

## Health Pedagogy and Narrative-based Strategies to Promote Healthy Eating Behaviours and Prevent Obesity in Schoolchildren: an Experimental Protocol Designed in Salento

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### Abstract

Overweight and obesity in paediatric population are becoming serious public health problems, reaching epidemic proportions in the world and being recognized as the "new pandemic of the twenty first century". Food choices and nutritional habits are strictly linked to the cultural dimension of communities and symbolic representations of food. Even in Italy, young generations are moving away from the culture of Mediterranean Diet (MD) – recognized as Intangible Heritage of Humanity by UNESCO – being at risk of losing both their identity and the health benefits associated with MD. In this frame, health pedagogy (i.e. nutritional education) can play a fundamental role in promoting the adoption of healthy eating behaviours since childhood, addressing at the same time such crucial binomials as food-health and environment-sustainability. In the last decades, a huge variety of school-based obesity prevention programs have been introduced. Among those, according to scientific evidence, narrative-based strategies may be helpful in promoting healthy nutritional habits among schoolchildren. Actually, narration is a useful tool in didactic practice, impacting on the emotional and motivational dimension of learning, thus representing a valuable vehicle of health contents. On these bases, as DREAM Laboratory of Health Pedagogy, we have proposed to the Department of Prevention of the Local Health Authority ASL Lecce – specifically involving the Food Hygiene and Nutrition Service (SIAN) – to implement a research protocol aimed at assessing if narrative-based strategies could be more effective than other educational approaches in promoting the adoption of healthy eating behaviours among schoolchildren.

**Keywords:** health pedagogy; food habits; schoolchildren; narrative pedagogy; storytelling.

### 1. Introduction: background

The culture of food, together with language or dialect, is a key element of community identity, being one of the intangible assets passed from a generation to another within an uninterrupted transmission of knowledge (Napier et al. 2014; Hedegaard, 2016; Anna 2001). The Expo 2015 held in Milan has represented an extraordinary non-formal setting for generating awareness about food and health topics. It has been a great international event during which countries, companies and NGOs implemented the general theme ("Feeding the Planet") according to the different traditions, cultures and creativity of each national, regional or local

community, in the perspective of defining a universal right to nutrition as "source of health" for all people and ecosystems. Health protection is a fundamental individual right (art. 32) stated in the Italian Constitution, while the right to have access to adequate food (both in terms of quantity and quality) is recognized in the Universal Declaration of Human Rights, as well as in the Convention on the Rights of the Child and Adolescent adopted by the United Nations.

Preserving specific food knowledge and flavors of different communities means protecting an integral part of their intangible heritage, which - in the case of the Mediterranean Diet (MD) -

also assumes therapeutic and preventive values, as confirmed by scientific evidence regarding the positive effects of MD on cardiovascular, metabolic and osteo-articular diseases.

Following dietary regimens with a high antioxidant content, such as those of MD, has been associated with a reduced prevalence of cardiovascular diseases and cancer in several studies. Beneficial effects of monounsaturated fatty acids (MUFA), widely contained in MD, on blood pressure and on the coagulation system have already been documented; it is now recognized that the adherence to MD is associated with the finding of a reduced waist circumference both in men and in women (Martinez-Gonzalez et al., 2009). The use of olive oil, typical of MD, reduces LDL-cholesterol levels and at the same time lowers cellular oxidative stress, thus removing free radicals from the bloodstream. Olive oil has also been shown to reduce the inflammatory response at the level of atherosclerotic lesions by inhibiting endothelial activation in the early stages of the atherosclerotic plaque genesis, displaying antithrombotic mechanisms and vascular protection (Capurso et al., 2014). Young generations who move away from the culture of the MD - recognized as Intangible Heritage of Humanity in 2010 by UNESCO – are at risk of losing both their identity and the benefits that derive from MD for individual health (Naska & Trichopoulou, 2014).

The philosopher Feuerbach asserted that "we are what we eat" and that individuals put into food all their humanity. This means that psychological variables have also an important role in determining healthy or pathological attitudes (anorexia or bulimia, diabetes, metabolic syndromes). That's why nutrition education can play a decisive role (Delgado-Noguera, 2011) since early stages of life. In this frame, health pedagogy can be helpful in promoting among young generations healthy food habits (i.e. adherence to MD), which may also impact on sustainable development. Moreover, MD has a huge range of specific local food products and biodiversity that young generations should preserve and pay attention to. Finally, food represents an opportunity for a significant relationship between parents and children, grandchildren and grandparents: by cooking and eating, community assets are transmitted

and the symbolic languages of food are learned (Curtis et al., 2011).

## 2. Rationale of the proposed research

Overweight and obesity in paediatric population are becoming serious public health problems, reaching epidemic proportions in the world and being recognized as the "new pandemic of the twenty first century" (Malecka-Tendera & Mazur, 2005). Obesity has negative physical and psychological health consequences during childhood and adolescence (Ng. et al., 2014). Moreover, children's obesity is a strong predictor of adult obesity, which results in negative health and economic effects both at individual and social level. For this reason, the World Health Organization (WHO) suggests that health and "nutrition literacy" should be included in the core curriculum as children enter school, and should be supported by a "health-promoting school environment" (WHO School Policy Framework, 2008; Paakkari & Paakkari 2012; Nutbeam 2000). Different approaches have been displayed for the prevention of overweight and obesity in school setting (Birch & Ventura, 2009); Blom-Hoffman et al., 2004; Brown & Summerbell, 2009).

In a previous systematic review, we have assessed the efficacy of narrative-based strategies to promote healthy eating behaviors among schoolchildren (Pulimeno et al., 2018). On these bases, the DREAM Laboratory of Health Pedagogy has proposed to the Department of Prevention of the Local Health Authority ASL Lecce – involving specifically the Food Hygiene and Nutrition Service (SIAN) – to implement a research protocol aimed at assessing if an educational intervention in school setting based on narrative pedagogy could be more effective than other educational and preventive approaches in promoting the adoption of healthy eating behaviors among schoolchildren, and particularly the adherence to the Mediterranean diet. The general objective of the research is to plan, implement and evaluate a specific education intervention to foster healthy nutrition in a sample of primary school children through narration (storytelling activities), in the framework of health and well-being pedagogy. Our specific objectives consist in:

- Developing a multidimensional questionnaire to evaluate (during the experimental intervention) the degree of adherence to the Mediterranean diet, and the preservation of traditional food knowledge, as well as to assess the symbolic representations and the cultural dimensions underlying food choices;
- Assessing the efficacy of Narrative Pedagogy as educational intervention to promote healthy nutrition and positively impact on food choices of schoolchildren and their weight. The interventions will be based on original and engaging stories that foster the adoption of healthy lifestyles (linked to eco-sustainable models).

## 2. Narrative Pedagogy for health education

Narration has always been at the basis of education (Demetrio, 2012). The idea of learning from stories (i.e. myths, fables, fairytales etc.) can be regarded as an alternative educational strategy, useful to overcome the risk of frontal teaching and able to create a friendly classroom environment (Walsh 2011).

As highlighted by Bruner (1990; 2010), narrative thinking allows us to map the reality and look at it from multiple points of view. Thanks to narrative, we can build and re-shape our yesterday and our tomorrow. Each narrative experience - with the help of memory and imagination - mobilizes energies and nurtures a relational potential between the narrator and the listener (Diekmann, 2009).

Being a medium of relationship in didactic practice, narration may impact on the emotional and motivational dimension of learning, becoming a valuable vehicle for health contents, including the promotion of healthy food habits. Moreover, narrative pedagogy is able to present even complex contents from the perspective of pleasure, stimulating the ethical and aesthetic sense of knowledge in the vision of a non-directive but promotional pedagogy, based on facilitation and joy. The mechanisms of interpretation, projection and reflection of narrative allow the internalization of contents (including those related to health) and potentially stimulate behavioural changes or modify cultural and symbolic representations (De Graaf, 2016).

Narrative pedagogy can engage children in activities that develop “critical and problem

solving thinking” concerning risk factors for individual and collective health.

In the current scenario, where the traditional food knowledge of the communities has been replaced with global market products (i.e. artificial milk in substitution of breastfeeding and fast-food or “junk-food” instead of vegetables and fruit snacks), narrative pedagogy can play a useful role in nutritional education of young generations, becoming a successful vehicle of health contents. It is not a coincidence that publishers (as well as media) have enriched their publications with titles dedicated to food choices and cooking even for children.

In this context, the storybook is proposed as a “friendly” intermediary that satisfies children's desire for adventure and fun. The pleasure of knowledge has an emotional value and increases the motivation to learn. It is known that an optimal level of learning is achieved (along with a possible change in students’ behaviours), only if children feel involved. That is why active methodologies are more effective than passive learning techniques (Michel, 2009). Teachers could incorporate narrative-based strategies in the repertoire of teaching skills as useful instrument for sharing knowledge, values, and behaviours in a transversal and interdisciplinary way, in order to satisfy the real needs of children, who naturally learn through fun, play and communication (Piaget, 1964). Teaching narratively consists in using stories instead of abstract concepts or theories, building up a safe and non-competitive learning environment, that stimulates creativity and encourages collaboration among schoolchildren, who feel more free to express themselves (Ironside, 2003).

School-based narrative interventions can take also advantage from technological devices and web resources (digital storytelling) – that may positively impact on the classroom daily setting (Oomen-Early, 2015; Wyatt, 2008).

## 3. Methodology of the research

A specific research protocol has been written and approved by the Ethical Committee of the Local Health Authority ASL Lecce. The methodology involves the use of a mixed approach based on quantitative and qualitative techniques. An experimental intervention of Health Pedagogy based on narrative strategies

(with the use of original storybooks specifically produced for this purpose by our PhD candidate) has been designed to prevent obesity and promote healthy eating behaviors among primary schoolchildren. Evaluation questionnaires (pre-intervention and post-intervention) aimed at assessing the cultural dimension (including aspects concerning sustainability) and the symbolic representation of nutritional choices have been developed.

Food frequency questionnaires were used to report dietary habits concerning a standard week and to evaluate the consumption of the so-called junk foods along with the degree of preservation of traditional food knowledge. Both questionnaires needed to be completed by children at home with their parents. The adherence to nutritional models that are supposed to represent a community heritage - such as Mediterranean Diet - have been assessed by KIDMED questionnaire directly administered in the classroom by personnel from Local Health Authority ASL Lecce, that had also the task of recording anthropometric measures (weight, height, Body Mass Index and waist circumference) according to anonymous and standardized procedures.

A total of 120 primary school children (aged 8-9 years old) have been enrolled in Otranto, Giurdignano, Uggiano La Chiesa and Lecce for a total of 8 classes participating into the study. Children have been divided into three different groups: (1) a group receiving traditional educational intervention with “frontal” lessons (one per month, for a total of six months) and presentation of slides addressing the topic of healthy nutrition; (2) a group receiving the multicomponent narrative-based intervention, which includes artistic laboratories (one per month, for a total of six months), aimed at stimulating the adoption of healthy eating behaviours through the original storybooks *“Tino and Rina, the fantastic adventure of life”* and *“Myrian vs. Raymond, the destiny girl and the prince of the world”*; (3) a control group in which the topic of healthy nutrition is not addressed at all. At the end of the study (May 2020), a storytelling laboratory will be offered also to children involved in the control group as a present for their participation and collaboration.

After the acquisition of informed consents from all the parents, the multidimensional

questionnaire has been proposed to all children (closed answers, with compilation assisted by the parents at home) to evaluate the psychological and cultural variables related to food choices, as well as the degree of preservation of traditional food-related knowledge, but also the sustainability of supplying food (if produced from one's own garden, at 0 km, organic/bio food or purchased in full in supermarkets). A food frequency diary was also proposed to all children to assess eating habits at baseline along with the KIDMED questionnaire, specifically developed for the evaluation of the adherence to the Mediterranean diet (MD).

For all children, we have recorded at the beginning of the study the following data: weight, height, Body Mass Index (BMI) and waist circumference (CV). These latter quantitative measures will be repeated at the end of the study (May 2020) along with re-administration of all the previously described questionnaires. At the end of the study all the parents will be provided with the results of the questionnaires and the overall data of the basal and final measurements, presented anonymously.

Statistical analyses will be performed to evaluate the differences between the groups and to assess the effectiveness of the proposed narrative-based strategies in improving eating behaviors and its potential to impact on cultural representations and sustainable models (variables measured through the multidimensional questionnaire) as well as on quantitative outcomes (weight/waist circumference/BMI).

The organization of the data matrix will be performed on Excel sheet showing the individual cases in the rows and the individual variables in the columns (e.g. sex, age, weight, height, waist circumference, BMI, class). Monovariate analyses will be used to determine the trend of each variable in the population under examination for each group (e.g. verify the prevalence of overweight with BMI > 26 or the adherence to the Mediterranean diet), in order to verify the baseline characteristics of the children and apply corrective factors in the bivariate/multivariate analysis, as well as to exclude extreme inhomogeneity of the groups. Graphical representations of the frequency distributions of the variables and their amplitude will be produced. By using a double entry

table, two categorical variables ordered and un-ordered will be placed in relationships to compare the observed and expected frequencies. The analyses will mainly consist in the calculation of the before-after difference. At the end of the study, statistical analyses ( $\chi^2$ ; Wilcoxon test) will be performed to evaluate the differences between the groups and to assess the effectiveness of the educational intervention based on Narrative Pedagogy in improving food choices and habits (and in particular the adherence to Mediterranean diet) and consequently the quantitative outcomes (weight / waist circumference / BMI). The significance of the difference test and the Wilcoxon test will indicate the existence of a relationship / association if the  $p$  values will be  $< 0.05$ . The control of the hypotheses will be checked with bivariate or multivariate analysis.

### 3. Expected Impact

The impact of the research relies on the possibility of validating a multidimensional questionnaire concerning cultural and psychological determinants of food choices and to assess the efficacy of a multi-component narrative-based intervention in school setting (in the framework of health pedagogy) at improving eating habits of schoolchildren.

In case of significant results, the Local Health Authorities could take advantage from the use of narratives in their ordinary health educational activities in school setting.

The promotion of healthy dietary habits and working for the prevention of childhood obesity also impacts on the protection of the environment (Micha 2018; Jones, 2012), fostering the recovery of traditional and more sustainable models based on waste reduction, re-use, recycling, and responsible consumption (circular economy) that can limit the exploitation of the territory, and safeguard natural resources of the planet (such as soil and water). Finally, it must be underlined the potential impact on school learning environment (that could become more friendly and cooperative, thanks to storytelling activities). Moreover, we expect that children will get closer to story-books, thus improving their reading's attitude and language and communication skills (Kuciapiński, 2014).

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