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# Effects of Consumption of Vitamin Supplements on Mental Health

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HWS 410
CURE

# Multivitamins and Omega 3's on Mental Health and School Performance

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## ABSTRACT


- Preliminary research indicates a possible relationship between omega-3 supplementation and multivitamin use to mental health.
- We studied the correlation between consumption of multivitamins and omega-3s and their effect on the mental health of college students.
- Does multivitamin and/or omega-3 supplementation have a measurable effect on a students mental health and stress levels?
- Students filled out a short survey on their dietary habits.


## BACKGROUND

- Many experiments focusing on the effects of omega-3 on mental health parameters shows that long-term supplementation has a positive effect on one's mental health.
- Some evidence indicates that multivitamin use can reduce anxiety among college students. No significance has been reported, though with moderate effect sizes, the need for future research is substantiated (Chang et al., 2019).
- Prior investigation of a link between fish oil supplementation and school performance exhibits minimal effects (Montgomery et al., 2018).

## NOTEWORTHY CORRELATIONS

- Eating Fish and Depression: r=.224,N= 147; (p=.0006)
- Eating Fish and Worthlessness: r=. 180, N= 148; (p=.180)
- Fish Oil and Depression: r=.198, N= 148; (p=0.16)
- Fish Oil and Worthlessness: r=.209, N=148; (p=0.11)

## INSIGNIFICANT CORRELATIONS

- Multivitamin Use vs Hopelessness: r=.03, N=148; (p=.721)
- Multivitamin Use vs Depression: r=.089, N=148; (p=.281)
- Multivitamins vs Positive Stress Outlook: r=.139, N=148; (p= .092)
- Eating Fish vs Hopelessness: r=0.127, N= 147; (p=.125)
- Fish Oil vs Effort: r=.11, N= 148; (p=.183)

## LEGEND

- * Significant
- ** More Significant

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## RESPONDENT DEMOGRAPHICS:

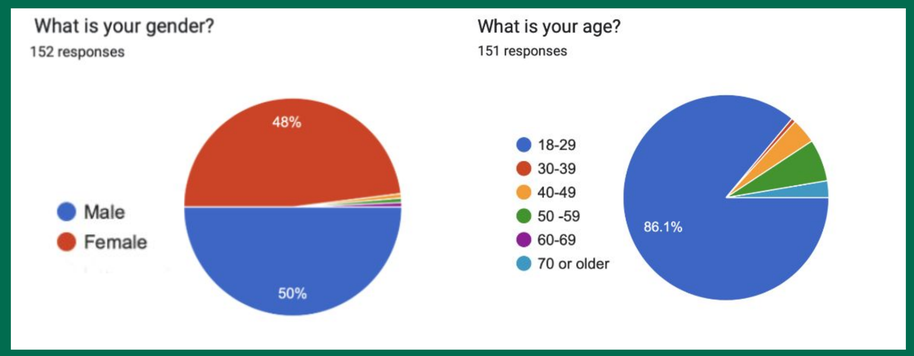


Figure 1. Demographic representation among survey respondents by gender and age

## METHODS

| Demographics | Number of Participants | Survey | Deliverance | Statistical analysis |
|---|---|---|---|---|
| Males and females; Adults: 18 years or older | 152 | Diet , mindset , stress, resilience and mental distress | Word of mouth, social media (insta), and group chats (GroupMe and text messages.) | Pearson's correlation coefficient |

## KEY RESULTS

| n= 147 | Hopeless | Depressed | Effort | Worthless |
|---|---|---|---|---|
| Eat fish | 0.127 | .224** | .175* | .180* |
| Eat fish | .125 | .0006 | .034 | .029 |
| n=148 | | | | |
| multivitamins | .03 | .089 | .031 | .152 |
| multivitamins | .721 | .281 | .71 | .065 |
| n=148 | | | | |
| Fish oil | .163* | .198* | .11 | .209* |
| Fish oil | .048 | .016 | .183 | .011 |

Table 1.
Omega 3 and multivitamin use Pearson correlations to components of mental health

## DISCUSSION

- Based on our research we can see that people who eat a mediterranean diet, take fish oil supplements, and eat fish regularly have a positive correlation with feeling hopeless, depressed, and worthless.
- This data is actually quite surprising because prior research exhibits that long term fish oil/fish (omega-3) consumption has a positive effect on mental health.
- It could be possible that the data does not represent change in mental health over time by changing the omega-3 in people's diet, so it might not adequately reflect the positive effects of omega-3 that was found in our references.
- Since we are looking at a college demographic who are widely known as being stressed, feeling worthless and hopeless (relatively higher than the normal population), it might be an inaccurate indicator of whether omega 3 has a positive effect on mental health (homogeneous data).
- A more focused trial might need to be conducted to isolate the effects omega-3 consumption has on mental health. Specifically, a control and experimental group might show for a better correlation between the two.

## CONCLUSION

- According to our data, consumption of Omega-3's in one's diet is strongly correlated with one's likeliness of experiencing depression.
  - This may be not be reflective of the general population because of the homogeneous nature of our data. Majority of participants were college students from the ages of 18-22, therefore many of our participants experience similar external stressors and may have similar diets/habits. In addition, young adults are less likely eat fish or consume omega-3 supplements.
- Additionally, our data concluded that the supplementation of multivitamins showed no significant relationship with levels of depression and hopelessness.
  - This could be because of shortcomings in our data; whether it be our limited sample size or the data homogeneity.
  - We believe that more research is needed with larger sample sizes, as well as the additions of experimental and control groups in order to directly test the effects of multivitamins and omega-3s.

## LIMITATIONS

- Since many of the survey respondents were college students, it is likely that the fish they consumed were farm-raised instead of wild-caught, which means they consume less omega-3
- Additionally, based off of the survey the questionnaire did not target the sample size that we intended to target. Therefore, the results may not be reflective of the general population.

**REFERENCES**

- Chang, Y. H., Becnel, J., & Trudo, S. (2019). Effects of Multivitamin-Mineral Supplementation on Mental Health Among Young Adults (OR15-03-19). *Current Developments in Nutrition*, *3*(Suppl 1), nzz044.OR15-03-19.
- Montgomery P, Spreckelsen TF, Burton A, Burton JR, Richardson AJ (2018) Docosahexaenoic acid for reading, working memory and behavior in UK children aged 7-9: A randomized controlled trial for replication (the DOLAB II study). PLOS ONE 13(2): e0192909.
- *High-dose vitamin B6 supplementation reduces ... - wiley online library*. (n.d.). Retrieved March 21, 2023,
- Petre, A. (2020, December 14). Multivitamin side effects: Timespan and when to be concerned. Healthline. Retrieved March 26, 2023
- David Mischoulon, M. D. (2020, October 27). Omega-3 fatty acids for mood disorders. Harvard Health. Retrieved March 26, 2023,
- Vitamin B-12 and depression: Are they related? (2018, June 1). Mayo Clinic.
- Camfield, David A, et al. "The Effects of Multivitamin Supplementation on Diurnal Cortisol Secretion and Perceived Stress." Nutrients, U.S. National Library of Medicine, 11 Nov. 2013
- Lange, Klaus W. "Omega-3 Fatty Acids and Mental Health." Global Health Journal, Elsevier, 19 Mar. 2020
- Reily, Natalie M., et al. "Omega-3 Supplements in the Prevention and Treatment of Youth Depression and Anxiety: A Scoping Review." MedRxiv, Cold Spring Harbor Laboratory Press, 1 Jan. 2022