Multi-symptom trajectories and correlation with suicidal behavior

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Mood disorders affect roughly 15% of the general adult population, are not limited to any specific age group or demographic, and have repeatedly been found to be a leading cause of disability worldwide. Patients with mood disorders are at an increased risk of suicidal behavior, with 10-15% of this population committing suicide. We sought to identify sub-groups of patients based on patterns in trajectories of mood related symptoms over time and test whether certain sub-groups are associated with increased risk of suicidal behavior. We analyzed longitudinal data from the National Network of Depression Centers Clinical Care Registry, in which patients were evaluated with the PHQ-9, GAD-7, Altman Self-Rated Mania Scale (ASRM), and The Columbia Suicide Severity Rating Scale before every clinic visit. SAS PROC TRAJ was used to fit multi-trajectory models to the repeated measures data and identify sub-groups of patients. The association between different sub-groups and risk of suicidal ideation and behavior were then tested; suicidal ideation was captured if patients endorsed having any thoughts of killing themselves and suicidal behavior was captured as positive if the patients endorsed making a suicide attempt or preparations for an attempt. Data were available on 4,905 observations from 1,428 patients seen at 18 NNDC centers between 2011-2014. The average age at the time of consent was 40.09 (SD 15.87). Of these 1,428 individuals, 473 (33.12%) were male, 1,184 (82.91%) were Caucasian, and 1,108 (77.59%) completed more than a high school degree. Repeated measures of the PHQ-9 and GAD-7 were highly stable with little decay in correlation over time. They were also highly correlated with each other cross-sectionally and (to a lessor but still significant extent) over time. The ASRM measures were modestly correlated over time and not at all correlated with either the PHQ-9 or GAD-7. We identified 3 sub-groups of patients based on trajectories of the PHQ-9, GAD-7 and ASRM. The groups differed in severity on the PHQ9 and GAD7 with group 1 scoring consistently low on both measures, group 3 scoring consistently high, and group 2 scoring in between. Groups 2 and 3 scored consistently the same on the ASRM over time, while group 1 started out the same but then declined over time. Older and more educated patients were less likely to be in the more severe groups, while there were no differences in race and sex between groups. There was a “dose-response” relationship across the 3 groups of patients with the more severe groups more likely to suffer from suicidal ideation and suicidal behavior. Mood disorders are a heterogeneous set of conditions with varying patterns of trajectories of mood and anxiety symptoms over time. This heterogeneity may reflect differences in etiology and influence clinical outcomes, including risk for suicide. Our analyses may help inform strategies for identifying patients who are at an increased risk of suicidal behavior based on symptom patterns.

(See two figures on next page)

Figure 1. Heat map of correlations for ASMR, PHQ9 and GAD7

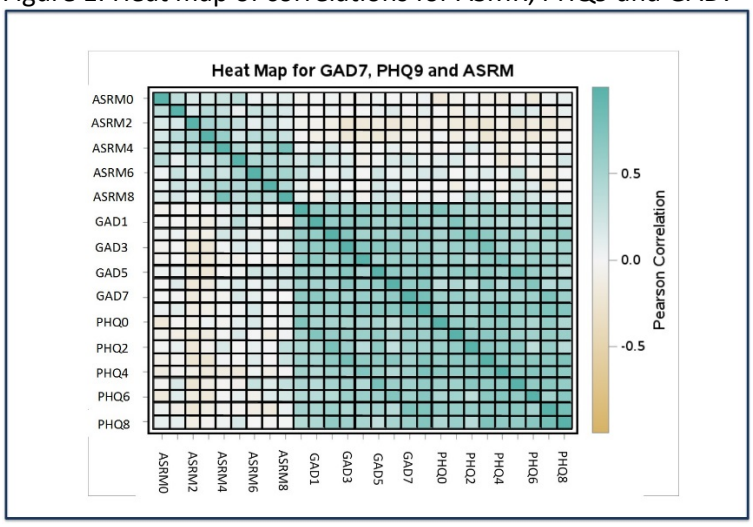
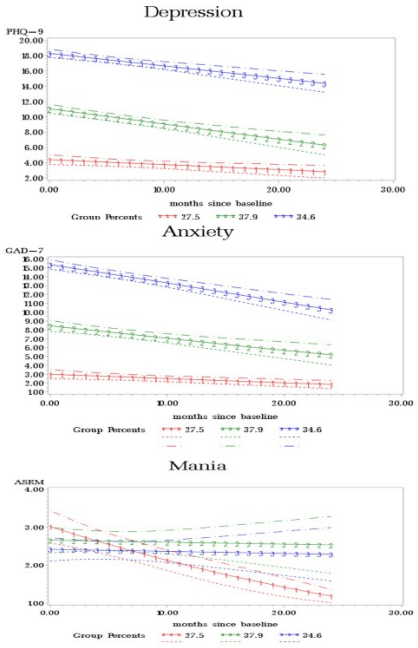


Figure 2: Estimated trajectories of the ASRM, GAD7, and PHQ9 from Multi-trajectory Latent Models



X-axis: months after baseline

~~1111~~: group 1, ~~2222~~: group 2, ~~3333~~: group 3