

# Hypovitaminosis D causes impaired glycemic control in type 2 diabetic patients

**Authors:** Quratulain Yousuf,<sup>A</sup> Athesham Zafar,<sup>B</sup> Kamrudeen Mohammed<sup>C</sup> and Nauman Jadoon<sup>A</sup>

## Aims

To determine the frequency of Vitamin D deficiency and its effect on glycaemic control in patients with type 2 diabetes mellitus.

## Methods

Study design: Cross-sectional study.

Setting: The study was conducted in the Outpatient Department of Medicine, Liaquat National Hospital, Karachi, Pakistan.

Duration of the study: 6 months from June 2015 to December 2015.

Sample size: The sample size was 191 patients, as calculated using World Health Organization software for sample size calculation by using:

- > proportion of vitamin D deficiency in type 2 diabetic patients = 58.34%
- > margin of error (d) = 7%
- > confidence interval = 95%.

Sampling technique: Non-probability consecutive sampling.

A total of 191 patients were included in the study. After taking informed consent, blood samples for the assessment of Vitamin D levels were obtained from the patients fulfilling inclusion criteria of the study. Confidentiality of their information was maintained.

## Results

Patients with type 2 diabetes mellitus were significantly vitamin D deficient. Vitamin D deficiency was found to be 69.1% in patients with type 2 diabetes mellitus. Descriptive statistics of HbA1c were calculated and showed that 98 (62.4%) patients who had HbA1c <8% were found to be vitamin D deficient while 34 (100%) patients with HbA1c >8% had vitamin D deficiency.

Further studies are required for the development of strategies for the supplementation of vitamin D in type 2 diabetic patients for better glycaemic control along with standard treatment.

## Conclusion

Our study found a significantly high frequency of Vitamin D deficiency in patients with type 2 diabetes mellitus. In view of this,

**Table 1. Frequency and association of vitamin D deficiency with HbA1c**

		Vitamin D deficiency		Total	p value
		Yes	No		
HbA1c group <8	n	98	59	157	
	%	62.4	37.6	100.0	
>8	n	34	0	34	
	%	100.0	0.0	100.0	0.000
<b>Total</b>		132	59	191	

Chi-square test was applied. p value  $\leq 0.05$  considered as significant at 0.05 level.

we recommend early replacement of vitamin D in patients with type 2 diabetes mellitus along with the specific therapy to improve the outcome; this may alter the natural history of this disease. ■

## Conflict of interest statement

No potential conflict of interest.

**Authors:** <sup>A</sup>Internal medicine; <sup>B</sup>Gastroenterology; <sup>C</sup>Endocrine and diabetes, Hull Royal Infirmary, Hull, UK