Web-based Dietary Assessment Software for Children (WebDASC) was developed to estimate dietary intake in a school meal intervention study among 8- to 11-year-old Danish children. The present study validates self-reported fruit, juice and vegetable (FJV) intakes in 8- to 11-year-old children by comparing intake with plasma carotenoid concentration, and by comparing the reported FJV intake to actually eaten FJV, as observed by a photographic method. A total of eighty-one children, assisted by parents, reported their diet for seven consecutive days. For the same five school days as they reported their diet, the children's school lunch was photographed and weighed before and after eating. In the week after the diet reporting, fasting blood samples were taken. Self-reported intake of FJV and estimated intake of carotenoids were compared with plasma carotenoid concentration. Accuracy of self-reported food and FJV consumption at school lunch was measured in terms of matches, intrusion, omission and faults, when compared with images and weights of lunch intake.

Self-reported intake of FJV was significantly correlated with the total carotenoid concentration (0·58) (P < 0·01). Fruit and juice consumption showed higher correlations than vegetables with plasma carotenoid concentration (0·38 and 0·42 v. 0·33) (P < 0·01). A total of 82 % of the participants fell into the same or adjacent quartiles when cross-classified by FJV intake and carotenoids biomarkers. WebDASC attained 82 % reporting matches overall and a higher percentage match for reporting fruits compared with beverages. The present study indicated that WebDASC can be used to rank 8- to 11-year-old Danish children according to their intake of FJV overall and at school meals.