



## Intakes from healthy and unhealthy food groups and obesity among 5- to 9-year-old South African children

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The global pandemic of paediatric overweight and obesity, along with undernutrition among children in low-income countries pose challenges for future health. Unhealthy dietary intake among children is of great concern<sup>(1)</sup>. The aim of this study was to determine the association between intakes from healthy and unhealthy food groups and adiposity among 5- to 9-year-old South African children (n = 920). Conventional dietary intake assessment methods are burdensome; therefore, a short unquantified food frequency questionnaire was developed based on the WHO Global school-based student health survey, which focused on healthy and unhealthy food groups. The new questionnaire includes four healthy food groups (fruits, vegetables, milk, meats) and six unhealthy food groups (hot sugar-sweetened beverages (SSBs), cold SSBs, cookies, candies, salty snacks, fast foods) with five different responses of frequency of intake per week. The food groups reflect foods generally eaten by South African school children. The questionnaire was completed by the parents. Weight and height were measured and WHO BMI z-score (BAZ) was calculated<sup>(2)</sup>. Descriptive statistics were reported using median and interquartile range. Frequency of intakes from food groups were compared across tertiles of BAZ using the Kruskal-Wallis test. The correlation between frequency of intakes from different food groups, and between the food groups and BAZ was calculated. The children reported similar daily intakes from the milk (35.3%), cold SSBs (33%) and hot SSBs groups (27%). Fruit (14%) and vegetables (9.6%) were consumed daily by a small percentage of children, while animal source protein foods (meat, fish, poultry, eggs) were consumed daily by 39% of children. The most frequent daily consumed snacks were salty snacks, e.g. crisps (13.2%), candy (11.1%) and cookies (5.3%), while fast foods were consumed once per week by the largest proportion of children (60.7%). Based on the WHO BMI z-scores, 15.2% of children were overweight, 4.4% were obese and 3.8% were underweight. Children in the highest two tertile groups of BAZ had a higher median weekly frequency of SSB intake (5, IQR 1,7), compared to those in the lowest BAZ tertile (3, IQR 1,7). No other differences were found between frequency of food group intake across BAZ tertiles. There was a weak positive correlation between BAZ and the frequency of SSB intake ( $r = 0.08$ ,  $P = 0.015$ ), as well as between frequency of milk intake and frequency of SSB intake ( $r = 0.13$ ,  $P < 0.001$ ), but a weak negative correlation between the frequency of vegetable intake and frequency of SSB intake ( $r = -0.08$ ,  $P = 0.01$ ). In conclusion, low fruit and vegetable intakes, combined with regular SSB intakes are evident in this group of children. The frequency of SSB intake was positively associated with adiposity, and SSB intake apparently replaced vegetable intake, but not milk intake among the children.

**Keywords:** healthy foods; children; obesity; snack

### Ethics Declaration

Yes

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### References

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