Methods We collected dietary information for 171 children aged 4–5 years from parents of the INMA study in Valencia, a prospective mother-child cohort study. A 105 foods items FFQ was used to assess the child’s diet of previous year, at baseline and, on average, 10 months later. As the reference method, we estimated several carotenoids, vitamin C and E in the plasma of the children. Pearson (and Spearman) correlations were calculated for reproducibility (FFQ1 vs FFQ1), and validity by comparing nutrient estimates from FFQ to nutrient biomarkers (biochemical calibration).

Results The average of correlation coefficients for reproducibility (Spearman r) between the two FFQ was 0.44 (0.44 for energy, 0.41 for protein, 0.39 for carbohydrate, 0.41 fat, 0.55 for β-carotene, 0.60 for vitamin C and 0.59 for vitamin E). The average of correlation coefficients for validity (Pearson r) between the mean of two FFQ and nutrients in plasma were 0.06 for α-tocopherol, 0.10 for lutein-zeaxanthin, 0.44 for β-cryptoxanthin (p<0.001), 0.20 for lycopene (p=0.01), 0.18 for α-carotene (p=0.021), 0.24 for β-carotene (p=0.002) and 0.25 for vitamin C (p=0.008). When children from mothers who reported a change in their children diets were excluded from the analysis correlations were improved.

Conclusions The FFQ showed a relatively good reproducibility and satisfactory agreements with most nutrient biomarkers measured in blood which may support its use as a valid instrument for dietary assessment in preschool children at these early ages.