# ABSTRAK

**Latar belakang**

Penurunan angka kejadian stunting di Indonesia belum memenuhi standar WHO yaitu <20%. Salah satu mikronutien yang berpengaruh dalam *fetal programming* adalah vitamin D.

**Tujuan**

Membuktikan pengaruh defisiensi vitamin D pada masa kehamilan terhadap pertumbuhan tulang dan neurokognitif anak usia 2 tahun melalui pertumbuhan janin.

**Metode**

Desain penelitian adalah kohort retrospektif. Sebanyak 120 ibu hamil 20-24 minggu dengan janin tunggal dan hidup intrauterin dilakukan pemeriksaan kadar serum 25(OH)D dan USG. Subyek terbagi 2 kelompok, yaitu defisiensi dan normal. Subyek dieksklusi jika terdapat penyakit sistemik, kronik dan kelainan kongenital. Pertumbuhan janin dinilai berdasarkan kurva WHO. Kadar bALP dan *osteocalcin* sebagai parameter pertumbuhan tulang serta BDNF sebagai biomarker neurokognitif diukur pada anak usia 2 tahun. Analisis data untuk mengetahui nilai RR (95% IK) setelah mengontrol variabel perancu.

**Hasil**

Nilai RR (95% IK) pengaruh defisiensi vitamin D terhadap pertumbuhan janin, tulang dan neurokognitif anak berturut–turut adalah 0,74(0,24-2,34), 0,99(0,38-2,58) dan 1,45(0,63-3,4). Nilai RR (95% IK) pengaruh pertumbuhan janin terhadap tulang anak adalah 2,35 (0,58-9,5) dan neurokognitif anak adalah 1,06(0,35-3,1). Variabel perancu ibu yang dikontrol adalah usia, paritas, status gizi, anemia (kadar hemoglobin dan ferritin), asupan zat gizi, sosial ekonomi, prematur, tinggi badan, kadar zinc, IGF-1, CRP dan PTH. Variabel perancu anak yang dikontrol adalah asupan gizi, kadar IGF-1, kalsium, zinc, ferritin dan vitamin D.

**Simpulan**

Defisiensi vitamin D pada masa kehamilan tidak berpengaruh terhadap pertumbuhan tulang dan neurokognitif anak usia 2 tahun baik secara langsung maupun melalui pertumbuhan janin.



**Kata kunci**

Kadar 25(OH)D; kurva WHO; bALP; osteocalcin; BDNF.

## ABSTRACT

**Background**

Incidence stunting has decreased, but did not meet WHO standards (<20%). One of the important micronutrient in fetal programming is vitamin D.

**Objective**

Verify the effect of vitamin D deficiency during pregnancy on bone growth and neurocognitive's offspring aged 2 years through fetal growth.

**Method**

The study design was a retrospective cohort. A total of 120 singleton and live pregnancy at 24-28 weeks of gestation measured 25(OH)D levels and ultrasound. Subjects were divided into 2 groups, deficient and normal. Exclusion criterias were systemic disease, chronic and congenital anomaly. Fetal growth were plotted to WHO chart. Offspring serum levels of bALP and osteocalcin for bone growth, BDNF for neurocognitive biomarker examined in offspring aged 2 year. Data analysed to know RR (95% CI) after controlled confounding variables.

**Result**

RR (95% CI) the effect of vitamin D deficiency on fetal growth, bone and neurocognitive biomaker in offspring aged 2 years were 0,74(0,24-2,34), 0,99(0,38-2,58) and 1,45(0,63-3,4) respectively after controlled for confounding variables. RR (95% CI) for the effect of fetal growth on bone and neurocognitive biomarker were 2,35 (0,58-9,5) and 1,06 (0,35-3,1) respectively. Confounding variables of mother were controlled such as age, parity, BMI, anemia (hemoglobin and ferrtitin), food intake, sosioeconomic, prematur, height, level of zinc, IGF-1, CRP and PTH. Confounding variables of offspring were controlled for food intake, level of IGF-1, calcium, zinc, ferritin and vitamin D.

**Conclusion**

Vitamin D deficiency during pregnancy do not give effect to disorder of bone and neurocognitive biomarker in offspring either directly or through fetal growth.



**Keywords**

Maternal level 25(OH)D; WHO fetal growth; bALP; osteocalcin; BDNF.