Evaluation of program to promote fruit with children

Interest for action

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In France we consider children as small fruit eaters. To change this behavior, it is possible to act on knowledge, attitudes and/or consumption of the child through interventions (Padilla, 2007). These interventions act either on the individual, either on its environment. Promote access by providing fruit in schools is the option chosen by the French government, as did earlier the United States, Denmark and Norway. That would have increase consumption of fruit of + 0.3-0.4 pieces / day. However, there are complex problems of organization and sometimes the result is unsatisfactory (Kamphuis, Giskes et al., 2006; Lytle, Fulkersen, 2002; O Brien, Shoemaker, 2006; Kann, Grumbaum et al., MMWR, 2005; Eriksen, Haraldsdottir et al, 2003; Buzby, Guthrie, 2004; Morgan, Sonnino, 2007; Kratt, Reynolds, Shewchuk, 2000; Sandvik, De Bourdeaudhuij et al., 2005).
The French program is called « Un fruit pour la récré ».

Aims of the program

- → To reduce the inequalities of the fruit supply
- → To integrate fruits in the daily food diet : interest, curiosity, pleasure
- → To increase fruit consumption by 10% to come nearer to recommandations of PNNS
- → To promote the knowledge on fruits
- → To encourage the behaviour changes of parents through their children

Methodology

Step 1 - 16 Focus Groups (112 pupils) - sept-oct 2008

Step 2 - Survey T0 on pupils and their parents before Fruit distribution (nov-dec 2008) Closed Questionnary

Step 3 - Survey T1 on pupils and their parents after Fruit distribution (may-june 2009) - Closed Questionnary + Leaflet « Tell us what are you eating today » (24h recall)

	With Action		Control Group		
	EPZ	Non EPZ	EPZ	Non EPZ	
« Before»					
1823 ←	1155 pupils	668 pupils	363 pupils	281 pupils	→ 644
1644 ←	1106 parents	538 parents	315 parents	231 parents	→ 546
« After »					
1260 ←	692 pupils	568 pupils	276 pupils	152 pupils	→ 428
1063 ←	606 parents	457 parents	228 parents	141 parents	→ 369

Sample description
- 159 pupils (CE2), 683 CM1, 845 CM2
- 53.3% girls, 46.7 % boys
- Age : 7 - 13 years
- 74.6% schools with Action
- 25.4% schools without Action
- Urban Area : big cities 30%, suburbs 10%
- Rural area : small towns and villages 58,5%
- 4,4 persons / household in average
- ~ 10% primary and 26% Bac +2 and +
- 23% unemployed

Sample
Randomisation in 36568 communes, (1 classroom / school)

Selection Criteria
- CE2, Cm1 and/or Cm2 classrooms
- Education Priority Zone (EPZ) vs non Education Priority Zone
- With Action vs Control (without action)

The evolution of consumption (although high) is decreasing highly = Cyclical effect (crisis)?

		T0	T1	
		Once a day and more Twice a day and more	Once a day and more Twice a day and more	
Pupils	With Action	67.1 % 38.3%	53.3 % 29.6 %	- 13.8 - 8.7
	Control group	66.5 % 36.9 %	51.5 % 26%	- 15 - 10.9
Parents	With Action	67.9 % 31.6 %	51.6% 25.4 %	- 16.3 - 6.2
	Control group	64.6 % 29.6 %	50.5 % 23.2 %	- 14.1 - 6.4

→ The action has limited the damage in children but does not appear to impact on parents

The Fruit consumption : A question of cultural origins?

	North Africa	France	Other countries
Once a day and more	**T0 : 81.4** **T1 : 58**	T0 : 63.1 T1 : 43.7	T0 : 71 T1 : 57.8
Twice a day and more	**T0 : 54.9** **T1 : 35.3**	T0 : 25.7 T1 : 20.6	T0 : 39.6 T1 32.3

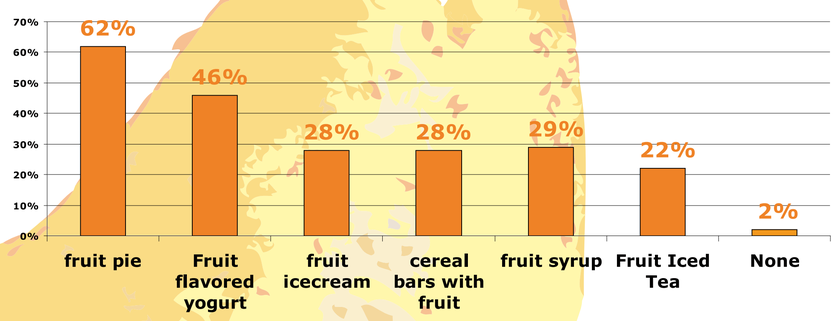
And the place to live?
Frequency of consumption of children perceived by their parents has fallen more in cities (-20.6) and villages (-17.7) than in suburban (16.6) → **Cultural Resistance?**

Attitudes

Desire for children to eat more fruits, especially when action
(twice a day and more : 38.7% of the "action with" vs. 36.1% with "control", p <0.05)
According to parents, availability of fruit at home increased (+ 7):
→ Purchases parents become more frequent (29.7% twice a week and more, 34.3%)
→ Proposed regular fruit at snacktime (47.3% twice a week and more) and increasing (+5.6)

Knowledge

- → Children: Changing knowledge (95.8 to 96.2), but no difference between groups with "action" and control group / Evolution of the knowledge of parents through the children (control = 15.2% vs. With action = 28.2%)
- → Link "fruit-health » well registered, but confusion in understanding the message of National Health Nutrition Program (PNNS) ("1 serving" or "1 times" + ambiguity of fruit definition)



Conclusions – Impacts of action...

... on Consumption
- → Limits the effects of the crisis
- → Frequency significantly higher than the control group
- → Fruit does not replace other foods

... on Attitudes
- → Very positive impact, excitement
- → Desire for diversity of fruit and choice
- → Impact on parents through children
- → Taste and health for children and Price and Quality for parents

... on knowledge
- → Link to health known but ...
- → Confusion in understanding the message of PNNS
- → Confusion in the definition of "fruit"
- → Educational support non discerned or untargeted
- → Supermarkets: potential relay messages to children

- No significant differences between non-EPZ vs EPZ (p> 0.05)
- Cultural approach upsets the conventional ideas: Target populations of European origin in the suburbs
- Need to influence behavior : >> Try participatory activities >> Try actions on vegetables >> Carry out actions that combine fruit with other food products

Bibliography
1 - Kamphuis, C. B. M., Giskes, K., Bruijn, G. J. d., Wendel-Vos, W., Brug, J., and Lenthe, F. J. v. (2006). Environmental determinants of fruit and vegetable consumption among adults: a systematic review. British Journal of Nutrition 96(4), 620-635.
2 - Lytle, L. A., and Fulkerson, J. A. (2002). Assessing the dietary environment: examples from school-based nutrition interventions. Public Health Nutrition 5(6A), 893-899.
3- O'Brien, S. A., and Shoemaker, C. A. (2006). An after-school gardening club to promote fruit and vegetable consumption among fourth grade students: the assessment of social cognitive theory constructs. HortTechnology 16(1), 24-29
4 - Kann, L., Grunbaum, J. A., McKenna, M. L., Wechsler, H., and Galuska, D. A. (2005). Competitive foods and beverages available for purchase in secondary schools - selected sites, United States, 2004. Morbidity and Mortality Weekly Report 54(37).
5 - Eriksen, K., Haraldsdottir, J., Pederson, R., and Flyger, H. V. (2003). Effect of a fruit and vegetable subscription in Danish schools. Public Health Nutrition 6(1), 57-63.
6 - Buzby, J., and Guthrie, J. (2004). The USDA Fruit and Vegetable pilot program evaluation. Agriculture Information Bulletin (792-6), 31 p.
7 - Morgan, K., and Sonnino, R. (2007). Empowering consumers: the creative procurement of school meals in Italy and the UK. International Journal of Consumer Studies 31(1), 19-25.
8 - Kratt, P., Reynolds, K., and Shewchuk, R. (2000). The role of availability as a moderator of family fruit and vegetable consumption. Health Education & Behavior 27(4), 471-482.
9 - Sandvik, C., Bourdeaudhuij, I. d., Due, P., Brug, J., Wind, M., Bere, E., Perez-Rodrigo, C., Wolf, A., Ibrahim, E., Thorsdottir, I., Almeida, M. D. V. d., Yngve, A., and Klepp, K. I. (2005). Personal, social and environmental actors regarding fruit and vegetable intake among schoolchildren in nine European countries. Annals of Nutrition and Metabolism 49(4), 255-266.

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