Participant Flow

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┌─────────────────────────────┐
│ Schools invited to participate │
│ N = 359                     │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐        ┌──────────────────────────────────────┐
│ Schools expressing interest │   ───▶  │ **Inclusion Criteria**                 │
│ N = 151                     │        │ <20 km from research institute         │
└─────────────────────────────┘        │ Medium size school (n=100 – 300)       │
                                        │ No similar project in school           │
                                        └──────────────────────────────────────┘
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Year 1: Implemented

4 intervention schools	2 control schools
2 urban, 2 rural schools	1 rural; 1 urban school
4 mixed schools	2 mixed schools
2 DEIS, 2 non DEIS schools	1 DEIS, 1 non DEIS school

Year 2: Implemented

7 intervention schools	3 control schools
4 urban, 3 rural schools	1 urban, 2 rural schools
5 mixed; 2 single sex schools	3 mixed
2 DEIS, 5 non DEIS schools	1 DEIS, 2 non DEIS schools

Year 3: Proposed

10 intervention schools	5 control schools
4 urban, 6 rural schools	2 urban, 3 rural schools
8 mixed; 2 single sex schools	5 mixed;
3 DEIS, 7 non DEIS schools	1 DEIS, 4 non DEIS schools

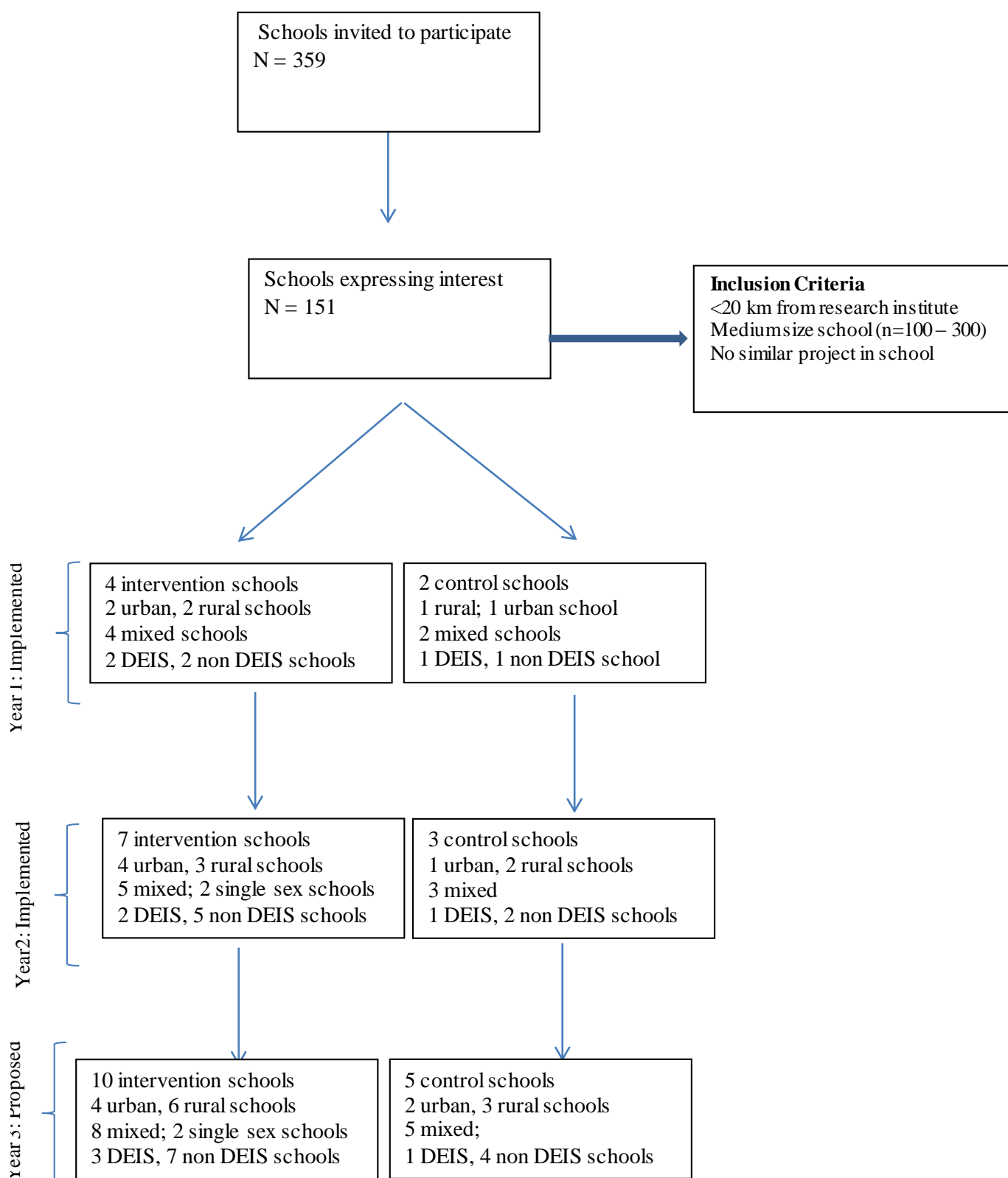## Baseline characteristics

Table 1: Mean and standard deviation (SD) of continuous variable and percentage of categorical variables by age cohort and gender

	6 year old children					10 year old children				
	All	Boys		Girls		All	Boys		Girls	
	N	Mean ± SD	N	Mean ± SD	N	Mean ± SD	N	Mean ± SD	N	Mean ± SD	N	Mean ± SD
Age (years)	332	6.1 ± 0.5	163	6.1 ± 0.4	169	6.1 ± 0.5	323	10.0 ± 0.4	183	10.0 ± 0.4	140	9.9 ± 0.4
Height (cm)	330	116.7 ± 5.5	163	117.2 ± 5.4	167	116.1 ± 5.5	319	140.1 ± 6.4	179	140.4 ± 6.4	140	139.8 ± 6.3
Body mass (kg)	330	22.4 ± 3.5	163	22.5 ± 3.4	167	22.3 ± 3.7	319	35.6 ± 7.6	179	35.4 ± 7.4	140	35.7 ± 7.8

	n		n		n		n		n		n	
*BMI (kg/m)	330	16.41 ± 1.83	163	16.33 ± 1.60	167	16.48 ± 2.03	319	17.96 ± 2.83	179	17.82 ± 2.75	140	18.15 ± 2.92
†WC (cm)	329	54.5 ± 4.7	162	54.7 ± 4.2	167	54.3 ± 5.1	320	62.0 ± 7.7	180	62.5 ± 7.4	140	61.4 ± 8.1
‡Systolic BP (mmHg)	302	101.7 ± 9.9	148	101.1 ± 10.2	155	102.3 ± 9.5	299	109.8 ± 12.1	165	109.3 ± 12.5	134	110.5 ± 11.7
Diastolic BP (mmHg)	302	60.0 ± 9.4	148	58.7 ± 9.0	154	61.3 ± 9.6	299	65.4 ± 9.7	165	64.3 ± 9.7	134	66.8 ± 9.5
§Resting HR (bpm)	302	88.8 ± 11.7	148	87.9 ± 11.3	154	89.7 ± 11.9	299	82.3 ± 12.3	165	80.1 ± 10.8	134	84.9 ± 13.5
Run Time (secs)	307	219.8 ± 31.5	153	211.0 ± 26.8	154	228.4 ± 33.5	297	176.3 ± 32.6	168	169.9 ± 31.2	129	184.7 ± 32.7

* BMI = body mass index
† WC = waist circumference
‡ BP = blood pressure
§ HR = heart rate

*MVPA (mins)	129	61.1 ± 15.8	62	64.7 ± 14.4	67	57.7 ± 16.4	147	57.8 ± 20.2	86	64.3 ± 20.0	61	48.6 ± 16.7
Sedentary (hrs)	129	7.6 ± 0.9	62	7.5 ± 0.9	67	7.7 ± 0.9	147	8.9 ± 0.9	86	8.7 ± 1.0	61	9.1 ± 0.7
BMI Overweight & Obese %	330	17.9	163	16.0	167	19.8	319	20.6	179	17.8	140	24.3
WC Overweight & Obese %	329	19.1	162	18.5	167	19.8	320	25.1	180	22.8	140	27.8
Achieve 60 mins MVPA %	129	51.9	62	59.7	67	44.8	147	39.5	86	53.5	61	19.7

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* MVPA = moderate to vigorous physical activity

Table 2: Mean, SC, 95% confidence interval (CI) and univariate analysis for health measure among boys and girls											
	6 year old children						**10 year old children**				
	Boys		Girls				Boys		Girls		
	n	Mean ± SD [95% CI]	n	Mean ± SD [95% CI]	p-value	η_p^2	n	Mean ± SD [95% CI]	n	Mean ± SD [95% CI]	p-value	η_p^2
Age (years)	163	6.1 ± 0.4 [6.0, 6.2]	169	6.1 ± 0.5 [6.1, 6.2]	0.371	0.002	183	10.0 ± 0.4 [9.9, 10.1]	140	9.9 ± 0.4 [9.9, 10.0]	0.061	0.011
Height (cm)	163	117.2 ± 5.4 [116.4, 118.0]	167	116.1 ± 5.5 [115.3, 117.0]	0.088	0.009	179	140.4 ± 6.4 [139.4, 141.3]	140	139.8 ± 6.3 [138.8, 140.9]	0.329	0.003

Body mass (kg)	163	22.5 ± 3.4 [22.0, 23.0]	167	22.3 ± 3.7 [21.7, 22.9]	0.662	0.001	179	35.4 ± 7.4 [34.3, 36.5]	140	35.7 ± 7.8 [34.4, 37.0]	0.610	0.001
BMI(kg/m²)	163	16.33 ± 1.60 [16.08, 16.58]	167	16.48 ± 2.03 [16.17, 16.79]	0.375	0.002	179	17.82 ± 2.75 [17.41, 18.23]	140	18.15 ± 2.92 [17.66, 18.64]	0.210	0.005
WC (cm)	162	54.7 ± 4.2 [54.1, 55.4]	167	54.3 ± 5.1 [53.5, 55.1]	0.652	0.001	180	62.45± 7.4 [61.4, 63.6]	140	61.4 ± 8.1 [60.0, 62.7]	0.662	0.001
Systolic BP (mmHg)	148	101.1 ± 10.2 [99.4,102.7]	154	102.3 ± 9.5 [100.8, 103.8]	*0.753	<0.0005	165	109.3 ± 12.5 [107.4, 111.2]	134	110.5 ± 11.7 [108.5, 112.5]	0.750	<0.0005

	N		N				N		N			
Diastolic BP (mmHg)	148	58.7 ± 9.0 [57.3, 60.2]	154	61.3 ± 9.6 [59.8, 62.8]	0.204	0.005	165	64.3 ± 9.7 [62.8, 65.8]	134	66.8 ± 9.5 [65.2, 68.5]	0.228	0.005
Resting HR (bpm)	148	87.9 ± 11.3 [86.1, 89.7]	154	89.7 ± 11.9 [87.8, 91.6]	0.106	0.009	165	80.1 ± 10.8 [78.4, 81.8]	134	84.9 ± 13.5 [82.6, 87.2]	0.003	0.029
Run Time (secs)	153	211.2 ± 26.8 [206.9, 215.5]	154	228.4 ± 33.5 [223.1, 233.8]	*<0.0005	0.088	168	169.9 ± 31.2 [165.1, 174.6]	129	184.7 ± 32.7 [179.0, 190.4]	<0.0005	0.053
MVPA (mins)	62	64.7 ± 14.4 [61.1, 68.4]	67	57.7 ± 16.4 [53.7, 61.7]	*0.001	0.083	86	64.3 ± 20.0 [60.0, 68.6]	61	48.6 ± 16.7 [44.3, 52.9]	<0.0005	0.132

Sedentary	62	7.5 ± 0.9	67	7.7 ± 0.9	0.073	0.026	86	8.7 ± 1.0	61	9.1 ± 0.7	0.028	0.003
Time (hours)		[7.2, 7.7]		[7.5, 7.9]				[8.5, 9.0]		[8.9, 9.2]		

Table 3: Mean, SD, 95% CI and univariate analysis for health measure among children in DEIS and Non DEIS schools

	6 year old children						10 year old children					
	DEIS		Non DEIS				DEIS		Non DEIS			
	n	Mean ± SD [95% CI]	n	Mean ± SD [95% CI]	p-value	η_p^2	n	Mean ± SD [95% CI]	n	Mean ± SD [95% CI]	p-value	η_p^2
Age (years)	89	6.3 ± 0.6 [6.2, 6.5]	243	6.04 ± 0.4 [6.0, 6.1]	<0.0005	0.080	86	9.9 ± 0.5 [9.8, 10.0]	237	10.0 ± 0.4 [9.9, 10.0]	0.114	0.008
Height (cm)	89	116.9 ± 5.6 [115.7, 118.0]	241	116.6 ± 5.4 [115.9, 117.3]	0.632	0.001	86	139.5 ± 7.4 [138.0, 141.1]	233	140.3 ± 6.0 [139.6, 141.1]	0.249	0.004

	n		n		p	p	n		n		p	p
Body mass (kg)	89	23.4 ± 4.4 [22.5, 24.3]	241	22.1 ± 3.1 [21.7, 22.4]	0.002	0.028	86	36.1 ± 9.2 [34.2, 38.1]	233	35.3 ± 6.9 [34.5, 36.2]	0.371	0.003
BMI (kg/m²)	89	17.04 ± 2.41 [16.53, 17.55]	241	16.18 ± 1.50 [15.98, 16.37]	<0.0005	0.043	86	18.34 ± 3.28 [17.64,19.04]	233	17.82 ± 2.64 [17.48, 18.17]	0.104	0.008
WC (cm)	89	56.3 ± 6.0 [55.0, 57.6]	240	53.8 ± 3.9 [53.3, 54.3]	<0.0005	0.055	86	65.1 ± 9.5 [63.1, 67.2]	234	60.9 ± 6.6 [60.0, 61.7]	<0.0005	0.057
Systolic BP (mmHg)	70	100.4 ± 9.9 [98.0, 102.8]	232	102.1 ± 9.8 [100.8, 103.4]	*0.281	0.004	73	111.6 ± 10.7 [109.0, 114.0]	226	109.3 ± 12.5 [107.6, 110.9]	0.207	0.005

Diastolic BP (mmHg)	70	58.4 ± 9.0 [56.3, 60.6]	232	60.5 ± 9.5 [59.3, 61.7]	0.099	0.009	73	63.8 ± 8.4 [61.8, 65.7]	226	66.0 ± 10.0 [64.7, 67.3]	0.078	0.010
Resting HR (bpm)	70	92.3 ± 11.6 [89.6, 95.1]	232	87.7 ± 11.5 [86.3, 89.2]	0.008	0.024	73	83.1 ± 12.2 [80.3, 86.0]	226	82.0 ± 12.3 [80.4, 83.6]	0.358	0.003
Run Time (secs)	82	229.2 ± 38.4 [220.8, 237.7]	225	216.4 ± 27.9 [212.8, 220.1]	*0.004	0.027	80	191.5 ± 30.3 [184.8, 198.3]	217	170.7 ± 31.7 [166.5, 175.0]	<0.0005	0.093
MVPA (mins)	36	62.2 ± 18.7 [55.9, 68.6]	93	60.6 ± 14.6 [57.6, 63.6]	*0.399	0.006	56	66.0 ± 23.1 [60.0, 72.2]	91	52.7 ± 16.4 [49.3, 56.1]	<0.0005	0.082

Sedentary Time (hours)	36	7.8 ± 1.0 [7.4, 8.1]	93	7.5 ± 0.9 [7.4, 7.7]	0.258	0.010	56	8.8 ± 1.0 [8.5, 9.1]	91	8.9 ± 0.8 [8.8, 9.1]	0.543	0.003

Table 4: Mean difference and simple main effect for systolic BP, run times and MVPA by gender and school classification using the Bonferroni correction method

6 year old children							
	N	Factor	Mean Difference		P-value	η_p^2	95% CI for Difference
Systolic BP	148	Boys	1.7	DEIS - Non DEIS	0.392	0.002	[-2.22, 5.64]
(mmHg)	154	Girls	4.6	Non DEIS - DEIS	0.011	0.022	[1.08, 8.15]
	70	DEIS	3.6	Boys – Girls	0.129	0.008	[-1.06, 8.23]
	232	Non DEIS	2.7	Girls - Boys	0.033	0.015	[0.22, 5.27]
Run Time	153	Boys	2.2	DEIS - Non DEIS	0.699	<0.0005	[-8.88, 13.2]
(secs)	154	Girls	20.1	DEIS – Non DEIS	<0.0005	0.046	[9.77, 30.50]
	82	DEIS	29.8	Girls - Boys	<0.0005	0.063	[16.84, 42.82]
	225	Non DEIS	11.9	Girls - Boys	0.003	0.029	[4.06, 19.68]
MVPA (mins)	62	Boys	9.3	DEIS - Non DEIS	0.038	0.034	[0.51, 18.04]
	67	Girls	4.2	Non DEIS - DEIS	0.306	0.008	[-3.88, 12.24]

| 36 | DEIS | 16.8 | Boys – Girls | 0.001 | 0.080 | [6.71, 26.96] |
| 93 | Non DEIS | 3.4 | Boys - Girls | 0.288 | 0.009 | [-2.89, 9.64] |

Outcome Measures

Table V: Changes in health measures among 6 year old intervention relative to control participants over 2 school years

	Intervention		Control		Effect of Intervention (Intervention v's control)	95% CI	P[*]	P[†]
	n	2 year adjusted mean change[‡]	n	2 year adjusted mean change[‡]				
BMI SDS	57	0.58	58	0.50	0.08	-0.07, 0.22	0.282	0.220
Waist C. SDS	57	0.85	58	0.58	0.27	0.03, 0.52	**0.028**	**0.017**
Systolic BP SDS	43	-0.61	52	-0.95	0.34	-0.07, 0.75	0.103	**0.048**
Diastolic BP SDS	43	0.20	52	-0.02	0.23	-0.11, 0.56	0.187	0.153
Heart Rate (bpm)	43	85.5	51	84.8	0.7	-2.8, 4.1	0.700	0.844
Run Time (secs)	50	198.9	48	200.0	-1.1	-10.3, 8.1	0.812	0.332
MVPA (mins)	34	71.9	32	76.6	-4.7	-14.1, 4.8	0.328	0.249

[*] P value for difference between groups at 2 years analysed by a one way ANCOVA adjusted for baseline measure
[†] P value corrected for the clustering of children by school
[‡] Adjusted for baseline measure mean at 2 years

Table VI: Changes in health measures among 10 year old intervention relative to control participants over 2 school years

	Intervention		Control		Effect of Intervention (Intervention v's control)	95% CI	P*	P†
	n	2 year adjusted mean change‡	n	2 year adjusted mean change‡				
BMI SDS	46	0.48	63	0.52	-0.04	-0.20, 0.12	0.639	0.275
Waist C SDS	46	0.74	63	1.13	-0.39	-0.60, 0.19	**<0.0005**	**<0.0005**
Systolic BP SDS	42	-0.90	58	-0.59	0.34	-0.76, 0.76	0.172	**0.021**
Diastolic BP SDS	42	0.59	58	0.43	0.16	-0.24, 0.56	0.437	0.707
Heart Rate (bpm)	42	73.1	58	79.0	-5.8	-9.7, -2.0	**0.003**	**0.002**
Run Time (secs)	42	161.8	54	163.2	-1.4	-6.8, 4.0	0.605	0.591
MVPA (minutes)	29	66.3	45	70.1	-3.8	-12.2, 4.7	0.379	0.371

* P value for difference between groups at 2 years analysed by a one way ANCOVA adjusted for baseline measure
† P value corrected for the clustering of children by school
‡ Adjusted for baseline measure mean at 2 years

Table VII: Changes in health categories among 6 and 10 year old intervention and control participants over 2 school years

		6 year olds								10 year olds						
	n	Intervention			n	Control			n	Intervention			n	Control		
		Pre	Post	P*		Pre	Post	P†		Pre	Post	P*		Pre	Post	P†
% Overweight/obese	57	20.7	22.8	1.000	58	25.8	17.2	0.250	46	25.1	19.6	0.375	63	25.4	27.0	1.000
% Not overweight/obese		79.3	77.2			74.2	82.8			74.9	80.4			74.6	73.0	
% Achieving PA guidelines	34	53.5	62.2	0.219	32	45.5	79.4	**0.016**	29	37.5	62.5	**0.007**	45	34.5	58.8	**<0.0005**
% Not achieving PA guidelines		46.5	37.8			54.5	20.6			62.5	37.5			65.5	41.2	

* P values for difference in health categories among intervention participants between baseline and 2-year follow up using Mc Nemar change test
† P values for difference in health categories among control participants between baseline and 2-year follow up using Mc Nemar change test

Table VIII: Changes in nutrition knowledge and attitudes among 6 year old intervention and control participants over 2 school years

6 year olds								
		Intervention				Control		
	n	Pre Mean (SD)	Post Mean (SD)	P*	n	Pre Mean (SD)	Post Mean (SD)	P†
Knowledge & Attitudes Accumulated Score	57	23.4 (3.9)	26.7 (1.8)	**<0.0005**	57	22.8 (4.2)	26.2 (1.9)	**<0.0005**

* P-values for difference in accumulated score among intervention participants between baseline and 2 year follow up using a Wilcoxin Signed Rank Test
† P-values for difference in accumulated score among control participants between baseline and 2 year follow up using a Wilcoxin Signed Rank Test

Table IX: Change in nutrition knowledge and attitude among 10 year old intervention and control participants over 2 school years

	10 year olds					
	Intervention			Control		
	Pre %	Post %	Diff	Pre %	Post %	Diff
How important do you think healthy eating is:						
Very much	96	96	-	98	95	-3

Adverse events

There were no adverse events associated with this trial