Determinants of serum 25-hydroxyvitamin D levels in healthy young adults living in the Western Cape, South Africa
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Rationale: The prevalence of vitamin D deficiency is fast emerging as a global pandemic. A growing evidence-base suggests an association between vitamin D deficiency and various chronic diseases, including cancer.

Aim and Methods: This descriptive, cross-sectional study investigated vitamin D status of healthy, undergraduate students (20.41±2.29 years old) at 2 time points (winter and summer) at Stellenbosch University. Data collected included serum 25(OH)D (Institute of Medicine interpretation), anthropometry, dietary vitamin D intake, skin tone and skin reflectometry.

Results: Results of 242 students indicated a mean serum 25(OH)D of 63.80±41.35 ng/ml and a high prevalence of vitamin D sufficiency (90%). The relationship between gender and serum 25(OH)D was found to be significant in winter and summer (p<0.01), with more females experiencing suboptimal levels. Participants with lighter skin tones had higher levels of 25(OH)D than those with darker skin tones (Chi²=24.02; p=0.02). The majority (60.74%) had normal BMIs, although the relationship between BMI and serum 25(OH)D was not significant (Spearman’s r=-0.11; p=0.09). Total mean dietary vitamin D intake was 7.99±13.81mcg, with 87.2% consuming inadequate intake (<15mcg). The relationship between total vitamin D intake and serum 25(OH)D was found to be significant in winter (p=0.003) and summer (p=0.013). Serum vitamin D levels were significantly higher in the winter phase of the study (p=0.00001). Most sun exposure and lifestyle factors did not have an effect on serum 25(OH)D levels.

Conclusion: A low prevalence of vitamin D deficiency was found amongst healthy young adults, despite low dietary vitamin D intakes. Significant relationships were found between serum 25(OH)D and gender, skin tone and vitamin D intake. Further studies need to be conducted, especially in high-risk groups, before results are applied to the greater South African public.