

## Let's play! Let's move and let's eat healthy! Promote the knowledge the food pyramid in the children: protocol of a randomized field trial

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### Abstract

*It's necessary to increase the knowledge of children aged 5-9 years and their parents on the subject of eating and promoting physical activity. The present paper describes the research protocol of a randomized field trial that aims: a) to increase the knowledge of food pyramid and b) to modify the nutrition behavior in order to improve the Mediterranean diet, especially: to increase fruit and vegetables consumption. The subjects enrolled in the trial will be children of the primary schools that will be randomized to receive or not an intervention through the use of games (cards and table games), which include also physical activities.*

**Keywords:** *food pyramid; card games; Mediterranean diet; nutrition; children; physical activity.*

## 1. Background

Physical activity and regular nutrition are essential aspects in children.

Correct lifestyle since young age is the first rule to prevent certain diseases and keep healthy [1].

The United Nations recognizes physical activity as a fundamental right of children and young people. The regular movement is important for the proper mental and physical development, ensures a physiological growth and gives children many benefits that persist into adulthood.

According to the World Health Organization's recommendations in order to improve cardio-respiratory conditions, and skeletal muscle of children and teenagers between the ages of 5 and 17 years and their metabolic and cardiovascular health indicators:

- You must do at least 60 minutes of physical activity a day, moderate to high intensity;

- If you exceed the daily hours of exercise, the body will draw benefits in terms of health and well-being;
- Doing aerobic and high-intensity activities for at least three times a week, including those that strengthen muscles and bones is good (which can be carried out within games such as running and jumping) [1].

It is also necessary to encourage the consumption of fruit and vegetables by children in order to educate them to the adoption of healthy eating habits and to contribute to the fight against obesity [2].

The regular use of so-called junk food (junk foods) containing substantial amounts of saturated fats, hydrogenated fats, preservatives and carbohydrates with a high glycemic index, substances known to be among the principal is responsible for the 'onset of obesity both children and adult [3].

1.1 Objective

The goal of the study is to increase the knowledge of children aged 5-9 years and their parents on the subject of eating and promoting physical activity, in particular to introduce the food pyramid, the consumption of different groups food with their property and the importance of physical activity, through the use of the games (cards and table games).

2. Metodology

2.1 Intervention

The intervention consists of two moments:

Time 1:

There will be a brief lecture by experts in the field of hygiene and preventive medicine nutrition. In particular, the topics covered will be:

- The food pyramid
- The properties of food

Time 2:

The class will be divided into 4 small groups and involved in reported below games.

- Card games (Fig 1):

- Pappa (5+ years);
- Piramemory (5+ years);
- "Fruit and a half" (7+ years);
- "Dulcis in fondo" (7+ years).



Fig 1 - Example of cards. The cards have a different color according to the food considered.

- Board Games:

- Mangiopoli (7+ years) (Fig 2):



Fig 2 - Mangiopoli inspired by the famous game "Monopoli".

- Games with physical activities:

- The Egyptian goose Game (6 + years) (Fig. 3);
- Piramidando (5 + years).



Fig. 3 - Egyptian Goose Game is a race game, in which the winner is determined solely by luck!

## 2.2 Setting

Elementary school will be involved on an opportunistic basis, through the availability of the Headmaster. Four classes (two in II and two in IV year) will be chosen randomly. For each class, a representative teacher was contacted for the project.

The intervention will involve two classes, and other two will act as control.

It is expected that the operation will also be proposed in the control classes but the next school year.

To promote adhesion to the study, we will proceed to make a series of actions designed to inform and motivate appropriately the children involved and their parents.

A short meeting will then be held with the parents, in order to make them aware of the objectives and methods of the study.

A letter of presentation of the project will be delivered to parents of participating children, along with the informed consent and their telephone numbers will be collected.

A second setting will be the school of children who are admitted to hospital for cancer reasons. In this case, children involved will be recruited only after the remission of the pathology.

## 2.3 Data Collection

You have chosen to use a self-administered questionnaire for children as an immediate and easy tool for data collection.

The questionnaire consists of three sections:

- a) demographics information;
- b) nutrition knowledge;
- c) nutrition behavior.

The mode of administration of the questionnaire will take place in the presence of a parent and / or teacher contact.

Subsequent evaluations are provided by recompiling the questionnaire in the same way in order to verify the effectiveness of the intervention over time.

Attention will be paid to the processing of sensitive personal data: the personal identity data isn't provided to unauthorized persons from the project, the names and the contact references collected will be kept separately from the identification data and linked by a numerical code.

The data obtained will then be entered into a database and then analyzed by statistical software SPSS20.

## 2.4 Statistical Analysis

The sampling was carried out with Epicalc 2000 [4].

Used the knowledge score (score of the questionnaire annex 1) min = 0 max = 13 it was assumed:

- Average pre intervention = 6
- Average post-intervention = 8
- Standard Deviation = 2
- Level of significance = 0.05
- Power = 80%

The sample size for the intervention group is fixed at 15.

A preliminary result, the reliability analysis, will be carried out by measuring Cronbach's alpha in order to test the internal validity of the questionnaire [5].

Also a descriptive analysis univariate analysis (chi-square test) and multivariate (logistic regression analysis) will be carried out. The level of significance will be set at  $p < 0.05$ .

## 2.5 Records

Duration of intervention: two hour and a half.

Duration of follow-up: one month.

Total duration of the study: one year.

## 3. Expected Results

- Increase knowledge about the consumption of some foods such as fruits and vegetables;
- Increasing knowledge about the weekly and daily consumption of some foods;
- Increase to knowledge of beneficial effects of some foods;
- Promoting physical activity.

## References

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