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AI can spot suicidal tendencies among young people

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The number of suicide attempts is rising at an alarming rate: In 59 low- and middle-income countries, 1 in 6 young people have attempted suicide, according to studies. This worrying development calls for

stronger preventive efforts, which is also at the center of a new international research project.

Researchers from Norway and Denmark have used artificial intelligence in the form of machine learning to map which factors are particularly related to young people's suicide attempts. Data from 173,664 Norwegian teenagers aged 13 to 18 years are included in the study, which is published in the *Journal of Youth and Adolescence*. Among the young people, 4.65% had attempted suicide in the past 12 months.

"It is crucial to identify the life circumstances that increase suicide risk among young people. Unfortunately, current methods for estimating risk factors are close to useless—thus, authorities cannot identify the people who are at risk," points out Milan Obaidi, Associate Professor at the Department of Psychology at the University of Copenhagen, who is one of the project's researchers.

Self-harm is a key warning sign

The researchers are left with a clear picture of the main risk factors:

"Recent self-harm is the most important indication of risk for suicide attempts. In addition, we found five other risk factors: internalizing problems such as anxiety and depression, sleep problems, eating disorders, pessimism about future prospects and victimization," says Obaidi.

There have been previous attempts to use machine learning to localize suicide risk, but these have had significant shortcomings.

"Among other things, the interaction of protective factors and risk factors has been overlooked. And previous studies have neglected to include established theories on suicidal behavior and instead used purely

algorithmic risk estimation," explains Obaidi.

Requires a holistic approach

The researchers' machine learning model is the most accurate of its kind to date. In other words, their model can identify which young people are at risk better than anyone else.

"Our model shows that young people's risk of suicide attempts is not simply a sum of various societal, economic and psychological pressures. Instead, we can see that intra- and interpersonal processes are crucial to suicide risk," says Obaidi. "These include a lack of optimism about education and career, conflicts with close relationships and victimizing experiences."

Stopping the alarming rise in suicide attempts among young people requires a more holistic approach to the problem, emphasizes Obaidi.

"You need to examine both risks and protective factors across many individual, psychological sociological and environmental domains," he states.

More information: E. F. Haghish et al, Unveiling Adolescent Suicidality: Holistic Analysis of Protective and Risk Factors Using Multiple Machine Learning Algorithms, *Journal of Youth and Adolescence* (2023). DOI: 10.1007/s10964-023-01892-6

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