Data supplement

Effects of nutrition intervention strategies in the primary prevention of overweight and obesity in school settings: a systematic review and network meta-analysis

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Supplementary Table 1. Deviations from the study protocol

Domain	Deviation
Systematic search	Reference lists from obtained systematic reviews and retrieved study protocols were additionally screened for further relevant studies.
Eligibility criteria	RCTs that primarily included both overweight and obese children/ adolescents without presenting results separately for the two groups were also excluded, unless the proportion of obese children was ≤30% of the study population. Interventions consisting of multiple different components (e.g. nutrition and physical activity), were only included if all components other than the nutrition component were available in both the intervention and control group.
Outcomes	Weight Z-score was removed as the WHO classification of nutritional conditions in children and adolescents (0-19 years) using weight and height (i.e. weight-for-age Z-score/height-for-age Z-score) does not include reference values or thresholds for obesity or overweight.[1 2]
Data extraction	The following study characteristics were additionally extracted: study acronym, number and type of clusters, intervention adherence/compliance, validation of outcome assessment instrument. We extracted odds ratios with 95% confidence intervals for dichotomous data and change scores with standard deviations for continuous data. Where available, we extracted change scores from an analysis of the covariance model (ANCOVA), followed by unadjusted change scores, and post-intervention scores. Missing change scores were calculated from pre- and post-intervention using a correlation coefficient according to the formula provided by the Cochrane Handbook.
Data synthesis	Component NMA for assessing the contributions of individual components of school-based nutrition interventions to their overall effect on a particular outcome could not be performed.
Risk of bias assessment	An additional guidance was used to facilitate and standardise the risk of bias assessment among reviewers.
Subgroup and sensitivity analyses	Subgroup analyses and sensitivity analyses were performed only when ≥10 RCTs were available. Post-hoc sensitivity analyses were conducted by repeating the analyses with reported SMDs instead of MDs and post scores instead of change scores.
Dissemination bias	Dissemination bias and small study effects were assessed for each outcome when at least ten comparisons were available.
GRADE assessment	The standard GRADE approach was used to assess the certainty of the evidence for pairwise comparisons for which NMA could not be performed.
Reporting of findings	Findings were interpreted and reported considering both magnitude and certainty of an effect, according to the GRADE guideline on communicating findings of systematic reviews.

Abbreviations: GRADE=Grading of Recommendations Assessment, Development, and Evaluation; MD=mean difference; NMA=network meta-analysis; RCT=randomised controlled trial; SMD=standardised mean difference;

Supplementary Table 2. Definitions of overweight and obesity in school-aged children and adolescents

Organisation	**Definition of childhood overweight and obesity**
World Health Organisation	Children and adolescents aged 5–19 years (WHO 2007 Growth Reference[1]) **BMI-for-age (zBMI)** **Overweight:** BMI >1 SD above WHO growth standard median (equivalent to BMI 25 kg/m^2 at 19 years) **Obesity:** BMI >2 SDs above WHO growth standard median (equivalent to BMI 30 kg/m^2 at 19 years)
Centers for Disease Control and Prevention (CDC)	Children and adolescents aged 2-20 years (CDC 2000 Growth Charts[3]) **Sex- and age-specific BMI percentiles** **Overweight:** BMI ≥ 85th to 94th percentile **Obesity:** BMI ≥95th percentile
International Obesity Task Force (IOTF)	Children and adolescents aged 2-18 years (IOTF 2000 Reference[4]) **International sex- and age-specific BMI cut-off points**, linked to the adult BMI cut-off points 25 kg/m^2 (overweight) and 30 kg/m^2 (obesity)

Abbreviations: BMI=body mass index; SD=standard deviation; WHO=World Health Organisation;

Supplementary Table 3. Search strategies for all electronic databases

Search strategy (02 May 2022): PubMed	
#1	("School Health Services"[Mesh] OR "Schools" [Mesh] OR "school*"[tiab] OR "pre-school*"[tiab] OR "pre school*"[tiab] OR "kindergarten*"[tiab])
#2	„Health Promotion" [MeSH] OR "Nutrition Policy" [MeSH] OR "Health Education"[MeSH] OR "Pediatric Obesity/prevention and control"[MeSH] OR "Obesity/prevention and control"[MeSH]
#3	#1 AND #2
#4	("nutrition polic*" [tiab] OR "nutrition promotion program*" [tiab] OR "Food Environment Polic*"[tiab] OR "food service intervention*" [tiab] OR "food service modificat*" [tiab] OR "health behaviour intervention* " [tiab] OR "foodservice program*" [tiab] OR "nutrition curricul*" [tiab] OR "nutrition educat*" [tiab] OR "nutrition polic*" [tiab] OR "obesity prevention" [tiab] OR "overweight prevention* " [tiab] OR "adiposity prevention*" [tiab]) AND (school* OR kindergarten)
#5	"school based nutrition intervention*" [tiab] OR "school food polic*" [tiab] OR "school nutrition practice*" [tiab] OR "School Nutrition Polic*" [tiab] OR "school-based intervention*" [tiab] OR "school feeding program*"[tiab] OR "health-promoting school*" OR "school lunch*" [tiab] OR "cafeteria-based intervention*" [tiab] OR "school food service change*" [tiab]
#6	#4 OR #5
#7	(health* [tiab] AND (promot* [tiab] OR "policy" [tiab] OR "policies" [tiab] OR educat* [tiab] OR environment* [tiab] OR curricul* [tiab] OR intervention* [tiab]))
#8	(nutr* [tiab] OR diet* [tiab] OR food* [tiab] OR feed* [tiab] OR intake* [tiab] OR consum*[tiab] OR eating [tiab] OR habit* [tiab])
#9	("Schools"[MeSH] OR "Students"[MeSH] OR school* [tiab] OR preschool* [tiab] OR pre-school* [tiab] OR kindergarten* [tiab])
#10	#7 AND #8 AND #9
#11	("Child Nutrition Sciences" [MeSH] AND ("School Health Services"[MeSH] OR "Schools" [MeSH] OR "school*" [all fields] OR "pre-school*" [tiab] OR "pre school*" [tiab] OR "kindergarten*"[tiab]))
#12	#3 OR #6 OR #10 OR #11
#13	#3 OR #6 OR #10 OR #11 (Filter: Randomized Controlled Trial)

Search strategy (02 May 2022): Cochrane Library (CENTRAL)	
#1	(school* OR preschool* OR pre-school* OR kindergarten*):ti,ab,kw
#2	MeSH descriptor: [Schools] explode all trees
#3	MeSH descriptor: [School Health Services] explode all trees
#4	#1 OR #2 OR #3
#5	MeSH descriptor: [Health Promotion] explode all trees
#6	MeSH descriptor: [Nutrition Policy] explode all trees
#7	MeSH descriptor: [Health Education] this term only
#8	MeSH descriptor: [Pediatric Obesity] explode all trees and with qualifier(s): [prevention & control - PC]
#9	MeSH descriptor: [Obesity, Abdominal] explode all trees and with qualifier(s): [prevention & control - PC]
#10	#5 OR #6 OR #7 OR #8 OR #9
#11	#4 AND #10
#12	(("nutrition polic*" OR "nutrition promotion program*" OR "Food Environment Polic*" OR "food service intervention*" OR "food service modificat*" OR "Health behaviour intervention*" OR "foodservice program*" OR "nutrition curricul*" OR "nutrition educat*" OR "nutrition polic*" OR "obesity prevention" OR "Overweight prevention*" OR "adiposity prevention*") AND (school* OR kindergarten)):ti,ab,kw
#13	("School based nutrition intervention*" OR "school food polic*" OR "school nutrition practice*" OR "School Nutrition Polic*" OR "school-based intervention*" OR "school feeding program*" OR "health-promoting school*" OR "school lunch*" OR "cafeteria-based intervention*" OR "school food service change*"):ti,ab,kw
#14	#12 OR #13

#15	(health* near/5 (promot* OR "policy" OR "policies" OR educat* OR environment* OR curricul* OR intervention*)):ti,ab,kw near/10 (nutr* OR diet* OR food* OR feed* OR intake* OR consum* OR habit* OR attitud* OR behav*):ti,ab,kw
#16	#15 AND #4
#17	MeSH descriptor: [Child Nutrition Sciences] explode all trees
#18	#17 AND #4
#19	#11 OR #14 OR #18

Search strategy (02 May 2022): Web of Science Core Collection: Science Citation Index Expanded, 1956 to current.	
#1	TS=(child* or student* or adolescent* or pupil* or teenager* or kid*)
#2	TS=(school* or pre-school* or kindergarten)
#3	TS=(health* near/2 (promot* or policy or policies or education* or environment* or curricul* or intervention*))
#4	TS=(nutr* OR diet* OR food* OR feed* OR intake* OR consum* OR habit* OR attitud* OR behav*)
#5	TS= („School based nutrition intervention*" OR ("nutrition polic*" AND school*) OR "school food polic*" OR "school nutrition practice*" OR "School Nutrition Polic*" OR "nutrition promotion programm*" OR „Food Environment Polic*" OR "school-based intervention*" OR „school feeding program*" OR "health-promoting school*" OR OR "school lunch*" OR "cafeteria-based intervention*" OR "school-based program*" OR "food service intervention*" OR "food service modificat*" OR "school food service change*" OR "environment polic*" OR "Environmental Strateg*" OR "school environment*" OR "foodservice program*" OR "nutrition curriculum*" OR "nutrition educat*" OR "nutrition polic*" OR "Health behaviour intervention*" OR "obesity prevention" OR "overweight prevention*" OR "adiposity prevention*")
#6	#2 AND #3 AND #4
#7	#5 OR #6
#8	#1 AND #7
#9	TS=(randomi?ed or randomly)
#10	#8 AND #9

Search strategy (02 May 2022): ERIC via ProQuest (1966-current)
((ti(("School based nutrition intervention*" OR (("nutrition policy") AND school*) OR "school food polic*" OR "school nutrition practice*" OR "School Nutrition Polic*" OR "nutrition promotion programm*" OR "Food Environment Polic*" OR "school-based intervention*" OR "school feeding program*" OR "health-promoting school*" OR ("school lunch" OR "school lunches" OR "school lunchroom") OR "cafeteria-based intervention*" OR "school-based program*" OR "food service intervention*" OR "food service modificat*" OR "school food service change*" OR ("environment policies" OR "environment policy") OR ("environmental strategies" OR "environmental strategy") OR ("school environment" OR "school environmental" OR "school environments") OR "foodservice program*" OR "nutrition curriculum*" OR ("nutrition education") OR ("nutrition policy") OR "Health behaviour intervention* " OR "obesity prevention" OR "overweight prevention* " OR "adiposity prevention*")) OR ab(("School based nutrition intervention*" OR (("nutrition policy") AND school*) OR "school food polic*" OR "school nutrition practice*" OR "School Nutrition Polic*" OR "nutrition promotion programm*" OR "Food Environment Polic*" OR "school-based intervention*" OR "school feeding program*" OR "health-promoting school*" OR ("school lunch" OR "school lunches" OR "school lunchroom") OR "cafeteria-based intervention*" OR "school-based program*" OR "food service intervention*" OR "food service modificat*" OR "school food service change*" OR ("environment policies" OR "environment policy") OR ("environmental strategies" OR "environmental strategy") OR ("school environment" OR "school environmental" OR "school environments") OR "foodservice program*" OR "nutrition curriculum*" OR ("nutrition education") OR ("nutrition policy") OR "Health behaviour intervention* " OR "obesity prevention" OR "overweight prevention* " OR "adiposity prevention*")) OR if(("School based nutrition intervention*" OR (("nutrition policy") AND school*) OR "school food polic*" OR "school nutrition practice*" OR "School Nutrition Polic*" OR "nutrition promotion programm*" OR "Food Environment Polic*" OR "school-based intervention*" OR "school feeding program*" OR "health-promoting school*" OR ("school lunch" OR "school lunches" OR "school lunchroom") OR "cafeteria-based intervention*" OR "school-based program*" OR "food service intervention*" OR "food service modificat*" OR "school food service change*" OR ("environment policies" OR "environment policy") OR ("environmental strategies" OR "environmental strategy") OR ("school environment" OR "school environmental" OR "school environments") OR "foodservice program*" OR "nutrition curriculum*" OR ("nutrition education") OR ("nutrition policy") OR "Health behaviour intervention* " OR "obesity prevention" OR "overweight prevention* " OR "adiposity prevention*"))) OR ((ti((school* OR pre-school* OR

kindergarten)) OR ab((school* OR pre-school* OR kindergarten)) OR if((school* OR pre-school* OR kindergarten))) AND (MAINSUBJECT.EXACT("Lunch Programs") OR MAINSUBJECT.EXACT("Breakfast Programs") OR MAINSUBJECT.EXACT.EXPLODE("School Health Services") OR MAINSUBJECT.EXACT.EXPLODE("Comprehensive School Health Education") OR MAINSUBJECT.EXACT("Eating Habits"))) OR ((ti((health* NEAR/2 (promot* OR policy OR policies OR education* OR environment* OR curricul* OR intervention*))) OR ab((health* NEAR/2 (promot* OR policy OR policies OR education* OR environment* OR curricul* OR intervention*))) OR if((health* NEAR/2 (promot* OR policy OR policies OR education* OR environment* OR curricul* OR intervention*)))) AND (ti((nutr* OR diet* OR food* OR feed* OR intake* OR consum* OR habit* OR attitud* OR behav*)) OR ab((nutr* OR diet* OR food* OR feed* OR intake* OR consum* OR habit* OR attitud* OR behav*)) OR if((nutr* OR diet* OR food* OR feed* OR intake* OR consum* OR habit* OR attitud* OR behav*))) AND (ti((school* OR pre-school* OR kindergarten)) OR ab((school* OR pre-school* OR kindergarten)) OR if((school* OR pre-school* OR kindergarten))))) AND (ti((randomi*ed OR randomly OR RCT)) OR ab((randomi*ed OR randomly OR RCT)) OR if((randomi*ed OR randomly OR RCT))) AND stype.exact("Scholarly Journals" OR "Dissertations & Theses" OR "Other Sources")

Search strategy (02 May 2022): PsycINFO (APA) via EBSCOhost (1984 to current)	
S1	DE "School Environment" OR DE "Middle School Students" OR DE "Intermediate School Students" OR DE "Primary School Students" OR DE "School Based Intervention" OR DE "Public School Education"
S2	TI (school* OR pre-school OR kindergarten) OR AB (school* OR pre-school OR kindergarten)
S3	DE "Health Promotion" OR DE "Preventive Health Services" OR DE "Public Health Campaigns" OR DE "Health Education"
S4	DE "Nutrition" OR DE "Beverages OR DE "Diets" OR DE "Food" OR DE "Mealtimes"
S5	(S1 OR S2) AND S3 AND S4
S6	TI ("nutrition polic*" OR "nutrition promotion program*" OR „Food Environment Polic*" OR "food service intervention*" OR "food service modificat*" OR "Health behaviour intervention* " OR "foodservice program*" OR "nutrition curricul*" OR "nutrition educat*" OR "nutrition polic*" OR obes* N3 prevent* OR overweight N3 prevent* OR adipos* N3 prevent*) AND TI (school* OR kindergarten) OR AB ("nutrition polic*" OR "nutrition promotion program*" OR "Food Environment Polic*" OR "food service intervention*" OR "food service modificat*" OR "Health behaviour intervention* " OR "foodservice program*" OR "nutrition curricul*" OR "nutrition educat*" OR "nutrition polic*" OR obes* N3 prevent* OR overweight N3 prevent* OR adipos* N3 prevent*) AND AB(school* OR kindergarten)
S7	TI ("School based nutrition intervention*" OR "school food polic*" OR "school nutrition practice*" OR "School Nutrition Polic*" OR "school-based intervention*" OR "school feeding program*" OR "health-promoting school*" OR "school lunch*" OR "cafeteria-based intervention*" OR "school food service change*") OR AB ("School based nutrition intervention*" OR "school food polic*" OR "school nutrition practice*" OR "School Nutrition Polic*" OR "school-based intervention*" OR "school feeding program*" OR "health-promoting school*" OR "school lunch*" OR "cafeteria-based intervention*" OR "school food service change*")
S8	S6 OR S7
S9	TI (health* AND (promot* OR "policy" OR "policies" OR educat* OR environment* OR curricul* OR intervention*)) OR AB (health* AND (promot* OR "policy" OR "policies" OR educat* OR environment* OR curricul* OR intervention*))
S10	TI (nutr* OR diet* OR food* OR feed* OR intake* OR consum* OR eating OR habit*) OR AB (nutr* [tiab] OR diet* [tiab] OR food* [tiab] OR feed* [tiab] OR intake* [tiab] OR consum*[tiab] OR eating [tiab] OR habit* [tiab])
S11	(school* OR kindergarten*)
S12	S9 AND S10 AND S11
S13	S5 OR S8 OR S12
S14	DE "Randomized Controlled Trials" OR DE "Randomized Clinical Trials" OR DE "Experiment Controls"
S15	TI("random* assigned" OR randomi?ed OR randomly) OR AB("random* assigned" OR randomi?ed OR randomly)
S16	S14 OR S15
S17	S13 AND S16

Search strategy (02 May 2022): CAB Abstracts via OVID 1910 to 2020 (Week 47)	
1	school.mp. or exp schools/ or exp high schools/ or exp private schools/ or exp elementary schools/ or exp public schools/
2	("pre-school*" or "pre school*" or "kindergarten*").ab,hw,id,ti.
3	1 or 2
4	infant foods.sh. or exp nutrition policy/ or Food policy.sh. or infant nutrition.sh. or Nutrition Policy.mp. or Nutrition programmes.sh.
5	3 and 4
6	(("nutrition polic*" or "nutrition promotion program*" or "Food Environment Polic*" or "food service intervention*" or "food service modificat*" or "Health behaviour intervention* " or "foodservice program*" or "nutrition curricul*" or "nutrition educat*" or "nutrition polic*" or "obesity prevention" or "Overweight prevention* " or "adiposity prevention*") adj5 (school* or kindergarten*)).ab,hw,id,ti.
7	("School based nutrition intervention*" or "school food polic*" or "school nutrition practice*" or "School Nutrition Polic*" or "school-based intervention*" or "school feeding program*" or "health-promoting school*" or "school lunch*" or "cafeteria-based intervention*" or "school food service change*").ab,hw,id,ti.
8	6 or 7
9	(health* adj5 (promot* or "policy" or "policies" or educat* or environment* or curricul* or intervention*)).ab,hw,id,ti.
10	(nutr* or diet* or food* or feed* or intake* or consum* or eating or habit*).ab,hw,id,ti.
11	3 and 9 and 10
12	5 or 8 or 11
13	exp randomized controlled trial/ or random*.ab,hw,id,ti.
14	12 and 13

Search strategy (02 May 2022): Campbell Library via Rowan University Libraries Website/Advanced Search (1984 – current)
subject contains school OR kindergarten AND Subject contains "nutrition policy" OR "nutrition promotion program" OR "Food Environment Polic" OR "food service intervention" OR "food service modification" OR "foodservice program" OR "nutrition curriculum" OR "nutrition education" OR "obesity prevention" OR "overweight prevention " OR "adiposity prevention" OR "school based nutrition intervention" OR "school food policy" OR "school nutrition practice" OR "School Nutrition Policy" OR "school-based intervention" OR "school feeding program" OR "health-promoting school" OR "school lunch" OR "cafeteria-based intervention" OR " school food service change" AND Subject contains "randomized controlled trial" OR "randomised controlled trial" OR RCT

Search strategy (02 May 2022): BiblioMap EPPI Database of health promotion research via Website – All years	
1	Characteristics of the study population: children OR young people OR educational institution OR preschool OR education OR environmental modification
2	What type of study does this report describe?: RCT
11	Freetext: "School based nutrition intervention*"
12	Freetext: "nutrition promotion program*"
21	Freetext: "school feeding program*"
23	Freetext: "school lunch*"
25	Freetext: "cafeteria-based intervention*"
27	Freetext: "food service intervention*"
30	Freetext: "food service modification*"
32	Freetext: " school food service change*"
34	Freetext: "nutrition polic*"
39	Freetext: "nutrition curricul*" OR "nutrition educat*"
41	Freetext: "obesity prevention" OR "Overweight prevention " OR "adiposity prevention"
45	Freetext: school*
47	Freetext: preschool*

48	Freetext: kindergarten*
49	11 OR 12 OR 21 OR 23 OR 25 OR 27 OR 30 OR 32 OR 34 OR 39 OR 41
50	45 OR 47 OR 48
51	49 AND 50
52	1 AND 49
53	51 OR 52
54	2 AND 53

Search strategy (4 May 2022): Australian Education Index (Informit) via Website/Advanced Search - All years
[All Fields: school* OR All Fields: kindergarten* OR All Fields: preschool*] AND [All Fields: nutrition* OR All Fields: diet* OR All Fields: 'health promotion' OR All Fields: 'obesity prevention' OR All Fields: 'food service' OR All Fields: fruit* OR All Fields: vegetable*] AND [All Fields: rct OR All Fields: randomized OR All Fields: randomised OR All Fields: randomly]

Search strategy (3 December 2020): Joanna Briggs Institute (JBI) Evidence Based Practice Database/Advanced Search*
(school* OR kindergarten*); "nutrition polic*" OR "nutrition promotion program*" OR "Food Environment Polic*" OR "food service intervention*" OR "food service modification*" OR "foodservice program*" OR "nutrition curriculum*" OR "nutrition education" OR "obesity prevention" OR "Overweight prevention " OR "adiposity prevention" OR " School based nutrition intervention*" OR "school food polic*" OR "school nutrition practice*" OR "School Nutrition Polic*" OR "school based intervention*" OR " school feeding program*" OR "health promoting school*" OR "school lunch*" OR "cafeteria based intervention*" OR "school food service change*"; random*

* Database was not accessible at the time of the update search.

Search strategy (4 May 2022): Practice based Evidence Nutrition Database/Advanced Search	
Search Term	(school OR kindergarten) AND (nutrition)
Resource Type	Research Report/Paper

Supplementary Table 4. Additional study information and data received from study authors

Reference	Data received
Alvirde-Garcia et al. 2013[5]	Additional information on control group intervention
Bessems et al. 2012[6]	Fruit intake data (pre- and post-intervention means and standard deviations, excluding three non-randomised control schools)
Bogart et al. 2016[7]	Additional information on control group intervention and sensitivity analyses
Ghaffari et al. 2019[8]	Additional information on randomisation and control group intervention
Keihner et al. 2017[9]	Additional information on control group intervention
Shamah Levy et al. 2012[10]	Additional information on control group intervention
Van den Berg et al. 2020[11]	Additional information on study duration

Supplementary Table 5. Additional risk of bias guidance for the included cluster randomised controlled trials

Risk of Bias domain	**Considerations for judgment**
1a. Randomization process	Unless major differences in baseline characteristics, judge as "low risk" No additional guidance required
1b. Recruitment	Did identification/recruitment take place before randomisation? (Informed consent [from parents] acquired before randomisation?) Add appropriate scenario from the Cluster RoB guidance document as a comment
2. Deviations from intended interventions	Blinding is likely not possible due to the nature of included interventions. Judge "some concerns" unless explicit arguments are mentioned in the text Assess the following three points and judge whether deviations have an impact on the outcome: (1) Additional interventions which were introduced not consistent with trial protocol (2) Failure to implement the protocol interventions as intended (3a) Assessment of adherence (yes/no/no information): non-adherence to their assigned intervention → high risk; if no information → some concerns (3b) What was the degree of adherence? → high risk if large degree of non-adherence
3. Missing outcome	Cut-off: 20% missing data Low risk: <20% + reasons Some concerns: <20% without reasons However, if valid imputation techniques mentioned →low RoB High risk: > 20% However, if: - valid imputation techniques mentioned →low RoB - no imputation techniques are used, but reasons are mentioned for both groups and are (nearly) equally distributed across groups, we will not assume high RoB
4. Measurement of the outcome	Blinding is likely not possible due to the nature of the included interventions. Judge "some concerns" unless explicit arguments are mentioned in the text. Low RoB: 1a) Add some information regarding dietary assessment method: i.e. validated FFQ or validated 24h dietary recall; at least 2-day dietary records; and did not differ between groups **AND** 1b) question 4.3a no/probably no 2a) Add some information regarding anthropometric assessment method: i.e. validated anthropometric assessment method; and did not differ between groups **AND** 2b) question 4.3a no/probably no High RoB: Assessments differ between groups **Focus on questions 4.1 and 4.2 for judgement**
5. Selection of reported results	Judge "low risk" if protocol is present and no evidence for differences between protocol and report exist.

Abbreviations: FFQ=food frequency questionnaire; RoB=risk of bias;

Supplementary Table 6. Study exclusions at full-text assessment

Reference	Reason for exclusion
12-120	Wrong study design
5 9 10 121-241	Wrong comparator
242-322	Wrong intervention
323-381	Wrong outcomes
382-412	Wrong study population
413-417	Wrong study setting
418-425	Wrong study focus
139 426-443	Duplicate
444-524	Study protocol
525-658	Systematic review
659-729	Conference proceeding, commentary, correction, dissertation, retraction, supplement or other
730-737	Ongoing study

Supplementary Table 7. Study characteristics of the 51 randomised controlled trials included in the current systematic review

First author, Year Country *Project name (acronym)*	Study length (months) Intervention duration (Id) Follow-up (Fu; months)	Number of schools (n)	School type(s)	Sample size (n) Female (f in %)	Age (mean; range)	BMI (base line)	Obesity (%)	SES (% low)	Migration back-ground (%)	Outcomes	Assessment instrument Validated (yes/no)	Included in MA	Adjusted for clusterin g	Adjusted for prognosti c factors	Qualitative findings
Nutrition education and literacy (n=17)															
Baranowski 2003[738] Cullen 2005[739] US *Squire's Quest!*	1.15 Id=1.15 Fu=0	n=26 IG=13 CG=13	Element ary schools	n=1,489; IG=740; CG=749 f=52.5	9.4 yrs (mean)	n.r.	n.r. (obesity prevalen ce at baseline not reported)	n.r.	n.r.	FV intake; F intake; V intake	Food Intake Recording Software System (simulating a Multiple-pass, 24-hour dietary recall) validated: yes	Yes	Yes	Yes	-
Barnes 2021[740] Sutherland 2019[367] Australia *SWAP IT*	11 Id=5-6 Fu=1-2	n=6 IG=3 CG=3	Primary schools	n=330; IG=163; CG=167 f=51.8	9-12 yrs (range)	n.r.	7.9	79.4	n.r.	Obesity / Overweig ht risk; BMI; zBMI; Waist circum-ference	Digital scale, stadiometer, measuring tape validated: yes	Yes	Yes	No	-
Bessems 2012[6] The Netherlands *Krachtvoer revised*	16 Id=1.8 Fu=6	n=21 IG=13 CG=8	Seconda ry schools	n=1,474; IG=1,016; CG=458 f=47.7[§]	12.9[§] yrs (mean)	n.r.	n.r. (obesity prevalen ce at baseline not reported)	n.r.	n.r.	F intake	Student questionnaire validated: no	Yes	No	No	-
Domel 1993[741] US *Gimme 5*	3 Id=1.4 Fu=0.5	n=2 IG=1 CG=1	Element ary schools	n=301; IG=195; CG=106 f=51.2	n.r. (4^{th}-5^{th} graders)	n.r.	n.r. (obesity prevalen ce at baseline not reported)	57.7	n.r.	FV intake; F intake; V intake	Food diaries validated: yes	Yes	No	No	-

Evans 2013[742] Kitchen 2009[479] England/UK *Project Tomato*	20 Id=10 Fu=6	n=54 IG=27 CG=27	Primary schools	n=658; IG=311; CG=347 f=50.3	7 yrs (mean)	16.4	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	FV intake; F intake; V intake; Fat intake	24h dietary assessment tool, the Child and Diet Evaluation Tool (CADET) diary (24-hour recall) validated: yes	Yes	No	Yes	-
Fonseca 2019[743] Brazil	3-4 Id=0.2-0.5 Fu=0.2-0.5	n=7 IG=4 CG=3	Elementary schools	n=461; IG=273; CG=188 f=47.1	14.8 yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	F intake; V intake; SSB intake	National School-Aged Adolescent Health Survey questionnaire (FFQ-like; evaluating regular intake as ≥5 times in past 7 days) validated: yes	No	No	Yes	The IG showed an increased weekly intake of fruits (p=0.642; OR: 1.17; CI: 0.60–2.29) and vegetables (p= 0.008; OR: 2.4; 95% CI: 1.26–4.51) as well as a reduced intake of soft drinks (p=0.021; OR: 0.36; 95% CI: 0.15–0.86) as compared to the control group.
Gold 2017[744] US *Go Wild With Fruits and Veggies! (GWWFV)*	1.6 Id=1.6 Fu=0	n=26 IG=14 CG=12	Elementary schools	n=662; IG1=261; IG2=76; CG=325 f=51.8	8-9 yrs (range)	n.r.	n.r. (obesity prevalence at baseline not reported)	47.7	n.r.	F intake; V intake	FV food frequency survey validated: yes	No	No	Yes	Children in the Fresh Fruit and Vegetable Snack Program (FFVSP) + nutrition education (GWWFV)+ taste testing (TT) group consumed more FV (p<.05) compared to the FFVSP+ GWWFV without TT group, along with the control group. Adjustments for baseline intake differences showed that the GWWFV and GWWFV+TT groups had higher FV intakes than the control group. Fruit intake was also greater with GWWFV+TT as compared to GWWFV only.

Kandiah 2002[745] US *n.r.*	0.7 Id=0.7 Fu=0	n=2 IG=1 CG=1	Elementary schools	n=187; IG=90; CG=97 f=n.r.	10.4 yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	F intake; V intake; Fat intake	3 days food records validated: yes	Yes	No	No	-
Katz 2011[746] US *Nutrition Detectives*	9 Id=4 Fu=0	n=5 IG=3 CG=2	Elementary schools	n=1,148; IG=622; CG=526 f=51.3	7 yrs: 17.4%; 8 yrs: 32.4%; ≥9 yrs: 41.7% (range)	18.4	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	BMI; Fat intake	Youth and Adolescent Questionnaire (YAO); Height and weight measures (computerised BMI assessment tool, BMI4KIDz) validated: yes	Yes	No	No	-
Lehto 2014[747] Finland *PRO GREENS*	12 Id=8 Fu=0	n=19 IG=9 CG=10	Primary schools	n=727; IG=303; CG=424 f=49.1	11.4 yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	F intake; V intake	Food frequency questionnaire validated: yes	Yes	Yes	Yes	-
Martens 2008[748] The Netherlands *Krachtvoer*	3 Id=3 Fu=0	n=18 IG=10 CG=8	Secondary schools	n=1,613; IG=879; CG=734 f= n.r.	≤12 y: 32% 13 y: 53% ≥14 y: 15% (range)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	<50%	F intake	Food frequency questionnaire validated: yes	Yes	No	No	-
Najimi 2013[749] Iran *n.r.*	4 Id=0.9 Fu=3	n=4 IG=2 CG=2	Elementary schools (male only)	n=130; IG=63; CG=67 f=0.0	n.r. (4th graders)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	F intake; V intake	3-day food record validated: n.r.	Yes	No	No	-
Perikkou 2013[750] Cyprus *n.r.*	21 Id=9 Fu=12	n=4 IG=2 CG=2	Elementary schools	n=117; IG=59; CG=58 f= 54.7	9 yrs (mean)	n.r.	2.8[§]	n.r.	0	F intake	2-day food record validated: yes	Yes	No	No	-

Smit 2020[751] The Netherlands *MyMovez*	5 Id=n.r. (1 day?) Fu=0.9	n=6 IG=3 CG=3	Primary and secondary schools	n=398; IG=209; CG=189 f=50.8[$]	10.7[$] yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	SSB intake	Averaging children's reported consumption over three days; glasses of ~200ml per day validated: no	No	Yes	Yes	Children in both the intervention and control group consumed more SSB.
Taghdisi 2016[435] Iran *n.r.*	18 Id=n.r. Fu=3	n=2 IG=1 CG=1	Elementary schools	n=184; IG=94; CG=90 f=0.0	n.r. (4th to 6th graders)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	FV intake; F intake; V intake	24-hour FV recall questionnaire (3 consecutive days, incl. 2 workdays) validated: yes	Yes	No	No	-
Vandongen 1995[752] Australia *n.r.*	11 Id=9 Fu=0	n=10 IG=5 CG=5	Primary schools	n=344; IG=199.; CG=145 f=50.9	10-12 yrs (range)	17.8	5.5[¶]	n.r.	n.r.	BMI; Body fat; Fat intake	Specific anthropometric instruments not specified; Self-reported food records from 2 weekdays validated: n.r.	Yes	No	No	-
Viggiano 2015[753] Italy *Kaledo*	20 Id=4.6 Fu=13	n=20 IG=10 CG=10	Middle and high schools	n=1,045; IG=624; CG=421 f= 46.9[¥]	13.2[¥] yrs (mean)	n.r.	13.6[¥]	n.r.	n.r.	zBMI; Obesity/ Overweight Risk	Anthropometric measurements (weight, height) validated: yes	Yes (zBMI)	Yes	Yes	Percentage overweight and obese children in middle schools significantly lower in IG at second post-assessment compared with baseline (34.6 and 9.9% vs 35.3 and 14.2%; p=0.043) but not in CG (33.1 and 12.3% vs 32.6 and 11.5%; p=0.888). Percentage overweight and obese children in high schools significantly lower in IG at second post-assessment compared with

															baseline (21.0 and 7.4% vs 34.6 and 12.7%; p=0.003) but not in CG (30.9 and 18.6% vs 32.7 and 18.1%; p=0.951).
School-based food preparation (n=1)															
Ask 2010[754] Norway *n.r.*	5 Id=4 Fu=0	n=3 IG=1 CG=2	Secondary schools	n=141; IG=53; CG=88 f=46.8	n.r. (9th graders)	20.5	1¥	n.r.	n.r.	Body weight change; BMI	Food frequency questionnaire; Seca R personal scale, stadiometer validated: yes	Yes	No	No	-
Social marketing campaigns (n=1)															
Rajbhandari-Thapa 2020[755] US *Fun facts nudges*	n.r. (~7) Id=0.33 Fu=0	n=8 IG=4 CG=4	Elementary schools	n=3,960; IG=2,111; CG=1,849 f=48.1¥	n.r. (1st-5th graders)	n.r.	n.r. (obesity prevalence at baseline not reported)	65.1¥	n.r.	FV intake	Direct lunchroom observations validated: yes	Yes	Yes	Yes	-
Nutrition-friendly school initiatives (n=7)															
Ashfield-Watt 2009[756] New-Zealand *n.r.*	3.9 Id= 2.3 Fu=1.4	n=20 IG=10 CG=10	Primary schools	n=979; IG=541; CG=438 f=50.1¥	8.8¥ yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r. (low; decile 1 schools)	n.r.	F intake	24-hour dietary recall ('Day in the Life Questionnaire' [DILQ]) validated: yes	Yes	Yes	Yes	-
Birnbaum 2002[757] Lytle 2004[758] US *Teens Eating for Energy and Nutrition at School (TEENS)*	24 Id=24 (12*) Fu=0	n=16 IG=8 CG=8	Middle schools	n=2,600; IG=845; CG=1,755 f=49.0	n.r. (7th graders)	n.r.	n.r. (obesity prevalence at baseline not reported)	15.7	n.r.	FV intake; F intake; V intake	Student self-report survey (FV component) validated: yes	Yes	Yes	Yes	Students receiving the school environment intervention reported a 0.19-serving decrease in F intake and no change in daily V servings intake (p=0.300). CG students reported no change in daily F intake (p=0.742) or V intake (p=0.895).

Chellappah 2015[759] Australia *FIST*	1.8 Id=1.8 Fu=0	n=4 IG=2 CG=2	Primary schools	n=267; IG=133; CG=134 f=48.7¥	n.r. (year 5-6 students)	18.8¥	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	Body weight change; BMI; Body fat; Waist circumference; F intake; V intake	Calibrated scale, height meter, measuring tape, Tanita Body Composition Analyzer; 24-hour recall questionnaire of dietary intake in past week validated: yes	Yes	No	No	Comparing mean scores between baseline and follow-up, in the IG significant increases were seen in V intake scores, 1.78 ± 0.42 to 1.87 ± 0.34 (P=0.03), and in F serves score, 5.57 ± 1.40 to 5.84 ± 1.39 (P=0.03); In the CG, (significant) decreases were seen in V intake scores, 1.91 ± 0.29 to 1.88 ± 0.33 (P=0.32), and in F serves scores, 5.79 ± 1.31 to 5.27 ±1.29 (P <0.001)
Cohen 2015[760] US *Modifying Eating and Lifestyles at School (MEALS)*	10 Id=7 Fu=0	n=14 IG=8 CG=6	Elementary and middle schools	n=2,638; IG1=379 IG2=651 IG3=672 CG=936 f=53.8	11.6 yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	87-95%	n.r.	F intake; V intake SSB intake	Plaste waste (weight of each remaining food was individually recorded [6 days]) validated: yes	Yes	Yes	Yes	Within smart café schools (intervention), children had access to SSB (white and sugar-sweetened milk), but there were no significant changes in consumption of SSB.
Marcano-Olivier 2019[761] Wales/UK *n.r.*	1 Id=0.7 Fu=0	n=4 IG=2 CG=2	Primary schools	n=176; IG=86; CG=90 f=50.6	n.r. (year 1-6 students)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	F intake; V intake	Digital photography method (estimation of intake from pre- and post-consumption photographs) validated: yes	No	Yes	Yes	Significant increase in F intake from baseline to follow-up in intervention but not control schools (p=0.001). No changes in V intake in either intervention or control schools.
Moore 2008[762] Moore 2000[495] Wales and England/UK *n.r.*	12 Id=12 Fu=0	n=43 IG=23 CG=20	Primary schools	n=1,612; IG=921; CG=691 f=51.3¥	9-11 yrs (range)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	F intake	Computerised 24-hour recall questionnaire validated: yes	Yes	No	No	-

Perry 2004[763]* US *5-A-Day Cafeteria Power Plus*	30 Id~18 Fu=0	n=26 IG=13 CG=13	Elementary schools	n=1,820; IG=n.r.; CG=n.r. f=49.0	n.r. (1st and 3rd graders)	n.r.	n.r. (obesity prevalence at baseline not reported)	21	n.r.	FV intake; F intake; V intake	Direct lunchroom observations validated: yes	No	Yes	Yes	Significantly higher FV (without potatoes and juice) and F (with and without juice) intakes among IG. Differences between intervention and control conditions ranged from 0.14 to 0.17 increased servings (at lunch) for intervention group. No differences between groups on total F and V servings (with potatoes), juice, or vegetables. Same pattern was observed after adjusting servings for caloric intake.
Multicomponent intervention (n=25)															
Anderson 2005[764] Scotland/UK *Bash Street Kids Project*	10 Id=9 Fu=0	n=4 IG=2 CG=2	Primary schools	n=129; IG=64; CG=65 f=54.3	8.5 yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	30.4	n.r.	FV intake; F intake; V intake; Fat intake	3-day food diaries validated: n.r.	Yes	No	No	-
Baranowski 2000[765] US *Gimme 5*	36 Id=2.8 Fu=0	n=16 IG=8 CG=8	Elementary schools	n=3,347µ; IG=1,673; CG=1,674 f=n.r.	n.r. (4th and 5th graders)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	FV intake; F intake; V intake	7-day food record validated: yes	Yes	Yes	Yes	-
Bere 2006a[766] Ovrebo 2019[767] Norway (Telemark) *FVMM*	21 Id=7 Fu=12	n=19 IG=9 CG=10	Primary schools	n=369; IG=190; CG=179 f=54.2	11.3 yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	FV intake	24-hour fruit and vegetable recall validated: yes	Yes	Yes	Yes	-

Bere 2006b[768] Bere 2014[769] Bere 2015[770] Ovrebo 2019[767] Norway (Hedmark) *FVMM*	21 Id=7 Fu=12	n=19 IG=9 CG=10	Primary schools	n=517; IG=286; CG=231 f=47.6	11.3 yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	FV intake	24-hour fruit and vegetable recall validated: yes	Yes	Yes	Yes	-
Bogart 2016[7] US *Students for Nutrition and Exercise (SNaX)*	48 Id=1.15 Fu=24	n=10 IG=5 CG=5	Middle schools	n=1,368; IG=829; CG=539 f=50.9	12.2 yrs (mean)	n.r.	30.0	88.9	n.r.	zBMI	Portable stadiometer Electronic scale (BWB-8005) validated: yes	No	No	Yes	Intervention showed no significant effects on BMI percentile for intervention vs control students overall, but did show a significantly different effect on BMI percentile for obese intervention students vs obese control students (b= –2.33 percentiles; SE, 0.83; P=0.005). All sensitivity analyses (e.g., predicting BMI z-score, predicting change scores) showed similar effects for obese students in terms of significance and magnitude.
Davis 2021[771] Davis 2019[458] US *Texas Sprouts*	36 Id=9 Fu=0	n=16 IG=8 CG=8	Elementary schools	n=3,135; IG=1,412; CG=1,723 f=52.7	9.2 yrs (mean)	20.1	27.3	68.3	n.r.	Body weight change; BMI; zBMI; Body fat; Waist circumference; F intake;	Standardised height, waist, weight, and bio-electrical impedance (Tantia Body Fat Analyzer) measurements; adapted version 2015 School	Yes	Yes	Yes	The intervention did not affect/result in reductions in SSB intake.

										V intake; SSB intake	Physical Activity and Nutrition (SPAN) dietary screener validated: yes				
Foster 2008[772] US *School Nutrition Policy Initiative (SNPI)*	24 Id=24 Fu=0	n=10 IG=5 CG=5	Elementary and middle schools	n=844; IG=479 CG=365 f=53.4¥	11.2¥ yrs (mean)	20.9¥	23.8¥	≥50¥	n.r.	Obesity / Overweight risk; BMI; zBMI; FV intake; Fat intake	Digital scale and wall-mounted stadiometer; Youth and Adolescent Food Frequency Questionnaire validated: yes	Yes	Yes	No (only adjusted odds ratio for obesity/ overweight)	-
Ghaffari 2019[8] Iran *n.r.*	6 Id=1 Fu=6	n=4 IG=2 CG=2	High schools	n=308; IG=154; CG=154 f=50.0	13-15y (range)	n.r.	n.r. (obesity prevalence at baseline not reported)	12.7	n.r.	FV intake	Food frequency questionnaire validated: yes	Yes	No	No	-
Greene 2017[773]* Thomas 2016[368] US *Smarter Lunchrooms*	2.1 Id=1.4 Fu=0	n=10 IG=7 CG=3	Middle schools	n=n.r.; IG1=n.r.; IG2=n.r.; CG=n.r. f=n.r.	n.r. (5th to 8th graders)	n.r.	n.r. (obesity prevalence at baseline not reported)	69.9	n.r.	F intake; V intake	Tray observations (quarter-waste method) validated: yes	No	Yes	Yes	Average fruit intake increased in fruit intervention schools by 0.10 units or by 14% (p<0.001), and decreased in control schools by 0.14 units or 16% (p<0.001). Average vegetable intake increased in fruit intervention schools by 51% (p<0.001) from 0.57 to 0.86 units, and increased in control schools by 34% (p<0.001) from 0.80 to 1.07.
He 2009[774] Canada	4.8 Id=4.8 Fu=0	n=26 IG1=9 IG2=9 CG=8	Elementary schools	n=695; IG1=213; IG2=228; CG=254	11.6¶ yrs (mean)	n.r.	n.r. (obesity prevalence at baseline	n.r.	n.r.	FV intake	24-hour fruit and vegetable recall questionnaire validated: yes	Yes	Yes	Yes	-

Northern Fruit and Vegetable Pilot Programme (NFVPP)				f=54.9¶			not reported)								
Hoppu 2010b[775] Hoppu 2010a[475] Finland *n.r.*	12 Id=9 Fu=0	n=12 IG=6 CG=6	Secondary schools	n=287; IG=147; CG=140 f=55.4	13.8¥ yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	F intake; V intake; Fat intake	Dietary interviews, computer-assisted 48-hour dietary recall (random subgroup) validated: yes	Yes	Yes	No	-
LaChausse 2017[776] US *The Harvest of the Month (HOTM)*	7 Id=4 Fu=3	n=28 IG=14 CG=14	Elementary schools	n=275; IG=127; CG=148 f= 54.3	9.8 yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	F intake; V intake: SSB intake	Youth Network Survey (based on the School and Physical Activity Nutrition [SPAN] Survey) validated: yes	No	Yes	Yes	No differences were found comparing the mean post-test scores of fruit consumption (b=0.14,t =0.89, P=0.38) or vegetable consumption (b= –0.17, t= –0.73, P=0.47) between the IG and CG. No differences were found comparing the mean post-test scores between the IG and CG for [...] soda consumption (b=0.14, t=1.33, P=0.19) and sports drink consumption (b=0.03, t=0.23, P=0.82)
Lent 2014[777] US *Healthy Corner Store Initiative*	31.5 Id=24 Fu=0	n=10 IG=5 CG=5	Elementary schools	n=511; IG=262; CG=249 f=56.4¥	11.0¥ yrs (mean)	21.4¥	27.5¥	n.r.	n.r.	Obesity / Overweight risk; BMI; zBMI	Digital scale (SECA) and portable stadiometer validated: yes	Yes	Yes	No	-

Meng 2013[778] Li 2010[487] China *n.r.*	12 Id=8.9 Fu=0	n=6 IG=3 CG=3	Primary schools	n=1,075; IG=615; CG=460 f=47.3	6-13 yrs (range)	16.6	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	Obesity & Overweight risk; Body weight change; BMI; zBMI	Freestanding stadiometer (height) and digital scale (body weight) validated: yes	Yes	No	Yes	-
Nicklas 1998[779] US *Gimme 5*	36 Id=24 Fu=12	n=12 IG=6 CG=6	High schools	n=2,213; IG=1,128; CG=1,085 f=56.0	n.r. (9th graders)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	FV intake	Knowledge, Attitudes, and Practices Questionnaire (FFQ like) validated: n.r.	Yes	No	No	-
Perry 1998[780]* US *5-a-Day Power Plus*	10 Id=6 Fu=2	n=20 IG=10 CG=10	Elementary schools	n=1,750; IG=n.r.; CG=n.r. f=n.r.	n.r. (4th graders)	n.r.	n.r. (obesity prevalence at baseline not reported)	>60%	n.r.	FV intake; F intake; V intake; Fat intake	24-hour recall, direct lunchroom observations validated: yes	No	Yes	Yes	IG had higher mean total dietary (24-hour recall) intakes of FV (+0.58 servings/day; P=0.14) and F (+0.62 servings/day; P=0.02), but lower intake of V (-0.02 servings /day; P=0.92) and total fat (-1.81; P=0.02) compared to CG.
Ooi 2021[781] Sutherland 2021[782] Ooi 2018[499] Australia *switchURsip*	6 Id~4.6 Fu=0	n=6 IG=3 CG=3	Secondary schools	n=742; IG=400; CG=342 f=52.5¥	12-15 yrs (range)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	Obesity & Overweight risk; SSB intake	Standardised height and weight measurements; ACAES (Australian Children and Adolescent Eating Survey) food frequency questionnaire; validated; yes	Yes	No	No	Year 7 students (this group provided valid height and weight measurements only) with BMI z-scores in the combined overweight and obese category increased by 1.0% in intervention schools, and by 1.2% in control schools between baseline and follow-up, a relative change between groups that was not significant (OR=0.94; CI 0.35, 3.15; imputed p=0.90).

Polonsky 2019[783] US *One Healthy Breakfast*	68 Id=30 Fu=0	n=16 IG1=8 IG2=8	Elementary and middle schools (K-8)	n=793; IG=350; CG=443 f=51.4¥	10.8¥yrs (mean)	n.r.	21.4¥	78.9¥	n.r.	Obesity risk, Obesity & Overweight risk; zBMI	Height and weight measurements (twice) with portable stadiometers and scales using standard protocols validated: yes	Yes	Yes	No	-
Reynolds 2000[784] US *High 5 (Alabama)*	24 Id=12 Fu=12	n=28 IG=14 CG=14	Elementary schools	n=1,698µ; IG=849; CG=849 f=50.0	8.7 yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	FV intake; F intake; V intake	24-hour diet recall interviews, cafeteria observations (observing plate waste) validated: yes	Yes	Yes	No (only for baseline consumption level)	-
Scherr 2017[785] Taylor 2017[786] Scherr 2014[505] US *Shaping Healthy Choices Program (SHCP)*	9 Id=9 Fu=0	n=4 IG=2 CG=2	Elementary schools	n=401; IG=229; CG=172 f=47.6¥	9.6¥ yrs (mean)	n.r.	n.r. (obesity prevalence at baseline not reported)	n.r.	n.r.	zBMI; F intake; V intake	Block food frequency questionnaire; Anthropometric measurements (weight, height, waist circumference) validated: yes	Yes	Yes	No	-
Sevinc 2011[787] Turkey *Get into motion for health*	8 Id=8 Fu=0	n=4 IG=2 CG=2	Primary schools	n=4,469; IG=1,815; CG=2,654 f=49.4	n.r. (1st to 7th graders)	18.4	n.r. (obesity prevalence at baseline not reported)	50.8	n.r.	BMI	Anthropometric measurements (weight and height) validated: yes	Yes	No	No	-
te Velde 2008[788] Norway, the	21 Id=21 Fu=0	n=62 IG=32 CG=30	Primary schools	n=1,472; IG=798; CG=674	10.8 yrs (mean)	n.r.	n.r. (obesity prevalence at baseline	n.r.	n.r.	FV intake; F intake; V intake	24-hour recall questionnaire, food frequency questionnaire	Yes	Yes	Yes	-

Netherlands, Spain *Pro Children*				f=52.6			not reported)				validated: yes				
van den Berg 2020[11] Evans 2016[465] US *Texas!Grow! Eat! Go! (TGEG)*	18 Id=6-7 Fu=n.r.	n=28 IG=21 CG=7	Elementary schools	n=632; IG=347; CG=285 f=52.2	7-8 yrs: 74.1% 9-11 yrs: 25.9% (range)	n.r.	28.2	80.4	n.r.	V intake	Student survey (food intake questions targeting vegetable consumption were adapted from the School PA and Nutrition (SPAN) Survey) validated: yes	Yes	Yes	Yes	-
Zota 2016[789] Greece *DIATROFI*	~9 Id~9 Fu=0	n=146 IG1=73 IG2=73	Primary and secondary schools	n=21,261; IG1=10,561; IG2=10,700 f=53.0	4-18 yrs (range)	n.r.	6.9	29.1	4.7	F intake; V intake; Body weight change	Modified, semi-quantitative food frequency questionnaire validated: no	No	No	Yes	Only (statistically) significant increases in IG1 for F intake in children (IG1 +5.68%, p=0.002; IG2 +2.18%, p=0.210) and for V intake in both children (IG1 +9.59%, p<0.001; IG2 +1.59%,p=0.717) and adolescents (IG1 +10.34 %, p=0.014; IG2 +2.16%, p=0.363). After adjusting for prognostic factors, children of IG1 had higher odds of increasing F intake (OR 1.22, 95%CI 1.02–1.46). Adolescents belonging to IG1had significantly higher odds of increasing V intake (OR 1.40, 95% CI 1.09–1.80). No statistically significant differences between

															IG1 and IG2 in the probability of increasing V intake in children and F intake in adolescents. Percentage IG1 children with BMI change from overweight/obese to normal was 31.4% compared to 22.4% (p=0.013) in IG2. For overweight/ obese adolescents, no statistically significant difference between groups (IG1 24.6% vs IG2 27.0%, p=0.716). After prognostic factors adjustment, the odds of improving BMI from overweight/ obese to normal for children in IG1 were 61% higher than IG2 (95% CI 1.12–2.31). No difference in probability to improve from overweight/obese to normal in adolescents between the two groups.
Zhu 2021[790] China *n.r.*	12 Id=12 Fu=0	n=10 IG=5 CG=5	Element ary and middle schools	n=2,202 IG=1,046 ; CG=1,15 6 f=48.4	9-14 yrs (range)	n.r.	n.r.	n.r.	n.r.	SSB intake	SSB frequency questionnaire validated: n.r. (originated from a former FFQ developed and validated by China Center for Disease and Control and Prevention)	Yes	No	No	-

Abbreviations: BMI=body mass index; CADET=the Child and Diet Evaluation Tool; CG=control group; F=fruit; FFQ=fruit frequency questionnaire; FV=fruits and vegetables; Fu=follow-up; IG=intervention group; Id=intervention duration; MA=meta-analysis; n.r.=not reported; SES=socioeconomic status; SSB=sugar-sweetened beverage; V=vegetable; yrs=years; zBMI=body mass index z-score

*__Birnbaum 2002:__ Only 7th grade intervention was eligible (hence the 12 months intervention duration); __Greene 2017:__ Only school consumption and not total consumption was reported (as individual students were not tracked and tray observations could not be referred to individuals); __Perry 1998 & 2004:__ Baseline outcome data missing; only between group analyses (i.e. difference between groups at follow-up) was reported; §Also considered participants from 3 nonrandomised control schools (i.e. N from 13 IG + 11 CG schools); $Also considered an intervention arm that was excluded in our analyses (as ineligible); ¥Based on number of participants at baseline/number of participants randomised (not on those included in our analyses); µSeparate Ns were not available for IG and CG, so the reported total N was split equally between both groups; ¶Based on number of participants with both baseline and endpoint values (not on those included in our analyses);

Intervention duration = t2-t1

Supplementary Table 8. Description of intervention and control group characteristics

Study	Intervention group	Control group	Co-interventions	Intervention compliance/adherence
Nutrition education and literacy (n=17)				
Baranowski 2003[738] *Squire's Quest!*	10 sessions (25min each) over 5 weeks, computer-based educational game aiming to improve skills (nutrition knowledge, food selection, shopping and preparation) and promote FV consumption	no intervention	n.r.	More than 90% students completed ≥8 sessions (out of 10)
Barnes 2021[740] *SWAP IT*	nutrition education to improve the nutritional quality of children's lunchboxes through: (1) School nutrition guidelines; (2) Lunchbox flipchart lessons; (3) Parent communication and provision of resources on barriers to packing healthy lunchboxes disseminated via a school mobile communication app ('m-health' component)	no intervention (usual practice/ delayed intervention)	n.r.	"All principals at intervention schools reported establishing school nutrition guidelines. A large proportion of parents reported downloading the school communication app (89%), approximately half of parents (46%) reported they had heard of the SWAP IT program and 71% recalled receiving the lunchbox messages via the app. App analytics identified the total views of the pushed messages ranged from 387 total views to 1550 views per week over the 10 weeks of messaging (indicating the content may have been viewed more than once by some families), with an average viewing rate of 1025 views per week."
Bessems 2012[6] *Krachtvoer revised*	8 lessons with fixed content and 7 optional activities, include learning activities (e.g. tasting healthy products) and cognition driven activities (e.g. comparing personal dietary intakes with the national recommendations); provision of student work book; take-home bag	usual nutrition education curriculum	n.r.	n.r.
Domel 1993[741] *Gimme 5*	18-session curriculum, taught 3x/week for 6 weeks, activities including recipe preparation and taste-testing of FV snacks in the classroom, games, FV Festival; provision of curriculum material and training for teachers (teachers receive four hours of initial training for implementing program, and two hour follow-up training at mid-program); weekly newsletter informed parents of classroom activities, simple FV recipes, tips for serving more FV	no intervention (delayed intervention)	n.r.	"Of the ten teachers who taught the program, eight employed all 18 sessions, one employed most (14 to 17), and one employed about half (6 to 13)."
Evans 2013[742] *Project Tomato*	provision of intervention materials (for activities, 12 lessons, 2 newsletters, advice for parents, three take-home activity bags, and instructions for setting up a committee); customised modules of materials and activities relating to promoting FV consumption	'5-A-Day' Booklet, health eating leaflets for parents	n.r.	"Implementation of the intervention was low, 21.3% of school items and 56.0% of home items were implemented."

Fonseca 2019[743] *n.r.*	educational sessions (3x45min); covering diet quality, food labelling and healthy eating	no intervention	n.r.	"The same investigator was responsible for delivering all activities in schools in the intervention group, thus ensuring uniform exposure."
Gold 2017[744] *GWWFV*	Classroom Nutrition Education curriculum with 7 lessons; including taste testing, classroom nutrition-based activities, take-home challenges, and parent newsletters	no intervention	**IG:** Access to federal Fresh Fruit and Vegetable Snack Program (FFVSP) **CG:** Access to FFVSP	n.r.
Kandiah 2002[745] *n.r.*	45min of nutrition education, 4 days/week for 3 weeks; 6 general topics: food guide pyramid, functions and food sources of macronutrients, dietary Guidelines, healthy snacks, vegetarianism; educational tools (e.g. lectures, games, various hands on activities)	no intervention	n.r.	n.r.
Katz 2011[746] *Nutrition Detectives*	5 lessons (20min each), delivered by physical education instructors; topics: food labels; detecting marketing deceptions, identify and choose healthful foods; written materials for parents; booster training session	no intervention	n.r.	n.r.
Lehto 2014[747] *PRO GREENS*	classroom sessions on taste and recommendations for '5 A Day' combined with an assessment of one's own intake, encouragement to bring a snack of fruits or vegetables to school daily and finally a weekly organised fruit/vegetable bring-a-dish event in the class	no intervention	**IG:** Free school lunch **CG:** Free school lunch	Lessons (42%), FV snacks (33%), Bring-a-dish breaks (71%), Taste tests (67%), Research, coordinator meeting (79%).
Martens 2008[748] *Krachtvoer*	8 nutrition classes (50min each); provision of material; take-home bags with newsletter and food items for parents; taste-testing sessions of various products	no intervention (usual nutrition education curriculum)	n.r.	n.r.
Najimi 2013[749] *n.r.*	4 sessions (60min each) for students; 2 sessions (50min each) for teachers and parents	no intervention	n.r.	n.r.
Perikkou 2013[750] *n.r.*	29 lessons classroom-based curriculum (15min each, once a week); designed to provide general information about healthy lifestyle, and build skills for choosing healthful foods	no intervention	n.r.	n.r.
Smit 2020[751] *MyMovez*	30min classroom presentation about benefits of drinking water – as an alternative for SSB; presentation delivered by research assistant	no intervention	n.r.	n.r.

Taghdisi 2016[435] *n.r.*	60min training session for teachers and parents to increase the subjective norms of students about FV; 4 training sessions (45min each) for children on food types/ groups, units of FV consumption and its importance for health; discussions on the barriers of FV consumption; provision of training materials and instruments included slides, food pyramid posters, educational and instructional booklets, and pamphlets	no intervention	n.r.	n.r.
Vandongen 1995[752] *n.r.*	10 lessons (60min each) aimed to improve knowledge, attitudes and eating habits. A program guide and other teaching resources including videos were specially prepared for teachers, all of whom attended a single half-day inservice training session	no intervention	n.r.	n.r.
Viggiano 2015[753] *Kaledo*	board game (Kaledo) to promote nutrition education and to improve dietary behavior	no intervention	n.r.	n.r.
School-based food preparation (n=1)				
Ask 2010[754] *n.r.*	provision of free healthy school lunch; lunch was prepared by the students and eaten in class	no intervention	n.r.	"All sixty-four pupils at the intervention school participated in the lunch programme."
Social marketing campaigns (n=1)				
Rajbhandaria-Thapa 2020[755] *Fun facts nudges*	placing table tents with fun facts about FV options commonly served in schools' lunchrooms in the center of each lunch table	no intervention (delayed intervention)	n.r.	n.r.
Nutrition-friendly school initiatives (n=7)				
Ashfield-Watt 2009[756] n.r.	free fruit provision (at least one piece of fruit per day)	no intervention	n.r.	n.r.
Birnbaum 2002[757] *TEENS*	classroom-based curricula, family newsletters, peer leaders involvement to improve delivery of the curriculum and changes in the school food environment including increasing more healthful options on a la carte and on the school lunch line	no intervention (delayed intervention)	n.r.	"Fewer than one-third of the lessons in the seventh-grade year and less than one half of the lessons in the eighth-grade year were implemented. In about two-thirds of the lessons, teachers completed at least some of the activities. Observation of lessons by TEENS evaluation staff suggested higher fidelity, with more than 80% of activities completed in the classrooms. About one-third of families participated to some extent in the behavioral coupon activity."
Chellappah 2015[759] *FIST*	provision of free fruit; washed and prepared by classroom teacher at mid-morning break each day, and participants were encouraged to take a fruit and start eating in class before going out to play	no intervention	n.r.	n.r.

Cohen 2015[760] *MEALS*	chefs collaborated with the schools 2-3 days/week during the school year to create recipes to improve the palatability of food and to teach the school cafeteria staff culinary skills	no intervention	n.r.	n.r.
Marcano-Olivier 2019[761] *n.r.*	school cafeteria modifications (elements: a) FV advertisement, b) attractive naming, c) food labelling, d) attractive serving, and e) prioritising consumption of FV); changes were made to the choice architecture of the school cafeterias.	no intervention	n.r.	n.r.
Moore 2008[762] *n.r.*	schools fruit tuck shops were encouraged to offer choice of fruits at prices that would encourage selection of those over unhealthy alternatives	no intervention	n.r.	"82.6% of schools successfully implemented tuck shops."
Perry 2004[763] *5-A-Day Cafeteria Power Plus*	daily activities (increasing the availability, attractiveness, and encouragement for FV) and special events (kick-offs, samplings, challenge weeks, theatre production, and finale meal) to encourage FV consumption; One-day training sessions for all school food service staff and school cook managers and monthly meetings with school cook managers	no intervention (delayed intervention)	n.r.	"All 26 schools were retained in the study and participated in intervention and evaluation activities as planned [...] All intervention schools conducted the annual kickoffs, monthly samplings, competitions, and finale meals as recorded by our intervention staff."
Multicomponent intervention (n=25)				
Anderson 2005[764] *Bash Street Kids Project*	(1) increased provision of FV in schools (tuck shops, school lunches); (2) tasting opportunities; (3) range of point-of-purchase marketing (posters and quizzes); newsletters for children and parents; (4) teacher information sessions (delivered in school assemblies, training sessions, classroom presentations); (5) provision of curriculum material	no intervention	n.r.	n.r.
Baranowski 2000[765] *Gimme 5*	10 sessions (25 min each), computer-based educational game aiming to improve skills (nutrition knowledge, food selection, shopping and preparation) and promote consumption of fruit, vegetables and fruit juice (via session goal setting)	no intervention (usual curriculum)	n.r.	"Observation of classroom implementation using a comprehensive checklist of activities suggested that 47% of all activities were performed."

Bere 2006a[766] *FVMM*	(1) 7 sessions of 3x45 min lessons on FV use and their availability and health benefits; taste testings and food preparations in classrooms; (2) Parental involvement: 6 newsletters with FV/health-related information, recipes and parent-child activities; (3) Participation in the Norwegian School Fruit Programme (EUR 0.30 per child for provision of piece of fruit/carrot each school day)	Usual practice (paid fruit provision)	n.r.	"The implementation of the curriculum ranged from 2.5 to 7 (scale 0-7). [...] All six newsletters were reported handed out to the pupils except for one letter in one school. The mean score of the newsletter usage scale was 1.5 [scale -3-6). [...] Parent meetings were held at five of the nine intervention schools. [...] Of the nine intervention schools, four participated in the School Fruit Programme at both Follow-ups, and of the 10 control schools three participated at Follow-up 1 and five at Follow-up 2. A total of 42 intervention pupils and 26 control pupils subscribed at follow-up 1, and 28 and 46 at Follow-up 2, respectively. Overall, no large differences in the proportions of individual subscribers were found between the intervention group and the control group at follow-up"
Bere 2006b[768] *FVMM*	School-based fruit and vegetable intervention consisting of a subscription to the Norwegian School Fruit Programme at no parental cost, and the Fruit and Vegetables Make the Marks (FVMM) educational programme (see Bere 2006a)	Usual practice (paid fruit provision)	n.r.	"The degree of implementation of the FVMM educational programme was similar in the present study as in the parallel study where the FVMM educational programme was the only intervention component (Bere 2006a)." [...] In Year 1, 100% of the intervention pupils participated (for free) in the School Fruit Programme, while 11% of the control pupils subscribed (Table I). In Year 2, 31% of the pupils in the intervention group and 7% of the control pupils subscribed (Table I)."
Bogart 2016[7] *SNaX*	(1) Environmental: provision of food and water at cafeterias, promotion of healthy lifestyle; (2) Social marketing delivered by peer leaders. (3) Take home activities	no intervention (wait-list control)	n.r.	n.r.
Davis 2021[771] *Texas Sprouts*	(1) Garden Leadership Committee formation; (2) Outdoor teaching garden; (3) 18 lessons of students Curriculum (60min each), taught by trained educators (4) 9 monthly parent lessons (each 60min)	no intervention (delayed intervention)	n.r.	"Reach: 96% of students attended each class (curriculum); 7% of parents attended at least one class; Dose: 98.5% of activities taught during students class, 66% taught outside; 100% of activities taught during parents class."
Foster 2008[772] *SNPI*	(1) school self-assessment; (2) nutrition education (50 hrs/year; integrated into various classroom subjects); (3) nutrition policy (changes to food sold in schools to meet nutritional standards. Activities such as limiting use of food as a reward, promoting active recess and providing healthy breakfasts); (4) social marketing (for intervention promotion, e.g. raffles and posters with health messages); and (5) parent outreach (intervention promoted to families through home and school association meetings, report card nights, parent education meetings, and weekly nutrition workshops)	no intervention (usual practice)	n.r.	"With respect to implementation of the intervention, teachers and support staff participated in an average of 10.4 +/-2.9 and 8.4+/-2.2 hours of training, respectively, during the first and second years of the intervention. Teachers and support staff, respectively, provided an average of 48.0+/-27.1 and 44.0+/-18.3 hours of nutrition education during each year of the intervention."

Ghaffari 2019[8] *n.r.*	(1) Nutrition education: Food and FV classroom lectures; educational PPT slides and pamphlets on FV; school wall newspapers designing, classroom preparation of salads/FV snacks and serving of healthy breakfasts by students; (2) Family: lecturing with focus on parents' role in receiving FV; discussion group with parents; distribution of FV booklets; participation in FV festival; (3) educational session for teachers/school managers; organization and participation in FV festival; (4) FV school posters; morning messages on FV at routine morning meetings of all students and teachers before class; (5) FV provision at school buffet	no intervention	n.r.	n.r.
Greene 2017[773] *Smarter Lunchrooms*	(1) Smarter Lunchrooms (Fruit promotion), environmental nudges to encourage students to make healthier food choices. Each intervention component addressed either the convenience (visibility and location) or attractiveness (descriptive names and attractive bowls) of the fruit options in the lunchroom; (2) nutrition education: training for school cafeteria staff, technical support, school visits and training lesson	no intervention	n.r.	"Total fruit fidelity during the intervention (70 %) was higher than total vegetable fidelity (50 %), with similar compliance among urban and rural schools (75 and 70 %, respectively). Unlike with vegetable variety, both urban and rural schools were in 100 % compliance with fruit variety prior to and during the intervention. Excluding variety, fruit messaging items were implemented with the highest fidelity across all lines and accounted for the largest increases in compliance from baseline.. For both fruit and vegetable treatments, the vast majority of schools failed to add creative fruit or vegetable names to their daily and monthly menus, keeping fidelity scores low. Data from lunchroom audits suggested that the vegetable treatment received a much lower dose of the intervention than the fruit treatment, even when implementation fidelity was high, due to the relative proportion of fruit offered in lunchrooms as compared to vegetables."
He 2009[774] *NFVPP*	(1) provision of one fruit or one vegetable, 3/week; (2) curriculum 'Paint Your Plate! Create a Masterpiece: Vegetable and Fruit Action Guide for Schools', provision of resources for teachers, nutrition education materials for morning announcements and school newsletter, activities at school and community level to promote FV	no intervention	**IG:** another FV program was already existing in three schools of IG1 and one school of IG2. **CG:** none	n.r.

Hoppu 2010b[775] *n.r.*	(1) education: provision of materials for teachers; ready-planned lessons; (2) development of a healthy food environment (quality of snacks at school; changing content of vending machines; actions to increase the appreciation of the school lunch and to encourage the eating of a balanced lunch daily) (3) drama workshops dealing with eating; (4) school meals for teachers and pupils; (5) discussions and informative meetings with school staff; (6) parents: meetings (information, tasting school meal), and provision of magazine dealing with healthy eating delivered	no intervention	n.r.	"Overall, the implementation of the intervention was successful and the teaching material was actively used."
LaChausse 2017[776] *HOTM*	FV tastings; student workbooks; nutritional information presentations, story books related to a monthly FV, farm to-school presentations, newsletters for parents, menu slicks (i.e. place mats); cafeteria posters	no intervention	n.r.	94%
Lent 2014[777] *Healthy Corner Store Initiative*	(1) class-based nutrition education on healthy snack identification, energy intake, tracking consumption, goal-setting and label reading; (2) social marketing campaign on healthy eating and well-being; (3) corner store-level initiatives included store owner trainings, adding healthier items, and signage identifying healthy items	no intervention	n.r.	n.r.
Meng 2013[778] *n.r.*	(1) nutrition education: 6 for students, 2 parents and 4 for teachers and health workers; provision of material (handbook, carton pamphlets); (2) evaluation and improvement of menus for students in school lunch cafeteria	no intervention	n.r.	n.r.
Nicklas 1998[779] *Gimme 5*	(1) media-marketing campaign (increase awareness, reinforce concepts, and promote positive attitudes toward FV-consumption); (2) classroom activities (education and skills necessary to increase FV consumption); (3) school meal modification (availability, variety, and taste of FV); (4) parental involvement (healthy education) support	no intervention	n.r.	n.r.
Perry 1998[780] *5-a-Day Power Plus*	(1) behavioural curricula, parental involvement/ education, (2) school food service changes, industry involvement and support	no intervention (delayed intervention)	n.r.	"Training sessions were attended by 100% of the teachers. Structured staff observations of classes revealed that 78% to 85% of the curriculum activities were implemented as planned. Two thirds of parents returned cards indicating they had participated in at least one of the home team and snack pack lessons each year. Structured lunchroom observations indicated high levels of adherence to the school lunch practices promoted by the Power Plus program."

Ooi 2021[781] *switchURsip*	(1) Curriculum and teaching: SSB curriculum lessons delivered by teacher; month-long (Peer-led) school challenge; six two-weekly health messages via school's electronic communication channel on reducing SSB intake, healthier drink alternatives, reminders of adverse health effects of excessive SSB consumption, links to relevant resources. (2) School nutrition environment modification: School guiding principles to supplement school's existing plans; Food outlet (school canteens) changes using principles of choice architecture; installation of water stations on school grounds (3) Partnerships and services: Six two-weekly health messages for parents, providing advice on SSB intake reduction and availability in home environment, suggestions for healthier drink alternatives and role modelling; newsletter snippets to provide updates on the intervention.	no intervention (usual practice)	n.r.	"Process evaluation data found that implementation fidelity varied across the three intervention schools. Full implementation of the multicomponent intervention ranged from 64% to 81% of all intervention components implemented. Components for school guiding principles, pricing and promotion of beverages, water station installation, and newsletter snippets were fully implemented across all intervention schools. Overall, schools seemed to have most difficulties implementing the peer-led school challenge, in addition to disseminating the fortnightly health messages to students and parents."
Polonsky 2019[783] *One Healthy Breakfast*	IG1: (1) provision of free breakfast in classroom; (2) 18 lessons of nutrition education (45min each); (3) social marketing (posters, gifts); (4) annual kickoff educational assembly; (5) corner store marketing: shelf talkers encouraging shoppers to make healthy choices were placed at 14 corner stores located less than 0.5 mile from the intervention schools; (6) monthly parents newsletters and family activities IG2: provision of breakfast before school in cafeteria	n.a.	**IG:** SNAP-Ed **CG:** SNAP-Ed Nutrition education programming as part of the US Department of Agriculture's Supplemental Nutrition Assistance Program Education (SNAP-Ed)	n.r.
Reynolds 2000[784] *High 5*	(1) 14 lessons of classroom nutrition curriculum (3 days/wk) including modelling, self-monitoring, problem solving, reinforcement, taste testing, and other methods. (2) Parents: Kick-Off Night; asked to encourage and support behavior change; 7 parent-child homework assignments with signed vouchers for prize drawings upon completion. (3) food service managers/ workers received a half-day training on purchasing, preparing and promoting FV that met High 5 guidelines. Each cafeteria was rated monthly basis and rewarded 2, 3 or 4 stars based on completion of 10 intervention activities.	no intervention (usual practice/delayed intervention)	n.r.	"Full or partial completion was achieved on 95% of the classroom activities. Forty-three percent of the homework was completed and 56% of children reported eating five or more servings of fruit and vegetables on High 5 days. Ninety-five percent of the Freggie books were received by parents, newsletters were read by 81% and brochures by 86% of parents, and shopping lists were used by 53%of parents. Kick-Off-Night attendance was 24%overall and 60%when held in conjunction with a school open-house. In the cafeteria, a mean of 3.5 servings of fruit and vegetables was offered to students, 3.6 High 5 posters were exhibited, and 4.4 food labels were displayed on High 5 days."

Scherr 2017[785] *SHCP*	(1) nutrition education and promotion, (2) family and community partnerships, (3) supporting regional agriculture, (4) foods available on the school campus, and (5) school wellness committees and policies.	no intervention (activities unrelated to nutrition, health, and science)	n.r.	"The ability to implement the intervention differed for each district, with less of the program completed in the Central Valley compared with Northern California (Table 2) IG in Northern California: - full implementation (100%) of all four components IG in Central Valley: - Nutrition: 97% Healthy Choices activities completed, but none (0) of Cooking up Healthy Choices activities - Parents: 100% of newsletters, one health fair - Salad bar: Installed, but not used; no improvements in daily produce offerings - School wellness policies: established"
Sevinc 2011[787] *Get into motion for health*	(1) education on importance of healthy nutrition and methods of preventing obesity for students, parents, and teachers; (2) distribution of boxed milk to students during meal time. Water, freshly squeezed fruit juice, buttermilk, milk and seasonal fruits were sold to supply healthy eating options for the students in the school canteens	no intervention	n.r.	n.r.
te Velde 2008[788] *Pro Children*	(1) classroom curriculum with activities (e.g. FV tasting; skills to prepare/ask for them); provision of material; (2) school environment: provision of FV, (3) family: active parent involvement in the children's homework worksheets; parental newsletters and a parent version of computer-tailored tool to get personalised feedback on their own fruit and vegetable intake levels.	no intervention	IG: Optional intervention components to encourage community participation: In NL and Norway the local media was used to raise awareness. In Spain, school health services participated and counselled students during their regular health visits. **CG:** none	"Although the school curriculum and parental components were more or less similar in the three countries, the level of implementation of these components differed between and within countries [...] Additional analyses, published elsewhere (Wind 2006), showed that degree of implementation was highest in Norway: on average eleven of the sixteen lessons were implemented in Norway in contrast to a mean of 9·4 lessons in Spain and a mean of only 7·4 lessons in the Netherlands."
van den Berg 2020[11] *TGEG*	(1) school gardening for each participating classroom; (2) 32 lessons of school curriculum; provision of material; at-home-actions with parents	no intervention	**IG:** CATCH **CG:** CATCH CATCH (Coordinated Approach To Child Health) is a school-based health program designed to	"Participation rates varied by school with student participation ranging 23.9%–90.2% of third grade students per school, with a mean participation rate of 55.7%. Based on process data collected through interviews with school principals and teachers, differences noted in extent of principal and teachers support can account for the large difference noted in student participation rates."

			promote physical activity and healthy food choices and prevent tobacco use.	
Zota 2016[789] *DIATROFI*	IG1: (1) provision of free healthy daily meal; (2) healthy nutrition educational program, including provision of educational materials and activities for students, parents and school staff; (3) interactive informational events for parents and for students; cooking events; IG2: Provision of free healthy daily meal	n.a.	n.r.	"In view of the actions included in the healthy nutrition educational program, we note that 100% of students and parents in the MI group received the educational/ informational material; all teachers, canteen stuff and 42% of parents participated in the informational events that took place in all schools in the MI group; 100% of adolescents participated in additional informational events targeting students that took place in gymnasium and lyceums."
Zhu 2021[790] *n.r.*	(1) Individual level: Class meetings twice a year on SSB reduction, and commendation of students with healthy behaviours; distributing SSB-related knowledge materials twice a year; recording own SSB behaviour once a week. (2) Family level: Establishing WeChat (social communication application) groups for parents and publishing new media promotional materials once a month. (3) Peer level: Distributing promotional cards (with cartoon figures and information on six questions concerning SSB-related knowledge of questionnaire, as well as mottos and goals for the new semester) to students twice a year. (4) School level: Conducting blackboard painting activities twice a year, using the theme of "understanding SSBs"; prohibiting the sale of SSBs on campus during the intervention. (5) Community level: Negotiating with stores near schools to refrain from selling SSB to students.	no intervention	**IG + CG:** All the participating schools followed the city-wide education schedule during the intervention period.	n.r.

Abbreviations: CATCH=Coordinated Approach To Child Health; CG=control group; FFVSP=Fresh Fruit and Vegetable Snack Program; FV=fruit and vegetable; IG=intervention group; Id=intervention duration; MA=meta-analysis; MI=multicomponent intervention; n.a.=not applicable; n.r.=not reported; SNAP-Ed=Nutrition education programming as part of the US Department of Agriculture's Supplemental Nutrition Assistance Program Education; SSB=sugar-sweetened beverage;

Supplementary Table 9. Reporting of study funding in the 51 included cluster RCTs

Study	Funding statement
Anderson 2005[764]	"The study was funded by The Food Standards Agency (UK) under its Food Acceptability and Choice R&D Programme."
Ashfield-Watt 2009[756]	"The present evaluation study, including the free fruit provision, was funded by the New Zealand Ministry of Health."
Ask 2010[754]	"This study was funded through the University of Agder, Kristiansand, Norway. [...] BAMA, TINE BA and Moseid Bakery are acknowledged and thanked for subvention of food."
Baranowski 2003[738]	"This research was funded largely by the National Institutes of Health, grant R01 CA-75614. This work is also a publication of the U.S. Department of Agriculture (USDA/ARS) Children's Nutrition Research Center, at Department of Pediatrics, Baylor College of Medicine, Houston, Texas, funded in part by the USDA/ARS (Cooperative Agreement 58-6250-6001)."
Baranowski 2000[765]	Not reported.
Barnes 2021[740]	"The study was supported by Hunter Children's Research Foundation (HCRF); Hunter Medical Research Institute (HMRI); and Hunter New England Population Health. CB is supported by a co-funded industry scholarship between Hunter New England Population Health and University of Newcastle; LW is supported by an NHMRC Career Development Fellowship (APP1128348), Heart Foundation Future Leader Fellowship (101175), and a Hunter New England Clinical Research Fellowship; RS is supported by an NHMRC TRIP Fellowship (APP1150661). None of the funding bodies had a role in the design, data collection, analysis or interpretation of data."
Bere 2006a[766]	"This study was funded by the Norwegian Research Council. The newsletters were developed in collaboration with the Norwegian Cancer Society which also funded this part of the intervention."
Bere 2006b[768]	"This study was funded by the Norwegian Research Council. Free school fruit for the nine schools was made possible by the Norwegian Fruit and Vegetable Marketing Board through the collective agricultural agreement between Norway's farmers and the agricultural authorities to reduce the price and the administration of the School Fruit Programme."
Bessems 2012[6]	"This work was supported by the Netherlands Organisation for Health Research and Development (ZonMw), grant number 63200011."
Birnbaum 2002[757]	"This research was supported by a grant from the National Cancer Institute (5RO1 CA71943-03)."
Bogart 2016[7]	"Supported by the National Institute on Minority Health and Health Disparities (R24 MD001648; Dr Schuster, Principal Investigator). Funded by the National Institutes of Health (NIH)."
Chellappah 2015[759]	"The authors would like to acknowledge the Manager and Staff from Coles, Port Melbourne store for generously sponsoring fruit for this study."
Cohen 2015[760]	"This study was funded by a grant from Arbella Insurance. Dr Cohen is supported by grant R25 CA 098566 from the Nutritional Epidemiology of Cancer Education and Career Development Program."
Davis 2021[771]	"This clinical study was funded by the National Institutes of Health [1R01HL123 865, 2015–2020). Whole Kids Foundation, Home Depot, and Sprouts Healthy Communities Foundation gave funding for garden builds and enhancements."
Domel 1993[741]	"This study was made possible by funding from the International Apple Institute."
Evans 2013[742]	"This work was supported by the National Prevention Research Initiative of the UK Medical Research Council."

Fonseca 2019[743]	"Funded studies: NT up to R$ 30,000.00. Conselho Nacional de Desenvolvimento Científico e Tecnológico Edital http://www.cnpq.br/. NO."
Foster 2008[772]	"This study was supported by grants from the Centers for Disease Control and Prevention (R06/CCR321534-01) and the US Department of Agriculture/Food and Nutrition Service through the Pennsylvania Nutrition Education Program as part of Food Stamp Nutrition Education."
Ghaffari 2019[8]	"Financial Support: None."
Gold 2017[744]	Not reported.
Greene 2017[773]	"This project was supported by Agriculture and Food Research Initiative Grant no. 2012-68001-19604 from the U.S. Department of Agriculture National Institute of Food and Agriculture, Childhood Obesity Prevention: Integrated Research, Education, and Extension to Prevent Childhood Obesity–A2101."
He 2009[774]	"The Ontario Ministry of Health Promotion (MHP) funded the project. […] Appreciation is also extended to the Work-Study Programme at Brescia University College for providing salary support to the students who assisted with data entry and verification."
Hoppu 2010b[775]	"The authors thank […] SITRA (Finnish Innovation Fund) for funding the study."
Kandiah 2002[745]	Not reported.
Katz 2011[746]	Not reported.
LaChausse 2017[776]	"This work was supported by a grant from the U.S. Department of Agriculture SNAP-ED program through the California Department of Public Health, Network for a Healthy California [grant number 10-10065]."
Lehto 2014[747]	"The PRO GREENS project has been made possible through financial support from the European Commission's Programme of Community Action in the Field of Public Health 2003–8. […] The Juho Vainio Foundation provided additional financial support to the Finnish study group."
Lent 2014[777]	"Funding agencies: The Robert Wood Johnson Foundation (Healthy Eating Research grant #63052) and NIH (F32DK096756)."
Marcano-Olivier 2019[761]	"This is a Knowledge Economy Skills Scholarships (KESS) supported research project, in collaboration with Bangor University."
Martens 2008[748]	"This study was financially supported by the Netherlands Organisation for Health and Development (ZonMW) and the Netherlands Heart Foundation."
Meng 2013[778]	"This project has been funded by China Ministry of Science & Technology as "Key Projects in the National Science & Technology Pillar Program during the Eleventh Five-Year Plan Period", grant number 2008BAI58B05."
Moore 2008[762]	"This study was funded by the Food Standards Agency Food Choice Programme. [...] LM is supported by a Career Scientist Award funded by the Welsh Assembly Government."
Najimi 2013[749]	Not reported.
Nicklas 1998[779]	"This research was supported by the National Institutes of Health, National Cancer Institute, CA 59803-01."
Ooi 2021[781]	"Funding was provided by the Ministry of Health's Translational Grant Research Scheme (TRGS)."
Perikkou 2013[750]	"This study was partially supported by the Department of Nutrition and Dietetics Graduate Program, Harokopio University, Athens, Greece."
Perry 1998[780]	"Funding for the research reported in this paper was provided by a grant from the National Cancer Institute (ROI CA59805; Donald B. Bishop, principal investigator; Cheryl L. Perry, co-principal investigator)."

Perry 2004[763]	"Funding for the research reported in this article was provided by a grant from the National Cancer Institute (R01 CA59805; Donald B. Bishop, principal investigator; Cheryl L. Perry, coprincipal investigator)."
Polonsky 2019[783]	"This research was supported by grant AFRI 2012-68001-19616 from the US Department of Agriculture (Dr Foster)."
Rajbhandaria-Thapa 2020[755]	"The funding was provided through a USDA sub-award from the Cornell Center for Behavioral Economics in Child Nutrition Programs."
Reynolds 2000[784]	"Funding for this research was provided by National Cancer Institute Grant CA59776."
Scherr 2017[785]	"Funding for this study was provided by University of California Agriculture and Natural Resources Competitive Grant 11-1018, US Department of Agriculture Nutrition Institute of Food and Agriculture HATCH Project 221082, and US Department of Agriculture Training Grant 2011-38420-20082, and University of California Supplemental Nutrition Assistance Program–Education (SNAP-Ed) Funds."
Sevinc 2011[787]	Not reported.
Smit 2020[751]	"The research leading to these results has received funding from the European Research Council under the European Union's Seventh Framework Programme (FP7/2007–2013)/ERC grant agreement n° [617253]."
Taghdisi 2016[435]	"This article, as a part of research plan (#92-02-62-20884), approved by Health Research Board of Tehran Medical Sciences University, is the result of an MSc thesis in Health Education."
van den Berg 2020[11]	"This material is based on work that is supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award number 2011-68001-30138. This study was partially funded by the Michael & Susan Dell Foundation through resources provided by the Michael & Susan Dell Center for Healthy Living, The University of Texas (UTHealth) School of Public Health at Austin Campus."
Vandongen 1995[752]	"This study was supported by a Program Grant from the National Health and Medical Research Council (Public Health Research and Development Commitee)."
te Velde 2008[788]	"The study is being carried out with financial support from the Commission of the European Communities, specific Research and Technological Development (RTD) programme 'Quality of Life and Management of Living Resources', QLK1-2001-00 547."
Viggiano 2015[753]	"This research was funded by Second University of Naples, Associazione Culturale Kaledo, Regione Campania (Assessorato all'Istruzione), Provincia di Napoli, Provincia di Salerno Assessorato allo Sport, Comune di Cercola (Assessorato all'istruzione) and Fondazione per l'Assistenza all'Infanzia."
Zota 2016[789]	"The DIATROFI Program was funded by the Stavros Niarchos Foundation and has been approved and runs under the auspices of the Greek Ministry of Education and Religious Affairs."
Zhu 2021[790]	"This study was funded by the Study of Diet and Nutrition Assessment and Intervention Technology (No.2020YFC2006300) from Active Health and Aging Technologic Solutions Major Project of National Key R&D Program—Intervention Strategies of Main Nutrition Problems in China (No.2020YFC2006305); Shanghai Municipal Health Commission—Academic Leader Program (GWV-10.2-XD12); the Foundation of Shanghai Municipal Health Commission (201740073); and the Youth Nutrition Elite Development Program of Chinese Nutrition Society."

Supplementary Table 10: Pairwise meta-analysis of all interventions vs control for BMI

Study	MD	95% CI	%W (random)
Ask 2010 boys	0.10	(-2.67 to 2.87)	0.2
Ask 2010 girls	0.20	(-2.56 to 2.96)	0.2
Barnes 2021	-0.52	(-1.98 to 0.94)	0.8
Chellappah 2015	0.26	(-0.05 to 0.57)	18.0
Davis 2021	-0.02	(-0.24 to 0.20)	34.5
Foster 2008	-0.04	(-0.27 to 0.19)	32.6
Katz 2011	0.50	(-0.26 to 1.25)	3.0
Lent 2014	0.20	(-1.83 to 2.23)	0.4
Meng 2013	0.02	(-1.29 to 1.33)	1.0
Sevinc 2011	-0.16	(-0.64 to 0.32)	7.4
Vandongen 1995 boys	0.30	(-1.01 to 1.61)	1.0
Vandongen 1995 girls	-0.20	(-1.65 to 1.25)	0.8
Random effects model	0.03	(-0.10 to 0.16)	100
Number of participants=4,045			
τ^2= 0; τ=0; I^2= 0.0% (0.0% to 58.3%)			

Abbreviations: CI=confidence interval; MD=mean difference; W=weight;

Supplementary Table 11: Pairwise meta-analysis of all interventions vs control for zBMI

Study	MD	95% CI	%W (random)
Barnes 2021	-0.13	(-0.60 to 0.34)	3.2
Davis 2021	-0.02	(-0.09 to 0.05)	24.9
Foster 2008	-0.01	(-0.08 to 0.06)	25.0
Lent 2014	-0.10	(-0.47 to 0.27)	4.8
Meng 2013	-0.00	(-0.57 to 0.57)	2.3
Polonsky 2019	0.07	(-0.22 to 0.36)	7.2
Scherr 2017	-0.21	(-0.41 to -0.01)	11.7
Viggiano 2015	-0.24	(-0.35 to -0.13)	20.8
Random effects model	-0.09	(-0.18 to 0.00)	100
Number of participants=4,232			
τ^2= 0.0070 (0.0000 to 0.0445); τ=0.0839 (0.0000 to 0.2109); I^2=59.3% (11.3% to 81.3%)			

Abbreviations: BMI=body mass index; CI=confidence interval; MD=mean difference; W=weight;

Supplementary Table 12: GRADE evaluation for BMI and all comparisons (study duration: range 2-36 months)*

	Direct evidence			Indirect evidence		Network meta-analysis	
Comparison	**N studies**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**
Multi-component vs control	5	-0.04 (-0.19 to 0.11)	⨁⨁⨁◯ [1]	-	-	-0.04 (-0.19 to 0.11)	⨁⨁◯◯ [5]
Nutrition education and literacy vs control	3	0.21 (-0.34 to 0.77)	⨁⨁⨁◯ [2]	-	-	0.21 (-0.34 to 0.77)	⨁⨁◯◯ [5]
Nutrition-friendly school initiatives vs control	1	0.26 (-0.05 to 0.57)	⨁⨁⨁◯ [3]	-	-	0.26 (-0.05 to 0.57)	⨁⨁◯◯ [5]
School-based food preparation vs control	1	0.15 (-1.80 to 2.10)	⨁⨁◯◯ [4]	-	-	0.15 (-1.80 to 2.10)	⨁◯◯◯ [5]
Multi-component vs nutrition education and literacy	0	-	-	-0.25 (-0.83 to 0.32)	⨁⨁⨁◯	-0.25 (-0.83 to 0.32)	⨁⨁◯◯ [5]
Multi-component vs nutrition-friendly school initiatives	0	-	-	-0.30 (-0.64 to 0.04)	⨁⨁⨁◯	-0.30 (-0.64 to 0.04)	⨁⨁◯◯ [5]
Multi-component vs school-based food preparation	0	-	-	-0.19 (-2.15 to 1.77)	⨁⨁◯◯	-0.19 (-2.15 to 1.77)	⨁◯◯◯ [5]
Nutrition education and literacy vs nutrition-friendly school initiatives	0	-	-	0.05 (-0.59 to 0.68)	⨁⨁⨁◯	0.05 (-0.59 to 0.68)	⨁⨁◯◯ [5]
Nutrition education and literacy vs school-based food preparation	0	-	-	-0.06 (-2.09 to 1.97)	⨁⨁◯◯	-0.06 (-2.09 to 1.97)	⨁◯◯◯ [5]
Nutrition-friendly school initiatives vs school-based food preparation	0	-	-	0.11 (-1.87 to 2.09)	⨁⨁◯◯	0.11 (-1.87 to 2.09)	⨁◯◯◯ [5]

⊕⊕⊕⊕ High; ⊕⊕⊕◯ Moderate; ⊕⊕◯◯ Low; ⊕◯◯◯ Very low.

[1] downgraded by one level due to risk of bias (1/5 of included RCTs rated with high risk of bias).
[2] downgraded by one level due to risk of bias (the included RCTs rated with some concerns for risk of bias).
[3] downgraded by one level due to risk of bias (the included RCT rated with some concerns for risk of bias).
[4] downgraded by two levels due to risk of bias (the included RCT rated as high risk of bias).
[5] downgraded by one level due to imprecision, since 95% CI overlaps null effect.

Abbreviations: BMI=body mass index; CI=confidence interval; GRADE=Grading of Recommendations Assessment, Development, and Evaluation; MD=mean difference; RCT=randomised controlled trial; vs=versus;

*Direct estimates were evaluated with the following GRADE criteria: risk of bias, indirectness, inconsistency and publication bias. As suggested recently by the GRADE working group, consideration of imprecision is not necessary when rating the direct and indirect estimates to inform the rating of network-analysis estimates.

Supplementary Table 13: GRADE evaluation for zBMI and all comparisons (study duration: range 9-68 months)*

	Direct evidence			Indirect evidence		Network meta-analysis	
Comparison	**N studies**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**
Multi-component vs control	6	-0.02 (-0.07 to 0.02)	⊕⊕⊕◯[1]	-	-	-0.02 (-0.07 to 0.02)	⊕⊕◯◯ [3]
Nutrition education and literacy vs control	2	-0.23 (-0.34 to -0.13)	⊕⊕⊕◯ [2]	-	-	-0.23 (-0.34 to -0.13)	⊕⊕⊕◯
Multi-component vs nutrition education and literacy	0	-		0.21 (0.10 to 0.32)	⊕⊕⊕◯	0.21 (0.10 to 0.32)	⊕⊕⊕◯

⊕⊕⊕⊕ High; ⊕⊕⊕◯ Moderate; ⊕⊕◯◯ Low; ⊕◯◯◯ Very low.

[1] downgraded by one level due to risk of bias (2/5 of included RCTs rated with high risk of bias).
[2] downgraded by one level due to risk of bias (included RCTs rated as some concerns for risk of bias).
[3] downgraded by one level due to imprecision, since 95% CI overlaps null effect.

Abbreviations: BMI=body mass index; CI=confidence interval; GRADE=Grading of Recommendations Assessment, Development, and Evaluation; MD=mean difference; RCT=randomised controlled trial; vs=versus;

*Direct estimates were evaluated with the following GRADE criteria: risk of bias, indirectness, inconsistency and publication bias. As suggested recently by the GRADE working group, consideration of imprecision is not necessary when rating the direct and indirect estimates to inform the rating of network-analysis estimates.

Supplementary Table 14: Pairwise meta-analysis of all interventions vs control for body weight change

Study	MD	95% CI	%W (random)
Ask 2010 boys	-1.70	(-11.80 to 8.40)	0.2
Ask 2010 girls	0.40	(-8.55 to 9.35)	0.3
Chellappah 2015	0.61	(-0.56 to 1.78)	16.0
Davis 2021	0.20	(-0.32 to 0.72)	81.5
Meng 2013	0.28	(-2.99 to 3.55)	2.0
Random effects model	0.26	(-0.20 to 0.73)	100
Number of participants=3,348			
τ^2=0; τ =0; I^2=0.0% (0.0% to 79.2%)			

Abbreviations: CI=confidence interval; MD=mean difference; W=weight;

Supplementary Table 15: Pairwise meta-analysis of all interventions vs control for body fat

Study	MD	95% CI	%W (random)
Chellappah 2015	1.54	(0.62 to 2.46)	37.6
Davis 2021	0.15	(-0.39 to 0.69)	47.5
Vandongen 1995 boys	0.90	(-2.80 to 4.60)	6.4
Vandongen 1995 girls	1.10	(-2.04 to 4.24)	8.5
Random effects model	0.80	(-0.20 to 1.80)	100
Number of participants=3,325			
τ^2=0.4715 (0.0000 to 9.4368); τ=0.6866 (0.0000 to 3.0719); I^2=55.0% (0.0% to 85.1%)			

Abbreviations: CI=confidence interval; MD=mean difference; W=weight;

Supplementary Table 16: Pairwise meta-analysis of all interventions vs control for waist circumference

Study	MD	95% CI	%W (random)
Barnes 2021	-2.18	(-6.44 to 2.08)	13.2
Chellappah 2015	-2.62	(-4.68 to -0.56)	32.8
Davis 2021	-0.37	(-1.12 to 0.38)	54.0
Random effects model	-1.35	(-3.10 to 0.40)	100
Number of participants=3,286			
τ^2=1.3292 (0.0000 to 55.4235); τ=1.1529 (0.0000 to 7.4447); I^2=56.1% (0.0% to 87.5%)			

Abbreviations: CI=confidence interval; MD=mean difference; W=weight;

Supplementary Table 17: GRADE evaluation for body weight change (kg) and all comparisons (study duration: range 2-36 months)*

	Direct evidence			Indirect evidence		Network meta-analysis	
Comparison	**N studies**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**
Multi-component vs control	2	0.20 (-0.31 to 0.71)	⊕⊕⊕◯ [1]	-	-	0.20 (-0.31 to 0.71)	⊕⊕◯◯ [4]
Nutrition-friendly school initiatives vs control	1	0.61 (-0.56 to 1.78)	⊕⊕⊕◯ [2]	-	-	0.61 (-0.56 to 1.78)	⊕⊕◯◯ [4]
School-based food preparation vs control	1	-0.52 (-7.22 to 6.18)	⊕⊕◯◯ [3]	-	-	-0.52 (-7.22 to 6.18)	⊕◯◯◯ [4]
Multi-component vs nutrition-friendly school initiatives	0	-	-	-0.41 (-1.68 to 0.87)	⊕⊕⊕◯	-0.41 (-1.68 to 0.87)	⊕⊕◯◯ [4]
Multi-component vs school-based food preparation	0	-	-	0.73 (-5.99 to 7.44)	⊕⊕◯◯	0.73 (-5.99 to 7.44)	⊕◯◯◯ [4]
Nutrition-friendly school initiatives vs school-based food preparation	0	-	-	1.13 (-5.67 to 7.93)	⊕⊕◯◯	1.13 (-5.67 to 7.93)	⊕◯◯◯ [4]

⊕⊕⊕⊕ High; ⊕⊕⊕◯ Moderate; ⊕⊕◯◯ Low; ⊕◯◯◯ Very low.

[1] downgraded by one level due to risk of bias (the included RCTs rated with some concerns for risk of bias).
[2] downgraded by one level due to risk of bias (the included RCT rated with some concerns for risk of bias).
[3] downgraded by two levels due to risk of bias (the included RCT rated as high risk of bias).
[4] downgraded by one level due to imprecision, since 95% CI overlaps null effect.

Abbreviations: CI=confidence interval; GRADE=Grading of Recommendations Assessment, Development, and Evaluation; MD=mean difference; RCT=randomised controlled trial; vs=versus;

*Direct estimates were evaluated with the following GRADE criteria: risk of bias, indirectness, inconsistency and publication bias. As suggested recently by the GRADE working group, consideration of imprecision is not necessary when rating the direct and indirect estimates to inform the rating of NMA estimates

Supplementary Table 18: GRADE evaluation for body fat (% body fat) and all comparisons (study duration: range 2-36 months)*

	Direct evidence			Indirect evidence		Network meta-analysis	
Comparison	**N studies**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**
Multi-component vs control	1	0.15 (-0.39 to 0.69)	⊕⊕⊕◯ [1]	-	-	0.15 (-0.39 to 0.69)	⊕⊕◯◯ [2]
Nutrition education and literacy vs control	1	1.02 (-1.38 to 3.41)	⊕⊕⊕◯ [1]	-	-	1.02 (-1.38 to 3.41)	⊕⊕◯◯ [2]
Nutrition-friendly school initiatives vs control	1	1.54 (0.62 to 2.46)	⊕⊕⊕◯ [1]	-	-	1.54 (0.62 to 2.46)	⊕⊕⊕◯
Multi-component vs nutrition education and literacy	0	-	-	-0.87 (-3.32 to 1.59)	⊕⊕⊕◯	-0.87 (-3.32 to 1.59)	⊕⊕◯◯ [2]
Multi-component vs nutrition-friendly school initiatives	0	-	-	-1.39 (-2.46 to -0.32)	⊕⊕⊕◯	-1.39 (-2.46 to -0.32)	⊕⊕⊕◯
Nutrition-friendly school initiatives vs nutrition education and literacy vs	0	-	-	0.52 (-2.04 to 3.09)	⊕⊕⊕◯	0.52 (-2.04 to 3.09)	⊕⊕◯◯ [2]

⊕⊕⊕⊕ High; ⊕⊕⊕◯ Moderate; ⊕⊕◯◯ Low; ⊕◯◯◯ Very low.

[1] downgraded by one level due to risk of bias (the included RCT rated with some concerns for risk of bias).
[2] downgraded by one level due to imprecision, since 95% CI overlaps null effect.

Abbreviations: CI=confidence interval; GRADE=Grading of Recommendations Assessment, Development, and Evaluation; MD=mean difference; RCT=randomised controlled trial; vs=versus;

*Direct estimates were evaluated with the following GRADE criteria: risk of bias, indirectness, inconsistency and publication bias. As suggested recently by the GRADE working group, consideration of imprecision is not necessary when rating the direct and indirect estimates to inform the rating of NMA estimates.

Supplementary Table 19: GRADE evaluation for waist circumference and all comparisons (study duration: range 2-36 months)*

	Direct evidence			Indirect evidence		Network meta-analysis	
Comparison	**N studies**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**
Multi-component vs control	1	-0.37 (-1.12 to 0.38)	⊕⊕⊕◯ [1]	-	-	-0.37 (-1.12 to 0.38)	⊕⊕◯◯ [2]
Nutrition education and literacy vs control	1	-2.18 (-6.44 to 2.08)	⊕⊕⊕◯ [1]	-	-	-2.18 (-6.44 to 2.08)	⊕⊕◯◯ [2]
Nutrition-friendly school initiatives vs. control	1	-2.62 (-4.68 to -0.56)	⊕⊕⊕◯ [1]	-	-	-2.62 (-4.68 to -0.56)	⊕⊕⊕◯
Multi-component vs nutrition education and literacy	0	-	-	1.81 (-2.51 to 6.13)	⊕⊕⊕◯	1.81 (-2.51 to 6.13)	⊕⊕◯◯ [2]
Multi-component vs nutrition-friendly school initiatives	0	-	-	2.25 (0.06 to 4.44)	⊕⊕⊕◯	2.25 (0.06 to 4.44)	⊕⊕⊕◯
Nutrition education and literacy vs nutrition-friendly school initiatives	0	-	-	0.44 (-4.29 to 5.17)	⊕⊕⊕◯	0.44 (-4.29 to 5.17)	⊕⊕◯◯ [2]

⊕⊕⊕⊕ High; ⊕⊕⊕◯ Moderate; ⊕⊕◯◯ Low; ⊕◯◯◯ Very low.

[1] downgraded by one level due to risk of bias (the included RCT rated with some concerns for risk of bias).
[2] downgraded by one level due to imprecision, since 95% CI overlaps null effect.

Abbreviations: CI=confidence interval; GRADE=Grading of Recommendations Assessment, Development, and Evaluation; MD=mean difference; RCT=randomised controlled trial; vs=versus;

*Direct estimates were evaluated with the following GRADE criteria: risk of bias, indirectness, inconsistency and publication bias. As suggested recently by the GRADE working group, consideration of imprecision is not necessary when rating the direct and indirect estimates to inform the rating of NMA estimates.

Supplementary Table 20: Pairwise meta-analysis of all interventions vs control for fruit and vegetable intake

Study	MD	95% CI	%W (random)
Anderson 2005	72.00	(-294.01 to 438.01)	0.6
Baranowski 2000	16.00	(-6.17 to 38.17)	7.2
Baranowski 2003	72.80	(71.61 to 73.99)	7.5
Bere 2006a	-16.00	(-55.93 to 23.93)	6.6
Bere 2006b	41.60	(4.95 to 78.25)	6.7
Birnbaum 2002	-28.80	(-36.64 to -20.96)	7.4
Domel 1993	-0.80	(-60.32 to 58.72)	5.8
Evans 2013	2.00	(-24.38 to 28.38)	7.1
Foster 2008	-3.20	(-30.00 to 23.60)	7.0
Ghaffari 2019	18.40	(-29.13 to 65.93)	6.3
He 2009	48.00	(-22.12 to 118.12)	5.3
He 2009	40.00	(-38.40 to 118.40)	4.9
Nicklas 1998	32.00	(7.33 to 56.67)	7.1
Reynolds 2000	134.40	(87.13 to 181.67)	6.3
Taghdisi 2016 M	38.40	(25.38 to 51.42)	7.4
te Velde 2008	39.00	(7.83 to 70.17)	6.9
Random effects model	28.42	(-1.61 to 58.45)	100
Number of participants=5,611			
τ^2=3147.773; τ=56.105; I^2=98.1% (97.6% to 98.5%)			

Abbreviations: CI=confidence interval; MD=mean difference; W=weight;

Supplementary Table 21: Pairwise meta-analysis of all interventions v. control for fruit intake

Study	MD	95% CI	%W (random)
Anderson 2005	43.00	(-0.41 to 86.41)	4.8
Ashfield-Watt 2009	-28.00	(-35.84 to -20.16)	6.3
Baranowski 2000	8.00	(-14.17 to 30.17)	5.9
Baranowski 2003	41.60	(15.26 to 67.94)	5.7
Bessems 2012	10.40	(-6.85 to 27.65)	6.1
Cohen 2015	13.60	(0.11 to 27.09)	6.2
Domel 1993	19.20	(-10.62 to 49.02)	5.5
Evans 2013	-1.00	(-22.10 to 20.10)	5.9
Hoppu 2010	24.00	(-30.91 to 78.91)	4.2
Kandiah 2002	160.00	(129.46 to 190.54)	5.5
Martens 2008	8.00	(-10.37 to 26.37)	6.1
Moore 2008	2.40	(-10.94 to 15.74)	6.2
Najimi 2013	38.40	(4.55 to 72.25)	5.3
Perikkou 2013	111.68	(72.50 to 150.86)	5.0
Reynolds 2000	70.40	(43.43 to 97.37)	5.7
Scherr 2017	5.60	(-54.14 to 65.34)	3.9
Taghdisi 2016	44.80	(19.17 to 70.43)	5.7
te Velde 2008	30.00	(5.77 to 54.23)	5.8
Random effects model	32.26	(13.28 to 51.23)	100
Number of participants=5,422			
τ^2=1461.033; τ=38.223; I^2=93.2% (90.6% to 95.0%)			

Abbreviations: CI=confidence interval; MD=mean difference; W=weight;

Supplementary Table 22: Pairwise meta-analysis of all interventions vs control for vegetable intake

Study	MD	95% CI	%W (random)
Anderson 2005	-2.00	(-128.28 to 124.28)	0.8
Baranowski 2000	-0.00	(-22.17 to 22.17)	8.5
Baranowski 2003	19.20	(7.79 to 30.61)	10.9
Cohen 2015	12.80	(6.15 to 19.45)	11.7
Domel 1993	-16.00	(-53.85 to 21.85)	5.5
Evans 2013	3.00	(-14.93 to 20.93)	9.5
Hoppu 2010	7.00	(-24.70 to 38.70)	6.5
Kandiah 2002	112.00	(74.68 to 149.32)	5.5
Najimi 2013	55.20	(24.72 to 85.68)	6.8
Reynolds 2000	55.20	(30.35 to 80.05)	7.9
Scherr 2017	-9.60	(-38.54 to 19.34)	7.1
Taghdisi 2016	30.40	(9.69 to 51.11)	8.9
te Velde 2008	10.00	(-3.97 to 23.97)	10.4
Random effects model	20.82	(8.87 to 32.78)	100
Number of participants=3,888			
τ^2=307.581; τ=17.538; I^2=78.3% (63.3% to 87.1%)			

Abbreviations: CI=confidence interval; MD=mean difference; W=weight;

Supplementary Table 23: GRADE evaluation for fruit and vegetable intake (g/d) and all comparisons (study duration: range 1-36 months)*

	Direct evidence			Indirect evidence		Network meta-analysis	
Comparison	**N studies**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**
Multi-component vs control	10	31.74 (8.22 to 55.26)	⊕⊕◯◯ [1,2]	-54.08 (-198.57 to 90.40)	⊕⊕◯◯	29.52 (6.31 to 52.74)	⊕⊕◯◯ [8]
Nutrition education and literacy vs. control	4	33.63 (0.73 to 66.52)	⊕⊕◯◯ [3,4]	-	-	33.63 (0.73 to 66.52)	⊕⊕◯◯
Nutrition-friendly school initiatives vs control	2	-10.10 (-61.47 to 41.27)	⊕⊕◯◯ [5,6]	10.45 (-117.90 to 138.80)	⊕⊕◯◯	-7.26 (-54.96 to 40.43)	⊕◯◯◯ [8,9]
Multi-component vs. Nutrition education and literacy	0	-	-	-4.10 (-44.36 to 36.16)	⊕⊕◯◯	-4.10 (-44.36 to 36.16)	⊕◯◯◯ [9]
Multi-component vs nutrition-friendly school initiatives	1	8.00 (-74.21 to 90.21)	⊕⊕⊕◯ [7]	54.07 (-9.64 to 117.78)	⊕⊕◯◯	36.79 (-13.57 to 87.15)	⊕◯◯◯ [9]
Nutrition education and literacy vs nutrition-friendly school initiatives	0	-	-	40.89 (-17.05 to 98.83)	⊕⊕◯◯	40.89 (-17.05 to 98.83)	⊕◯◯◯ [9]

⊕⊕⊕⊕ High; ⊕⊕⊕◯ Moderate; ⊕⊕◯◯ Low; ⊕◯◯◯ Very low.

[1] downgraded by one level due to risk of bias (the sensitivity analysis without high risk of bias studies confirms results of primary analyses).
[2] downgraded by one level due to unexplained inconsistency (I^2 =72%; p<0.001).
[3] downgraded by one level due to risk of bias (2/4 of included RCTs rated with high risk of bias).
[4] downgraded by one level due to unexplained inconsistency (I^2 =95%; p<0.001).
[5] downgraded by one level due to risk of bias (1/2 of included RCTs rated with high risk of bias).
[6] downgraded by one level due to unexplained inconsistency (I^2 =66%; p=0.09).
[7] downgraded by one level due to risk of bias (included RCT rated as some concerns for risk of bias).
[8] direct evidence contributing more to the NMA estimate (>50%) and not downgraded for incoherence since network estimate is similar to dominant (direct) estimate.
[9] downgraded by one level due to imprecision, since 95% CI overlaps null effect.

Abbreviations: CI=confidence interval; GRADE=Grading of Recommendations Assessment, Development, and Evaluation; MD=mean difference; RCT=randomised controlled trial; vs=versus;

*Direct estimates were evaluated with the following GRADE criteria: risk of bias, indirectness, inconsistency and publication bias. As suggested recently by the GRADE working group, consideration of imprecision is not necessary when rating the direct and indirect estimates to inform the rating of NMA estimates.

Supplementary Table 24: GRADE evaluation for fruit intake (g/d) and all comparisons (study duration: range 1-36 months)*

	Direct evidence			Indirect evidence		Network meta-analysis	
Comparison	**N studies**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**
Multi-component vs control	6	31.58 (0.80 to 62.37)	⊕⊕◯◯ [1,2]	-	-	31.58 (0.80 to 62.37)	⊕⊕◯◯
Nutrition education and literacy vs control	9	45.69 (22.23 to 69.14)	⊕⊕◯◯ [3,4]	-	-	45.69 (22.23 to 69.14)	⊕⊕◯◯
Nutrition-friendly school initiatives vs control	3	-4.22 (-42.29 to 33.85)	⊕⊕◯◯ [1,5]	-	-	-4.22 (-42.29 to 33.85)	⊕◯◯◯ [6]
Multi-component vs nutrition education and literacy	0	-	-	-14.10 (-52.81 to 24.60)	⊕⊕◯◯	-14.10 (-52.81 to 24.60)	⊕◯◯◯ [6]
Multi-component vs nutrition-friendly school initiatives	0	-	-	35.80 (-13.16 to 84.77)	⊕⊕◯◯	35.80 (-13.16 to 84.77)	⊕◯◯◯ [6]
Nutrition education and literacy vs nutrition-friendly school initiatives	0	-	-	49.91 (5.19 to 94.62)	⊕⊕◯◯	49.91 (5.19 to 94.62)	⊕⊕◯◯

⊕⊕⊕⊕ High; ⊕⊕⊕◯ Moderate; ⊕⊕◯◯ Low; ⊕◯◯◯ Very low.

[1] downgraded by one level due to risk of bias (the sensitivity analysis without high risk of bias studies confirms results of primary analyses).
[2] downgraded by one level due to unexplained inconsistency (I^2 =63%; p=0.02).
[3] downgraded by one level due to risk of bias (5/9 of included RCTs rated with high risk of bias).
[4] downgraded by one level due to unexplained inconsistency (I^2 =93%; p<0.001).
[5] downgraded by one level due to unexplained inconsistency (I^2 =94%; p<0.001).
[6] downgraded by one level due to imprecision, since 95% CI overlaps null effect.

Abbreviations: CI=confidence interval; GRADE=Grading of Recommendations Assessment, Development, and Evaluation; MD=mean difference; RCT=randomised controlled trial; vs=versus;

*Direct estimates were evaluated with the following GRADE criteria: risk of bias, indirectness, inconsistency and publication bias. As suggested recently by the GRADE working group, consideration of imprecision is not necessary when rating the direct and indirect estimates to inform the rating of NMA estimates.

Supplementary Table 25: GRADE evaluation for vegetable intake (g/d) and all comparisons (study duration: range 1-36 months)*

	Direct evidence			Indirect evidence		Network meta-analysis	
Comparison	**N studies**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**
Multi-component vs control	6	12.32 (-11.03 to 35.68)	⊕⊕◯◯ [1,2]	-	-	12.32 (-11.03 to 35.68)	⊕◯◯◯ [6]
Nutrition education and literacy vs control	6	31.46 (9.49 to 53.43)	⊕⊕◯◯ [3,4]	-	-	31.46 (9.49 to 53.43)	⊕⊕◯◯
Nutrition-friendly school initiatives vs control	1	12.80 (-34.68 to 60.28)	⊕⊕◯◯ [5]	-	-	12.80 (-34.68 to 60.28)	⊕◯◯◯ [6]
Multi-component vs nutrition education and literacy	0	-	-	-19.14 (-51.20 to 12.92)	⊕⊕◯◯	-19.14 (-51.20 to 12.92)	⊕◯◯◯ [6]
Multi-component vs. nutrition-friendly school initiatives	0	-	-	-0.48 (-53.39 to 52.44)	⊕⊕◯◯	-0.48 (-53.39 to 52.44)	⊕◯◯◯ [6]
Nutrition education and literacy vs nutrition-friendly school initiatives	0	-	-	18.66 (-33.66 to 70.98)	⊕⊕◯◯	18.66 (-33.66 to 70.98)	⊕◯◯◯ [6]

⊕⊕⊕⊕ High; ⊕⊕⊕◯ Moderate; ⊕⊕◯◯ Low; ⊕◯◯◯ Very low.

[1] downgraded by one level due to risk of bias (the sensitivity analysis without high risk of bias studies confirms results of primary analyses).
[2] downgraded by one level due to unexplained inconsistency (I^2 =67%; p=0.01).
[3] downgraded by one level due to risk of bias (2/6 of included RCTs rated with high risk of bias).
[4] downgraded by one level due to unexplained inconsistency (I^2 =86%; p<0.001).
[5] downgraded by two levels due to risk of bias (the included RCT rated with high risk of bias).
[6] downgraded by one level due to imprecision, since 95% CI overlaps null effect.

Abbreviations: CI=confidence interval; GRADE=Grading of Recommendations Assessment, Development, and Evaluation; MD=mean difference; RCT=randomised controlled trial; vs=versus;

*Direct estimates were evaluated with the following GRADE criteria: risk of bias, indirectness, inconsistency and publication bias. As suggested recently by the GRADE working group, consideration of imprecision is not necessary when rating the direct and indirect estimates to inform the rating of NMA estimates.

Supplementary Table 26: Pairwise meta-analysis of all interventions vs control for fat intake (mean difference)

Study	MD	95% CI	%W (random)
Anderson 2005	-2.89	(-6.37 to 0.59)	15.9
Davis 2021	0.80	(-5.72 to 7.32)	7.5
Evans 2013	1.20	(-3.30 to 5.70)	12.2
Foster 2008	-3.78	(-8.58 to 1.02)	11.3
Hoppu 2010	0.80	(-1.75 to 3.35)	20.1
Katz 2011	-0.30	(-11.65 to 11.05)	3.0
Vandongen 1995 Boys	-3.62	(-8.48 to 1.25)	11.1
Vandongen 1995 Girls	3.35	(0.54 to 6.17)	18.9
Random effects model	-0.30	(-2.36 to 1.77)	100
Number of participants=1,766			
τ^2=3.827; τ=1.956; I^2=47.4% (0.0% to 76.6%)			

Abbreviations: CI=confidence interval; MD=mean difference; W=weight;

Supplementary Table 27: GRADE evaluation for fat intake (g/d) and all comparisons*

	Direct evidence			Indirect evidence		Network meta-analysis	
Comparison	**N studies**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**	**MD (95% CI)**	**Certainty of evidence**
Multi-component vs control	4	-1.21 (-3.97 to 1.55)	⨁⨁⨁◯ [1]	-	-	-1.21 (-3.97 to 1.55)	⨁⨁◯◯ [3]
Nutrition education and literacy vs control	3	0.83 (-2.21 to 3.87)	⨁⨁◯◯ [2]	-	-	0.83 (-2.21 to 3.87)	⨁◯◯◯ [3]
Multi-component vs nutrition education and literacy	0	-	-	-2.04 (-6.14 to 2.06)	⨁⨁◯◯	-2.04 (-6.14 to 2.06)	⨁◯◯◯ [3]

⨁⨁⨁⨁ High; ⨁⨁⨁◯ Moderate; ⨁⨁◯◯ Low; ⨁◯◯◯ Very low.

[1] downgraded by one level due to risk of bias (1/3 of included RCTs rated with high risk of bias).
[2] downgraded by two levels due to risk of bias (3/3 of included RCTs rated with high risk of bias).
[3] downgraded by one level due to imprecision, since 95% CI overlaps null effect.

Abbreviations: CI=confidence interval; GRADE=Grading of Recommendations Assessment, Development, and Evaluation; MD=mean difference; RCT=randomised controlled trial; vs=versus;

*Direct estimates were evaluated with the following GRADE criteria: risk of bias, indirectness, inconsistency and publication bias. As suggested recently by the GRADE working group, consideration of imprecision is not necessary when rating the direct and indirect estimates to inform the rating of NMA estimates.

Supplementary Table 28: Pairwise meta-analysis of multicomponent intervention vs control for SSB intake (mean difference)

Study	MD	95% CI	%W (random)
Frequency/day			
Davis 2021	-0.06	(-0.27 to 0.15)	90.4
Zhu 2021	-0.30	(-0.94 to 0.34)	9.6
Random effects model	-0.08	(-0.28 to 0.12)	100
Number of participants=3,231			
τ^2= 0; τ=0; I^2= 0.0%			
mL/day			
Ooi 2021	-28.58	(-105.62 to 48.46)	65.6
Zhu 2021	-33.50	(-139.91 to 72.91)	34.4
Random effects model	-30.27	(-92.67 to 32.13)	100
Number of participants=200			
τ^2= 0; τ=0; I^2= 0.0%			

Abbreviations: CI=confidence interval; MD=mean difference; W=weight;

Supplementary Table 29: GRADE evidence profile for pairwise (multicomponent intervention vs control group) comparisons on continuous outcomes.

Certainty assessment							№ of patients		Effect		Certainty
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	MCI	CG	Relative (95% CI)	Absolute (95% CI)	
SSB intake - frequency/day (study duration: range 12-36 months)											
$2^{771\ 790}$	randomised trials	serious[a]	not serious	not serious	serious[b]	none	1458	1773	-	MD **0.08 lower** (0.28 lower to 0.12 higher)	⨁⨁◯◯ Low
SSB intake - mL/day (study duration: range 9-12 months)											
$2^{771\ 790}$	randomised trials	very serious[c]	not serious	not serious	serious[d]	none	102	98	-	MD **30.27 lower** (92.67 lower to 32.13 higher)	⨁◯◯◯ Very low

CG=control group; **CI=**confidence interval; **MCI=**multicomponent intervention; **M=**mean difference;

Explanations
a. Downgraded by one level for RoB, since one out of two RCTs was rated as high RoB.
b. Downgraded by one level for imprecision since 95% CI overlap null effect.
c. Downgraded by two levels for RoB, since both included RCTs were rated as high RoB.
d. Downgraded by one level for imprecision, since number of participants was low (n=200), and 95% CI overlap null effect.

Supplementary Table 30: Relative ranking of nutrition interventions (P-scores*)

Intervention	**BMI** (↓)	**zBMI** (↓)	**Body weight change** (↓)	**Body fat** (↓)	**Waist circumference** (↓)	**FV intake** (↑)	**Fruit intake** (↑)	**Vegetable intake** (↑)	**Fat intake** (↓)
MCI	**0.7604**	0.4231	0.4567	0.6812	0.3536	0.7795	0.7132	0.4878	**0.8202**
NEL	0.3618	**0.9999**	-	0.3677	0.6880	**0.8244**	**0.9160**	**0.8781**	0.2303
NFSI	0.2483	-	0.2635	0.1168	**0.8481**	0.1807	0.1681	0.4836	-
SBFP	0.4831	-	0.5909	-	-	-	-	-	-
CG	0.6464	0.0770	**0.6888**	**0.8343**	0.1103	0.2154	0.2028	0.1506	0.4495

*P-scores were calculated and presented to obtain relative ranking of nutrition interventions. Higher P-score value indicates greater benefit (larger decrease or increase in outcome of interest) with a certain intervention.

Abbreviations: CG=control group; FV=fruit and vegetable; MCI=multicomponent intervention; NEL=nutrition education and literacy; NFSI=nutrition friendly school initiatives; SBFP=school-based food preparation;

Bolded are nutrition interventions identified as the best for the given outcome.

(↓) = decrease is the effect of interest; (↑) = increase is the effect of interest

Subgroup and sensitivity analyses

Supplementary Table 31: Sensitivity analysis: using post values instead of change scores for fruit and vegetable intake (g/d)

Intervention	MD	95% CI
Control	.	.
Multi-component	29.41	(6.70 to 52.11)
Nutrition education and literacy	40.95	(8.48 to 73.41)
Nutrition-friendly school initiatives	-7.73	(-54.30 to 38.83)
Heterogeneity: τ^2=873.110; τ=29.548; I^2=85.5% (77.2% to 90.8%)		

Abbreviations: Ci=confidence interval; MD=mean difference;

Supplementary Table 32: Pairwise meta-analysis of all interventions vs control for fruit and vegetable intake (standardised mean difference)

Study	SMD	95% CI	%W(random)
Anderson 2005	0.07	(-0.48 to 0.62)	2.5
Baranowski 2000	0.05	(-0.18 to 0.28)	7.4
Baranowski 2003	0.16	(0.06 to 0.26)	10.9
Bere 2006a	-0.08	(-0.36 to 0.20)	6.1
Bere 2006b	0.19	(-0.07 to 0.46)	6.5
Birnbaun 2002	-0.29	(-0.54 to -0.04)	6.9
Domel 1993	0.48	(-0.22 to 1.18)	1.7
Evans 2013	0.01	(-0.18 to 0.20)	8.4
Foster 2008	-0.09	(-0.41 to 0.22)	5.5
Ghaffari 2019	0.19	(-0.30 to 0.68)	3.0
He 2009	0.12	(-0.15 to 0.40)	4.1
He 2009	0.10	(-0.17 to 0.37)	4.3
Nicklas 1998	0.34	(0.08 to 0.61)	6.4
Rajbhandari-Thapa 2020	0.13	(-0.35 to 0.61)	3.2
Rajbhandari-Thapa 2020	-0.12	(-0.54 to 0.31)	3.7
Reynolds 2000	0.27	(0.08 to 0.46)	8.4
Taghdisi 2016	1.98	(1.15 to 2.82)	1.3
te Velde 2008	0.19	(0.04 to 0.34)	9.6
Random effects model	0.12	(0.02 to 0.21)	100
Number of participants=5,040			
τ^2=0.020; τ=0.143; I^2=61.7% (36.1% to 77.0%)			

Abbreviations: CI=confidence interval; SMD=standardised mean difference; W=weight;

Supplementary Table 33: Sensitivity analysis: using post values instead of change scores for fruit intake (g/d)

Intervention	MD	95%-CI
Control	.	.
Multi-component	35.54	(10.97 to 60.10)
Nutrition education and literacy	33.55	(15.45 to 51.64)
Nutrition-friendly school initiatives	-4.41	(-32.64 to 23.83)
Heterogeneity: τ^2=586.381; τ=24.215; I^2=83.5% (74.5% to 89.3%)		

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 34: Pairwise meta-analysis of all interventions vs control for fruit intake (standardised mean difference)

Study	SMD	95%-CI	%W(random)
Anderson 2005	0.61	(0.04 to 1.17)	2.8
Ashfield-Watt 2009	-0.46	(-0.69 to -0.22)	6.4
Baranowski 2000	0.02	(-0.20 to 0.25)	6.5
Baranowski 2003	0.16	(0.06 to 0.26)	8.3
Bessems 2012	0.14	(-0.10 to 0.37)	6.5
Chellappah 2015	0.43	(-0.08 to 0.93)	3.3
Cohen 2015	0.01	(-0.30 to 0.32)	5.3
Domel 1993	0.74	(0.03 to 1.45)	2.0
Evans 2013	-0.01	(-0.20 to 0.18)	7.1
Hoppu 2010	0.16	(-0.18 to 0.50)	5.0
Kandiah 2002	1.25	(0.51 to 1.99)	1.9
Lehto 2014	0.17	(-0.10 to 0.44)	5.9
Martens 2008	0.10	(-0.13 to 0.33)	6.5
Moore 2008	0.03	(-0.14 to 0.20)	7.5
Najimi 2013	0.51	(-0.05 to 1.07)	2.8
Perikkou 2013	1.03	(0.43 to 1.63)	2.6
Reynolds 2000	0.25	(0.06 to 0.44)	7.1
Scherr 2017	-0.08	(-0.60 to 0.44)	3.1
Taghdisi 2016	1.19	(0.45 to 1.93)	1.9
te Velde 2008	0.18	(0.03 to 0.33)	7.7
Random effects model	0.18	(0.07 to 0.30)	100
Number of participants=5,703			
τ^2=0.038; τ=0.196; I^2=71.1% (54.6% to 81.6%)			

Abbreviations: CI=confidence interval; SMD=standardised mean difference; W=weight;

Supplementary Table 35: Sensitivity analysis: using post values instead of change scores for vegetable intake (g/d)

Intervention	MD	95%-CI
Control	.	.
Multi-component	13.80	(-1.79 to 29.40)
Nutrition education and literacy	21.33	(7.20 to 35.45)
Nutrition-friendly school initiatives	12.80	(-13.96 to 39.56)
Heterogeneity: τ^2=174.894; τ=13.225; I^2=59.1% (20.5% to 79.0%)		

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 36: Pairwise meta-analysis of all interventions vs control for vegetable intake (standardised mean difference)

Study	SMD	95%-CI	%W(random)
Anderson 2005	-0.01	(-0.56 to 0.54)	2.7
Baranowski 2000	-0.00	(-0.23 to 0.23)	8.8
Baranowski 2003	0.17	(0.07 to 0.27)	14.1
Chellappah 2015	-0.03	(-0.53 to 0.47)	3.2
Cohen 2015	0.08	(-0.23 to 0.39)	6.3
Domel 1993	0.28	(-0.42 to 0.97)	1.8
Evans 2013	0.03	(-0.17 to 0.22)	10.2
Hoppu 2010	-0.01	(-0.35 to 0.33)	5.6
Kandiah 2002	0.15	(-0.54 to 0.83)	1.9
Lehto 2014	-0.00	(-0.27 to 0.27)	7.4
Najimi 2013	0.89	(0.31 to 1.47)	2.5
Reynolds 2000	0.21	(0.02 to 0.40)	10.3
Scherr 2017	0.08	(-0.44 to 0.60)	3.0
Taghdisi 2016	1.70	(0.91 to 2.50)	1.4
te Velde 2008	0.11	(-0.04 to 0.26)	12.0
van den Berg 20	0.01	(-0.21 to 0.24)	8.9
Random effects model	0.12	(0.02; 0.22)	100
Number of participants=4.472			
τ^2=0.015; τ=0.123; I^2=48.2% (7.5%; 71.0%)			

Abbreviations: CI=confidence interval; SMD=standardised mean difference; W=weight;

Supplementary Table 37: Sensitivity analysis: using post values instead of change scores for fat intake (g/d)

Intervention	MD	95%-CI
Control	.	.
Multi-component	-0.77	(-4.27 to 2.73)
Nutrition education and literacy	0.60	(-3.19 to 4.39)
Heterogeneity: τ^2=8.094; τ=2.845; I^2=63.2% (16.5%; 83.8%)		

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 38: Pairwise meta-analysis of all interventions vs control for fat intake (standardised mean difference)

Study	SMD	95%-CI	%W(random)
Anderson 2005	-29.22	(-34.95 to -23.48)	1.2
Davis 2021	-0.02	(-0.30 to 0.26)	17.2
Evans 2013	0.04	(-0.15 to 0.23)	17.5
Hoppu 2010	0.18	(-0.16 to 0.52)	17.0
Kandiah 2002	-0.92	(-1.63 to -0.20)	14.8
Vandongen 1995 boys	0.07	(-0.46 to 0.59)	16.0
Vandongen 1995 girls	-0.03	(-0.53 to 0.46)	16.2
Random effects model	-0.46	(-1.12 to 0.20)	100
Number of participants=953			
τ^2=0.645; τ=0.803; I^2=94.4% (90.8% to 96.6%)			

Abbreviations: CI=confidence interval; SMD=standardised mean difference; W=weight;

Supplementary Table 39: Relative ranking of nutrition interventions (SMD sensitivity analysis; P-scores*)

Intervention	**FV intake (↑)**	**Fruit intake (↑)**	**Vegetable intake (↑)**	**Fat intake (↓)**
MCI	0.6851	0.6819	0.4963	**1.0000**
NEL	**0.9147**	**0.9434**	**0.9050**	0.3133
NFSI	0.2043	0.1329	0.4011	-
SMC	0.3800	-	-	-
CG	0.3159	0.2418	0.1976	0.1867

*P-scores were calculated and presented to obtain relative ranking of nutrition interventions. Higher P-score value indicates greater benefit (larger decrease or increase in outcome of interest) of a certain intervention.

Abbreviations: MCI=Multicomponent intervention; NEL=Nutrition education and literacy; NFSI=Nutrition friendly school initiatives; SMC=Social marketing campaigns; CG=Control group; FV=fruit and vegetable;

Bolded are nutrition interventions identified as the best for the given outcome.

(↓) = decrease is the effect of interest; (↑) = increase is the effect of interest

Supplementary Table 40: Sensitivity analysis excluding high RoB RCTs for BMI

	MD	95%-CI
Control	.	.
Multi-component	-0.04	(-0.19; 0.11)
Nutrition education and literacy	0.21	(-0.34; 0.77)
Nutrition-friendly school initiatives	0.26	(-0.05; 0.57)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 41: Sensitivity analysis excluding high RoB RCTs for fruit and vegetable intake

	MD	95%-CI
Control	.	.
Multi-component	50.21	(13.28; 87.15)
Nutrition education and literacy	56.00	(13.51; 98.49)
Nutrition-friendly school initiatives	41.49	(-38.82; 121.81)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 42: Sensitivity analysis excluding high RoB RCTs for fruit intake

	MD	95%-CI
Control	.	.
Multi-component	49.37	(-28.44; 127.18)
Nutrition education and literacy	71.03	(18.12; 123.94)
Nutrition-friendly school initiatives	2.40	(-100.18; 104.98)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 43: Sensitivity analysis excluding high RoB RCTs for vegetable intake

	MD	95%-CI
Control	.	.
Multi-component	32.18	(-14.25; 78.61)
Nutrition education and literacy	50.40	(18.09; 82.70)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 44: Subgroup analysis for geographical location for BMI

	MD	95%-CI
Australia/Oceania		
Control	.	.
Nutrition education and literacy	-0.11	(-0.92; 0.70)
Nutrition-friendly school initiatives	0.26	(-0.05; 0.57)
Asia		
Control	.	.
Multi-component	-0.14	(-0.59; 0.31)
Europe		
Control	.	.
School-based food preparation	0.15	(-1.80; 2.10)
North America		
Control	.	.
Multi-component	-0.03	(-0.19; 0.13)
Nutrition education and literacy	0.50	(-0.26; 1.25)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 45: Subgroup analysis for age for BMI

	MD	95%-CI
Age: <10 years		
Control	.	.
Multi-component	-0.02	(-0.24; 0.20)
Age: ≥10 years		
Control	.	.
Multi-component	-0.04	(-0.27; 0.19)
Nutrition education and literacy	0.08	(-0.90; 1.05)
School-based food preparation	0.15	(-1.80; 2,10)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 46: Subgroup analysis for study length for BMI

	MD	95%-CI
Study length: <6 months		
Control	.	.
Nutrition education and literacy	0.28	(-0.39; 0.95)
Nutrition-friendly school initiatives	0.26	(-0.05; 0.57)
School-based food preparation	0.15	(-1.80; 2.10)
Study length: ≥6 months		
Control	.	.
Multi-component	-0.04	(-0.19; 0.11)
Nutrition education and literacy	0.08	(-0.90; 1.05)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 47: Subgroup analysis for geographical location for fruit and vegetable intake

	MD	95%-CI
Asia		
Control	.	.
Multi-component	18.40	(-29.13 to 65.93)
Nutrition education and literacy	38.40	(25.38 to 51.42)
Europe		
Control	.	.
Multi-component	23.62	(-7.77 to 55.01)
Nutrition education and literacy	2.00	(-46.92 to 50.92)
North America		
Control	.	.
Multi-component	36.71	(0.23; 73.19)
Nutrition education and literacy	44.99	(-13.38 to 103.36)
Nutrition-friendly school initiatives	-2.33	(-59.40 to 54.73)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 48: Subgroup analysis for age for fruit and vegetable intake

	MD	95%-CI
Age: <10 years		
Control	.	.
Multi-component	129.88	(28.15 to 231.61)
Nutrition education and literacy	38.73	(-29.31 to 106.77)
Age: ≥10 years		
Control	.	.
Multi-component	18.35	(-3.05 to 39.75)
Nutrition education and literacy	18.02	(-47.09 to 83.14)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 49: Subgroup analysis for study length for fruit and vegetable intake

	MD	95%-CI
Study length: <6 months		
Control	.	.
Multi-component	22.87	(-14.15 to 59.89)
Nutrition education and literacy	52.27	(12.14 to 92.41)
Nutrition-friendly school initiatives	22.25	(-51.88 to 96.38)
Study length: ≥6 months		
Control	.	.
Multi-component	35.85	(3.38 to 68.33)
Nutrition education and literacy	2.00	(-74.63 to 78.63)
Nutrition-friendly school initiatives	-28.80	(-101.17 to 43.57)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 50: Subgroup analysis for geographical location for fruit intake

	MD	95%-CI
Asia		
Control	.	.
Nutrition education and literacy	42.47	(22.03 to 62.90)
Europe		
Control	.	.
Multi-component	32.56	(-5.83 to 70.95)
Nutrition education and literacy	26.59	(-2.57 to 55.75)
Nutrition-friendly school initiatives	2.40	(-52.28 to 57.08)
North America		
Control	.	.
Multi-component	29.22	(-40.40 to 98.84)
Nutrition education and literacy	73.36	(5.27 to 141.45)
Nutrition-friendly school initiatives	13.60	(-101.52 to 128.72)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 51: Subgroup analysis for age for fruit intake

	MD	95%-CI
Age: <10 years		
Control	.	.
Multi-component	43.06	(-11.13 to 97.24)
Nutrition education and literacy	48.09	(-2.77 to 98.95)
Nutrition-friendly school initiatives	-28.00	(-111.42 to 55.42)
Age: ≥10 years		
Control	.	.
Multi-component	27.11	(-101.15 to 55.37)
Nutrition education and literacy	84.45	(-41.56 to 210.46)
Nutrition-friendly school initiatives	13.60	(-163.39 to 90.59)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 52: Subgroup analysis for study length for fruit intake

	MD	95%-CI
Study length: <6 months		
Control	.	.
Multi-component	8.00	(-89.39 to 105.39)
Nutrition education and literacy	45.46	(5.25 to 85.66)
Nutrition-friendly school initiatives	-28.00	(-123.15 to 67.15)
Study length: ≥6 months		
Control	.	.
Multi-component	38.33	(8.36 to 68.30)
Nutrition education and literacy	47.30	(4.05 to 90.56)
Nutrition-friendly school initiatives	8.00	(-30.80 to 46.79)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 53: Subgroup analysis for geographical location for vegetable intake

	MD	95%-CI
Asia		
Control	.	.
Nutrition education and literacy	40.17	(16.42 to 63.93)
Europe		
Control	.	.
Multi-component	9.40	(-3.33 to 22.12)
Nutrition education and literacy	3.00	(-14.93 to 20.93)
North America		
Control	.	.
Multi-component	15.36	(-33.51 to 64.22)
Nutrition education and literacy	37.34	(-12.50 to 87.18)
Nutrition-friendly school initiatives	12.80	(-68.21 to 93.81)

Abbreviations: CI=confidence interval; MD=mean difference;

Supplementary Table 54: Subgroup analysis for age for vegetable intake

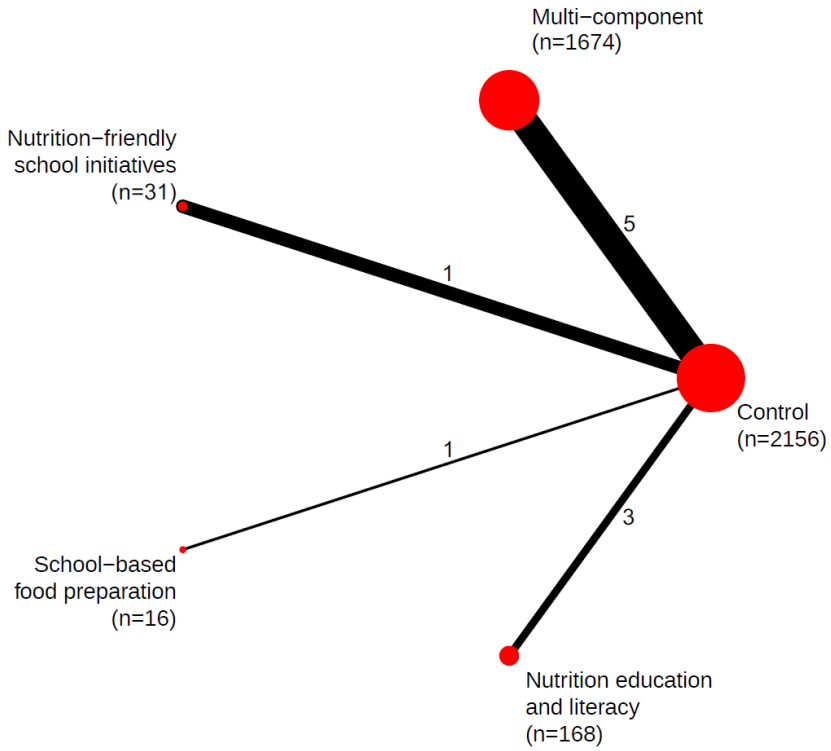
	MD	95%-CI
Age: <10 years		
Control	.	.
Multi-component	22.49	(-11.74 to 56.71)
Nutrition education and literacy	11.49	(-20.19 to 43.16)
Age: ≥10 years		
Control	.	.
Multi-component	9.51	(-3.28 to 22.30)
Nutrition education and literacy	112.00	(74.68 to 149.32)
Nutrition-friendly school initiatives	12.80	(6.15 to 19.45)

Abbreviations: CI=confidence interval; MD=mean difference;

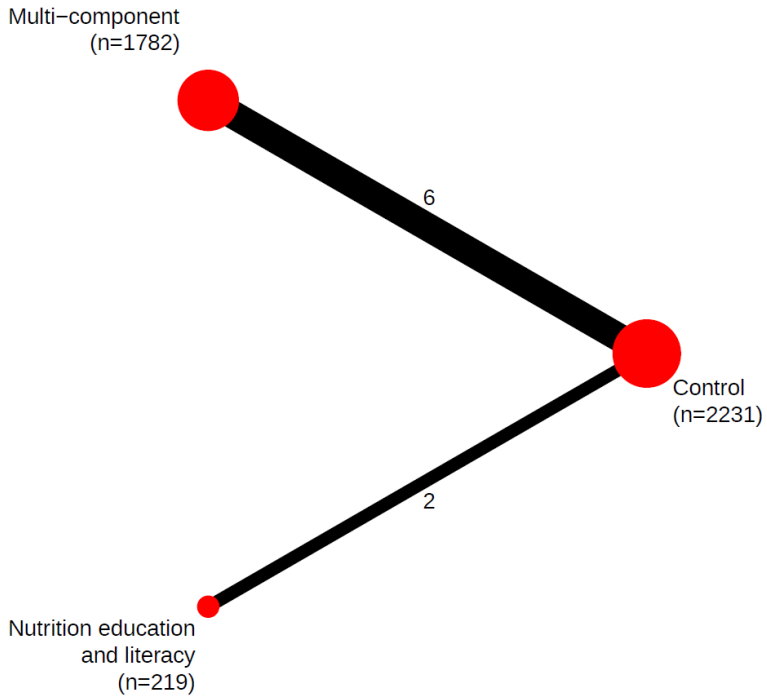
Supplementary Table 55: Subgroup analysis for study length for vegetable intake

	MD	95%-CI
Study length: <6 months		
Control	.	.
Multi-component	0.00	(-83.50 to 83.50)
Nutrition education and literacy	41.80	(-1.25 to 84.85)
Study length: ≥6 months		
Control	.	.
Multi-component	15.60	(-8.34 to 39.54)
Nutrition education and literacy	3.00	(-42.48 to 48.48)
Nutrition-friendly school initiatives	12.80	(-29.52 to 55.12)

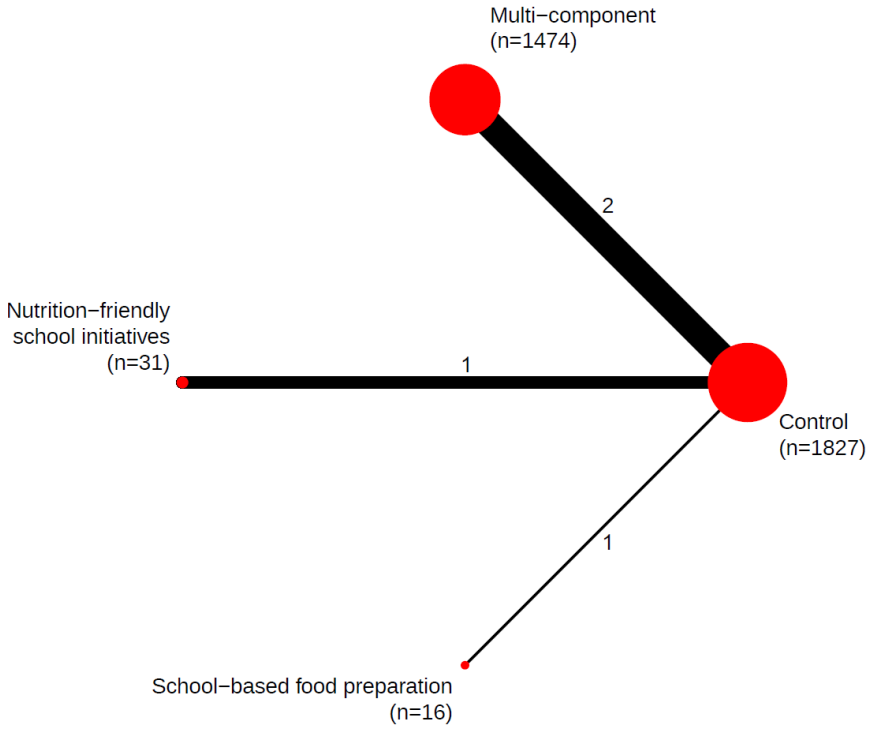
Abbreviations: CI=confidence interval; MD=mean difference;



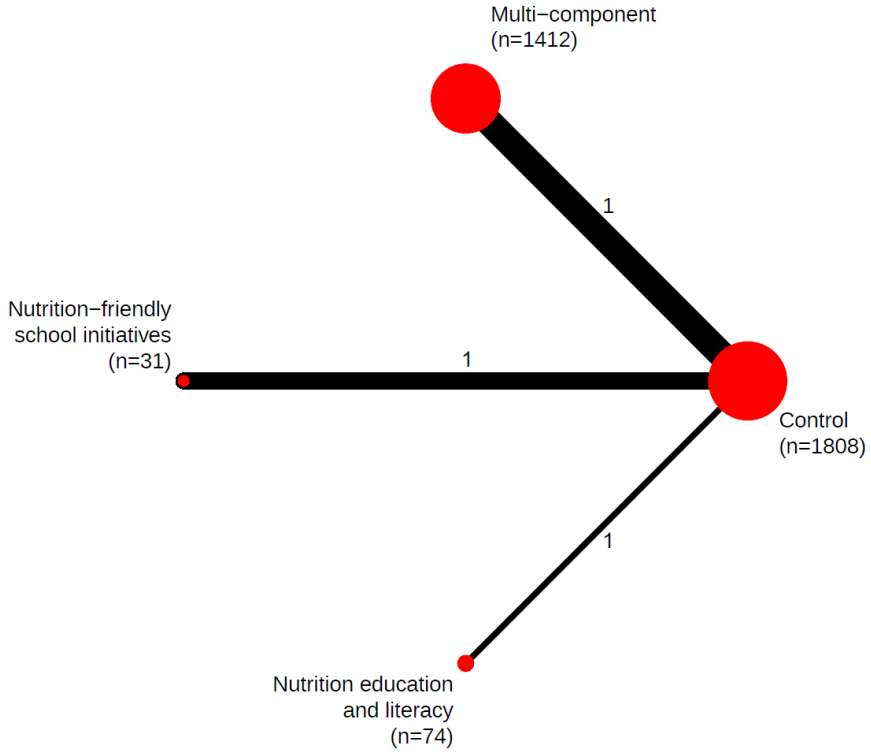
Supplementary Figure 1a: Network graph BMI



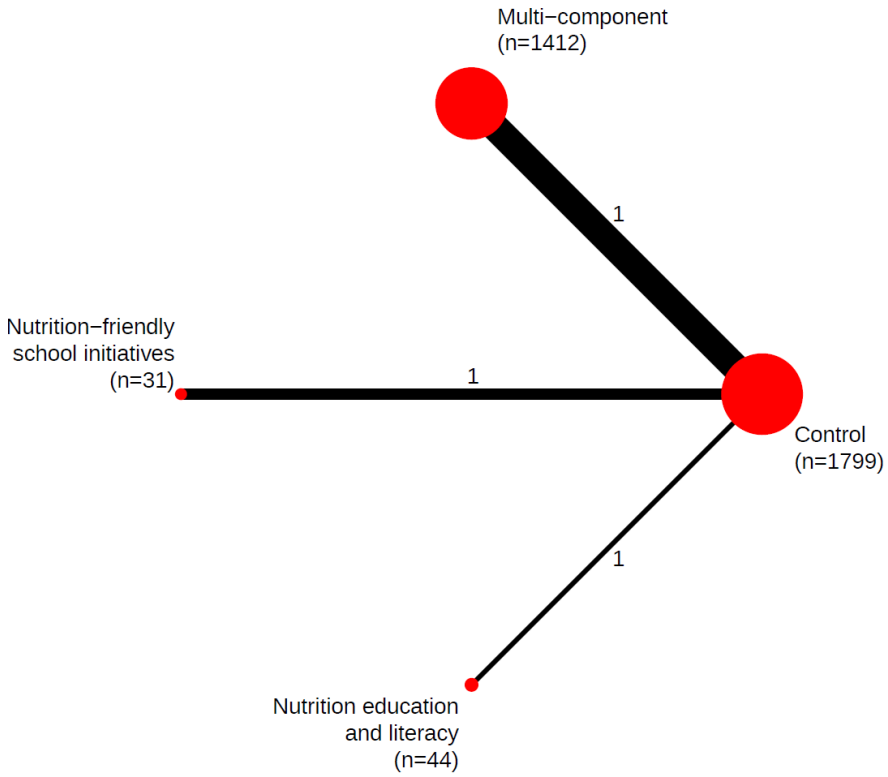
Supplementary Figure 1b: Network graph zBMI



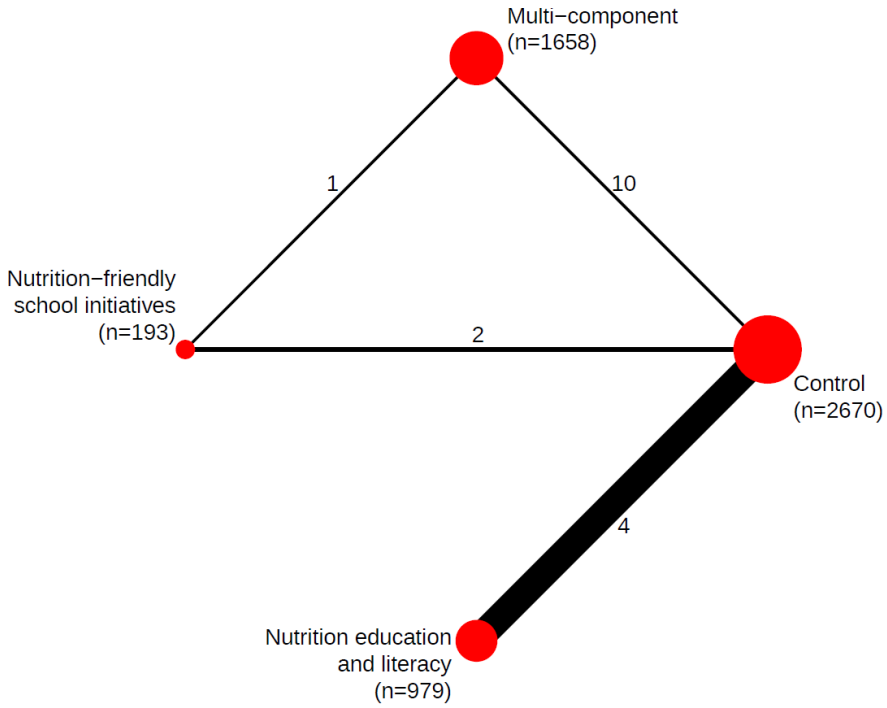
Supplementary Figure 1c: Network graph body weight change



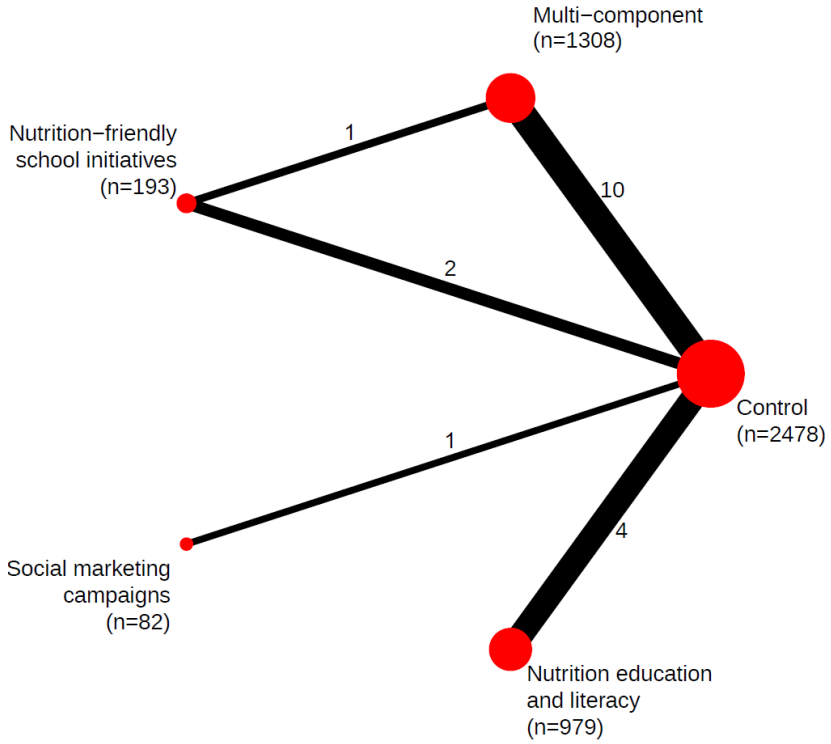
Supplementary Figure 1d: Network graph body fat



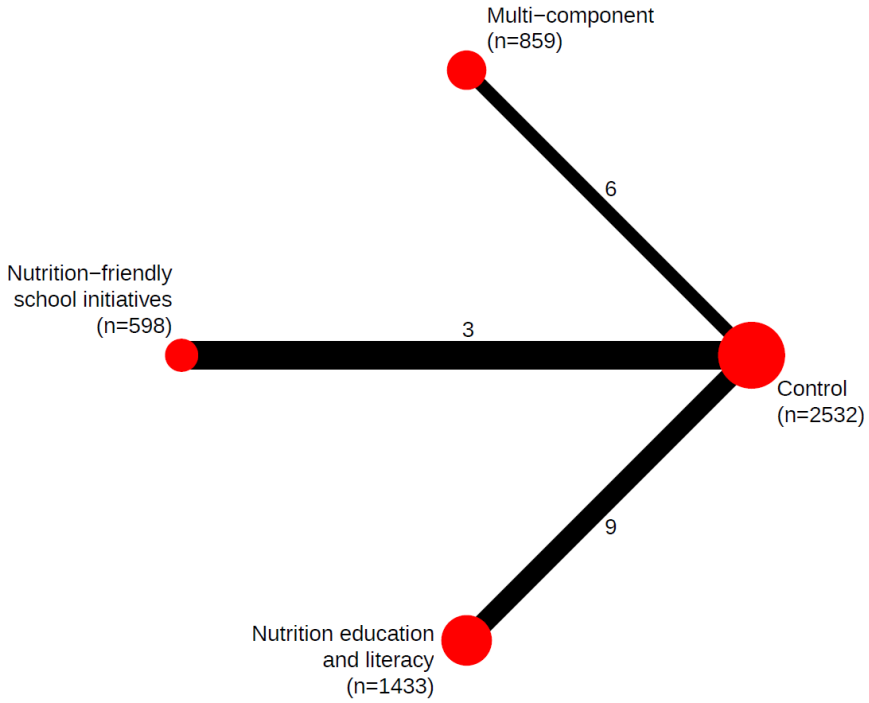
Supplementary Figure 1e: Network graph waist circumference



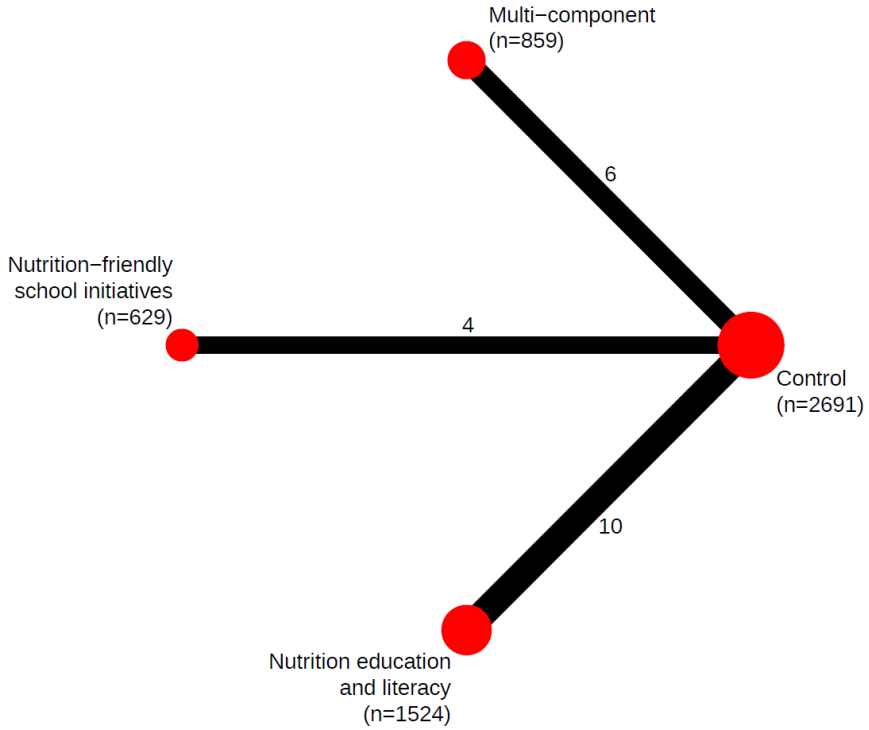
Supplementary Figure 1f: Network graph fruit and vegetable intake (mean differences)



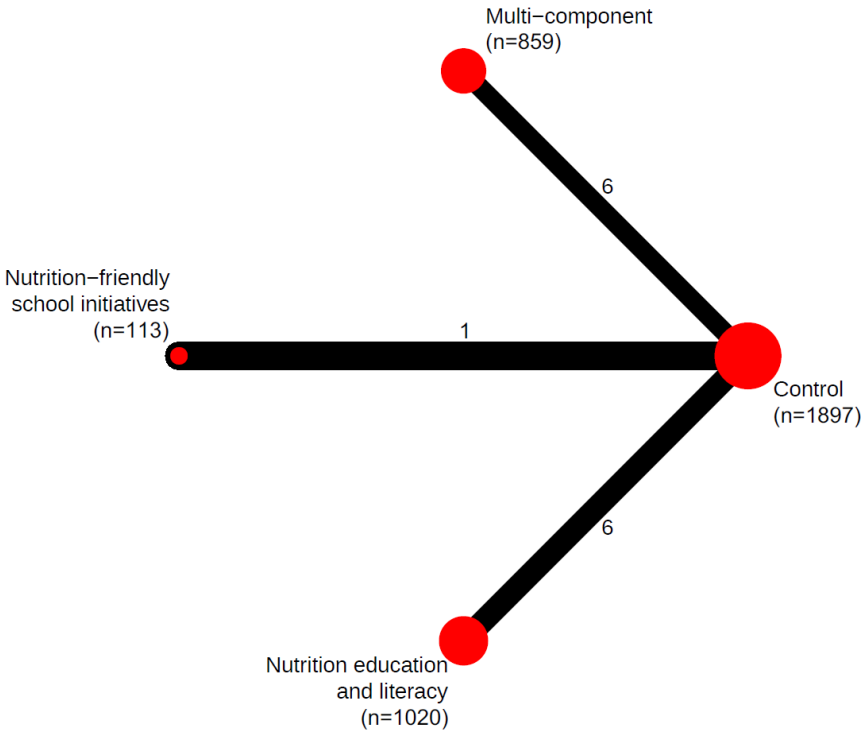
Supplementary Figure 1g: Network graph fruit and vegetable intake (standardised mean differences)



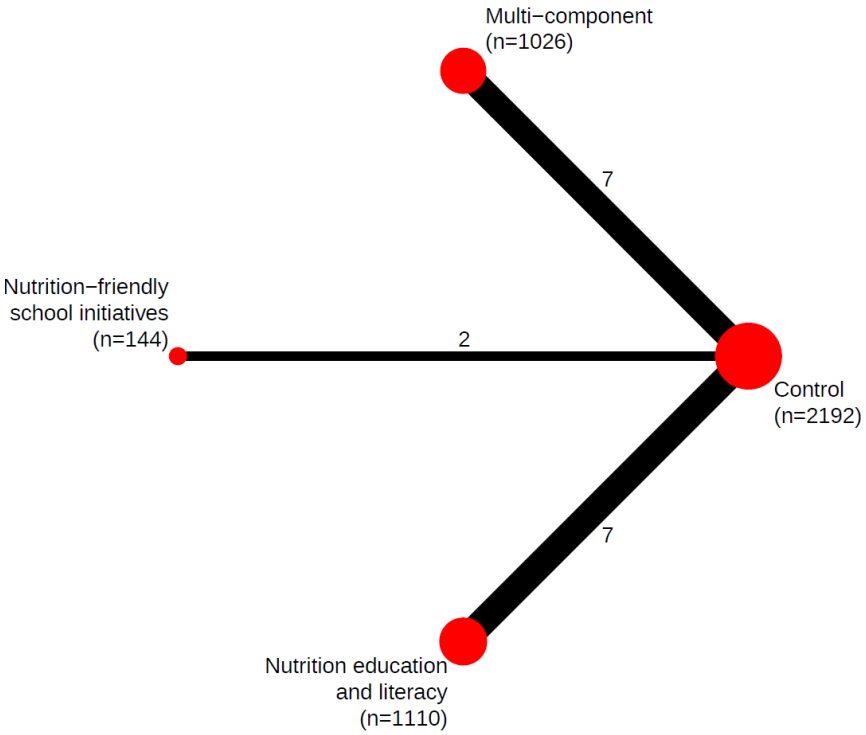
Supplementary Figure 1h: Network graph fruit intake (mean differences)



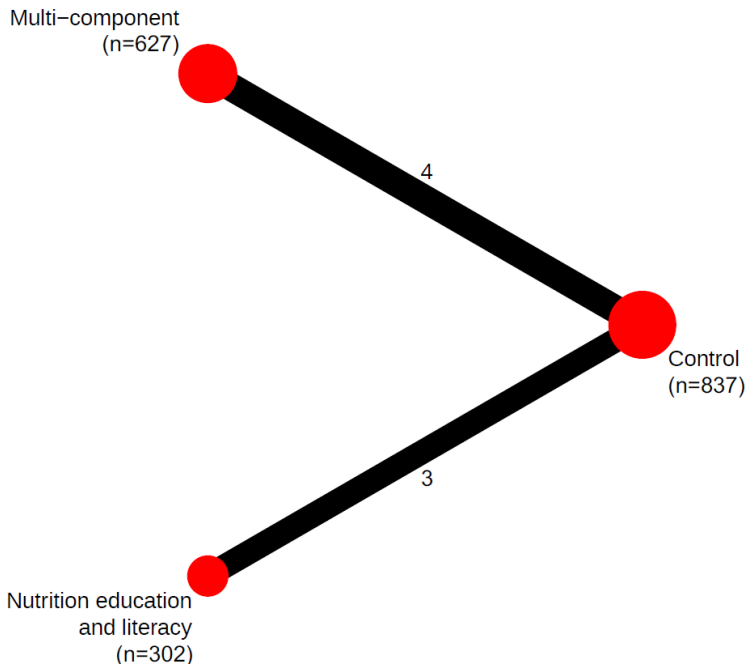
Supplementary Figure 1i: Network graph fruit intake (standardised mean differences)



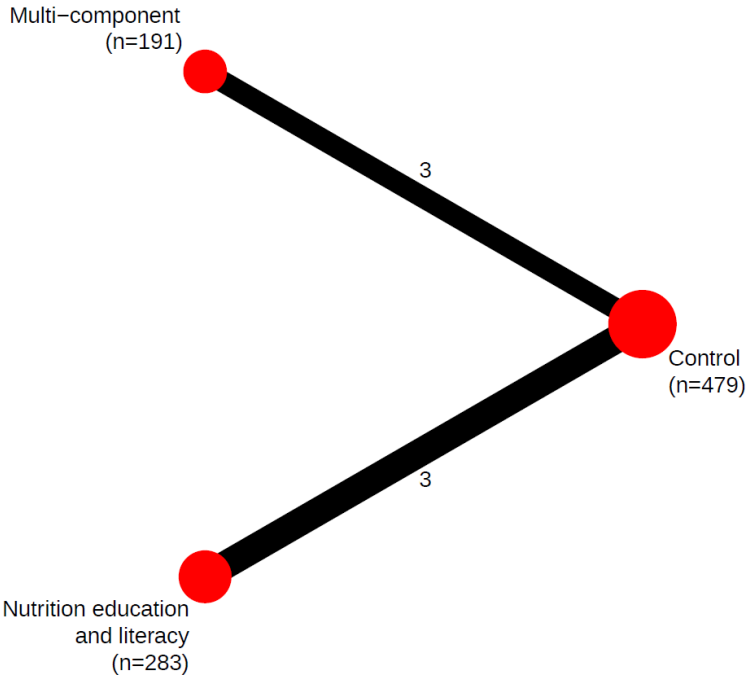
Supplementary Figure 1j: Network graph vegetable intake (mean differences)



Supplementary Figure 1k: Network graph vegetable intake (standardised mean differences)

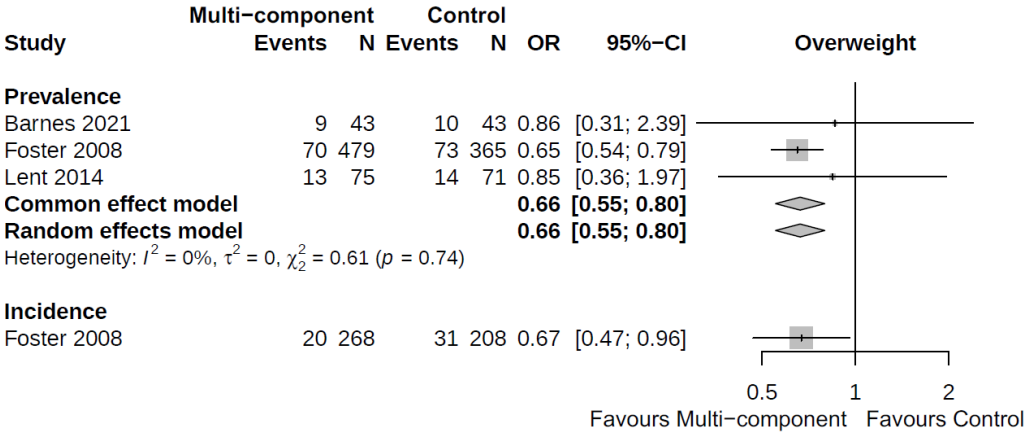


Supplementary Figure 1l: Network graph fat intake (mean differences)



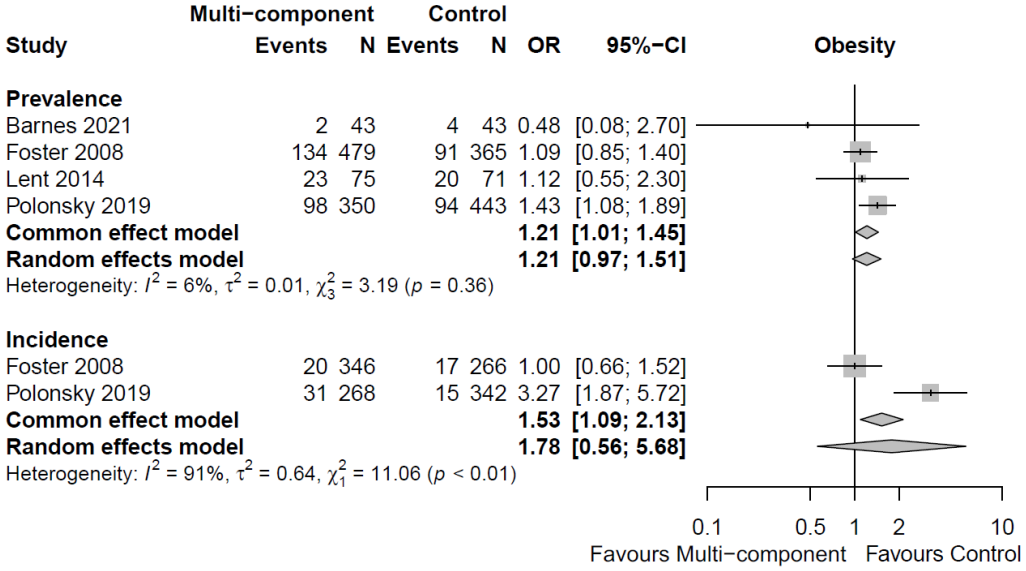
Supplementary Figure 1m: Network graph fat intake (standardised mean differences)

Supplementary Figure 2: Summary of the risk of bias assessment for the included RCTs



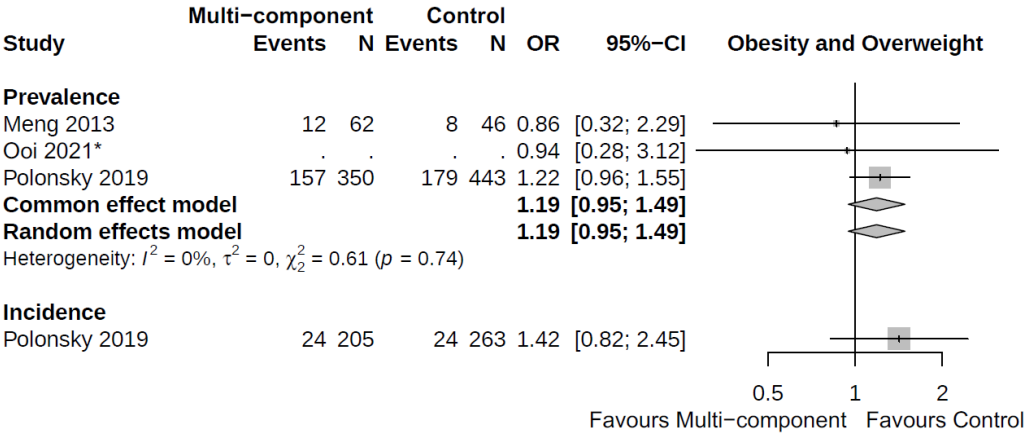
Supplementary Figure 3: Forest plot overweight risk (pairwise meta-analysis)

CI=confidence interval; N=number of participants; OR=odds ratio



Supplementary Figure 4: Forest plot obesity risk (pairwise meta-analysis)

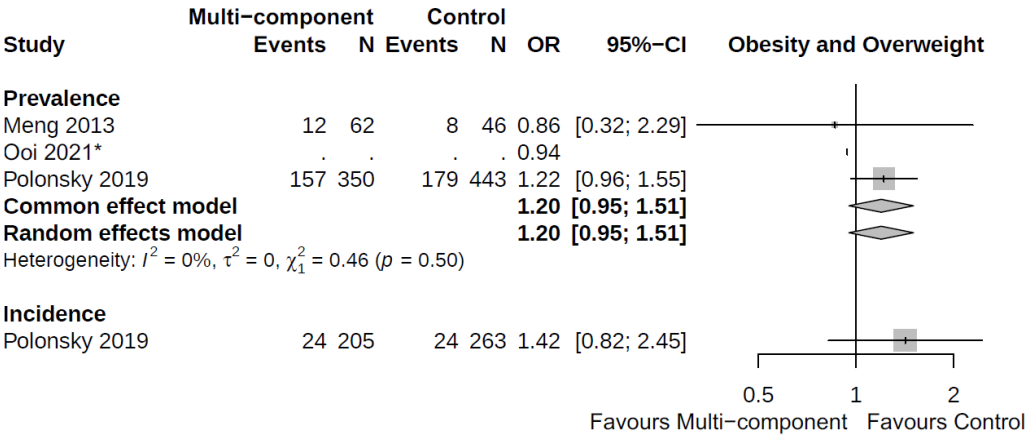
CI=confidence interval; N=number of participants; OR=odds ratio



Supplementary Figure 5a: Forest plot overweight/obesity risk (pairwise meta-analysis)

*No clustering adjustment was made in the Ooi 2021 study and only the OR was reported.

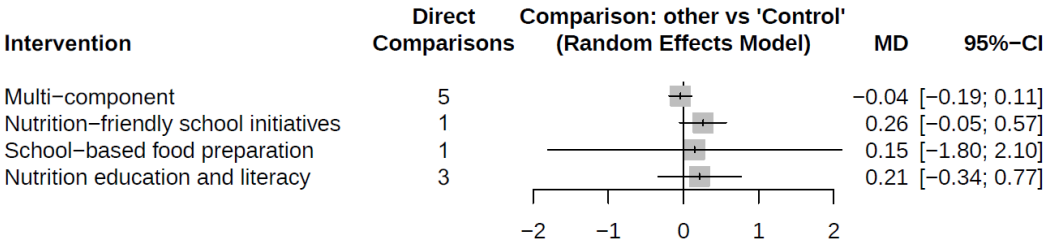
CI=confidence interval; N=number of participants; OR=odds ratio;



Supplementary Figure 5b: Forest plot overweight/obesity risk (pairwise meta-analysis)

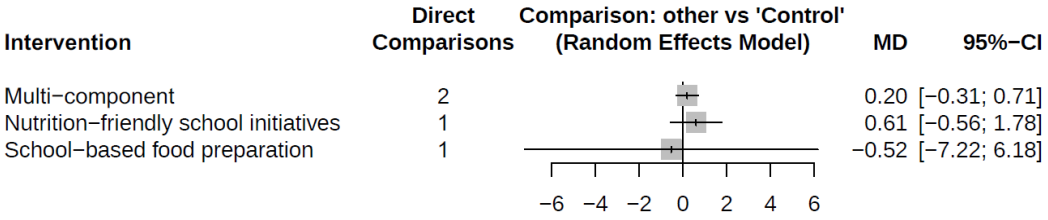
*Sensitivity analysis excluding Ooi 2021 (as no clustering adjustment was made in the study and only the OR was reported).

CI=confidence interval; N=number of participants; OR=odds ratio;



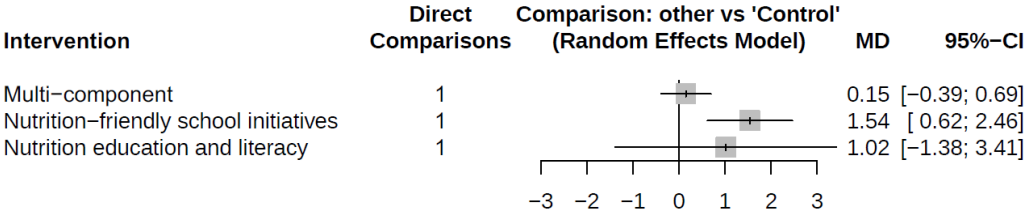
Supplementary Figure 6: Forest plot BMI

BMI=body mass index; CI=confidence interval; MD=mean difference;



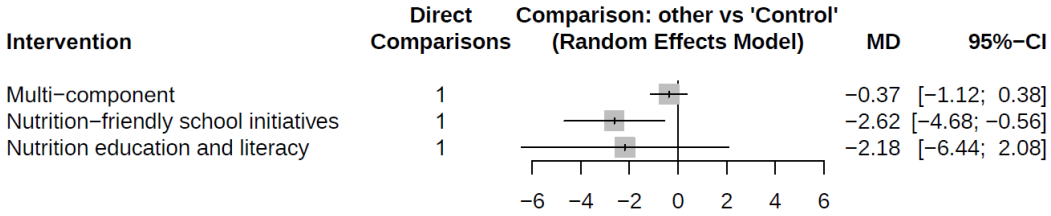
Supplementary Figure 7: Forest plot body weight change (kg)

CI=confidence interval; MD=mean difference;



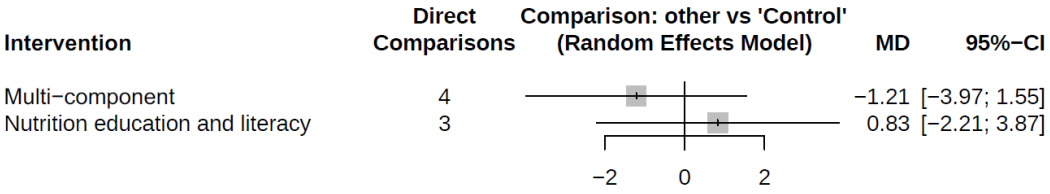
Supplementary Figure 8: Forest plot body fat (%)

CI=confidence interval; MD=mean difference;



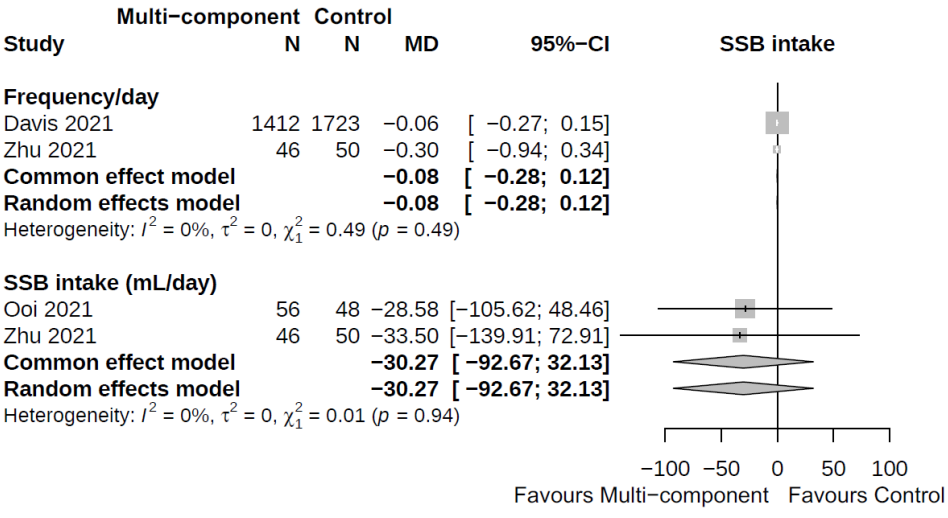
Supplementary Figure 9: Forest plot waist circumference (cm)

CI=confidence interval; MD=mean difference;

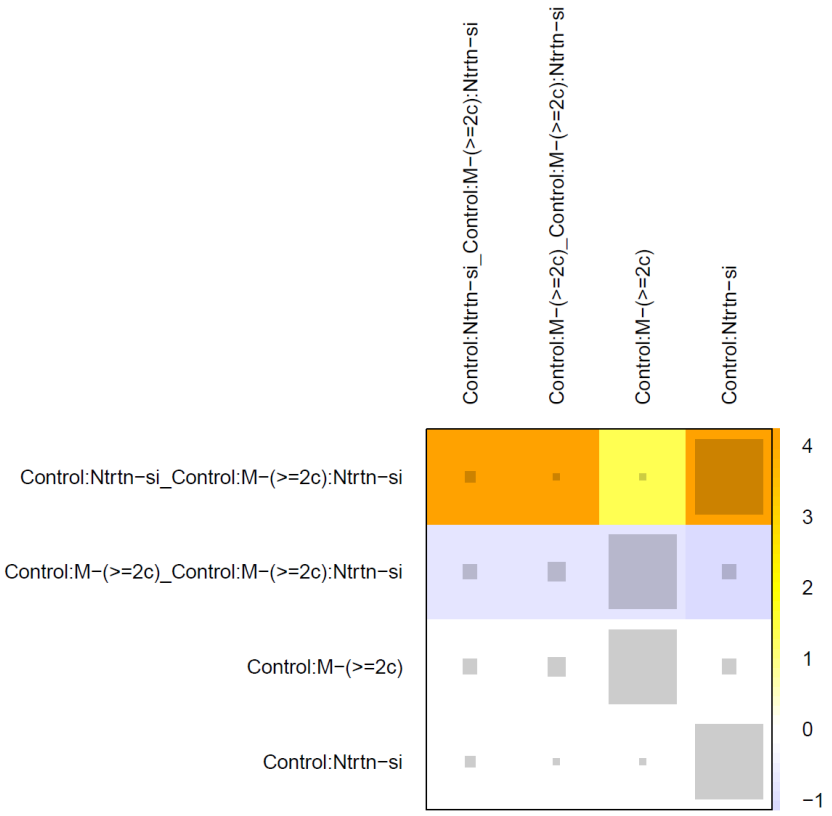


Supplementary Figure 10: Forest plot fat intake (g/d)

CI=confidence interval; MD=mean difference;

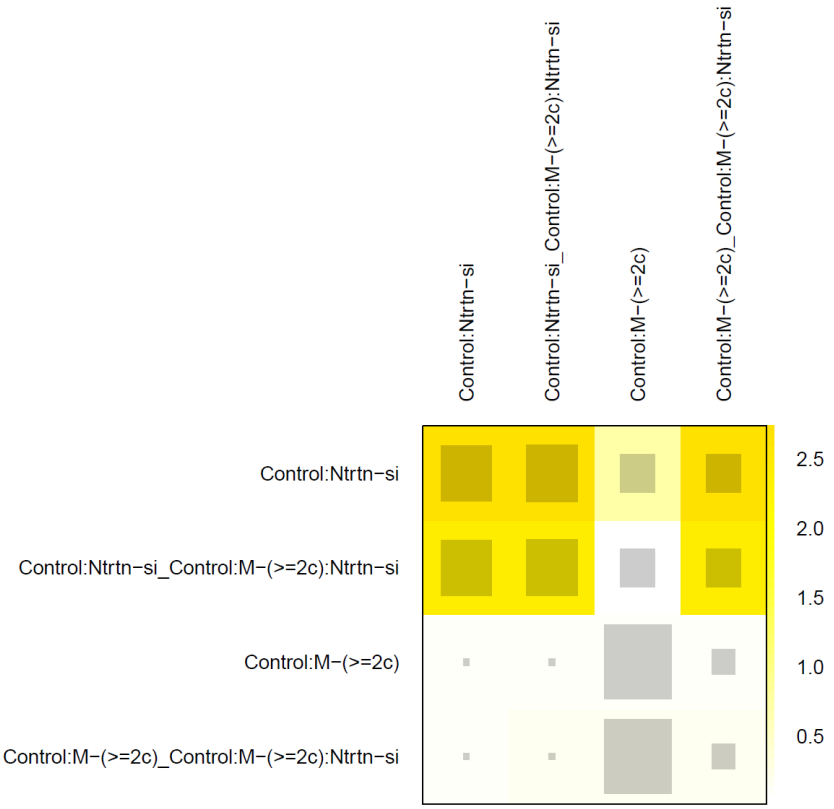


Supplementary Figure 11: SSB intake (pairwise meta-analysis)
CI=confidence interval; MD=mean difference;



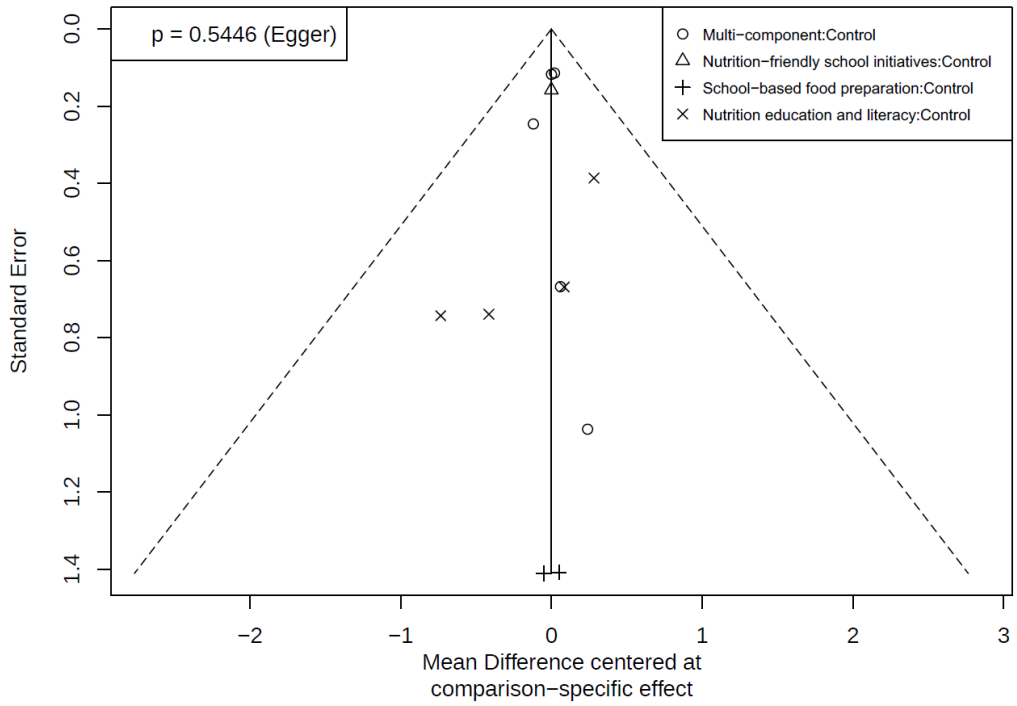
Supplementary Figure 12: Net-heat plot* to assess inconsistency for fruit and vegetable intake (mean difference)

*This plot is a heat map where the colours on the diagonal represent the inconsistency contribution of the corresponding design and the colours on the off-diagonal are associated with the change in inconsistency between direct and indirect evidence in a network estimate in the row after relaxing the consistency assumption for the effect of a design in the column. A blue coloured element indicates that the evidence of the design in the column supports the evidence in the row; a red coloured element indicates that the evidence of the design in the column contrasts to the evidence in the row.

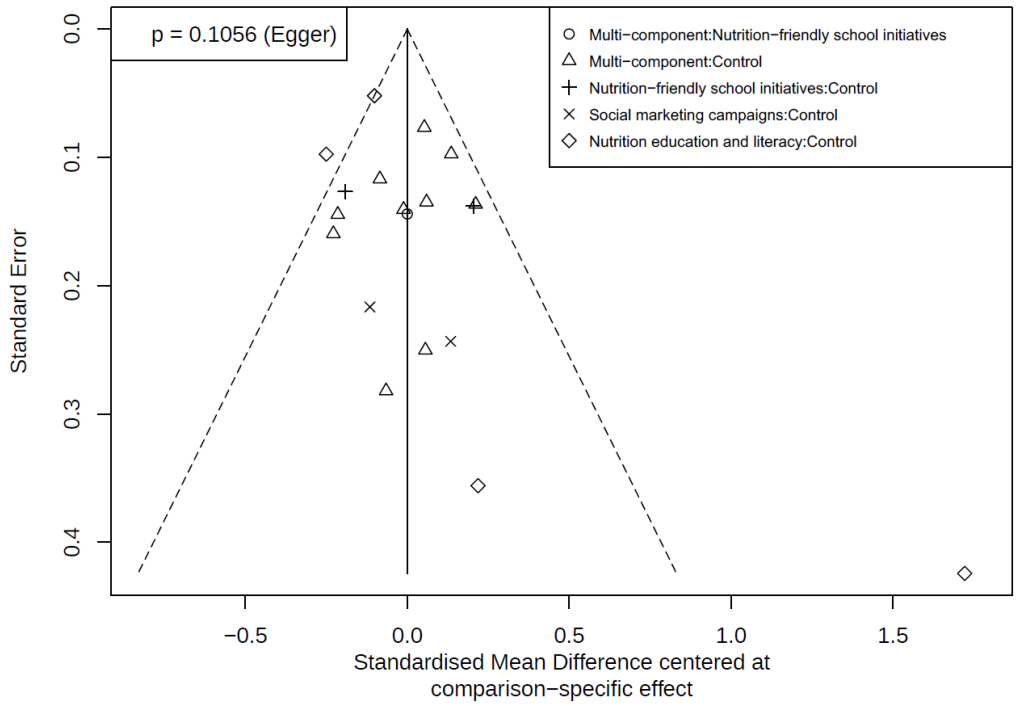


Supplementary Figure 13: Net-heat plot* to assess inconsistency for fruit and vegetable intake (standardised mean difference)

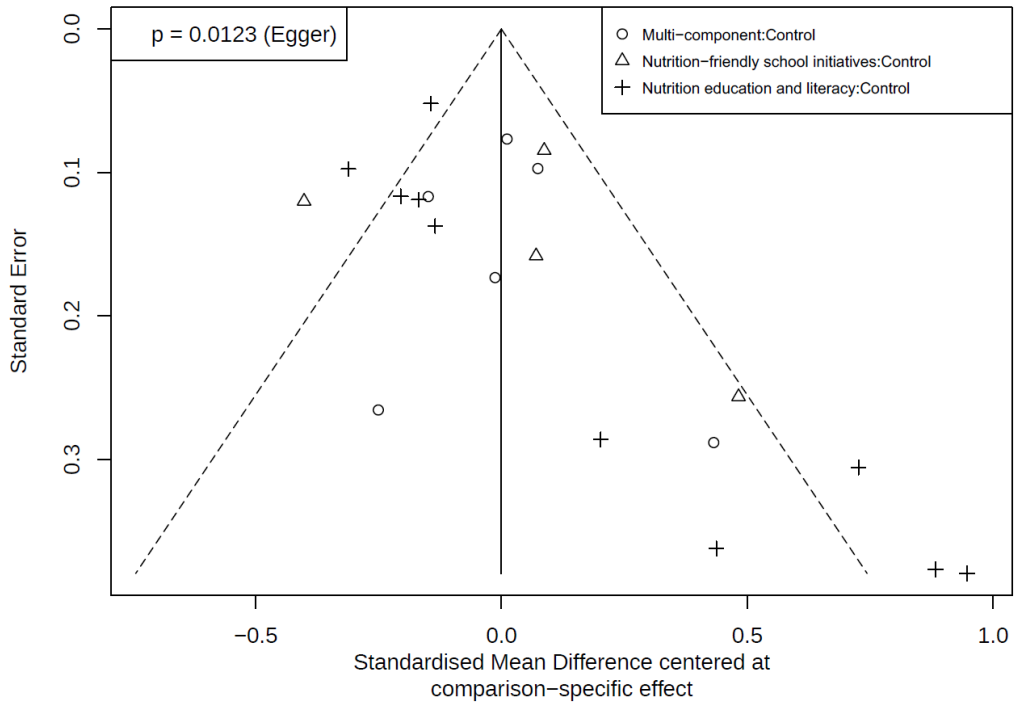
*This plot is a heat map where the colours on the diagonal represent the inconsistency contribution of the corresponding design and the colours on the off-diagonal are associated with the change in inconsistency between direct and indirect evidence in a network estimate in the row after relaxing the consistency assumption for the effect of a design in the column. A blue coloured element indicates that the evidence of the design in the column supports the evidence in the row; a red coloured element indicates that the evidence of the design in the column contrasts to the evidence in the row.



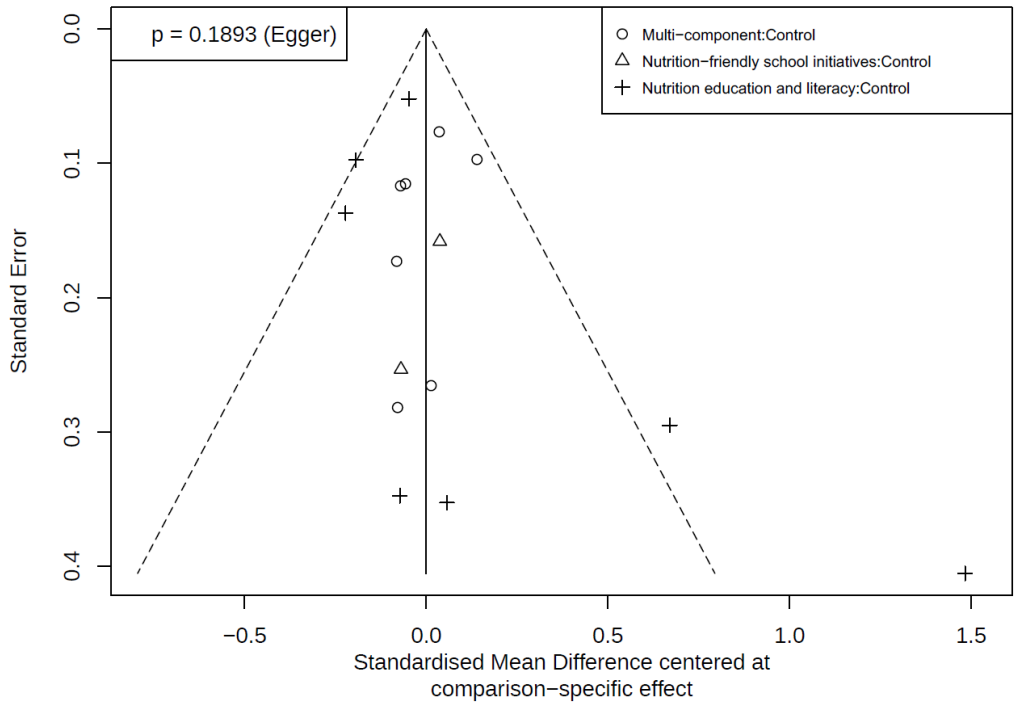
Supplementary Figure 14: Comparison adjusted funnel plot for body mass index



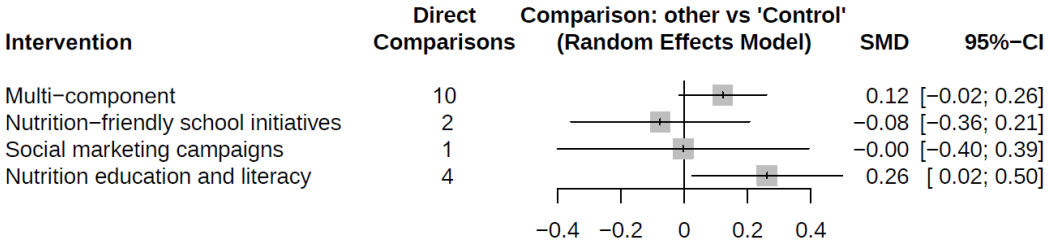
Supplementary Figure 15: Comparison adjusted funnel plot for fruit and vegetable intake



Supplementary Figure 16: Comparison adjusted funnel plot for fruit intake

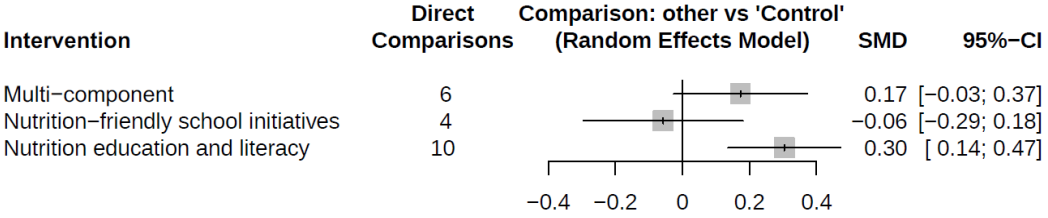


Supplementary Figure 17: Comparison adjusted funnel plot for vegetable intake



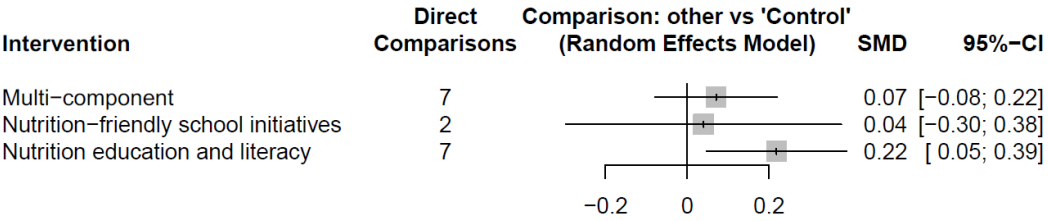
Supplementary Figure 18: Forest plot fruit and vegetable intake (standardised mean difference)

CI=confidence interval; SMD=standardised mean difference;



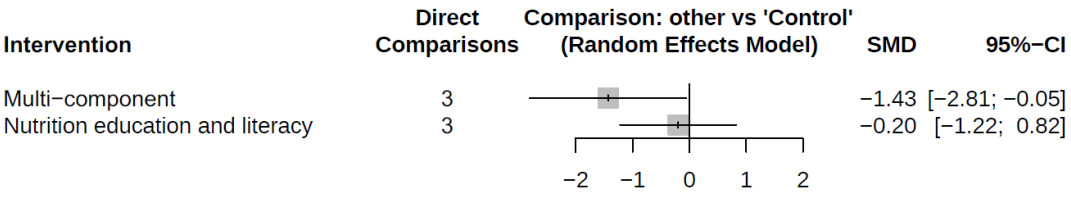
Supplementary Figure 19: Forest plot fruit intake (standardised mean difference)

CI=confidence interval; SMD=standardised mean difference;



Supplementary Figure 20: Forest plot vegetable intake (standardised mean difference)

CI=confidence interval; SMD=standardised mean difference;



Supplementary Figure 21: Forest plot fat intake (standardised mean difference)

CI=confidence interval; SMD=standardised mean difference;

Supplemental References

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