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# Assessment of Plasma Vitamin D Levels in Diabetic Patients With and Without Hepatic Steatosis at Imam Khomeini Hospital, Urmia, Iran

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## ABSTRACT

**Introduction:** Metabolic dysfunction-associated steatotic liver disease (MASLD) represents a significant public health challenge, particularly in populations with high rates of obesity and type 2 diabetes. The association between vitamin D deficiency and MASLD in diabetic patients remains incompletely characterized. This study aimed to assess plasma vitamin D levels in type 2 diabetes patients with and without MASLD at Imam Khomeini Hospital, Urmia.

**Methods:** In this cross-sectional study, diabetic patients with and without MASLD were enrolled. Demographic and clinical data, including BMI, lipid profile, liver enzymes, blood pressure, and plasma vitamin D levels, were collected. MASLD was diagnosed using ultrasonography. Exclusion criteria included other chronic liver diseases, alcohol consumption, and hepatotoxic medications. Statistical analyses were performed using SPSS 27.

**Results:** Among 128 participants (97 men, 31 women), the mean vitamin D level was  $24.5 \pm 10.4$  ng/mL, with 72% exhibiting deficiency. Hepatic steatosis was present in 50% of patients, who demonstrated significantly lower vitamin D levels. Vitamin D deficiency correlated positively with higher BMI and poorer glycemic control in non-steatotic patients, though this relationship was absent in those with steatosis. Steatotic patients also showed elevated triglycerides, total cholesterol, ALT, and higher rates of hypertension and cardiovascular disease.

**Conclusion:** Vitamin D deficiency is highly prevalent in diabetic patients, particularly those with MASLD, and is associated with obesity and inadequate glycemic control. These findings support targeted screening and vitamin D supplementation in high-risk populations to potentially improve metabolic and hepatic outcomes.

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