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Fruit juice consumption is associated with intakes of whole fruit and vegetables, as well as non-milk extrinsic sugars: a secondary analysis of the National Diet and Nutrition Survey

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Pure fruit juice (PFJ) contains naturally occurring ‘free’ sugars, providing 8–14 % of daily intakes depending on the age group⁽²⁾. Free sugars are now the target of a challenging average population intake of ≤ 5 % energy⁽¹⁾, i.e. around 30 g daily for an adult. While concerns have been raised about the sugar content of PFJ, 150 ml counts as one portion of fruit and PFJ continues to be acknowledged as a valid option within 5-A-Day messaging⁽³⁾.

A secondary analysis was conducted on 2967 participants aged 11 to 99 years from the National Diet and Nutrition Survey (2008–2012) as this is the age range to which the 5-A-day message applies. Dietary data were collected using a 4-day food record with estimated portion sizes. The aim of the analysis was to examine associations between PFJ consumption and 5-A-Day compliance, whole fruit and vegetable (F&V) consumption, and non-milk extrinsic sugar (NMES) intakes (similar to free sugars).

Mean PFJ consumption was 83 ml/d in participants aged 11–18 y (53 % were consumers) and 52 ml/d in those aged 19–64 y (39 % were consumers). Orange and apple were the most commonly consumed PFJs. After grouping participants by PFJ intake, associations were investigated with whole F&V consumption (excluding composite dishes), as well as with NMES intakes as a proportion of daily total energy (see table below).

PFJ intake (mld) % of population	Adults (19–64y)			Young people (11–18y)		
	0	≤ 150 ml	>150ml	0	≤ 150 ml	>150ml
Whole vegetable intake (g/d)	61	28	11	47	34	19
Whole fruit intake (g/d)	171	199	204	108	113	122
% energy from NMES	94	126	130	50	68	81
n	10.6	11.9	15.2	14.3	15.5	18.1
	1305	550	228	449	259	176

All linear associations were statistically significant (ANOVA) suggesting that higher PFJ consumption was associated with higher intakes of F&V, but also higher NMES intakes. The small differences in NMES intake between non-consumers and those who consumed ≤ 150 ml PFJ were only statistically significant in adults. On a positive note, PFJ consumers were significantly more likely to reach 5-A-DAY (39 % vs. 23 % of non-consumers). Previous work has shown that PFJ consumers tend to have a lower BMI than non-consumers⁽⁴⁾.

In conclusion, PFJ intake appears to be a marker of a ‘health-conscious’ diet as well as a distinct contributor to 5-A-day (mean from PFJ = 0.4 portion in adults and 0.6 portions in young people). Consuming up to 150 ml/d PFJ marginally increased NMES in adults but not in young people, suggesting this level of intake offers a benefit in terms of 5-A-day compliance, particularly since only 9 % of children and 32 % of adults achieve the F&V target.

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1. Scientific Advisory Committee on Nutrition (2015) *Carbohydrates and health*. London: SACN.
2. Bates B *et al.* (2014). *National Diet and Nutrition Survey years 1–4*. London: FSA.
3. Public Health England (2015) *Sugar reduction. The evidence for action*. London: PHE.
4. Gibson S *et al.* (2015) *Ann Nutr Metab* 67 (supp 1): abstract 149/1262.