

RELATIONSHIP BETWEEN 25-HYDROXYVITAMIN D LEVELS AND SYMPTOMS OF DEPRESSION AND ANXIETY IN RENAL TRANSPLANT PATIENTS

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INTRODUCTION

Vitamin D deficiency is common in patients with transplanted kidney and may influence the development of psychiatric disorders such as depression and anxiety. Vitamin D receptors are present in multiple brain regions associated with depressive and anxiety disorders, including the prefrontal cortex and hippocampus, and cells in many of these regions are capable of metabolizing 25-hydroxyvitamin D (25-OHD) to the biologically active metabolite 1,25-dihydroxyvitamin D. The best assessment of vitamin D status is by measuring the serum 25-OHD level.

OBJECTIVES

We evaluated whether there is an association between serum 25-OHD levels and symptoms of depression and anxiety among renal transplant recipients.

METHODS

A total of 81 renal transplant patients (30 female [37.0%], 51 male [63.0%]; mean age, 44.7 ± 11.7 years) were included in this study from October 2013 to March 2014.

Serum 25-OHD levels were measured by high performance liquid chromatography (HPLC) method. Chromatographic determination of 25-OHD was achieved at 40°C using Purospher STAR RP-18e column with mobile phase consisted of 10.0% methanol and 90.0% acetonitrile. UV detection at 265 nm was used.

Depression and anxiety in these patients were assessed using the Serbian version of the Zung Self-Rating Depression Scale (ZSDS) and Zung Self-Rating Anxiety Scale (ZSAS). Patients with ZSDS score ≥50 and ZSAS score ≥45 were defined as having depression and anxiety, respectively. The ZSDS and ZSAS scores were correlated with demographic, biochemical parameters and estimated glomerular filtration rate (eGFR) by using Pearson's correlation coefficient.

CONCLUSIONS

This study indicates that low levels of 25-OHD were associated with anxiety and depressive symptoms suggesting that vitamin D deficiency might contribute to the presence of these psychiatric disorders among renal transplant patients. Therefore, this finding should be the basis for further studies of vitamin D supplementation for prevention and treatment interventions of anxiety and depression in these patients.

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RESULTS

Deficient levels of vitamin D (25-OHD < 20 ng/mL) was found in 61 (75.3%) of the patients, while 11 (13.6%) had insufficient levels (25-OHD < 30 ng/mL) and 9 (11.1%) had normal levels (25-OHD > 30 ng/mL). The mean serum 25-OHD level was 14.6 ± 8.9 ng/mL. Based on the ZSDS and ZSAS scores, depressive symptoms were found in 29 (35.8%) patients and 16 (19.8%) had symptoms of anxiety. Mean scores of depression and anxiety were 44.6 ± 11.2 and 36.4 ± 8.5, respectively. Vitamin D levels correlated negatively with depression ($r = -0.54, p < 0.001$) and anxiety ($r = -0.36, p < 0.001$). No significant correlation of ZSDS and ZSAS scores with demographic, biochemical parameters and eGFR was detected.

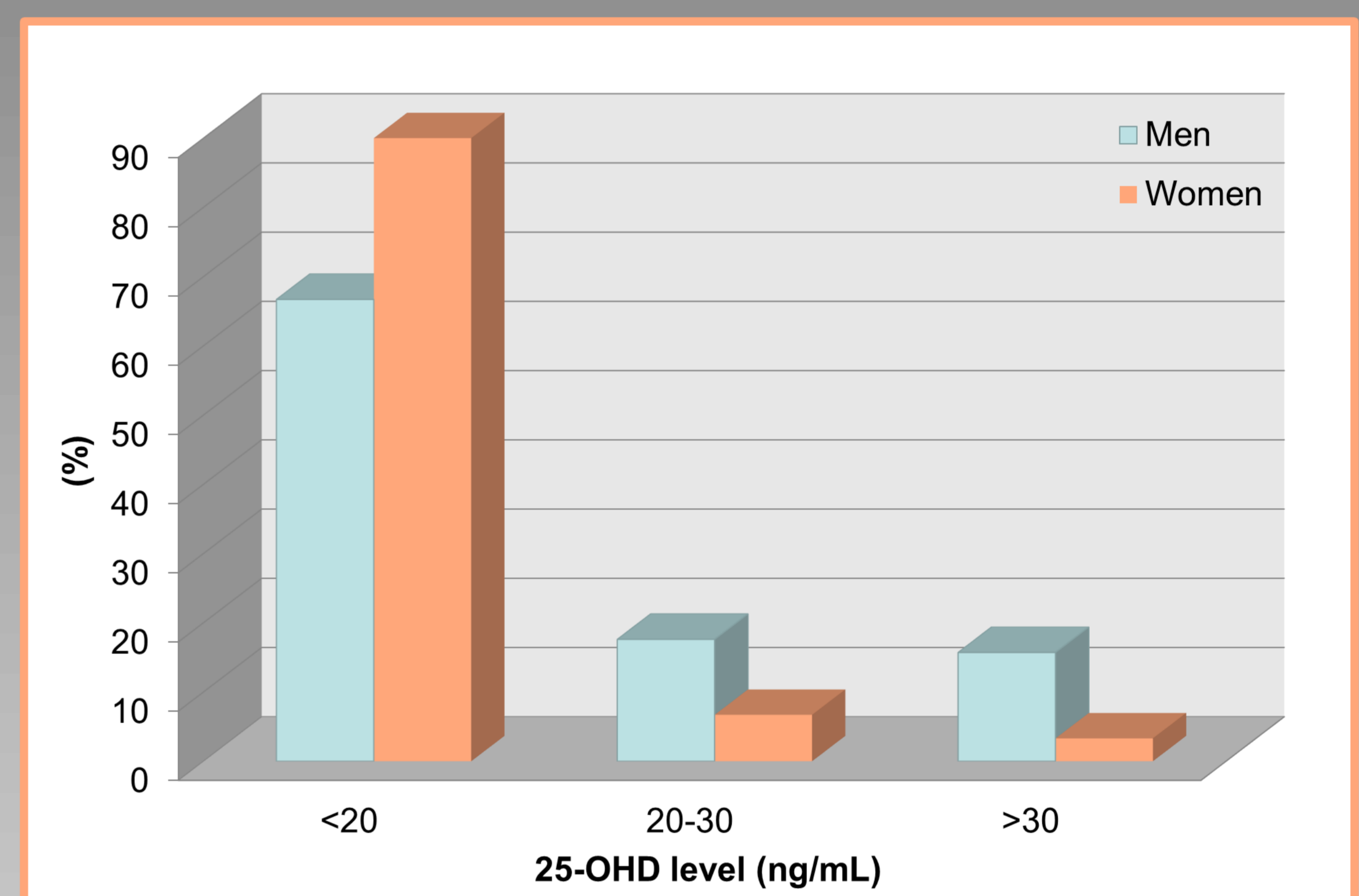


Fig. 1. Distribution of serum 25-OHD levels among study subjects

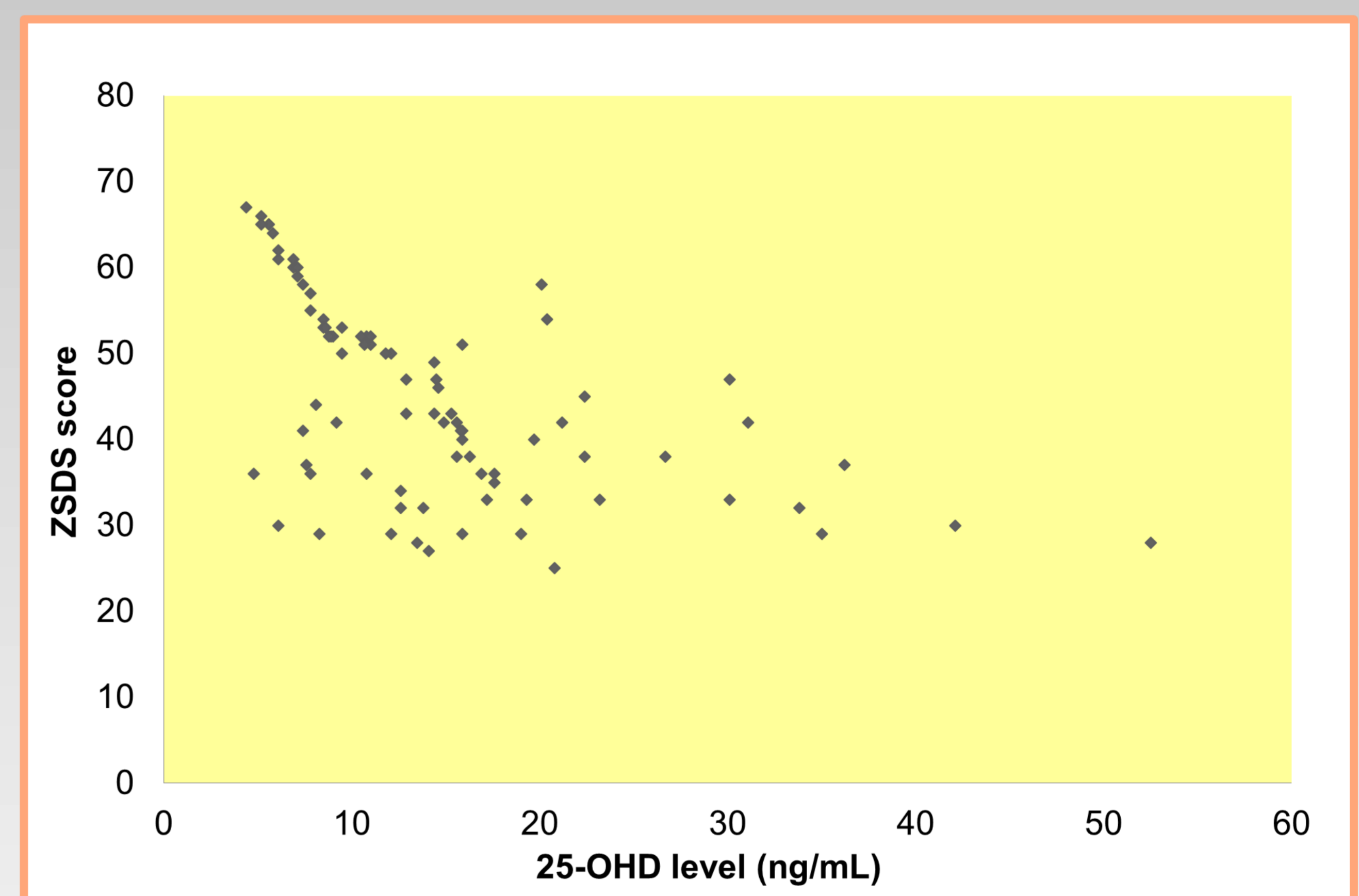


Fig. 2. The correlation between ZSDS score and serum 25-OHD level in study participants ($r = -0.54$)

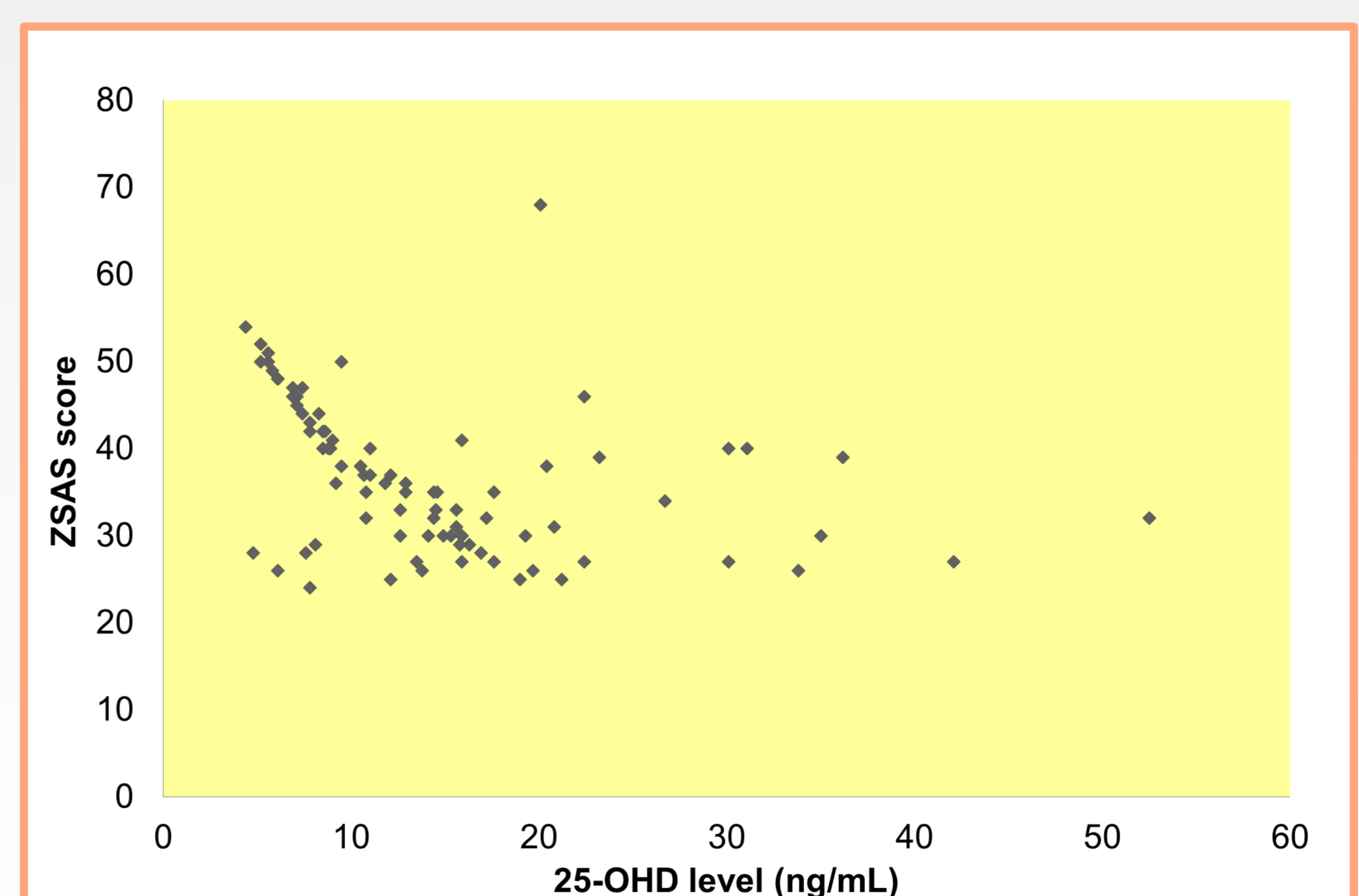


Fig. 3. The correlation between ZSAS score and serum 25-OHD level in study participants ($r = -0.36$)

