

# Associations between Omega-3 Fatty Acid Intake, Status, and Depressive Symptoms in Pregnant Women in Switzerland

## Project 581

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**Background:** Low maternal intake and status of omega-3 polyunsaturated fatty acids (n-3 FAs) during pregnancy have been associated with poor pregnancy, maternal and child outcomes. Furthermore, evidence indicates that a low n-3 FA status may contribute to the development of depression during pregnancy.

**Aim:** The study aimed to investigate the associations between n-3 FA intake, status and depressive symptoms in pregnant women living in Switzerland.

**Methods:** In this national cross-sectional study, dried blood spot samples were collected from 508 pregnant women for fatty acid (FA) composition (% of total FAs) analysis. The n-3 index, expressed as a percentage of eicosapentaenoic acid (EPA) + docosahexaenoic acid (DHA) of total FAs, was converted to erythrocyte equivalents. Dietary intake of n-3 FAs was assessed using a food frequency questionnaire (FFQ) and depressive symptoms using the Edinburgh Postnatal Depression Scale (EPDS).

**Results:** The mean n-3 index in the study population was  $4.59 \pm 1.09\%$ . Women who consumed fish or n-3 supplements had a significantly higher n-3 index than non-consumers. Nuts and rapeseed oil consumption had significantly higher alpha-linolenic acid (ALA) levels and linseed oil consumption was associated with significantly higher levels of ALA, EPA, DHA and n-3 index. Higher ALA levels were significantly associated with lower EPDS scores ( $\beta_i=0.17$ ,  $p \leq 0.001$ ), whilst there were trends between higher EPA levels and higher n-6 to n-3 FA ratios with lower and higher EPDS scores, respectively (EPA:  $\beta_i=-0.11$ ,  $p=0.055$ ; n6/n-3 ratio:  $\beta_i=0.10$ ,  $p=0.068$ ).

**Conclusion:** Pregnant women in Switzerland have inadequate intakes of n-3 FAs and low n-3 FA statuses. Higher ALA levels were associated with less depressive symptoms, but trials are required to establish efficacy of ALA interventions for maternal depression. Nevertheless, there is a need to increase n-3 FA intake, possibly with supplements or fish intake, to prevent poor clinical outcomes in pregnancy.