Increasing the intake of fruit and vegetables
Executive summary of a literature review

This literature review provides an analysis of what determines the fruit and vegetables intake of children, pregnant women and older people and of how it can be improved. It is built on previous reviews of various types of intervention studies and strategies (from 2000 onwards and focusing on the EU, in particular on Hungary and Poland).

Introduction
WHO reports suggested in 2002 that up to 2.6 million deaths worldwide and 31% of cardiovascular diseases may be attributed to inadequate consumption of fruit and vegetables.

In most Western countries, large population groups, including children and adolescents, eat far less than the recommended amount of fruit and vegetables and several studies have shown that children's intake of fruit and vegetables tracks into adolescence and that those food preferences and eating habits established in childhood and adolescence tend to be maintained into adulthood.

Reaching out to youth from lower socioeconomic status groups and specific targets like pregnant women and older people are also crucial challenges in this area.

Main conclusions
Nutrition promotion initiatives have an important role to play. Interventions may improve individual preference for and/or access to fruit and vegetables. Experiences have been developed all over the world and studies show that most of the time such programmes result in an increase of fruit and vegetables consumption, at least in the short term.

In fact, to date, nutrition education projects have only been moderately successful in promoting a sustained consumption of adequate amounts of fruit and vegetables. This only increases the importance of designing interventions to improve health-related behaviours that focus on the most important determinants or mediators of these behaviours.

Pregnant women
Although pregnant women tend to eat more fruit and vegetables during their pregnancy, the consumed quantities still fall below the recommended amount.

To prevent nutritional deficiencies in the maternal diet and to ensure adequate neonatal growth, behaviourally-based pregnancy interventions usually rely on the provision of dietary counselling.

Distributing vouchers for fruit and vegetables may effectively increase consumption of those products in the long run.
Children and adolescents
The consumption of fruit and vegetables of children is determined by the eating habits of their parents. This influence dramatically decreases during adolescence.

Tailored programmes that focus on specific populations and consider gender differences have been more successful in terms of behaviour changes.

In general, interventions combining nutrition and physical activity have been shown to be particularly promising. The same can be said about programmes that provide respondents with individualised feedback about their behaviour.

Older people
Older people are more often burdened by numerous health problems. Besides multimorbidity, this group is frequently affected by limited economic capabilities. Interventions might be more effective when personalised and tailored to each individual needs.

Research gaps
There is a need for more comparative studies on an international level. At best, these should be theory-based multi-level studies in which both personal and environmental factors (family, school, local community, and national factors) are considered within a longitudinal design (even if exploring a broad range of potential determinants also entails measurement problems). Such future research should generate:

- more information on determinants and mediators of fruit and vegetables consumption among pregnant women, children and adolescents and older people on which coming interventions should be tailored;
- more information concerning product-related, consumer-related and environmental-related factors which determine food choices.

The present review also observed a lack of interventions, studies and surveys among older people, and to a lesser extent, among pregnant women. Efforts should be made to study, raise awareness and educate these particularly vulnerable target groups (that often have different characteristics and needs).