



## Fruit and vegetable intake and its relationship with health parameters in primary school children in Aberdeenshire

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Little is known about whether Scottish children follow the UK government recommendation of consuming 5 portions of fruit and vegetables (F&V) a day<sup>(1,2)</sup> or whether there is any association between F&V intake and health parameters (HP). This study aimed to 1) examine changes in the number of portions of F&V that children consume by age and gender throughout their primary school education. 2) Establish the relationship between F&V intake and HP in primary school children.

In 2015, data was collected from nine schools (236 children between 4–13 years old). All F&V was assessed using a questionnaire that specifically focused on the consumption of F&V. Children's parents were asked to report any fruit or vegetables (excluding potatoes) consumed in 3 main meals (breakfast, lunch, dinner) and 2 snacks (before lunch, dinner) a day for 4 days. HP (weight, height, body composition, blood pressure, waist circumference, hip circumference and lung function) were collected from all of the children.

Children consumed on average a total of 4.25 (SD 1.65) portions of F&V per day (including fruit juices and other food that contained F&V). F&V intake was the same for girls compared to boys (fruit intake ( $t = 0.11$ ,  $p = 0.91$ ) and vegetable intake ( $t = 0.88$ ,  $p = 0.38$ )). Children aged 4–6 and 8–10 years old had significantly higher intake of F&V compared to 6–8 and 10–12+ children. Children increased their intake of F&V over the weekdays compared to weekend days ( $t = 4.99$ ,  $p < 0.05$ ). Only 32% children achieved the recommended F&V intake of five or more.

This current study revealed after controlling for age, sex and schools that those children who increased intake of F&V had an increase in weight (W) ( $R = 0.530$ ,  $P < 0.05$ ), height (H) ( $R = 0.645$ ,  $P < 0.05$ ), waist circumference (WC) ( $R = 0.369$ ,  $P < 0.05$ ), waist/hip ratio (WHP) ( $R = 0.029$ ,  $P = 0.036$ ), forced expiratory volume in one second (FEV1) ( $R = 0.055$ ,  $P = 0.033$ ) and forced vital capacity (FVC) ( $R = 0.052$ ,  $P = 0.041$ ) while those children who increased intake of F&V had a decrease in systolic blood pressure (BPS) ( $R = 0.060$ ,  $P = 0.008$ ), pulse (P) ( $R = 0.077$ ,  $P = 0.002$ ), hip Circumference (HC) ( $R = 0.376$ ,  $P < 0.05$ ) and waist to height ratio (WH) ( $R = 0.173$ ,  $P < 0.05$ ). Other health parameters did not show any relationship.

Although some studies examined the relationship between F&V intake and specific health parameters in adults and children, ours was unique in our extensive measurement of health parameters. Unexpectedly an increased in F&V intake were positively related to some of children's health parameters. The lack of similar association to these findings among children at primary age or adults make it not clearly understood and needs further investigation.

1. Cade JE, *et al.* (2006), *Public Health Nutr* **9**, 501–508.
2. Christian MS, *et al.* (2013), *J Epidemiol Community Health* **67**, 332–338.