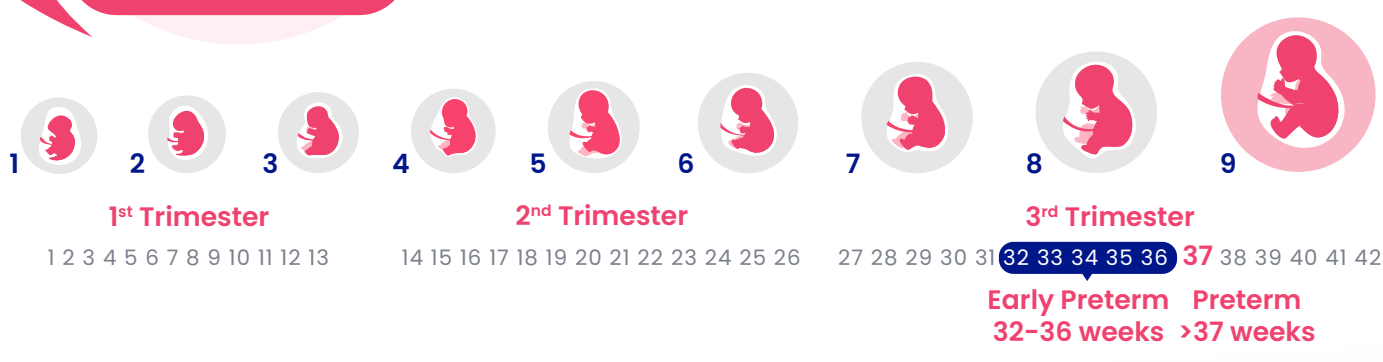
Nutrition and its potential role in preterm birth prevention

The World Health Organization defines preterm birth as any birth occurring before 37 weeks of pregnancy and early preterm birth between 32 and 36 weeks.[1]



Preterm birth represents 85% of all perinatal complications and deaths.[2]

- This may have short- and long-term consequences.[2]
- Premature babies have increased risk of early morbidities often with lifelong effects.[2]

Risk Factors of preterm birth[3]

- Pregnant women under age 18 and over the age of 30.
- Chronic high blood pressure.
- Multiple pregnancies.
- Prior premature birth.
- Untreated infection: uterine and urinary tract.
- Type 1 or type 2 Diabetes Mellitus before pregnancy.
- Lack of prenatal care.
- Poor nutrition.
- Smoking and alcohol consumption.
- Uterine or cervical problems.

Role of maternal nutrition[1]

- Not only does maternal nutrition play a role in providing necessary nutrients for fetal growth but an imbalanced diet may be a key factor associated with preterm birth.
- Many expert committees recommend micronutrient supplementation including iron, folate, calcium, and DHA during pregnancy to reduce premature birth. Among these micronutrients, DHA has been gaining a lot of attention in the last years.

What is the role of DHA in preventing preterm birth?

Cochrane Review (70 randomized clinical trials including 20,000 women):

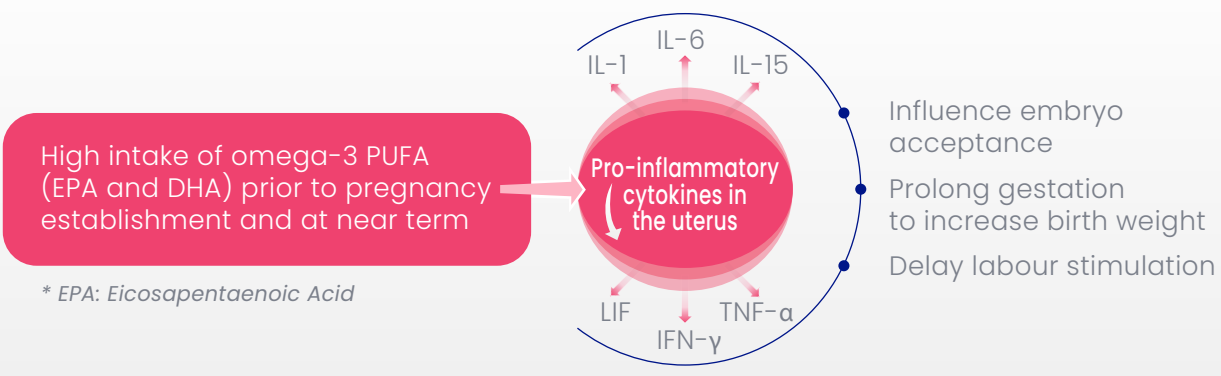
- Indicated that pregnancy supplementation of higher than 500 mg/d omega 3, including DHA, reduces risk of preterm and early preterm birth.[4]

A recent randomized clinical trial (1100 women):

- Indicated that women who received the higher dose (1000 mg of DHA per day) had fewer early preterm birth particularly in the ones with low DHA status at enrollment.[5]

What is the mechanism of omega-3/ DHA in preventing preterm birth?[6]

Proposed mechanism of action of Docosahexaenoic acid, 22:6n-3 (DHA), an n-3 (omega-3) long-chain polyunsaturated fatty acid



RECOMMENDATION

High dose of omega-3 supplementation (including DHA) during pregnancy was shown to reduce the risk of early preterm birth.

Women with DHA inadequacies may derive particular benefit from omega-3/DHA supplementation.

References

1. Best KP, Gomersall J, Makrides M. Prenatal nutritional strategies to reduce the risk of preterm birth. Annals of Nutrition and Metabolism. 2020;76(3):31-9. **2.** Makrides M, Best K. Docosahexaenoic acid and preterm birth. Annals of Nutrition and Metabolism. 2016;69(Suppl. 1):29-34. **3.** What are the risk factors for preterm labor and birth? From: https://www.nichd.nih.gov/health/topics/preterm/conditioninfo/who_risk. Accessed on 16 September 2022. **4.** Middleton P, Gomersall JC, Gould JF, Shepherd E, Olsen SF, Makrides M. Omega 3 fatty acid addition during pregnancy. Cochrane Database of Systematic Reviews. 2018(11). **5.** Carlson SE, Gajewski BJ, Valentine CJ, Kerling EH, Weiner CP, Cackovic M, Buhimschi CS, Rogers LK, Sands SA, Brown AR, Mudaranthakam DP. Higher dose docosahexaenoic acid supplementation during pregnancy and early preterm birth: a randomised, double-blind, adaptive-design superiority trial. EClinicalMedicine. 2021 Jun 1;36:100905. **6.** Akerele OA, Cheema SK. A balance of omega-3 and omega-6 polyunsaturated fatty acids is important in pregnancy. Journal of Nutrition & Intermediary Metabolism. 2016 Sep 1;5:23-33

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