

Correction of Vitamin D Insufficiency or Deficiency to Improve Postpartum Depression

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Question

Does correction of Vitamin D insufficiency or deficiency improve postpartum depression?

Evidence-Based Answer

- ◆ Vitamin D insufficiency is associated with increased incidence of postpartum depression on Edinburgh Postnatal Depression Scale (SOR: A, systematic review).
- ◆ Vitamin D supplementation is associated with a reduction in depression score compared to placebo group at 38-40 weeks gestational age (p=0.01) and at 4 and 8 weeks postpartum (p<0.001) (SOR: B, single RCT).
- ◆ A daily dose of 2000 IU vitamin D3 administered for at least 8 weeks in late pregnancy is associated with decreased perinatal depression levels (SOR: B, single RCT).

Summarized Data Review

A 2018 systematic review examined six prospective cohort studies and one case-control study (N=3,896) to establish the relationship between vitamin D insufficiency and postpartum depression. Studies measured vitamin D levels prenatally or within the first 24 hours post-delivery in addition to following levels over time. The Edinburgh Postnatal Depression Scale (EPDS) was used to diagnose postpartum depression in all studies: 10 questions with a max score of 30 and a score >10 suggestive of mild or major depression.

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Table 1. Summary of results from cohort and case-control studies of the relationship between vitamin-D and postpartum depression.

Result	Duration of follow-up	Design	n	Population	Country	Study, (year)
An inverse association between prenatal log 25(OH)D and PPD symptomatology was observed ($\beta = -0.209$, $P = 0.058$).	10 months	Cohort	91	African-American pregnant women	USA	Accortt et al. (2016)
Cord blood 25(OH)D 10–20, >20 ng/mL at childbirth was associated with reduced depressive symptoms at six weeks post-partum.	6 months	Cohort	1040	Australian newly delivered women	Australia	Gould et al. (2015)
In women with PPD, serum 25(OH)D levels were significantly lower than those women with no PPD ($P < 0.0001$).	3 months	Cohort	213	Chinese newly delivered women	China	Fu et al. (2014)
There is a significant relationship between low 25(OH)D levels in mid-pregnancy and severity of PPD, which was measured by EPDS questionnaire, in three follow-up periods ($P = 0.003$, $P = 0.004$ and $p < 0.001$, respectively).	6 months	Cohort	179	Pregnant women between 24–28 gestational weeks	Turkey	Gur et al. (2014)
Women in the lowest quartile for vitamin D report more PPD symptoms than those with the highest quartile for 25(OH)D.	5 months	Cohort	796	Australian pregnant women	Australia	Robinson et al. (2014)
There is a significant relationship between low 25(OH)D levels in post-partum and high EPDS scores ($P = 0.02$).	7 months	Cohort	97	American newly delivered women	USA	Murphy et al. (2010)
No association between low 25(OH)D levels and risk of PPD ($P = 0.08$) and a significant increased risk of PPD among women with the highest 25(OH)D serum levels ($P = 0.04$).	—	Case-Control	1480 (605 PPD and 875 controls)	Danish pregnant women	Denmark	Nielsen et al. (2013)

EPDS: Edinburgh Postnatal Depression Scale; PPD: Postpartum Depression.

Study 1

Overall, evidence suggested an inverse relationship between Vit. D levels and PPD.

Vitamin D insufficiency was associated with an increased incidence of PPD

Study 2

The Vitamin D group had lower EPDS scores compared to the placebo group at 38-40wga (6.17 vs. 7.77, p=0.01) and at 4 weeks (4.59 vs 7.36, p<0.001) and 8 weeks after birth (4.19 vs 7.18, p<0.001).

A daily dose of 2000 IU Vitamin D3 administered for at least 8 weeks in late pregnancy is associated with decreased perinatal depression levels.

Summarized Data Review

A 2016 RCT (N=169) studied 2000 IU vitamin D-3 supplementation daily compared to placebo during the third trimester for perinatal depression. Otherwise healthy married pregnant Iranian women with no pregnancy complications and no history of mental illness with baseline EPDS score 0 to 13 were enrolled between 26-28 weeks gestational age. Maternal serum 25(OH)D levels were obtained at baseline and childbirth. Patients reported EPDS scores at 26-28 weeks gestation, 38-40 weeks gestation, and at 4 and 8 weeks postpartum. The groups had similar baseline 25(OH)D levels. There was no correlation between baseline Vitamin D levels and development of PPD. The vitamin D group had lower EPDS scores compared to the placebo group at 38-40wga (6.17 vs 7.77, P=0.01) and at 4 weeks (4.59 vs 7.36, P= <0.001) and 8 weeks after birth (4.19 vs 7.18, P<0.001).

References

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2. Vaziri F, Nasiri S, Tavana Z, Dabbaghmanesh MH, Sharif F, Jafari P. A randomized controlled trial of vitamin D supplementation on perinatal depression: In Iranian pregnant mothers. *BMC Pregnancy Childbirth*. 2016; 16:239.

