Abstract Honors Day 2025-Ryan Gray

Vitamin D is an essential vitamin and hormone that the body either makes or obtains from food. It plays a crucial role in physiological functions, such as calcium homeostasis, bone mineralization, and immune support. Previous literature also provides indirect evidence suggesting a possible link between vitamin D and circadian rhythms. For instance, vitamin D is produced in response to the primary circadian influencer, sunlight. It is also fundamental for melatonin production, the sleep-wake hormone, and has receptors located in the 'circadian center' of the brain (suprachiasmatic nuclei). However, no known research has been done studying the effect of vitamin D on circadian rhythms. Thus, the aim of this study is to see if vitamin D supplementation alters circadian rhythm parameters and sleep. Participants between the ages of 18-80 were recruited to supplement with 4000 IU of vitamin D for 4 weeks. Data on circadian rhythms (amplitude, acrophase, mesor), objective and subjective sleep, and subjective mood were collected pre- and post-supplementation. No significant differences were observed in circadian parameters, but there were changes in sleep and mood. Specifically, overall time slept decreased from pre (463.8 ± 102.7 min) to post (423.0 ± 80.4 min; p=0.03), subjective sleep quality increased from pre (5.8825±2.40) to post (4.55±2.30; p=0.01), and self-reported depression scores decreased from pre (3.95±3.37) to post (2.95±3.69; p=0.02). The data suggests that 4000 IUs of Vitamin D is not effective in improving circadian rhythms. However, that amount of vitamin D is sufficient for altering sleep and mood.