

# Poor Nutrition Due to Excess Calorie Intake: Prevalence, Related Factors Found in Aruban Elementary School Children and a Control Program

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**Childhood Obesity**

## Objectives:

1. Identify poor nutrition due to excess calorie intake in 6 to 11 year-old school children.
2. Identify health problems (high blood pressure, dyslipidemias, frequent signs of pubescent development, skin conditions, skeletal deformities, and cavities ) from poor nutrition and excess calorie intake found in the population studied.
3. Determine the factors (aspects of nutrition, physical activity, personal and family Hx) that may be related to excess calorie intake in the children studied.
4. Create a program designed to reduce poor nutrition due to excess calorie intake in the children studied, and evaluate its short-term effects.

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## Methods

To identify poor nutrition due to excess caloric intake the following study was conducted:

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Anthropometric Evaluation: to 3952 school children

Physical Exam: to 3952 school children.

Biochemical analysis: a selection of 325 school children

Surveys on associated factors: to 1776 selected school children.

Energetic output measurements: to 42 selected school children

School environment: at 15 schools.

Knowledge and opinion: of 2206 Arubians (92 teachers, 2034 parents, 52 food handlers y 28 business people).

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## Methods

An Intervention program for school children to reduce poor nutrition due to excess calorie intake was implemented.

Based on the current scientific literature, the characteristics of Aruba and the risk factors related to childhood obesity that were identified in this study, an intervention program was designed with actions in the fields of promotion, prevention, treatment and rehabilitation

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## Results y Discussion

### Childhood Obesity

Increases from 21,6% at 6 years of age to 33,6% at 11 years of age.

In 1046 obese kids 468 (44,7%) were female and 578 (55,2%) were male

### Height/Age

We found higher values for the index of height over age in the obese and overweight (respectively 39.7% y 21.0%), population in relation to those found with the normal weight and underweight subjects (respectively 15.5% y 12.8%).

### Types of Obesity

Within the 1046 school children we found a predominantly central type of obesity according to the following indicators:

Circumference of the waist: 729 (69,6%), (CDC)

Cw/Ch Index: 734 (70,1%), (Martinez y col)

Index Skin fold Tricep/Skin fold Sub Scapula: 698 (66,7%), (Moreno y col)

### Morbid Obesity

Of the 1046 school children 124 (11,8%) were found to be morbidly obese.

### Physical Exam

Arterial pressure in one take

240 (22,9%) of the 1046 obese and 46 (11,1%) of the 418 overweight children had elevated blood pressure.

Where as of the 2309 normal weight we only found 210 (9,1%) with the same results.

### Gynecomastia

Gynecomastia was found in the:

10 (4.2%) of the overweight group and in

54 (9.3%) of the obese.

Biochemistry

In the biochemical studies of the blood of the 325 school children studied there were no abnormal values glycemia or hemoglobin found.

Associated factors in 1776 school children

Physical activity:

Sedentary 1376 (77,4%),

Active 400 (22,5%).

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**Food (energy) intake:**

Adequate in 552 (31,1%),  
 Inadequate by excess in 989 (55,6%),  
 Inadequate by deficiency in 235 (13,2%).

**Energetic Output by movement of 42 school children.**

Other associated factors  
 Exclusive breastfeeding (6 months)  
 Eating frequency  
 The largest meal of the day  
 Antioxidant quality of the diet  
 Preferred likes and tastes of the food consumed  
 Personal history  
 Family history  
 School *environment*,  
 Perception of risk and danger related to childhood obesity

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Intervention program has five integrated components

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Creation y development of “Comunidad cu vitalidad” (non-profit foundation);  
 Social communication on physical activity and balanced healthy nutrition;  
 Educating teachers, parents, school children, food handlers and business people;  
 Programs to increase physical activities;  
 Programs that allow you to make healthier eating choices.

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**At the end of the school year**

An evaluation was done to determine the short-term effects of the intervention program.

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**Conclusions**

1. Overweight and obesity due to excess caloric intake in more than 1/3 of the population studied indicates that overweight and childhood obesity is an *important* problem in the healthcare of Aruba.

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2. The elevated rates of high blood pressure, dyslipidemias, frequent signs of pubescent development, skin conditions, skeletal deformities, and cavities in the school children affected as a result of bad and excessive nutrition confirms that there is an important break down in the public health in Aruba in relation to overweight and obesity.

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3. The sedentary life style and bad nutritional habits, like overeating, the lack of consumption of fruits and vegetables, no exclusive breast feeding for the first six months, skipping breakfast, where identified as the main causes for the over-

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weight and obesity epidemic of the school children studied.

4. The intervention program designed in this study with strategic components and necessary procedures to counter act the excessive consumption and poor nutrition was applied satisfactory and the results signal that they can be used with success to help contribute in lowering the growing rate of overweight and obesity in Aruban school children.

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