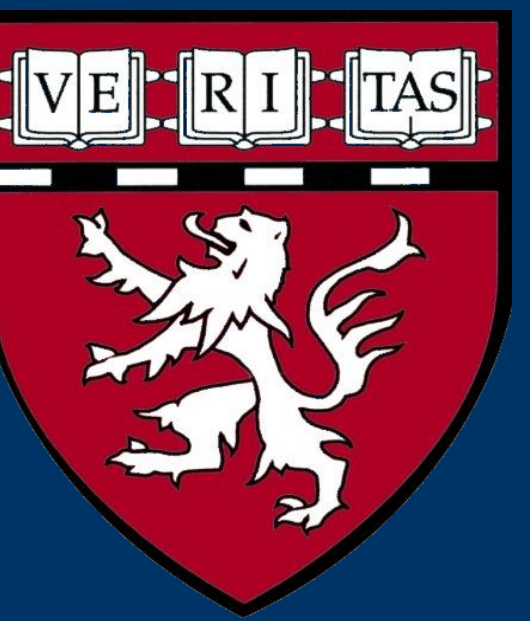




# Symptoms of Depression and Anxiety Predict Worse Disease Activity and Functional Disability in a Cohort of Established Rheumatoid Arthritis Patients



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## Introduction

- Depression and anxiety are common co-morbidities in RA patients with 16.8% of RA patients having a diagnosis of depression and 25.1% of RA patients having screened positive for anxiety (Matchum F et al., 2013; Spitzer RL et al., 2006)
- In RA patients, depression and anxiety have been shown to be associated with increased pain, fatigue, reduced quality of life, and increased healthcare utilization
- However, prior research has been limited by either small sample size or suboptimal methods of measuring depression and anxiety

## Aims

- To examine the longitudinal impact of depression and anxiety on RA disease activity and functional status in a cohort of RA patients with established disease

## Methods

### Study Population:

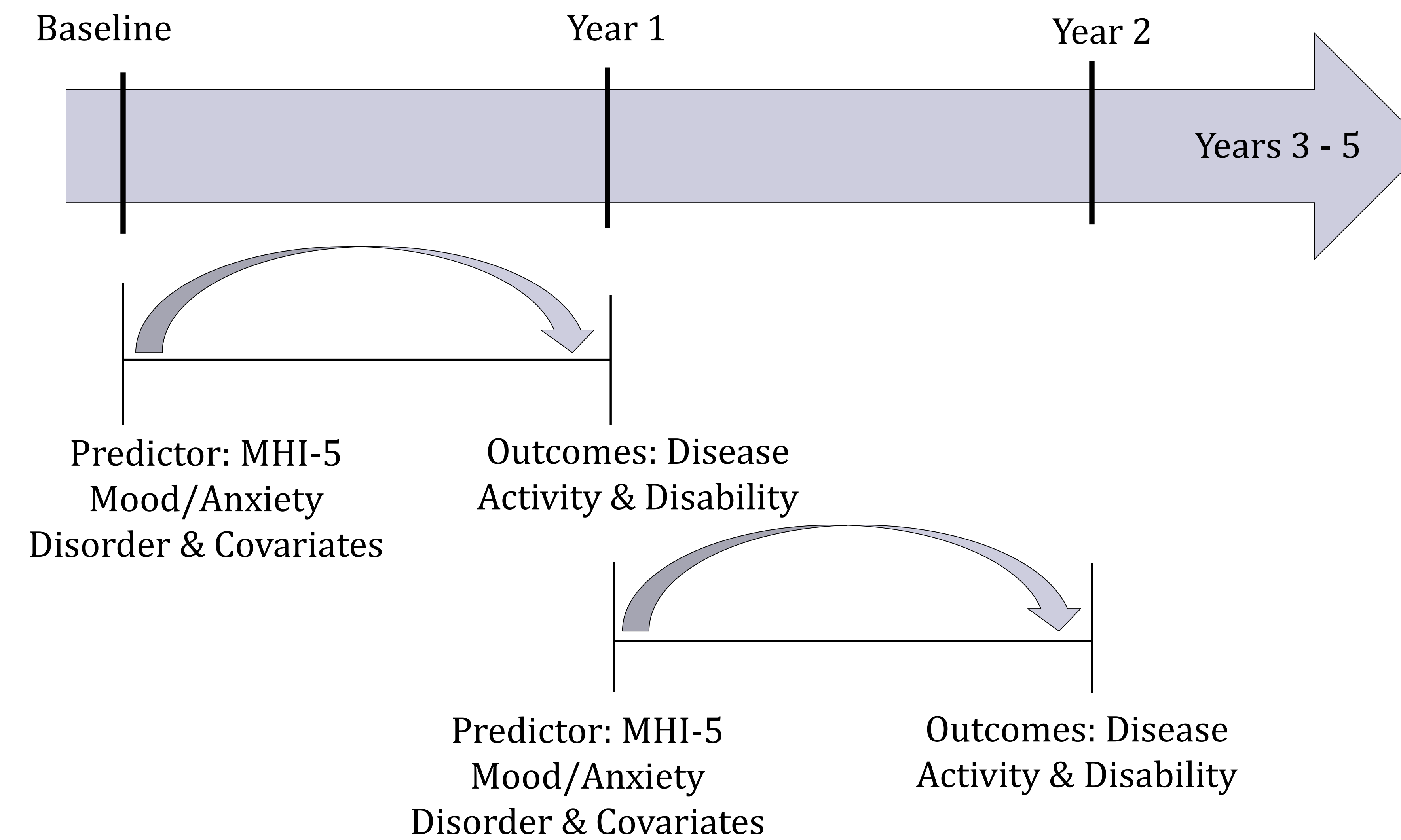
- 992 RA patients enrolled in the Brigham and Women's Rheumatoid Arthritis Sequential Study (BRASS)
- Data collection includes joint examinations, serological analyses and patient reported outcome measures annually
- The Mental Health Index-5 (MHI-5), a validated scale that screens for both depression and anxiety, was collected 3 times over a 5 year period
- Patients with an MHI-5 score  $\leq 65$  were considered to have met the criteria for Mood/Anxiety Disorder (Rumpf et al., 2001)

### Statistical Analyses:

- **Study Covariates:** Age, gender, ethnicity, education level, Berkman-Syme Social Network Index (SNI), seropositive, baseline DAS28-CRP3, baseline CRP, baseline RADAI, and baseline MHAQ
- **Outcomes:**
  - **Disease Activity Measures:** DAS28-CRP3, CRP, and RADAI (self-administered RA Disease Activity Index; Stucki et al, 1995)
  - **Functional Disability:** MHAQ
- To examine the association of MHI-5 Mood/Anxiety Disorder with the outcomes of disease activity and functional disability, linear mixed model analyses were performed where the predictor variable, MHI-5 Mood/Anxiety Disorder, and the study covariates were lagged by one year in relation to the outcomes (figure 1)

## Methods

Figure 1. Lagged Variable Analysis



## Results

Table 1. Baseline demographics, clinical and psychological variables

Variables	Total (N=992)
Age (years) (M, SD)	57 (13.6)
Race (White) (N,%)	922 (93.5)
Gender (female) (N,%)	820 (82.7)
Disease Duration (years) (M, SD)	13.8 (11.9)
Education (N,%)	
High School Degree	195 (19.7)
College Degree	234 (23.7)
Graduate Degree	560 (56.6)
MHI-5 Mood/Anxiety Disorder ( $\leq 65$ )(N,%)	215 (21.6)
Berkman-Syme SNI (0-4, 4=high)(M, SD)	2.4 (1.0)
DAS28-CRP3 (M, SD)	3.2 (1.5)
Seropositive (N,%)	678 (70.1)
MHAQ (M, SD)	0.34 (0.4)
RADAI (0-10, 10=high disease activity)(M, SD)	2.8 (2.1)
CRP, median (quartile range)	2.1 (0.77-5.59)

\*no differences at baseline between patients whose MHI-5 scores were  $\leq 65$  and patients with MHI-5 scores  $\geq 66$

## Results

Table 2. Using MHI-5 Mood/Anxiety Disorder to predict disease activity and functional disability a year later

Covariates	Outcomes					
	Worse DAS28-CRP3		Worse MHAQ Scores		Worse RADAI Scores	
	$\beta$	P-Value	$\beta$	P-Value	$\beta$	P-Value
MHI-5 Mood/Anxiety Disorder	0.18	0.01	0.04	0.03	0.30	0.004
Age	0.004	0.12	0.001	0.12	0.001	0.90
Gender	-0.01	0.92	0.05	0.02	0.07	0.60
Seropositive	0.21	0.003	0.02	0.40	-0.03	0.73
Education Level	-0.03	0.10	-0.02	<0.0001	-0.06	0.03
Berkman-Syme SNI	-0.082	0.58	-0.006	0.52	0.01	0.82
Baseline DAS28-CRP3	0.59	<0.0001	-	-	-	-
Baseline MHAQ	-	-	0.67	<0.0001	-	-
Baseline RADAI	-	-	-	-	0.56	<0.0001

- MHI-5 Mood/Anxiety Disorder did not predict worse CRP levels over time ( $p=0.31$ , results not shown)

## Conclusions

- In patients with long standing RA, more than 20% met the criteria for an MHI-5 Mood/Anxiety Disorder
- Symptoms of depression and anxiety, as defined by the MHI-5 score, predict worse disease activity and functional disability in RA patients independent of known confounders
- Further research is needed to evaluate whether symptoms of depression or anxiety contribute more to worse RA outcomes

## Strengths/Limitations

- Use of a validated scale for measuring depression and anxiety from a large cohort with prospective follow-up
- Results may not be generalizable to RA patients outside of a tertiary referral center



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