

Art on a Plate: A Pilot Evaluation of an International Initiative Designed to Promote Consumption of Fruits and Vegetables by Children

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ABSTRACT

Objective: To evaluate the 2016 International Chefs Day cooking workshops Art on a Plate.

Design: Nonexperimental pretest–posttest design

Setting: Art on a Plate workshops with children from 14 countries in Asia, America, and Europe.

Participants: A total of 433 workshop participants aged 4–14 years (mean age, 8.6 years).

Intervention: Instructed by a chef, children in the workshops created a self-chosen design on their plate with a spinach–fruit salad.

Main Outcome Measures: Before and after the workshop, a questionnaire assessing liking and willingness to eat or taste; hunger was assessed using the Teddy the Bear method and emotions were assessed using the Self-assessment Manikin. The event coordinator evaluated salad intake.

Analysis: Linear and generalized linear (logit) mixed models were used to test statistical differences before and after the workshop.

Results: The workshop resulted in a small increase in liking ($n = 409$; $P = .02$) and person control ($n = 375$; $P < .001$) and a decrease in hunger ($n = 379$; $P < .001$). A total of 30% of children increased their liking scores, 18% decreased them, and 52% did not change them. Significant associations of liking and change in liking with salad intake were in the expected direction.

Conclusion and Implications: This study showed the positive effect of a cooking workshop on children's salad liking across a selection of countries worldwide. Further research and novel methods are needed to evaluate the long-term effectiveness of cooking activities in real-life settings across countries.

Key Words: acceptance, children, cooking, meal preparation, vegetable intake (*J Nutr Educ Behav.* 2019; 51:919–925.)

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INTRODUCTION

Although the promotion of healthy eating habits in children is considered to be highly important, school-based interventions, which often focus on increasing fruit and vegetable intake, have had minimal impact on vegetable

intake.^{1,2} Simultaneously, vegetable intake remains a parental concern.^{3–5} The use of experiential learning strategies in school education programs is associated with the largest increases in fruit and vegetable consumption, preference, and nutritional knowledge outcomes.^{6–8} The mechanism behind the

positive effects of participatory activities (eg, cooking foods) potentially relates to several factors, such as having choices,^{9,10} increasing familiarity with foods,^{11,12} a higher degree of child control and a consequent level of intrinsic motivation and pride,^{10,13,14} the higher value placed on self-created objects,^{15–17} and the positive context in which cooking activities take place.^{18,19}

In addition to intervention studies that often combined several elements such as education and gardening activities with cooking, 2 experimental studies assessed the immediate effect of cooking on subsequent intake. Results from these experimental studies showed increased vegetable intake²⁰ and increased willingness to choose and taste unfamiliar foods with vegetables.²¹ Observational studies showed that cooking activities were associated with diet quality and

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fruit and vegetable intake in children^{22,23} and adolescents.²⁴

In addition to participatory activities, several factors such as role modeling,²⁵ availability (ie, whether the food is present),^{25,26} accessibility (eg, washed and cut into pieces),²⁷ and enhancing the visual appeal of foods were suggested as strategies for promoting fruit and vegetable intake in children.^{28,29}

An international cooking workshop was developed with the aim of creating a positive hands-on experience with fruits and vegetables for children. The workshops were organized during the International Chefs Day on October 20, 2016. International Chefs Day is celebrated by over 10 million chefs around the world. It is an event for chefs to engage with their communities, honor their profession, and share the pleasure of cooking. Nestlé Professional and the *Nestlé Healthy Kids Program*³⁰ initiated a yearly event in 2015 with cooking workshops for children together with professional chefs in over 60 countries. In 2016, the workshops were conducted in 62 countries, with approximately 2,000 chefs and 19,000 children participating in the cooking workshops.

The workshops in 2016 were themed Art on a Plate and combined hands-on experience with other important determinants of fruit and vegetable intake, such as exposure, role modeling, and visual appeal. The objective of the current study was to assess the effectiveness of the workshops in achieving positive change in children's liking and willingness to consume the prepared fruits and vegetables. It was hypothesized that children's liking and willingness to consume the prepared fruits and vegetables would increase after completing the workshop.

METHODS

Participants and Recruitment

The 52 Nestlé Healthy Kids contact persons from countries that participated in the Art on a Plate event were asked to participate in the evaluation on a voluntary basis as well, which resulted in 17 countries contributing to the evaluation. All countries organized cooking workshops in 1 location, except Russia, where the 3 workshops were organized in different locations. Each participating location conducted at least 1 workshop. The

Healthy Kids contact persons invited children to participate most often through collaborations with schools. Parents provided written consent for a child to participate in the event and evaluation. The study was exempt from ethical approval because it did not include health measures or sensitive or harmful questions and data were collected anonymously.³¹ Before the analyses were conducted, 3 countries were excluded from the study because the study protocol was not followed adequately, only part of the data was collected, or the pre- and post-questionnaires were not assigned a unique identifier and therefore could not be matched to the corresponding child. In total, 433 children from 14 countries and 16 different locations were included in the study. [Table 1](#) lists the descriptive statistics of the participating countries and the total study sample.

Study Protocol

Countries participating in the evaluation were free to set up the Art on a Plate workshop content with the chefs following local wishes and needs. However, to have comparable workshops across the evaluating

Table 1. Countries and Children Participating in Art on a Plate Workshops

Country	n	Girls (%)	Age, y (mean)	Age, y (range)	Spinach Intake			Other Ingredient Intake		
					None (%)	Taste (%)	Eat (%)	None (%)	Taste (%)	Eat (%)
Argentina	48	50	9.4	9–11	40	33	27	0	20	80
Austria	8	50	6.5	4–8	0	0	100	0	0	100
Brazil	17	41	7.7	7–8	24	47	29	18	47	35
China ^a	41	65	8.2	7–10	0	0	100	0	0	100
India	12	50	8.6	6–14	8	33	58	8	42	50
Indonesia	29	59	10.6	9–12	52	48	0	14	86	0
México	23	65	7.7	7–8	5	32	64	0	23	77
Peru	15	47	5.0	5–5	7	40	53	0	33	67
Philippines	51	53	9.3	9–14	16	37	47	0	4	96
Poland	10	50	9.2	8–11	0	60	40	0	40	60
Portugal	46	43	6.8	4–9	24	27	48	18	15	67
Slovak Republic	22	64	7.4	7–8	14	27	59	0	0	100
Switzerland	55	62	9.0	6–12	11	47	42	8	26	66
Bryansk, Russia	13	69	9.5	9–10	77	0	23	0	0	100
Kineshma, Russia	22	41	7.9	7–8	0	32	68	0	18	82
Moscow, Russia	21	67	8.8	7–9	0	48	52	0	43	57
Total	433	55	8.4	4–14	18	33	49	4	23	73

^aChina reported that children were asked to consume the salad to prevent food waste.

Note: Instructed by a chef, children in the workshops created a self-chosen design on their plate with a spinach–fruit salad. All countries organized a cooking workshop in 1 location, except Russia, in which 3 workshops were organized in different locations.

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