**Supplementary Table 1: Reviewers’ judgment for risk of bias assessment in the included trials.**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Study author (year)** | **Random sequence generation** | **Allocation concealment** | **Double blinding** | **Blinding of outcome assessment** | **Incomplete outcome data** | **Selective outcome reporting** | **Other sources of bias** |
| Litonjua *et al*. (2020)[28] | Low  Using a system that automates the random assignment of treatment groups to study ID number | Low  Assignment of treatment groups to study ID number is automatically done | Low  The participants and investigators remained unaware of the treatment group assignments until after the visit corresponding to each child’s sixth birthday | Low  The participants and investigators remained unaware of the treatment group assignments until after the visit corresponding to each child’s sixth birthday | Low  Missing outcome data balanced in numbers, with similar reasons for missing data between intervention group and control group | Low  The predefined outcomes (as stated in the Methods section) are reported | Low  None identified |
| Rosendahl *et al*. (2019)[24] | Unclear  Insufficient information about the sequence generation process | Low  Pharmacy-controlled randomization; sequentially numbered drug containers of identical appearance | Low  Participants and investigators were blinded to the treatment code | Low  Investigators and staff were blind to the treatment code | Low  About 9% of participants are missing | Low  The predefined outcomes (as stated in the Methods section) are reported | Low  None identified |
| Brustad *et al*. (2019)[30] | Low  A computer-generated list of random numbers was used, supplied by an external investigator | Unclear  Insufficient information to permit judgment of “Low risk” or “High risk”. This is usually the case if the method of concealment is not described or not described in sufficient detail to allow a definite judgment | Unclear  Insufficient information to permit judgment of “Low risk” or “High risk” | Unclear  Insufficient information to permit judgment of “Low risk” or “High risk” | Low  Missing outcome data balanced in numbers, with similar reasons for missing data between intervention group and control group | Low  The predefined outcomes (as stated in the Methods section) are reported | Unclear  Women also received long-chain n-3 polyunsaturated fatty acids supplement and it was unclear whether the supplement had an impact on the study results |
| Chawes *et al*. (2016)[25] | Low  A computer-generated list of random numbers was used, supplied by an external investigator | Low  Random numbers were supplied by an external investigator who had no further involvement in the RCT.  The intervention code was unblinded when the youngest child reached age 3 years | Low  The intervention code was unblinded when the youngest child reached age 3 years or in case of a medical emergency | Low  The study pediatricians who acted as general practitioners  were blinded to the intervention | Low  Missing outcome data balanced in numbers, with similar reasons for missing data between intervention group and control group | Low  The predefined outcomes (as stated in the Methods section) are reported | Unclear  Women also received long-chain n-3 polyunsaturated fatty acids supplement and it was unclear whether the supplement had an impact on the study results |
| Goldring *et al*. (2013)[29] | Low  A computer-generated random number list in blocks of 15, stratified by four ethnic groups in a 1:1:1 ratio | Low  The treatment was allocated from the hospital pharmacy | High  Not possible to blind participants or investigators as they would know if they had no treatment, daily tablets, or a single bolus | Low  Investigators kept blind to original treatment allocation at the extended follow-up | Low  Missing data are well balanced between the groups | Low  The predefined outcomes (as stated in the Methods section) are reported | Low  This trial was conducted before national guidance  on vitamin D intake during pregnancy was introduced in March 2008 |
| Rueter *et al*. (2019)[27] | Low  The pharmacy created a randomization plan from an online source for each of the four stratification groups | Low  Randomization was conducted by the Princess Margaret Hospital for Children Clinical Trials Pharmacy and stratified according to a history of maternal allergic disease and the participant’s sex | Low  Pharmacy staff had no contact with participants, and all research staff remained blind to the allocations until analyses were completed | Low  Pharmacy staff had no contact with participants, and all research staff remained blind to the allocations until analyses were completed | Low  Missing data are well balanced between the groups | Low  The predefined outcomes (as stated in the Methods section) are reported | Low  None identified |
| Grant *et al*. (2016)[26] | Low  Randomization was performed by the study biostatistician | Low  Study participants and research staff remained unaware of treatment allocations throughout the recruitment, enrolment phases | Low  Study participants and research staff remained unaware of treatment allocations throughout the enrolment, treatment | Low  Study participants and research staff remained unaware of data acquisition phases | Low  Missing data are well balanced between the groups. The proportion of missing outcomes compared with observed event risk is not enough to have a clinically relevant impact on the intervention effect estimate | Low  The predefined outcomes (as stated in the Methods section) are reported | Low  None identified |

RCT: Randomized controlled trial.