

associated with suicide is depression. It is crucial to develop clinical tools that can provide objective data to assess suicide risk in clinical settings. Depression and high suicide risk may lead to physiological changes that can affect the speech pattern. Prior research has indicated that the acoustic and prosodic characteristics of speech may hold potential clues for assessing suicide risk. Additionally, specific speech parameters may serve as discriminators for identifying individuals at risk. In recent years, deep learning-based models have yielded successful results in identifying such alterations in speech signals.

Objectives: The aim of our study was to examine specific voice analysis parameters between control, depressive and high suicide risk groups. We also aimed to investigate the effect of voice-related variables in predicting suicidal behavior in patients with depression using an artificial intelligence model. The results of voice analysis are intended to serve as a starting point for the development of future artificial intelligence algorithms.

Methods: The study sample consisted of 30 near-term suicidal patients, 30 patients with major depression and 30 healthy controls. The participants were presented with a pre-determined text and a voice recording was carried out. Feature extraction and model training for three tasks, namely depression or not, suicide or not, and depression or suicide were carried out. Mel-Frequency Cepstral Coefficients (MFCCs), deep learning-based (VGGish), formant and prosodic features were extracted to analyze the sound characteristics of the participants. The Support Vector Machine was used as the machine learning algorithm for classification and the three models were trained for each task. A 10-fold cross-validation was carried out and presented by metrics including accuracy, precision, sensitivity and specificity.

Results: Among the metrics examined, MFCCs for the "Suicide or not" task were found to be more successful with rates of 0.90, 0.88, 0.93 and 0.86 for accuracy, precision, sensitivity, and specificity, respectively. MFCCs were also more successful for the "Depression or suicide" task with rates of 0.68, 0.66, 0.76, and 0.60 for accuracy, precision, sensitivity, and specificity, respectively. Among the metrics examined for the "Depressed or not" task, VGGish was more successful with rates of 0.73, 0.81, 0.70, and 0.76 for accuracy, precision, sensitivity, and specificity, respectively.

Conclusions: To the best of our knowledge, our study is the first to compare the VGGish and other features of speech (MFCCs, prosodic, formant features) between high suicide risk, depression and control groups. Classification parameters developed using the VGGish and MFCCs features of speech could be useful in predicting suicide risk in future studies.

Disclosure of Interest: None Declared

O0035

Deliberate self-harm and suicide in people with immigrant background: how can reason for immigration and country of origin differentiate the risks?

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Introduction: A growing body of research have devoted into suicide and deliberate self-harm in immigrant population, but no study has examined how reason for immigrating to the host country differentiates the risks.

Objectives: To gain firm insight into suicide and deliberate self-harm among people with immigrant background.

Methods: Norwegian registers were interlinked to identify all individuals who died by suicide in 1992-2018 and who received emergency treatment for non-fatal deliberate self-harm (DSH) in 2008-2018, and to construct the respective databases via a nested case-control design. Rates and relative risks of suicide and DSH were assessed according to immigrant background, country of birth and reasons of immigration, and in the context of personal socioeconomic status.

Results: People with an immigrant background accounted for 11.6% of all suicides in 1992-2018 and 17.9% of all DSH incidents treated in hospital emergency departments in 2008-2018. The rates of both suicide and DSH were highest in people born abroad with two Norway-born parents (mean rate: 19.4/100 000 for suicide and 280.9/100 000 for DSH) and lowest in the second-generation immigrants. Compared with the native Norwegians, suicide risk was significantly higher for those foreign-born with two Norway-born parents (HR=1.50) and those born in Norway with 1 one foreign-born parent (HR=1.20), but was significantly lower for the first- and second-generation immigrants. The associated risks remained almost unchanged when the data were adjusted for personal differences in education, marital status, income and place of residence in Norway. The analyses on deliberate self-harm exhibited similar patterns of results as for suicide, although the estimated reduced risks in the first- and second-generation immigrant is somewhat smaller. Evidently, the risks for suicide and DSH varied significantly by reason of immigration and country of origin. Immigrants coming for education had the lowest risk for suicide and self-harm, and those coming for work the second lowest. The risks for immigrants coming for family unity were lower than the natives, but significantly higher than counterparts coming for job or education from the same country. Among immigrants coming to Norway as a refugee or asylum seeker, the risk of suicide was comparably high as those coming for work, but the relative risk for self-harm was significantly higher. The increased risks associated with the mixed immigration background tended to be slightly higher in females than in males, and were likely confined to adoptee population.

Conclusions: Risks for suicide and deliberate self-harm in people with an immigrant background differs significantly by reason of immigration and country of origin. The findings should be taken into account in efforts of mental healthcare and suicide prevention targeting immigrant population.

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Prospective mortality in patients with non-fatal deliberate self-harm: a national cohort study

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