of Survey-Linked Twitter Data With a Semisupervised Machine Learning Algorithm. *J Med Internet Res*, 25:e44965. https://doi.org/10.2196/44965.

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