# B Vitamins in Treating Depression


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### *Significance*

- Depression affects 1 in every 10 adults in the United States, with an associated $150 billion in direct and indirect medical and employment costs.
- Depression affects quality of life by negatively impacting numerous other ailments such as arthritis, obesity, and diabetes.
- Ten billion dollars' worth of antidepressants were prescribed in 2010, but patient adherence to medications is often as low as 25%. This is due to negative side-effects, inefficacy, cost and negative perceptions regarding their use.
- By 2020, depression is projected to be the second largest health burden worldwide.
- Alternative therapies need to be researched to give health care practitioners more treatment options.

### What is Depression?

Five or more of the below symptoms must be present for a continuous period of at least two weeks:

- ✓ Depressed or sad mood
- ✓ Diminished interest in activities which used to be pleasurable
- ✓ Weight gain or loss
- ✓ Physical agitation or restlessness
- ✓ Slowing of physical or mental activity; fatigue
- ✓ Inappropriate guilt
- ✓ Difficulties concentrating
- ✓ Recurrent thoughts of death

### *Background*

- Deficiencies of various B vitamins have been associated with psychiatric diseases, including depression.
- Case studies have shown that B vitamin supplementation increases efficacy of antidepressants in antidepressant resistant patients.
- B vitamins are essential in numerous mechanisms in the body, including Involvement in reactions that regulate the stress and mood hormones serotonin, epinephrine, norepinephrine and dopamine.
- There are few trials on B vitamins in the treatment of depression, and the research that exists is conflicting.

### *Results*

- ❖ There was a significant decrease in depressive symptoms from baseline ($M$ = 31.4, $SD$ = 9.6) and at post-intervention ($M$ = 18.9, $SD$ = 10.4), $t(32)$ = 7.08, $p < .001$ (Figure 1). The effect size was large, $d$ = 1.23.
- ❖ There was no significant difference in the reduction of depressive symptoms between:
  - ❖ medicated and unmedicated participants.
  - ❖ participants inadequate in 6 or more B vitamins versus those inadequate in 2 or fewer B vitamins.
  - ❖ gender.

### *Demographic Results*

Population sample (N=33)

- ➢ 21 females;12 males
- ➢ Age range: 19 to 63 yrs ($M$ = 28.3, $SD$ = 13.7). Median age: 21 yrs
- ➢ BMI range: 17.9 to 49.0 kg/m$^2$ ($M$ = 28.4, $SD$ = 8.3)
- ➢ 4 smokers; 29 nonsmokers
- ➢ Alcohol consumption frequency:
  - 3% almost every day
  - 0% 5 or 6 days a week
  - 0% 3 or 4 days a week
  - 27.3% once or twice a week
  - 30.3% once or twice a month
  - 39.4% less than once a month

### *Objectives*

The purpose of this study is:

1. To assess if B vitamin supplementation decreases symptoms of depression.
2. To assess if B vitamin supplementation decreases depressive symptoms in people who take antidepressants yet still experience symptoms of depression.
3. To assess if dietary intake of B vitamins affects the efficacy of B vitamin supplementation in reducing symptoms of depression.

| B Vitamin Supplement | |
|---|---|
| B1-Thiamin | 14 mg |
| B2-Riboflavin | 16 mg |
| B3-Niacin (as niacinamide and niacin) | 200 mg |
| B5-Pantothenic acid (as D-calcium pantothenate) | 75 mg |
| B6-Pyridoxine (as pyridoxine HCl) | 22 mg |
| B7-Biotin | 250 mcg |
| B9-Folate (as folic acid and L-5-methyltetrahydrofolate) | 400 mcg |
| B12-Cobalamin (as cyanocobalamin) | 250 mcg |

*Also included vitamin C, choline, inositol & PABA to promote B vitamin absorption.

### *Methods*

- Depression was assessed using the Center for Epidemiologic Studies Depression (CES-D) scale. Participants took the CES-D questionnaire at baseline and at the end of the study. A score ≥ 16 on the CES-D is considered clinically significant depression.
- 33 participants took one B vitamin complex tablet for 28 days (see table below).
- Participate height and weight was taken.
- Two 24-hour food diaries were taken. Diet analysis software was used to analyze the B vitamin content of their diets and compared with their individual B vitamin needs.

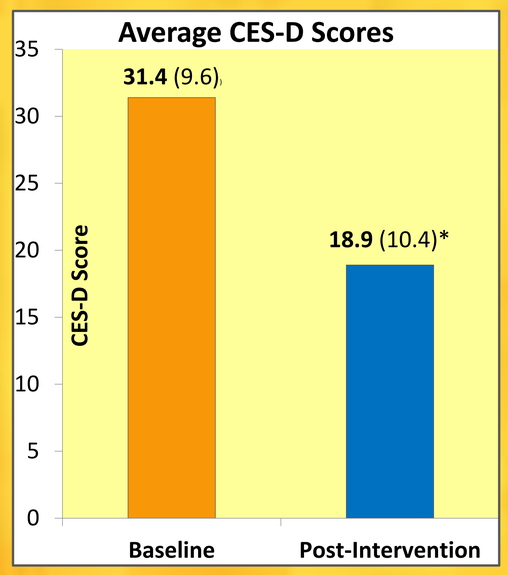


*Figure 1:* Depression symptoms decreased by an average 12.5 points (*$p$ = .000).

### *Conclusions*

This research showed that B vitamin supplementation significantly reduced depressive symptoms in people whether medicated or unmedicated. It also reduced symptoms of depression in people regardless of dietary B vitamin intake or gender.

The bulk of research in treatment-resistant depression focuses on dosage and drug substitution rather than possible nutrition connections, yet nutrition research shows that nutrition intervention positively impacts treatment outcomes in people with depression.

Health care professionals should consider B vitamin supplementation in patients who are unwilling or unable to take antidepressants, or are responding poorly to traditional treatments.