**Supplementary Table 2: Summary of Excluded Studies on Experiential Nutrition Interventions in Primary Schools and Reason for Exclusion**

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| **Author / Year** **City/Country** **Funding** | **Sample** | **Intervention duration** | **Intervention** | **Control group** | **Relevant Outcomes** | **GRADE rating** | **Reason for exclusion** |
|  |  |  | **School Gardens** |  |  |  |  |
| **Quasi-Experimental Design**  |  |  |  |  |  |  |  |
| Macnab et al, 2013 (20)Johannesburg , South Africa*Siyakhana Initiative for Ecological Health and Food Security, division of Wits Health Consortium, University of Witwatersrand* | Grade 1-6,n = 68 | 1 academic year | School gardens were established and integrated into curriculum.  | *N* | Food gardens did not significantly improve diet diversity or nutritional status. | Very Low | Small sample size with no effect found. No baseline measures. Very Low quality. |
| Block et al, 2012(39)Victoria, Australia*Victoria State Government* | Grade 3-6,n = 764 | 2007-2009 | *Stephanie Alexander Kitchen Garden* Program: 1.5hr per wk of kitchen classes (cooking and tasting) and 1hr per week of gardening classes | *Y* | Increased student engagement, confidence and self-esteem.No changes in child wellbeing. | Low | No baseline and follow-up measures. Outcomes reported from student focus-group responses. |
| Gatto et al, 2012(44)California, US*Not Reported* | Grade 4-5,n = 104 | 12-weeks | *LA Sprouts* program consisting of weekly 90 minutes lessons (45mins gardening and 45min nutrition and cooking classes including snack provision (e.g. veggies with yoghurt and dip, breakfast taco, avocado salad). | *Y* | The students involved in LA Sprouts intervention showed increased preference from vegetables (p = 0.06), but not fruit. The group showed an increased in preference for the three-target fruit and vegetables and improved perception that "vegetables from the garden taste better than vegetables from a store'. | Low | Small sample group due to pilot study (including LA Sprouts RCT in analysis). Only significant results were found for subgroups, but not all participants) |
| Hanbazaza et al, 2015(22)Alberta, CA*Canadian Institute of Health Research Operating Grant and Health Canada* | Grade 1-6,n = 116 | 2-academic years | *EarthBox* kids garden education project - kids planted, cared for, harvested, cooked and ate produce grown in container gardens in addition to provision of healthy fruit and vegetable snacks | *N* | 98.5% of students able to name 5 fruit and vegetables post intervention. Improvement in preference scores for fruit between baseline and 18 months (p<0.05). Increase in some fruit preference (p<0.05). Decline in vegetable preference scores for celery, radish, and tomato. | Very Low | Study quality and small sample size.Does not report effect size. |
| Hermann et al, 2006(21)Oklahoma, US*USDA Children, Youth and Families at risk* | Grade K-8,n = 43 | Not reported | Oklahoma Cooperative Extension Service (OCES) after-school education and gardening program which involved gardening along with food preparation, nutrition and physical activity education | *N* | There was a significant increase in the proportion of children reporting yes to “I eat vegetables every day” (21% pre-test to 44% post-test (p < 0.02)) after the education and gardening program | Very Low | Small sample group representing one school. Very Low quality. |
| Jaenke et al, 2012(29)New South Wales, AustraliaColes Community Grant | Grade 5 and 6,n = 127 | 10-week | (1)3 x 45min classes per week of nutrition education (NE)(2)4 x 45min classes of NE and gardening (growing and cooking) | *Y* | Increases in overall willingness to taste (p = 0.03) in both experimental groups.No change in vegetable intake. | Low | The significant effects found for willingness to taste were for both NE and NE + gardening. Therefore, unable to determine effects of gardening. |
| Morris and Zidenberg-Cherr, 2012(30)California, US*S. Zidenberg-Cherr from the Division of Agriculture and Natural Resources, University of California and by a University of California David graduate fellowship.* | Grade 4,n = 213 | 18-weeks | **NL Intervention:** n = 71 students from one school participated in 17 fortnightly lessons including a classroom education and tasting. **NG Intervention:** n = 81 students from one school participated in 17 fortnightly lessons including a classroom education and tasting in addition to hands-on gardening activities. | *Y* | Exposure to nutrition education classes increased student’s preference for vegetables. Nutrition knowledge was significantly higher in intervention groups **NL** and **NG** compared with control (p < 0.0005), these improvements were maintained at the 6-month follow-up (p < 0.0005). Vegetable preference for carrots and broccoli for **NL** and **NG** groups were significantly higher than control (p < 0.005 and p < 0.01 respectively). The **NG** preference for snow peas and zucchini was significantly higher than the **NL** and control group (p < 0.005 and p < 0.0005 respectively). The were no difference between the three groups for willingness to taste vegetables | Low | Significant differences were reported for **NL** and **NG** interventions (thus success is not attributable to gardening alone) Gardening only found sig increase in preference for snow peas and zucchini) |
| O’Brien and Shoemaker, 2006(23)Kansas, US*Kansas Agricultural Experiment Station* | Grade 4,n = 38 | 10-weeks | 8 x 30min after-school gardening lessons and FV snack provision. | *Y* | No differences between intervention and control for nutrition knowledge.High preference for fruit reported in both groups at baseline and completion of program. No difference for vegetable consumption reported for either group. | Very Low | Small sample size and no indicators of intervention success. |
| Sarti et al, 2017(40)The NetherlandsZonMW | Grade 3-4,n = 45 | 8-months | Researchers observed existing school gardening program. | *N* | Researcher observation reports student’s enthusiasm for vegetables (they had grown) translated into their wish to eat them, resulting in increases in willingness to try vegetables and consumption at home. | Very Low | Small study sample from one school. Outcomes reported through research observation. |
| Triador et al, 2014(24)Alexander, CA*Health Canada and Canadian Institue for Health Research Institue of Nutrition, Metabolism and Diabetes* | Grade 1-6,n = 76 | 11-months | Gardening intervention of *Earth Box Kids* and a 4-month fruit and vegetable snack program | *N* | Significant increases in vegetables preferences were only seem for tomatoes and no other vegetables. Fruit preference was high at both baseline and follow-up. There was a non-significant increase in fruit and vegetable consumption at home. | Very Low | Significant effect found for children’s preference scored for fruit, vegetable and FV combined. Small sample group of Aboriginal First Nations children affecting scope and generalisability. V. Low quality rating |
| **Cohort Studies** |  |  |  |  |  |  |  |
| Carlsson et al, 2016(43)Nova Scotia, Canada*Not Reported* | Grade 1-6, | Not Reported | Planting seeds, harvesting food, eating food. | *N* | Increased willingness to try new foods, grow and prepare foods, increased pride, ownership and increased interest in gardening and cooking days (p<0.05). Also increased enjoyment in eating new foods (p<0.05). | Very Low | Small, specific study group, V.Low quality and outcomes measures of community food security. |
|  |  |  | **Food Provision** |  |  |  |  |
| **Randomised Controlled Trial** |  |  |  |  |  |  |  |
| Ashfield-Watts, Stewart and Scheffer, 2008(33)Auckland, NZ*New Zealand Ministry of Health* | Grade 1-5,n = 2032 | 10-weeks | Students received one piece of free fruit every day for one school term | *Y* | At the completion of the intervention, students who received the fruit had significantly higher intakes of fruit compared with control (p < 0.001). However, fruit consumption within this group had reduced significantly by 6 weeks post intervention compared to the previous follow-up. Only 9% of intervention students maintained their increase in fruit consumption throughout the entire study. Fruit consumption remained unchanged throughout study in the control group. | High | Fruit intakes fell below baseline at six weeks follow up. No other significant results |
| Mhurchu et al, 2013(32)New Zealand*Red Cross and/or private sector food industry partners* | Grade 1-6,n = 424 | 1-academic year | Free daily school breakfast program. Stepped-wedge design allowed participating schools to cross over between intervention and control phase. All participating school were involved in intervention for at least one term | *Y* | Decrease in the number of children eating breakfast at home during the intervention phase compared with control.Significant decrease in children self-reported short-term hunger (p<0.05) during the intervention phase. Increase in satiety by 8.6 units on the Freddy satiety scale (p<0.05). | Moderate | No statistically significant results for outcomes of interest.Outcomes report on school attendance, academic achievement and satiety. |
| **Quasi-Experimental Design** |  |  |  |  |  |  |  |
| El Harake et al, 2018(38)Bekaa, Lebanon*Reach Out to Asia: Education Above All Foundation in Qatar, as part of GHATA Project* | Grade 4-6,n = 203 | 6-months | multicomponent food provision intervention. Consisting of bi-weekly classroom nutrition education and the provision of a daily food item (e.g. cheese sandwich, traditional pies and pastries) as well as two pieces of fruit per week. | *Y* | There were significant increases in dietary knowledge and attitudes in students from the intervention group, compared with control (p < 0.05).Significant increases in total caloric intake, dietary fibre, protein, saturated fat and several key micro nutrients (p < 0.05) in intervention group compared with control | Very Low | Study quality.Specific study group (Syrian refugee children) limited generalisability |
| **Cohort Studies** |  |  |  |  |  |  |  |
| Bartfield, Hong and Min, 2011(26)Wisconsin, US*Not Reported* | Grade 3, n = 3010 | Not Reported | School Breakfast Program | *N* | The “marginal food insecurity” rate was lower 13% lower for those with access to the breakfast program (p<0.05). The program appears to offset food-related concerns among ‘at-risk’ families (Reduces the least severe of food security conditions (p<0.05)) but less so for those over the poverty line threshold. | Low | Only reporting baseline measures for food insecurity. |
| Berry et al, 2018(31)Texas, US*North Texas Food Bank - "Food for Kids* | Grade 1-4,n = 10,076 | 1-academic year.Data was only included for students who participated for a minimum of five months | School-based weekend *"backpack program"*. Students from low income, food insecure households were provided shelf-stable food and snacks on a Friday afternoon. | *N* | A significant effect with time was found for Child Food Insecurity Brief Behavioural Scale (CFIBBS) (p < 0.0001). Boys reported a higher (non-significant) CFIBBS rating than girls. Verbalisation measures revealed children participating in the program spoke less often about not having sufficient food at home. | Very Low | Reporting on Food Security Outcomes. |
| Fletcher and Frisvold, 2017(28)US*Not Reported* | Grade 1-6n = not reported | Not reported | Impact of the availability of the national School Breakfast Program on food insecurity by merging restricted-access NHANES data with school-level poverty data and state policy information | *N* | Overall, the estimates suggest that the SBP reduces food insecurity rates for elementary school aged children. The results for these children are larger in magnitude than high schools (aged 11-18). Findings suggest access to the SBP reduces the likelihood of indicating low food security by over 15 percentage points. | Low | Only reporting baseline measures for food insecurity. |
| Robinson-O'Brien et al, 2010(27)Minnesota, USNational School Lunch Program (NSLP) and School Breakfast Program (SBP) | Grade 4-6,n = 103 | Not Reported | Students receiving NSLP and SBP | *N* | Average reported mean (SD) daily FV intake was 3.6 (2.5) servings. Children consumed over half of their daily FV intake within school (54%). Of 103 children, 82 (80%) consumed fewer than 5 daily servings of FV. When compared to children with higher FV intake (≥5 FV servings daily), children with lower FV intake (<5 FV servings daily) consumed a higher pro-portion of their daily intake at school (34% vs 59%) (p = .002). | Low | Only reporting baseline measures for food insecurity. |
| Rodgers and Milewska, 2007(42)Arkansas, US*Arkansas Rice Depot (Food Bank)**North Texas Food Bank “Food for Kids”* | Grade 4, 6, 8,n = 249 | Not reported.Data collection period 2-years | Backpacks with ready-to-eat food. | *N* | 56% students indicated higher self-esteem and 50% more trusting relationships with school personnel.Increased school attendance (p<0.05). | Low | No follow up measures. Primary study outcome program participation and student behaviour. |
|  |  |  | **Cooking Classes** |  |  |  |  |
| **Quasi-Experimental Design** |  |  |  |  |  |  |  |
| Brill and Shaykis, 2015(41)New Jersey, US*21st Century Community Learning Center grant from the New Jersey and U.S. Departments of Education* | Grade 4-7, n = 23 | 12-weeks | students participated in an after-school cooking and food preparation program. The program also included nutritional messaging from My Plate guidelines. Number of weekly sessions varied between sites, 9-11 sessions total. | *N* | Post-test measures and qualitative observations found that the program increased cooking skills and enjoyment, interest in healthy eating and exposure to healthy foods, and provided knowledge and tools to help modify students’ eating habits away from school | Very Low | Qualitative data reported, no significance or effect reported |
| Ensaff et al, 2016(34)Sheffield, UK*Jamie Oliver Food Foundation* | Grade 3-4,n = 325 | Not reported.Follow-up one-year post intervention | Jamie Oliver's Kitchen Garden Project (JOKGP) involved 90min sessions once per fortnight | *Y* | There were small increases in students taste description and willingness to try new foods. No impact was found for food neophobia. The intervention students showed improvements in cooking enjoyment and enthusiasm and helping cooking at home. | Low | No significant findings for outcomes of interest |
|  |  |  | **Taste Testing** |  |  |  |  |
| **Quasi-Experimental Design** |  |  |  |  |  |  |  |
| Battjes-Fries et al, 2017(35)The Netherlands*The Platform for Food Education and the Netherlands Organisation for Health Research and Development* | Grade 4-5, n = 877 | 1-academic year | (1)Taste Lessons Vegetable Menu (TLVM) program (taste testing, nutrition education; 5x 45min lessons plus 4 extra activities) (2)Taste Lessons (taste testing and nutrition education; 5x 45min lessons) | *Y* | No significant effects were found for either intervention on willingness to taste unfamiliar vegetables nor for daily vegetable consumption or food neophobia. There was a positive effect for both intervention groups for the number of familiar vegetables tasted. | Low | No significant effects found for outcomes of interest. Five tasting lessons only. |
| Lehto et al, 2014(36)Finland, Europe*PRO GREENS Project was funded by Europeans Commission's Programme of Community Action (Public Health) and Juho Vainio Foundation* | Grade 4-5, n = 727 | 1-academic year | Multi component vs single component. Degree of implementation was determined by teacher’s discretion as to how many PRO GREENS classes they conducted throughout the school year. Children bought their own fruit to school for tasting and Nutrition education | *N* | A high degree of implementation of the intervention had an effect on children’s fruit intake. But no effect on vegetable intakes. | Low | Only found significance for fruit consumption and fruit to school in higher degree of implementation. |
| Woo and Lee, 2013(25)Changwon, Korea*Not Reported* | Grade 2 and 3, n = 75 | 12-weeks | 12 x 40min sensory education program involving feeling and expressing the taste of foods and difference in food preferences, whilst sampling different foods | *Y* | Students in the intervention group showed improvements in food knowledge (p < 0.05) and food neophobia towards unfamiliar foods (p < 0.05) compared with both control groups. However, there were no changes in eating behaviours towards unfamiliar foods in all groups | Very low | Small sample group n = 26, low generalisability and Korean specific foods tasted. |
|  |  |  | **Multi-component Intervention** |  |  |  |  |
| **Randomised Controlled Trial** |  |  |  |  |  |  |  |
| *Evans et al, 2012*(37)*Leeds, UK*National Foundation of Educational Research | Grade 2, n = 658 | 10-months | *Project Tomato* - A tasting intervention using the familiarisation, repetition, activities, modelling and environment principles. | *Y* | There was no impact on the intake of FV (Number of portions of fruit (0·0 portions, 95 % CI −0·3, 0·3) or vegetables (0·0 portions, 95 % CI −0·2, 0·3)) consumed daily by children in either intervention or control groups. Intake of FV at school and home dropped by ∼100 g/d and 50 g/d, respectively, between baseline and follow-up in both the intervention and control groups. | High | No significant effects reported. At home intakes of FV decreased between baseline and follow up. |