# Depressive Symptoms on the Incidence of Sexually Transmitted Infections Among Reproductive-Age Women

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## Background

Depressive symptoms may be related to incidence of sexually transmitted infections (STIs) among reproductive-age women
- Patterns have not been consistent
- Types of comparisons have been limited

**Aims**:
(1) Estimate the dose-response relationship between depressive symptoms and STI incidence at 6 months among:
- Women with HIV (WWH)
- Women without HIV (WWoH)

(2) Estimate how reductions in depressive symptoms would change STI incidence among:
- WWH
- WWoH

## Methods

**Data**: Study of Treatment and Reproductive Outcomes (STAR)[1]
- Observational cohort of reproductive age (18-45) women
- Southern United States (AL, DC, FL, GA, MS, NC)

**Exposure**: depressive symptoms at baseline
- Measured using the 20-item Center for Epidemiologic Studies-Depression (CES-D) scale

**Outcome**: incident STI at 6 months
- Self-reported a new diagnosis of gonorrhea, syphilis, chlamydia, herpes simplex, or trichomoniasis since baseline

**Confounding variables**: age, education, race, marital status, employment, alcohol use, drug use, cigarette use, hormonal birth control, history of STIs, condom use, number of sexual partners

**Statistical Methods**:
(1) Dose-response
- G-estimation of structural nested mean models[2]

(2) Reducing depressive symptoms
- G-computation[3]

## Results

**Table 1**: Descriptive statistics (n=853)

| | WWH (n=505) | WWoH (n=348) |
|---|---|---|
| Age | 37 [32, 42] | 32 [26, 38] |
| CES-D score | 10 [6, 21] | 11 [5, 21] |
| CES-D ≥ 16 | 192 (38%) | 118 (34%) |
| STI at 6 months | 32 (9%) | 17 (7%) |
| Missing STI | 167 | 116 |

Median [IQR], N (%)

**Figure 1**: Distribution of CES-D scores at baseline

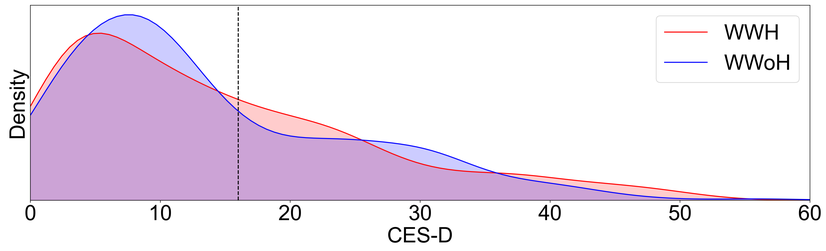
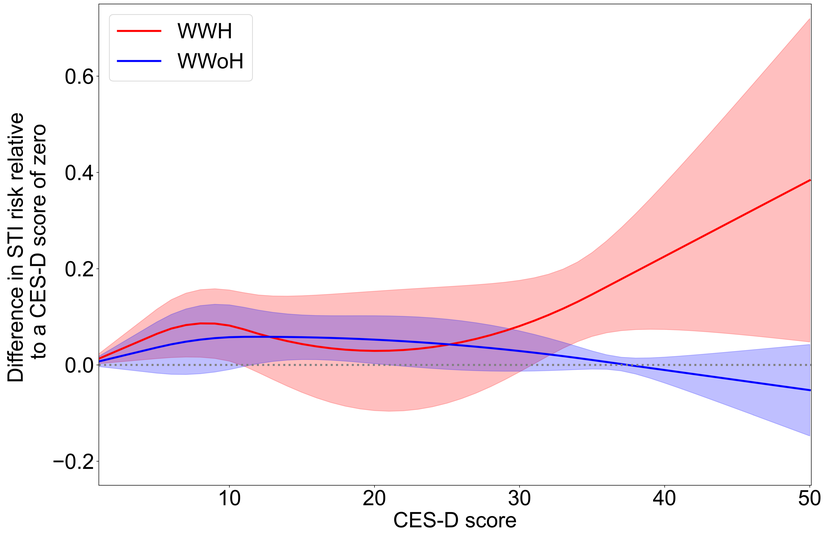



**Figure 2**: Dose-response relationship of CES-D score and incident STI




Shaded regions are 95% confidence intervals. Estimates represent the risk difference of self-reported incident STI given a CES-D score relative to CES-D of zero at baseline.

**Table 2**: Changes in STIs incidence at 6 months under reductions in depressive symptoms at baseline

| | Change in STI (95% CI) |
|---|---|
| Overall | |
| Lower CES-D score by 2 | -0.4% (-1.2%, 0.4%) |
| Lower CES-D score by 6 | -1.1% (-3.4%, 1.2%) |
| WWH | |
| Lower CES-D score by 2 | -0.7% (-1.5%, 0.1%) |
| Lower CES-D score by 6 | -1.9% (-4.1%, 0.3%) |
| WWoH | |
| Lower CES-D score by 2 | 0.2% (-4.9%, 5.2%) |
| Lower CES-D score by 6 | 0.5% (-4.4%, 5.4%) |

## Conclusions

Reducing depressive symptoms provides many benefits, one of which may be the reducing the incidence of STIs. This benefit appeared to be limited to WWH.

Future directions
- Re-analyze when all participants complete six month visit
- Explore other changes to CES-D scores
- Examine over longer time scales

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