Effect of treatment of vitamin D deficiency and insufficiency during pregnancy on fetal growth indices and maternal weight gain: a randomized clinical trial.

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OBJECTIVE:
To determine whether treatment of low serum vitamin D in pregnant women improves fetal growth indices.

STUDY DESIGN:
In this open-label randomized clinical trial, 130 Iranian pregnant women (24-26 weeks of gestation) with vitamin D deficiency or insufficiency [25(OH)D <30ng/ml] were divided at random into an intervention group and a control group. The control group received 200mg calcium plus a multivitamin (containing vitamin D3 400U) each day, and the intervention group received 200mg calcium plus a multivitamin (containing vitamin D3 400U) each day, plus vitamin D3 (50,000U) each week for 8 weeks. At delivery, maternal and cord blood 25(OH)D levels, maternal weight gain, neonatal length, neonatal weight and neonatal head circumference were compared between two groups. Serum vitamin D was measured using enzyme-linked immunosorbent assay. A multivariate regression analysis was performed to examine the independent effect of maternal vitamin D level on fetal growth indices.

RESULTS:
Mean (±standard deviation) length (intervention group: 49±1.6cm; control group: 48.2±1.7cm; p=0.001), head circumference (intervention group: 35.9±0.7cm; control group: 35.3±1.0cm; p=0.001) and weight (intervention group: 3429±351.9g; control group: 3258.8±328.2g; p=0.01) were higher in the intervention group compared with the control group. Mean maternal weight gain was higher in the intervention group compared with the control group (13.3±2.4kg vs 11.7±2.7kg; p=0.006). Multivariate regression analysis for maternal weight gain, neonatal length, neonatal weight and neonatal head circumference showed an independent correlation with maternal vitamin D level.

CONCLUSION:
Treatment of low serum vitamin D during pregnancy improves fetal growth indices and maternal weight gain.

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KEYWORDS:
Fetal growth; Pregnancy; Vitamin D deficiency

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