



The Association Between Depression, Sleep Problems, and Overall Mental Health

Emily Rodriguez, Applied Data Analysis, Wesleyan University

Introduction

- 31.6% of adults aged 18 years/over and 72.5% of students in grades 9-12 reported getting insufficient sleep (CDC, 2017).
- Some of the most potent risk factors implicated in the investigation of poor sleep quality and its subsequent impact on individuals' mental health include mood swings, anxiety, and depression.
- The vast majority of research to date comes from cross sectional surveys in which later and shorter weeknight sleep duration has been linked to the development of depression and other mental health issues, specifically across adolescent groups (Tanaks, Shirakawa, 2014).
- Evidence from the National Comorbidity Survey Adolescent Supplement, a cross-sectional survey of US adolescents 13-18 years of age, revealed that participants categorized as having poor-quality sleep had significantly greater negative mood subscale scores (anger, confusion, depression, fatigue, and tension), compared to those with good-quality sleep (Zhang, Paksarian, Hickie, Merikangas, 2016).
- The goals of this study include 1) using a nationally representative sample and 2) using new measures to determine whether adults with depression are more sensitive to the development of sleeping problems

Research Question

- Does depression make adults (ages 24 to 32) more sensitive to the development of sleeping problems?
- Does the association between depression and sleep problems differ for individuals' depending on their living quarters?

Methods

Sample

- Respondents (n=15,701) of ages 24 to 32 were drawn from the fourth wave of the 2008 National Longitudinal Study of Adolescent Health (ADDHEALTH), a study that tracked the development and health trajectories across the life course of a nationally representative sample. Responses used from wave 4, the 'In Home Interview Code Book,' consisted of questions related to depression and sleep problems.

Measures

- Whether or not respondents' have depression was determined using the question "During the past 7 days: You felt depressed". Responses were coded in a yes/no format. Scores of 0 (never) and 1 (sometimes) was set equal to "no" while a score of 3 (most/all of the time) was set equal to "yes."
- Whether or not respondents' have a sleep problem was assessed similarly, using two questions about how often the respondents' have trouble falling asleep and how often they have trouble staying asleep in the past 4 weeks. Responses were coded in a yes/no format. Scores >2 (3 or 4 times a week or more) was set equal to "yes" while a score <3 (1 or 2 times a week or less) was set equal to "no".
- The association between depression, sleep problems and living quarters was coded by class using multiple logistic regression.

Results

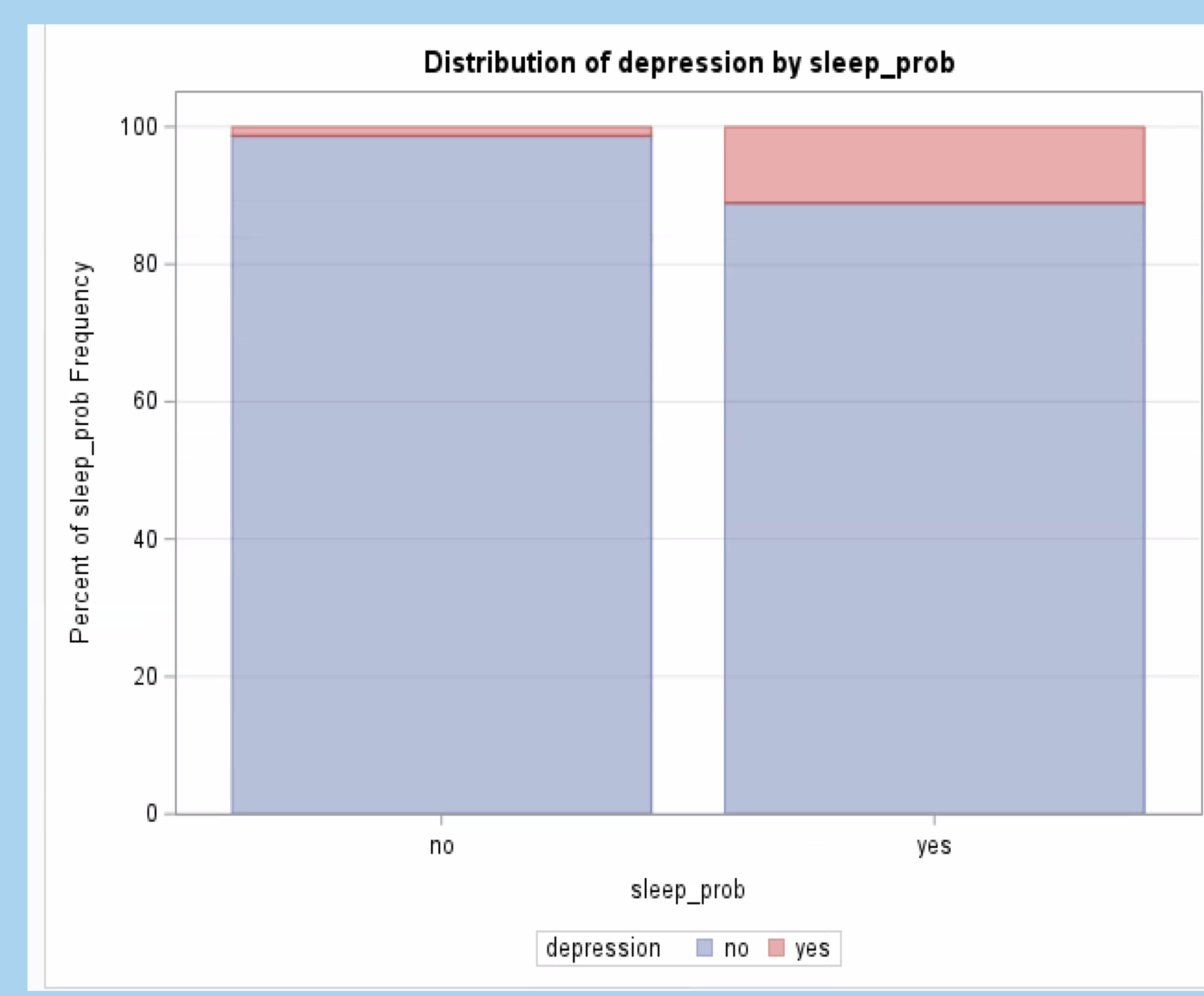
Univariate

- The majority of respondents (70.72%) reported not having felt depressed during the past 7 days while (23.04%) reported having felt depressed only sometimes.
- The majority of respondents (47.37%) reported never having had trouble falling asleep while (17.98%) reported having had trouble 1 or 2 times a week.
- The majority of respondents (44.15%) reported never having had trouble staying asleep in the past 4 weeks while (17.09%) reported having had trouble 1 or 2 times a week.

Bivariate

- A Chi-Square Test of Independence showed that **whether respondents do/don't have depression** is significantly and positively associated with **whether or not they do/don't experience a sleep problem** ($\chi^2=185.3782$, $p=0.001$).
- Additionally, a Chi-Square Test of Independence revealed that respondents **who have experienced depression in the past 7 days** were significantly more likely to have experienced a sleep problem, as indicated by Figure 1.

Figure 1. Bivariate graph of Sleep Problems by Depression

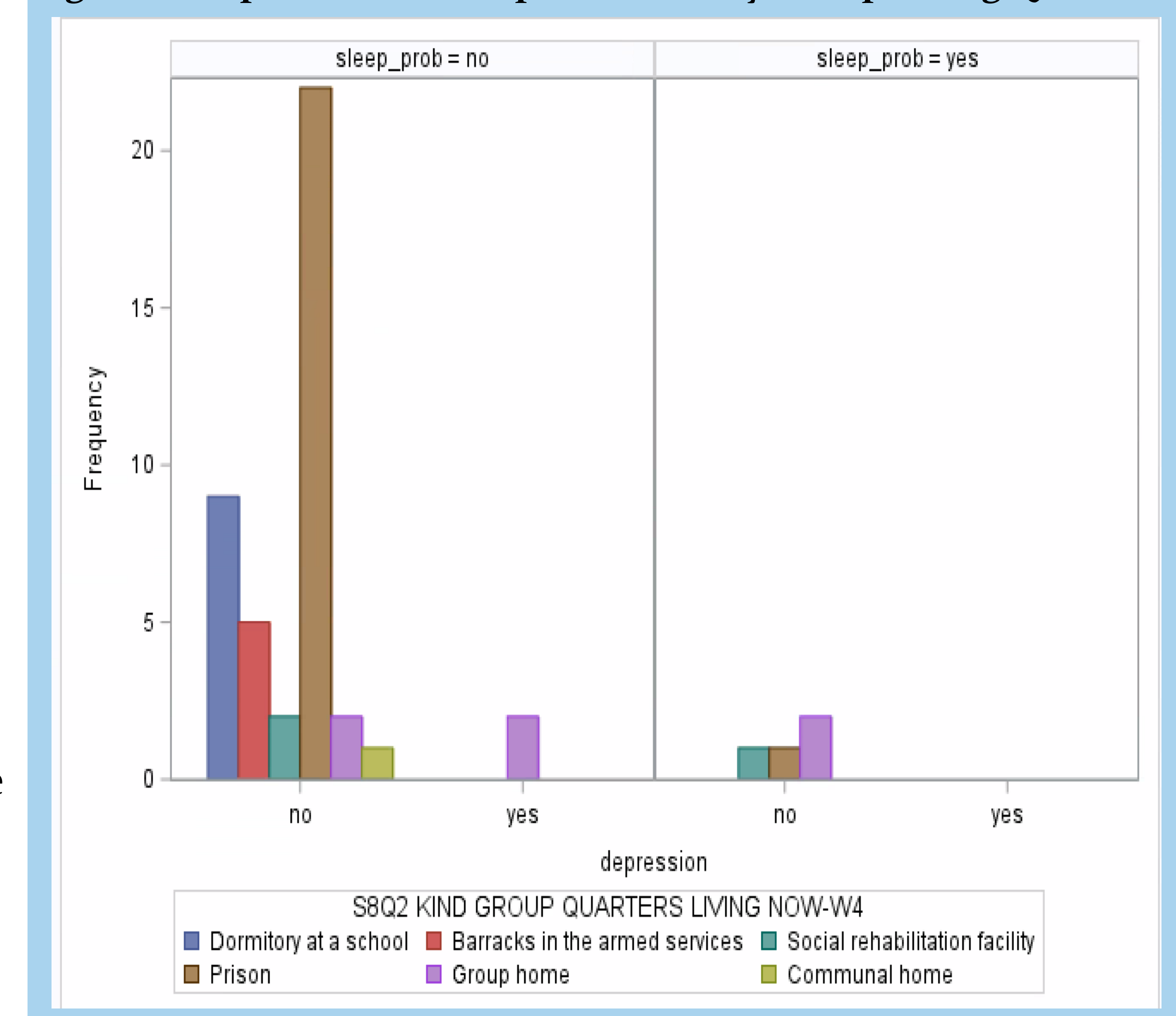


- Additionally, a logistic regression test showed that respondents with depression are significantly more likely to have a sleep problem compared to those without depression (O.R=9.568, C.I 6.471-14.147, $p<.0001$).

Multivariate

- A multiple linear regression test revealed that group living quarters does appear to confound the relationship between depression and sleep problems
- After controlling for living quarters, there is no longer a significant difference between depression and sleep problems ($p=0.9191$)
- Figure 2 suggests that there may not have been a large enough variety within the sample.

Figure 2. Depression vs Sleep Problems by Group Living Quarters



Discussion

- Depression in adults of ages 24 to 32 does play a pivotal role in worsening their sleep quality and overall mental health.
- Respondents with depression are more likely to have trouble with both falling and staying asleep compared to those who do not experience depression as frequently.
- Family counselors, psychiatrists, and sleep psychologists might use this information to create customized plans for those individuals with bad sleeping habits that take into account factors like depression, work schedule, living quarters, diet, and other medical issues.
- Further research is needed to determine what interventions would be most effective in helping treat depression for all generations, specifically of individuals 65+, as the vast majority of research to date has focused on adolescent groups rather than more robust national representative samples.