

# Machine learning predicts suicide risk in patients with anxiety and stress

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Anxiety and depression are serious mental health problems that a growing number of people seem to be facing. These conditions can tragically lead to suicidal thoughts and actions. As such, new research in

the *International Journal of Biomedical Engineering and Technology* is being undertaken to help find modern solution to help prevent such tragic outcomes. The work focuses on how machine learning might be used to identify patients who may be at risk of suicide and allow interventions to be made in a timely manner.

According to the World Health Organization, approximately 700,000 die by suicide each year. That represents more than one person every minute. Many more people attempt suicide and the WHO suggests that a prior attempt is ultimately the biggest risk factor for suicide. Suicide is a multidimensional disorder that arises from the interaction between biological, genetic, psychological, sociological, and environmental factors. In places where [mental health services](#) are not readily available, people at risk often see a physician rather than a psychiatrist. Research has shown that between one in five and three in five of people who commit suicide had seen a physician in the month prior to their death.

Anju Bhandari Gandhi and Devendra Prasad of the Panipat Institute of Engineering and Technology in Haryana, Umesh Kumar Lilhore and Sarita Simaiya of Chandigarh University in Gharuan Mohali, Punjab, and Deepak Kumar Verma of the Chhatrapati Shahu Ji Maharaj University in Kanpur Uttar Pradesh, India, have investigated how [computer algorithms](#) can be used to analyze data from patients suffering from anxiety and stress. They compared several different types of algorithms to see which might be best suited to predicting suicidal behavior based on the patient data.

The results are promising. The team explains that the random forest algorithm was able to predict with 95% accuracy which patients were at risk for suicide. This kind of analysis could be used to screen patients more efficiently, helping [health care workers](#) identify those who need help the most sooner rather than when it is too late.

As health care workers continue to face increasing complexity and limited time, it is important to find innovative ways to identify problems. The WHO points out that suicide is the fourth leading cause of death among 15- to 29-year-olds. The team's algorithmic approach to risk assessment based on monitoring [anxiety](#) levels works equally well for youngsters as it does for older people.

Obviously, software can never replace one-to-one care, but if it can reveal issues that might not be immediately apparent to a health care worker and flag problems early, then the health care worker might be in a better position to make a timely intervention and so save lives.

**More information:** Sarita Simaiya et al, Suicidal behaviour screening using machine learning techniques, *International Journal of Biomedical Engineering and Technology* (2023). [DOI: 10.1504/IJBET.2023.10054322](#)

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