METHODOLOGICAL ISSUE

- How to efficiently elucidate meaningful symptom patterns to characterize subgroups of major depression and changes in these subgroups among women receiving clomipramine in the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) trial.

INTRODUCTION

- Depression can differ by a number of factors such as symptoms and gender, with women experiencing depression more often and more severely than men.
- While depression heterogeneity is well established, how to delineate homogeneous subgroups that respond differently to treatment is uncertain. Identifying homogeneous subgroups based on observable symptoms would likely improve the ability to efficiently predict who will benefit from which treatment.
- It has been seen that individual symptoms can change throughout depressive episodes and transitions from one subtype to another are probable. Additional research about the longitudinal stability of subtypes, including transitions between subtypes in response to treatment, could inform efforts to address depression symptom heterogeneity in personalizing treatment strategies.

AIMS

- To characterize depression subgroups based on symptom patterns in women participating in level 1 of STAR*D.
- To examine qualitative changes in these subgroups.
- To estimate probabilities of transition between subgroups.

METHODS

- Latent transition analysis (LTA) is one method for identifying subgroups from the multiple dimensions of depression and examining how these subgroups change over time (Figure 1). These finite mixture models assume that there are mutually exclusive and exhaustive groups that can be differentiated by values of an unobserved categorical variable. This latent variable is based on observed indicators of characteristics such as symptoms.
- Data from version 3 of the publicly available, NIMH-supported STAR*D limited access dataset were analyzed for this study.
- Women who completed baseline and week 12 study visits were eligible (n=775).

- The individual items measuring depression symptoms from the self-rated version of the Quick Inventory of Depressive Symptomatology were used as indicators of latent depression subgroups.

Figure 1. Overview of LTA to examine changes in depression subtype

STATISTICAL ANALYSIS

- Determined the number of subgroups by fitting LTA models with the number of datasets varying from 2-7. Selection of the appropriate number of subgroups was informed by fit statistics, parsimony, and interpretability.
- Evaluated whether the qualitative characterizations of the subtypes are the same at baseline and 12 weeks (measurement invariance) using the difference of test Akaike Information Criterion and Bayesian Information Criterion to compare two nested models:
  - A model in which the item-response probabilities were allowed to vary between baseline and week 12; and
  - A model in which the item-response probabilities were constrained for both time points.
- Identified demographic and clinical correlates of baseline subtype membership within multinomial logistic models, resulting in adjusted odds ratios.

RESULTS

- When compared to included women, the women who were excluded were younger on average. The excluded women were also more likely to be black or African American and more likely to have comorbid anxiety disorders such as generalized anxiety disorder (GAD), and social phobia when differences in frequency ≥5% were considered (Table 1).
- At baseline, women who were included were likely to be younger than 45 years old, while severely depressed Anxiety disorders were the most prevalent psychiatric comorbidities (Table 1).
- The symptom patterns characterizing the subgroups differed between baseline and week 12 (Figure 2). In baseline, the subgroups were Mild, Severe with Increased Appetite, Severe with Increased Appetite and Severe with Insomnia. At week 12, the subgroups were Symptom Resolution, Mild with Insomnia, Moderate with Psychomotor Disturbances, and Severe.
- Women who were likely to belong to the MIId subtype at baseline had the greatest chance of transitioning into the Symptom Resolution subgroup at week 12 (Figure 3). Those in the Severe with Insomnia group had the lowest chance of transition into the Symptom Resolution subgroup.
- Women with generalized anxiety disorder and those with PTSD were more likely to belong to the Severe groups than the MIld group (Table 2). Those with bulimia were less likely to be in Severe with Increased Appetite and Severe with Insomnia than the MIld group. Women with social phobia were more likely to be in Severe with Insomnia and less likely to be in Severe with Insomnia when compared to the MIld group.