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Effects of Vitamin D Supplementation

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Abstract

Vitamin D (1,25-dihydroxycholecalciferol) is known to be a fat soluble vitamin. We hypothesized that losing weight would thus cause an increase in serum vitamin D levels. To investigate this, a retrospective chart review was performed in which data including sex, age, race, serum Vitamin D levels, body weight and more, of 200 Rowan SOM Family Medicine patients for up to 6 doctor's office visits each were collected. These data were then analyzed using Microsoft Excel and IBM SPSS. We found while there was a significant positive correlation between weight loss and serum Vitamin D levels, there was not a significant change in weight. We also found that patients that were taking Vitamin D supplements significantly raised their serum Vitamin D levels. This was not effected by any other variables such as sex, age, or race. We will perform further analysis of the data and hope our findings can be used by clinicians assisting patients losing weight.

Introduction

Over 70% of American adults are overweight (National Center for Health Statistics, 2016); thus, it is imperative that we learn as much about obesity's effects to better prevent and treat the afflicted patients. As such, it has been shown that obese patients have a deficiency in Vitamin D compared to their normal weight peers (Wortsman et. al. 2000) and that optimizing Vitamin D levels in patients that were previously Vitamin D deficient helped them lose weight (Vigna et. al. 2015). It has also been shown that weight loss is correlated with increased serum Vitamin D levels in obese women (Rock et.al. 2012) as well as in overweight and obese teenagers (Reinehr et. al. 2012). Therefore, our aim on this project was to determine if this correlation holds true for other populations in addition to the two aforementioned, and if so, if the rate or amount of weight loss contributes to any change in serum Vitamin D levels.

Results

While we did find a statistically significant correlation between change in serum Vitamin D levels from visit 1 to visit 2 and change in bodyweight from visit 1 to visit 2, the change in bodyweight from visit 1 to visit 2 was negligible (**Fig. 1**) and thus the aforementioned correlation isn't meaningful. However we did find that patients who took vitamin D supplements did statistically raise their serum vitamin D levels from visit 1 to visit 2 (**Fig. 2**).

Bodyweight (lbs)	
Visit 1	197.6
Visit 2	196.3

Figure 1: Change in mean bodyweight from Visit 1 to Visit 2 was negligible

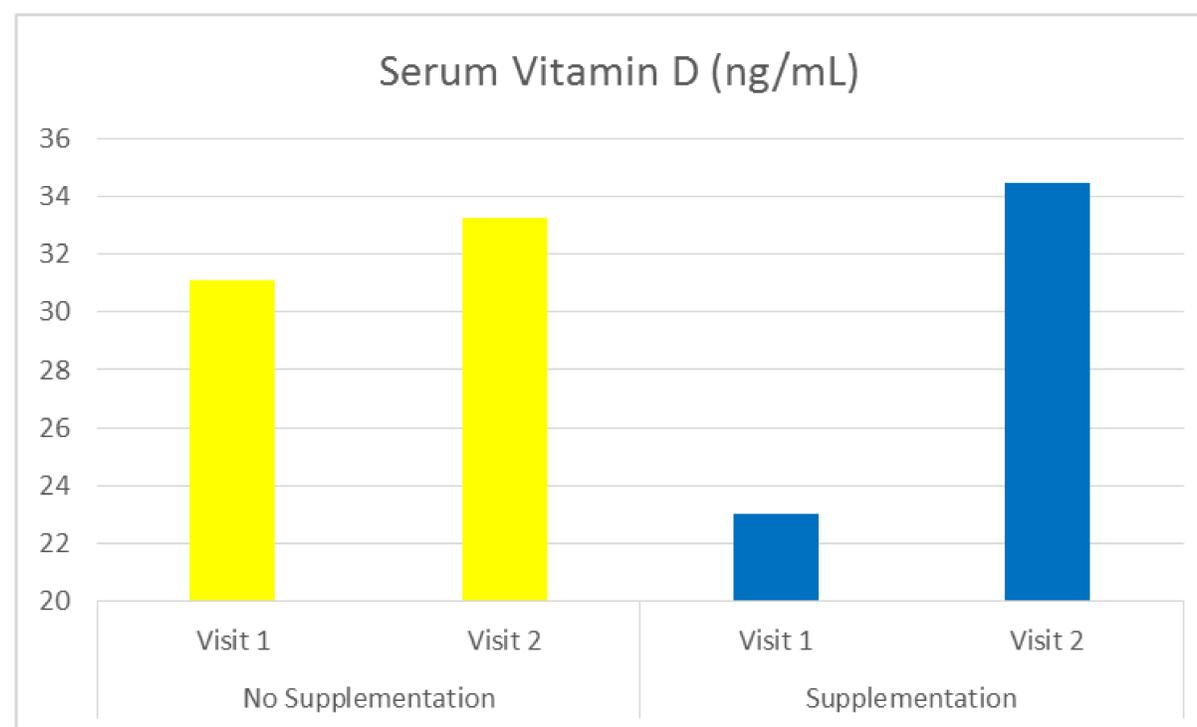


Figure 2: Patients that took Vitamin D supplements did significantly raise their serum Vitamin D levels from visit 1 to visit 2

Conclusions & Future Directions

So far, we conclude that taking vitamin D supplements will significantly increase serum vitamin D levels. However, more analyses must be done to determine, of the patients that DID significantly lose weight from visit 1 to 2, if serum vitamin D levels were significantly increased from visit 1 to visit 2 and if so, by how much. Furthermore, is this relationship between weight loss and serum vitamin D levels effected by other factors such as patient sex, age, or race, or even other physiologic variables including bodyweight, Body Mass Index (BMI), serum Calcium levels, systolic or diastolic blood pressure, and more. Future studies should be conducted to determine if this correlation between weight loss and serum vitamin D levels exists in other populations and what other factors may effect it. In addition, the ramifications of these changes should be more thoroughly investigated and protocols for maintaining adequate vitamin D levels despite weight gain and/or weight loss should be developed in various populations.

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