Should routine screening for vitamin D deficiency be performed in pregnancy?

EVIDENCE-BASED ANSWER

No. Low vitamin D levels in pregnancy are associated with worse outcomes than no vitamin deficiency; however, supplementation does not conclusively improve outcomes (SOR: **B**, meta-analyses of observational studies and RCTs). The Royal College of Obstetricians and Gynaecologists (RCOG) recommends against screening for vitamin D deficiency in pregnancy (SOR: **C**, expert opinion).

A 2014 umbrella systematic review and meta-analysis of 181 systematic reviews of observational studies (74 with meta-analyses and 107 without meta-analyses) and 87 meta-analyses of RCTs explored associations between vitamin D levels and 137 different health outcomes.[1] The review included 33 observational studies of pregnancy or neonatal outcomes and 11 RCTs of vitamin D supplementation in pregnant females. The review did not use standard definitions for low vitamin D, supplementation dose, or supplementation formulation.

Normal vitamin D levels were associated with higher birth weight, decreased odds of small for gestational age (SGA) infants, gestational diabetes, and preeclampsia, but were not associated with differences in birth length or head circumference (see **TABLE 1**). Maternal vitamin D supplementation decreased the risk of low birth weight and increased head circumference at birth but did not alter birth length, risk of SGA, or risk of preterm birth (see **TABLE 2**). Limitations included heterogeneity and variable study quality.

A 2014 scientific impact review from the RCOG recommended against universal screening for vitamin D deficiency in pregnancy (expert opinion).[2] This guideline noted the association between vitamin D deficiency and neonatal hypocalcemia, maternal preeclampsia, low birthweight, and poor skeletal development. However, the authors were unable to find any clear evidence demonstrating improved outcomes with maternal vitamin D supplementation.

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2. Royal College of Obstetricians and Gynaecologists. Vitamin D in pregnancy. Scientific impact paper no. 43. https://www.rcog.org.uk/globalassets/documents/guidelines/scientific-impact-papers/vitamin_d_sip43_june14.pdf. Published June 2014. Accessed March 26, 2016. **[STEP 5]**

TABLE 1

Neonatal, infant, child, and pregnancy-related outcomes associated with normal versus low maternal 25-hydroxy vitamin D levels[1]

Outcome	Studies (n)	Patients (n)	Result type	Result (95% CI)
Neonatal/child/infant-related outcomes				
Birth length	2	840	WMD (cm)	0.19 (−0.26 to 0.65)
Birth weight	4	5,541	WMD (g)	131 (75–187)[a]
Head circumference	2	840	WMD (cm)	0.05 (−0.24 to 0.34)
Small for gestational age	6	6,851	Odds ratio	0.54 (0.44–0.67)[a]
Pregnancy-related outcomes				
Gestational diabetes mellitus	10	4,112	Odds ratio	0.67 (0.53–0.85)[a]
Preeclampsia	9	3,230	Odds ratio	0.56 (0.39–0.8)[a]

WMD=weighted mean difference.
[a]Statistically significant.

TABLE 2

Neonatal, infant, child, and pregnancy-related outcomes from RCTs of maternal vitamin D supplementation[1]

Outcome	Studies (n)	Result type	Result (95% CI)
Neonatal/child/infant-related outcomes			
Birth length	2	WMD (cm)	0.97 (−0.41 to 2.3)
Low birth weight	3	Relative risk	0.4 (0.23–0.71)[a]
Head circumference at birth	2	WMD (cm)	0.43 (0.06–0.79)[a]
Small for gestational age	2	Relative risk	0.67 (0.40–1.1)
Pregnancy-related outcomes			
Preterm delivery	2	Relative risk	0.77 (0.35–1.7)
Mean gestational age at delivery	2	WMD (weeks)	0.17 (−0.16 to 0.51)
Maternal vitamin D at term	4	WMD (nmol/L)	47 (24–70)[a]

WMD=weighted mean difference.
[a]Statistically significant.

What are the most effective treatments for insomnia in the elderly?

EVIDENCE-BASED ANSWER

Brief behavioral treatment, extended-release melatonin, and doxepin all improve measures of sleep such as sleep onset latency and total sleep time in older adults with insomnia. Brief behavioral treatment and doxepin also improve sleep quality (SOR: **B**, single RCTs).

A 2011 RCT that included 79 older adults with insomnia compared the efficiency of a brief behavioral treatment for insomnia (BBTI) with printed education material referred to as information control (IC).[1] Participants were randomized into either BBTI (n=39) or IC (n=40) then assessed on 4 outcome measures including sleep questionnaires, sleep diary, actigraphy, and polysomnography. The BBTI group received 2 individualized behavioral intervention sessions concentrating on sleep hygiene and 2 phone calls; the IC group received printed educational materials. The participants were assessed prior to intervention and 4 weeks after intervention.

At the 4-week follow up, 55% in the BBTI group no longer met International Classification of Sleep Disorders criteria for insomnia compared with 13% in the IC group ($P<.001$). The BBTI group had greater self-reported improvements in sleep onset latency (mean difference [MD] –22 min; 95% CI, –32 to –12), less wakefulness after sleep onset (MD −21 min; 95% CI, −37 to −4.7), and percent time spent sleeping while in bed (MD 7.5%; 95% CI, 3.2 to 12) compared with the IC group. Self-reported sleep quality (rated on 1 to 100 visual analog scale) also showed greater improvement in the BBTI group (MD 10; 95% CI, 3–17). Improvements were maintained for 25 patients at 6 months in the BBTI group. Actigraphy confirmed improved patient-reported outcomes but not polysomnography.[1]

A 2010 RCT compared prolonged-release melatonin (PRM) 2 mg nightly with placebo for the treatment of primary insomnia over 6 months in adults with baseline sleep latency >20 minutes.[2] Pertinent outcomes were reported for a subgroup consisting of 293 elderly patients 65 to 80 years old.

In this subgroup, PRM led to significantly greater reductions in sleep latency as recorded in sleep diaries by week 3 (MD –16 min; 95% CI, –25 to –6) and 6 months (MD –15 min; 95% CI, –21 to –8) compared with placebo.

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