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Comparison of three school-based intervention strategies to increase starch consumption in adolescent Scottish boys

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To achieve current targets for dietary macronutrients in the UK would require a decrease in consumption of fat (particularly saturated fat), a decrease in consumption of sugars (especially non-milk extrinsic sugars) and an increase in consumption of total carbohydrates, particularly starchy carbohydrates⁽¹⁾. Current intakes of carbohydrate in adolescents have been estimated to be approximately 51% total energy⁽²⁾, which complies with the recommended intake of 50% energy⁽¹⁾. However, the percentage energy from non-milk extrinsic sugar is too high (16), and exceeds the recommended intake of 10% energy. Consequently, the contribution from starch is too low (28%). Dietary interventions often focus on reducing consumption of fat (or sugar), but there is a paucity of research looking at strategies for increasing starch consumption⁽³⁾.

The aim of the present study was to compare three 4-week school-based interventions to increase starch intake in adolescent Scottish boys. A randomised controlled intervention study was employed and seventy-six boys (aged 12–13 years) from four local authority schools within North Lanarkshire were randomly recruited to one of four groups: A, control (received no specific advice); B, provided with an education package on starch that was designed to be fun and educate the subjects on the benefits of eating starchy foods; C, provided with starchy snacks (Rice Krispies, Cornflakes and Nutri-grain bars (Kellogg's Manchester, UK) and Twiglets (United Biscuits, Aintree, Merseyside, UK); D, provided with both the education package and the snacks. Ethical approval for the study was granted by Queen Margaret University College Ethical Committee and The Research Ethics Committee of Lanarkshire Health Board.

Dietary intakes were estimated using a 3 d diet diary at baseline and at 4 weeks post intervention. Full instructions for completion of the diary were given at the start of the dietary recording period by the researcher. Specific questions on starchy food consumption were included to ensure that all starchy foods consumed were recorded. Energy and nutrient intakes were assessed using CompeatPro version 5.0 (Nutrition Systems, Banbury, Oxon, UK). Statistical analyses were performed using SPSS version 11.5 (SPSS Inc, Chicago, IL, USA). Paired-sample *t* tests were used to compare data at baseline and at 4 weeks post intervention.

After 4 weeks group C showed an increased % energy from starch (from 29 to 34; $P < 0.001$) and a decreased % energy from total sugar (from 24 to 19.7; $P < 0.05$) with no significant change in total carbohydrate. Group D showed an increased % energy from starch (from 27 to 33; $P < 0.005$) and total carbohydrate (from 49.8 to 54.3; $P < 0.01$). Group D also showed a decreased % energy from fat (from 39 to 35; $P < 0.005$).

It was concluded from the study that a simple intervention package, including dietary education and provision of snacks high in starch, resulted in beneficial dietary changes in adolescent boys. However, longer-term studies are required to assess the sustainability of these dietary changes.

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2. Gregory JR, Lowe S, Bates CJ *et al.* (2000) *National Diet and Nutrition Survey: Young People Aged 4–18 years*. vol. 1: *Report of the Diet and Nutrition Survey*. London: The Stationery Office.
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